Modeling the Effects of Racial and Gender Bias in Chicago's Police Misconduct Complaint System

Computational Methods for American Politics

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Introduction

For decades, Chicago has been one of the most racially segregated cities in the United States, with high levels of poverty concentrated in predominantly African American and Hispanic neighborhoods. Moreover, while the crime rate trended down in recent years, Chicago's level of criminal activity is substantially above average, a fact which has motivated the city to develop and deploy what has become the second largest non-federal police force in the nation.[1] These are just two of many factors that contribute to frequent interactions between Chicago's minorities and law enforcement. When these interactions become dangerous or unfair for the civilians involved, having strong mechanisms of accountability such as an effective police misconduct complaint system essential to creating trust between the police and the communities that they have sworn to protect. In this paper, I employ logistic regression to model effect of race and gender in shaping the outcome of a police misconduct complaint, so as to better understand how racial and gender biases pervade one of Chicago's most important police accountability mechanisms. I find that the complainant being a person of color has a negative impact on the likelihood of a successful complaint leading to disciplinary action, and that this negative impact is magnified when the complainant is a woman of color. Similarly, I find that when the accused officer is African American, disciplinary action is more likely to be taken in comparison to their non-black counterparts on the force.

[1] United States Department of Justice. "Investigation of Chicago Police Department". Civil Rights Division and United States Attorney's Office Northern District of Illinois. United States Government, January 12, 2017. https://www.justice.gov/opa/file/925846/download

Background:

As we near the turn of the decade, one trend which has incontrovertibly left an impact on American culture and politics has been the emergence of the #BlackLivesMatter movement.[2] Indisputably, this movement has helped unleash a massive re-awakening throughout America, prompting a national conversation around racial bias and police brutality. As #BlackLivesMatter calls on America to reckon with the structural racism driving the disproportionate police violence towards African Americans at a national level, it is equally importance to evaluate areas where police reform can take place locally.

In Chicago specifically, the case of Laquan McDonald's shooting exemplifies how public attention to an issue can lead to meaningful change. In 2014, 17-year-old Laquan McDonald was shot and killed by CPD Officer Jason Van Dyke, who reported the incident as resulting from McDonald lunging at him and a group of officers with a knife.[3] The killing instantly sparked public outcry, for which McDonald's death served as yet another instance of the police unnecessarily using lethal violence against Black males. Ultimately, this sustained public response resulted in Jason Van Dyke being convicted of second-degree murder, marking the first time in half a century that an officer was found guilty for the killing of a Black man. In addition, the immense public response triggered by this event resulted in the City's commitment to increase transparency and accountability by increasing the effectiveness of its misconduct complaint process and publicizing misconduct data.[4]

2 Anderson, Monica, Skye Toor, Lee Rainie, and Aaron Smith. "Activism in the Social Media Age." Pew Research Center: Internet, Science & Tech. Pew Research Center, September 12, 2019. https://www.pewresearch.org/internet/2018/07/11/activism-in-the-social-media-age/.

3 Kalven, Jamie. "Laquan McDonald." Invisible Institute. Invisible Institute, December 8, 2014. http://invisible.institute/news/2014/laquan-mcdonald.

4 United States Department of Justice. "Investigation of Chicago Police Department". Civil Rights Division and United States Attorney's Office Northern District of Illinois. United States Government, January 12, 2017. https://www.justice.gov/opa/file/925846/download

While the conviction of Jason Van Dyke and the City's pledge to improve its accountability mechanisms were steps forward in re-building trust between Chicago's minority communities and the CPD, great strides are necessary in truly bridging this divide. In Chicago, negative interactions with the police – such as traffic stops and "stop and frisks" – disproportionately impact the city's people of color, particularly African American men. According to the ACLU's 2015 Stop and Frisk Report, despite representing under a third of the Chicago's population, 72% of those stopped by the police are African American civilians. This statistic becomes even more alarming considering that even at the height of New York City's stop and frisk practice in 2011, the amount of stops-by-population was four times higher in Chicago.[5]

While one may think that the excessive application of police stops is a reflection of the higher crime rates among minority neighborhoods, most of the people that are subjected to stops in even predominantly white neighborhoods are Latinos and African Americans. Moreover, out of the hundreds of thousands of stops that the police make, an extremely small fraction lead to arrest, which points to how often the police initiate these interactions based on unfounded suspicion. Indeed, in the summer of 2015, a time period with one of the highest rates of stop-and-frisk in Chicago's history, there was not a single instance where a stop actually led to an arrest.[6] Thus, often subjected to arbitrary police violence and intimidation, minority communities often harbor a profound distrust of the Chicago Police Department.

The divide between minorities and the Chicago police is deepened when this undue application of police violence and intimidation is coupled with the CPD's lack of responsiveness

[5] "2015 Stop and Frisk Report." ACLU of Illinois, February 28, 2018. https://www.aclu-il.org/en/publications/2015-stop-and-frisk-report.
[6] "2015 Stop and Frisk Report." ACLU of Illinois.

to emergencies occurring in minority neighborhoods. Throughout the city, police officers are constantly being asked to respond to emergencies. However, when emergencies are reported in South and West side neighborhoods, regions which consist primarily of Black or Latino communities, the average response time of police officers rises significantly from that of white neighborhoods on the North side of the city.[7] In fact, in these minority neighborhoods, it is not uncommon for a civilian to call for help, only to be told that there are no officers available to provide assistance.[8]

In part, the reason behind this disparity in emergency response time is a concomitant of the Chicago's police deployment system, which decides the number of officers dispatched at each neighborhood. This deployment system assigns a disproportionate number of officers to the predominantly White districts of Chicago, while allocating less resources and personnel to Hispanic and African American districts. This lack of responsiveness undermines the deterrence effect that law enforcement is designed to create, which contributes to the significantly higher rates of violence and criminal activity in Chicago's minority districts. Correspondingly, these high crime rates in communities of color reinforce racialized policing practices throughout Chicago, contributing to the tension between minorities and the police.

Ultimately, the reality is that such cycles result in minority communities and the police perceiving each other as their adversaries. The perception of many Chicagoans is that the idealized relationship with the police as their protectors only extends to White civilians. For many communities of color, especially African American communities, this ostensible

[7] "Newly-Released Data Shows City Continues to Deny Equitable Police Services to South and West Side Neighborhoods." ACLU of Illinois, July 25, 2017. https://www.aclu-il.org/en/press-releases/newly-released-data-shows-city-continues-deny-equitable-police-services-south-and.
[8] "Newly-Released Data Shows City Continues to Deny Equitable Police Services to South and West Side Neighborhoods." ACLU of Illinois.

relationship of police serving as the civilians' protector is often perceived as inherently misguiding—for it seems as though instead of police concern centered around protecting whites *and* minorities, police appear to believe that their mission is protecting whites *from* minorities.

Theory

With such a strained relationship between Chicago's minority population and the police department that supposedly protects them, it is of paramount importance that mechanisms of police accountability are effective and unbiased. This is especially true for accountability mechanisms that directly involve the participation of civilians, such as Chicago's police misconduct complaint system, since the proven effectiveness of these systems can improve the public's trust in law enforcement.[9]

If the police misconduct complaint system is proven to be effective and transparent in enforcing accountability, citizens are more likely to believe that their input can contribute meaningfully to this accountability process regardless of their race when violations of their rights occur. Just as importantly, when a complaint system is effective at holding officers accountable for actions that qualify as police misconduct, officers will likely become more aware of the legality of their actions towards civilians and more conservative with the application of their use of force.[10] These two potential outcomes of a transparent complaint system can help restore the trust between minorities and law enforcement, ideally helping society move forward to an extent that African Americans in Chicago no longer feel subjected to arbitrary police violence and discrimination.

[9] United States Department of Justice. "Investigation of Chicago Police Department". Civil Rights Division and United States Attorney's Office Northern District of Illinois. United States Government, January 12, 2017. https://www.justice.gov/opa/file/925846/download,
[10] United States Department of Justice. "Investigation of Chicago Police Department", p 19.

Given the stakes of maintaining an unbiased and effective police misconduct complaint system, an empirical evaluation that measures elements of racial, and even gender, bias is necessary. Even though the Police Misconduct Complaint System of Chicago was in part established to improve the relationship between communities of color and the police,[11] I fully expect the allegations of a Black complainants to result in a substantially lower rate in disciplinary action of the officer than the allegations of a White complainant. Moreover, since Black males, in particular, are those most severely affected by police violence and intimidation,[12] I expect that their complaints are devalued when compared to Black females. The racialized perception of Black men as inherently more violent and confrontational than other demographics is a well-documented psychological phenomenon.[13] This pervasive implicit bias towards the supposedly "aggressive" predisposition of Black men may be a serious detriment to the fair evaluation of their complaints. For instance, if a Black man files a complaint against an officer's excessive use of force, this bias may lead those who handle the complaint to assume that the officer's use of force was merely a reaction to the Black man acting hostile in the first place. Thus, I expect this implicit bias, along with many others, to undermine the chance that complaints from black men lead to an officer's disciplinary action in comparison to virtually all other demographics.

I also expect that the gendered valuation of victimhood carries over to the other races, with complaints from females having more success than those of males. Multiple theories are involved in this hypothesis, namely: outdated and bigoted stereotypes of female passivity and

[11] Ibid, p 19.
[12] "2015 Stop and Frisk Report." ACLU of Illinois.
[13] "'People See Black Men as Larger, More Threatening Than Same-Sized White Men.'" American Psychological Association. American Psychological Association. Accessed December 12, 2019. https://www.apa.org/news/press/releases/2017/03/black-men-threatening.

innocence, and conversely, the implicit assumption that men should be able "tough out" aggression.[14] For millennia, patriarchal customs and norms have ascribed women in society to passive roles, continuously reinforcing cultural notions that women are nurturing, delicate, and submissive figures while men are self-reliant, tough, and authoritative.[15] While society has made some progress, particularly in urban areas like Chicago, the reality is that these stereotypes continue to pervade nearly all aspects of life in the United States.

As a result, I expect these gendered notions to influence the evaluation of a complainant's allegation. More specifically, I expect that a woman who files a complaint of police misconduct will have a higher chance of the officer being disciplined, as the image of an officer abusing his or her power over someone perceived as passive and delicate will evoke a stronger sense of protectiveness on behalf of the City's administrators. In other words, the role ascribed to woman – as a cultural figure – will actually improve a female complainant's chances of bringing the officer to justice, since those in charge of evaluating these complaints are more likely to see this situation as an officer taking advantage of his or her steep power dynamic at the expense of a "defenseless" victim.[16]

In contrast, I expect a male's complaint of an officer's misconduct to be taken less seriously. The traditional notion that a man should be capable of traversing violence situations and be self-reliant enough to not feel the need to complain to authorities for a perceived slight. This cultural perception that a man should be strong enough to tolerate aggression and conflict,

[14] Apa.org. (2018). *Harmful masculinity and violence*. [https://www.apa.org/pi/about/newsletter/2018/09/harmful-masculinity. Accessed 08 Dec. 2019.
[15] Croegaert, Ana. "Innocence and Victimhood: Gender, Nation, and Women's Activism in Postwar Bosnia-Herzegovina." *SpringerLink*, Palgrave Macmillan UK, 10 Nov. 2015, link.springer.com/article/10.1057/fr.2015.43.
[16] Croegaert, Ana. "Innocence and Victimhood: Gender, Nation, and Women's Activism in Postwar Bosnia-Herzegovina." *SpringerLink*, Palgrave Macmillan UK, 10 Nov. 2015, link.springer.com/article/10.1057/fr.2015.43.

and do so without the help of others, is part of why the phrase "toxic masculinity" has gained so much traction in American society. Toxic masculinity, which encompasses the self-destructive messages of how a man ought to act and feel, may serve as a detriment to male complainants attempting to bring to light perceived police misconduct. I expect that cultural preconceived notions of how a man should handle conflict will lead to his complaint being met with cynicism. In other words, those responsible for evaluating these allegations of misconduct may believe that the male complainants should be more "resilient" or less "sensitive" to an officer's inappropriate behavior. These gendered assumptions and the accompanying cynicism towards a male's claim to victimhood, I hypothesize, will lower the rate at which their complaint results in the discipline of an officer accused of police misconduct.

Finally, regarding the effect that an officer's race and gender may have on the chances that he or she is deemed guilty of police misconduct, I expect minorities to be treated more harshly than white officers. The reasoning behind my hypothesis that African American and Latino officers are treated more harshly is an extension of my previous theory on the effect of a complainant's race. That is, given that African Americans, particularly those who are male, are often perceived as inclined towards aggression than other demographics, allegations such as the excessive use of force will align with the preconceived notions of those responsible for assigning blame.[17]

As for the expected effect of the officer's gender, I expect female officers to be disciplined for misconduct at a higher rate than male officers. Given that my hypothesis on the effect of a complainant's gender is that male complaints will be taken less seriously than their

17 "'People See Black Men as Larger, More Threatening Than Same-Sized White Men.'" American Psychological Association. American Psychological Association. Accessed December 12, 2019.

female counterparts, it may appear illogical that I hypothesize that male officers will be disciplined at a lower rate than female officers. However, the logic underpinning my expectation that a male complainants claim to victimhood will be devalued (due to outdated stereotypes of how each gender should be able to handle conflict) is not applicable to the role of an officer's gender, simply because an officer accused of misconduct is not making any claims to victimhood. Therefore, given the fundamentally different circumstances between the accused and the complainant, the reasoning behind my expectation that rates of disciplinary action will favor male officers over female officers is that police department's hypermasculine culture is less welcoming and supportive to women in the force. According to one of the most comprehensive qualitative reports conducted by the National Institute of Justice on the experiences of female officers, hypermasculinity is enshrined in the majority of American police departments, while prejudiced views towards women and workplace sexual harassment are tolerated (and even actively promoted, in some cases).[18] Thus, I believe that this preferential treatment towards male officers and the degradation of female officers will be reflected in the rate by which these officers are disciplined for allegations of police misconduct.

In sum, based on the various gender theories and the history of racialized policing, I expect gender and race to play key roles in the police misconduct complaint process. Regarding the effect that a complainant's race has on the likelihood that their complaint is sustained, I hypothesize that male African American complainants, in particular, will have substantially lower rates of success than virtually all other demographics, given society's implicit belief that black men are inherently more aggressive and hostile. This same implicit belief, I predict, will also contribute to a higher rate of disciplinary action against Black officers accused of

[18] "Woman in Policing: Breaking Barriers and Blazing a Path". National Institute of Justice. United States Department of Justice. July 2019. https://www.ncjrs.gov/pdffiles1/nij/252963.pdf

misconduct in comparison to their White counterparts. As for the influence of the complainant's gender, I hypothesize that complaints from male complainants are taken less seriously than those of females due to socially imposed (albeit highly outdated) assumptions that a woman's passivity provides her with a higher claim to victimhood in conflict situations, whereas the toughness and self-reliance that is expected of men partially discredits their own claims. However, the effect of gender is completely different in the context of an officer's chances of being disciplined, and I predict that the culture of masculinity and the tolerance for sexism in the workplace will result in the harsher treatment of female officers accused of misconduct in comparison to male officers.

Data:

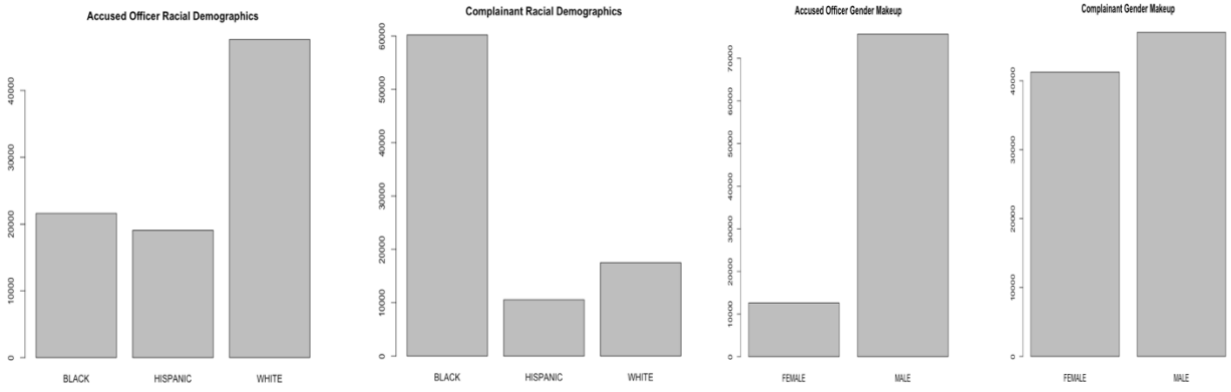
In order to empirically evaluate the effect that both race and gender have in shaping the outcome of police misconduct complaints, I utilize the data collected, cleaned and labeled by Invisible Institute. This organization, which played an instrumental role in bringing the truth behind the Laquan McDonald's murder to light, continues to promote police reform through the Citizens Police Data Project. After the Invisible Institute submitted a formal request that police misconduct data be made publicly available, the City released data on all misconduct claims since 2000.[19]

It is this matched and labeled data of each police misconduct complaint from 2000 to 2018 that I use to evaluate how race and gender influence a complaint's outcome. From the Invisible Institute's public repository, I downloaded a dataset containing the complainant's demographic information, which included the Case ID assigned to each complaint, the location of the incident, and the complainant's age, race/ethnicity and gender; and I did the same with a

[19] "Citizens Police Data Project." *Invisible Institute*, invisible.institute/police-data.

dataset of the officer's information, which included the variables listed above along with the officer's ID, rank, age, name, and the final finding of the complaint (i.e., whether or not the complaint was sustained).[20] I then merged the two datasets by the Case ID, which I then subset so as to only include the five variables of interest: the officer's race and gender, the complainant's race and gender, and the complaint's final finding.

While the vast majority of observations in my data subset contained complete information for all five variables, a small portion of missing data was identified for the complainant's race. Finally, I dropped the levels "Asian Pacific Islander" and "Other" from the complainant and officer race factors. This decision was made because there is little to suggest that Asian Pacific Islanders experiences disproportionate violence by the police, and given that the objective of this research is to determine whether the unequal treatment of these marginalized minority groups such as Hispanics and Blacks is also reflected in the police misconduct complaint system, the inclusion of Asian Pacific Islanders is unnecessary. After dropping the complaints with missing information, my dataset contained 88,283 observations. The figures below illustrate the demographic distribution of the complainants and officers accused of misconduct.



[20] Invinst. "Invinst/Chicago-Police-Data." *GitHub*, github.com/invinst/chicago-police. Acccessed November 2019.

Finally, I make the "final findings" variable a binary variable. This is done by re-coding the variable such that if the complaint is "Sustained" it is re-coded as 1, and if it is not, then it is given the value of 0. I create this binary response variable because a complaint is sustained if the City believes it has sufficient evidence to justify disciplinary action. According to the Invisible Institute, a complaint being sustained is generally the benchmark of a successful complaint, given that in nearly all sustained complaints result in some form of disciplinary action against the officer. Thus, using the rate by which a complaint is sustained among each demographic of interest lends itself to meaningful interpretation as to how race and gender influence the police misconduct complaint process.

Methodology:

In order to evaluate the relationship between a complainant and officer's race and gender in the outcome of police misconduct allegations, I employ multivariate logistic regression. Multiple considerations underpin my decision to use logistic regression over multivariate linear regression and linear discriminant analysis.

First, the binary nature of my response variable reveals that employing linear regression would be inappropriate and misleading. The objective of my research is to describe the relationship between the outcome of a misconduct allegation (whether it is deemed worthy of discipline or not) and four categorical independent variables – officer's race, officer's gender, complainant's race, and complainant's gender. In other words, I am interested in describing the probabilities that my explanatory variables result in one of two potential outcomes: whether the complaint was sustained or not. Therefore, given that linear regression assumes that the response variable is continuous and unbounded, applying linear regression to model the probabilities of my explanatory variable resulting in one of two outcomes would result in a wholly misleading

output, as linear regression is not capable of restricting the predicted values within 0 and 1. Logistic regression, on the other hand, can produce a probability score ranging from 0 to 1.

Regarding linear discriminant analysis (LDA), this approach typically performs better than logistic regression when the sample size is small and each class of the predictor variables have close to a normal distribution. This is because logistic regression makes no assumptions about the distribution of explanatory or response variables, which can make logistic regression models unstable in data with a small n.[21] Given that my data contains nearly 90,000 observations, it is quite safe to say that sample size is large, and thus the benefit of assuming a normal distribution is negligible. Further, when the explanatory variables consist of only two categories, which is the case for both officer gender and complaint gender, logistic regression has a far higher predictive accuracy than LDA.[22]

Ultimately, logistic regression is uniquely suited to model the relationship between my four categorical predictor variables and my binary response variable. This method can accurately model probabilities when working with large sample sizes, and it can estimate the odds outcome of my response variable, restricting these probabilities to range from 0 to 1.[23] As a result, I used the following logistic regression equation:

$$Pr(Y = 1|X)) = \frac{e^{\beta_0 + \beta_1(Officer\ Race) + \beta_2(Complainant\ Race) + \beta_3(Officer\ Gender) + \beta_4(Complainanat\ Gender)}}{1 + e^{\beta_0 + \beta_1(Officer\ Race) + \beta_2(Complainant\ Race) + \beta_3(Officer\ Gender) + \beta_4(Complainanat\ Gender)}}$$

Here, $Pr(Y = 1|X))$ represents the log outcome that a police misconduct complaint is sustained or unsustained given the four categorical variables of the officer and complainant's

[21] Pohar, Maja, Mateja Blas, and Sandra Turk. "Comparison of Logistic Regression and Linear Discriminant Analysis: A Simulation Study." *Metodološki Zvezki* Vol. 1, no. No. 1 (2004): 159.
[22] Pohar, Maja, Mateja Blas, and Sandra Turk. "Comparison of Logistic Regression and Linear Discriminant Analysis: A Simulation Study", 160.
[23] Ibid, 156.

demographic information. The $\beta_0, \beta_1, \ldots \beta_4$ represent the regression coefficients. The formula above restricts the probabilities to 0 and 1, as any exponent of e yields a positive number and the numerator is smaller than the denominator. This is excellent for ensuring that the output of my model is standardized and can be easily converted to a percent likelihood.[24]

In order to ensure full transparency in my methodology, I will thoroughly explain my initial steps in effectively applying logistic regression to model the relationship between race, gender and a complaint's outcome. To compute these probabilities in R, I test and train the data. To do this, I first create a sample of 80% of observations, storing these observations into a sampling set. This sampling set is then indexed, as is the inverse of the sampling set, and both are stored separately. Then, I pass the raw values of my test set's response variable into the response variable that I will use in building my logit object. From there, I take the following steps in order to compute the predicted probabilities of my response variable:

```
1 . logit <- glm(outcome ~ officer.race + complainant.race + officer.gender + complainant.gender,
                 data = train, family = binomial)

2.  logit.probs <- predict(logit,  newdata = test, type="response")

3.  logit.pred <- ifelse(logit.probs > 0.5, 1, 0)
```

In the first step, I create a logit object with my response variable on the left side of the equation and my four independent variables on the right. The data is set to "train," which is the object that stores the observations that I previously sampled. Next, I insert two new arguments, setting "newdata" to "test" (which is the object that I stored the inverse of my sampled set), and setting `type='response'`, a required argument for calculated predicted probabilities with logistic regression. Finally, in step three, since this is a classification task, I set a threshold used to determine whether an observation is classified as sustained or unsustained complaint. This

[24] Ibid, 130.

threshold is set to 0.5, so that observations with a $Pr(Y = 1|X))$ that is higher than 0.5 is categorized as sustained, while observations who's log likelihood fall below that threshold are assigned to the not sustained category. After these steps are complete, to compute the accuracy of the model, I calculate the proportion of the predicted outcomes of complaints that match with the actual outcomes of those complaints. This accuracy is then visually assessed through plots.

Finally, I create five additional logistic regression models to measure the various ways in which race and gender affect the outcome of a misconduct allegation. First, to describe the interaction effects of the officer's race with their gender, create. After running these models, I create plots which illustrate the effects that the combination that the officer and complainant's race and gender have in the likelihood that a complaint will result in disciplinary action.

```
logitmod7 <- glm(complainant.race*complainant.gender + officer.race + officer.gender, data=totalsub, family=binomial)
logitmod8 <- glm(officer.race*officer.gender + complainant.race + complainant.gender, data=totalsub, family=binomial)
logitmod9 <- glm(officer.race*complainant.race + complainant.race + officer.gender, data=totalsub, family=binomial)
logitmod1 <- glm(officer.gender + officer.race*(complainant.race*complainant.gender), data=totalsub, family=binomial)
logitmod0 <- glm(officer.gender*complainant.gender + officer.race + complainant.gender, data=totalsub, family=binomial)
```

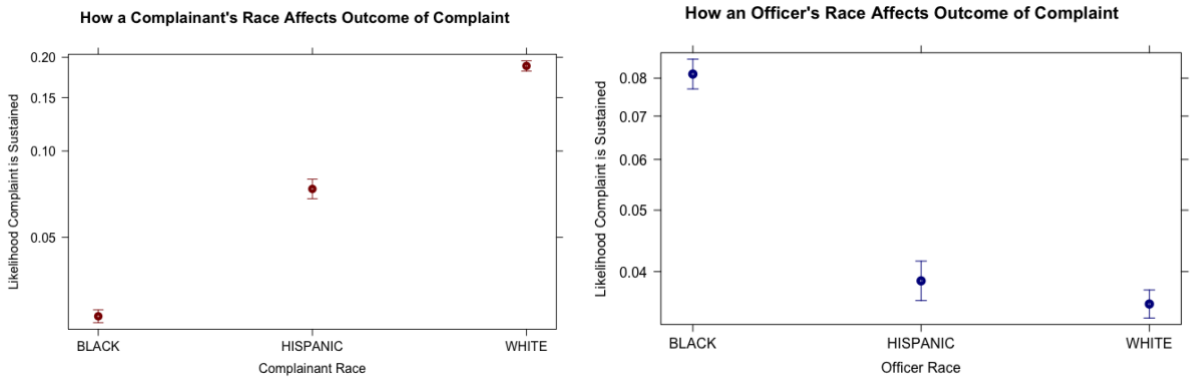
Results:

The predictive accuracy of the tested and trained logit model was very high. In fact, simply by using the officer's race and gender, along with the complainant's race and gender, the model was able to correctly classify over 93% of observation as either sustained or unsustained, which shows the influence that these demographic factors have in shaping the outcome of police misconduct complaints. Moreover, a summary of this

model shows that the races and genders of the officers and complainants all proved to be highly statistically significant.

```
Coefficients:
                            Estimate Std. Error z value Pr(>|z|)
(Intercept)                -2.93937    0.04812 -61.087  < 2e-16 ***
officer.raceHISPANIC       -0.76464    0.04533 -16.866  < 2e-16 ***
officer.raceWHITE          -0.86926    0.03641 -23.875  < 2e-16 ***
officer.genderMALE         -0.31942    0.03996  -7.994 1.31e-15 ***
complaintant.raceHISPANIC   1.13015    0.05098  22.167  < 2e-16 ***
complaintant.raceWHITE      2.13876    0.03560  60.077  < 2e-16 ***
complaintant.genderMALE     0.41721    0.03342  12.484  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

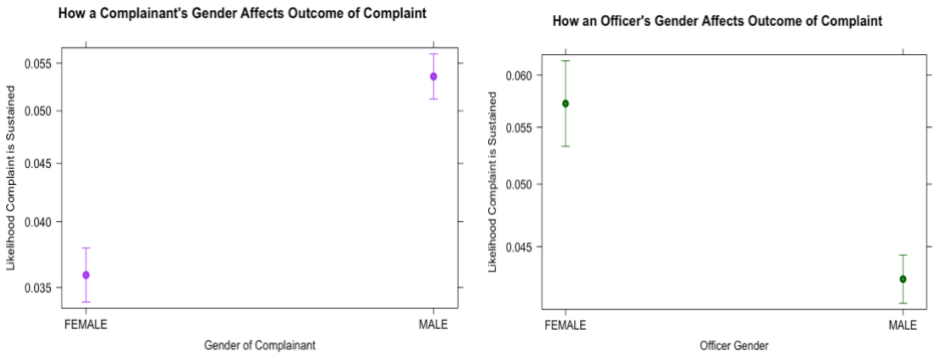
The results from my original logistic regression model indicate that the police misconduct complaint process is fundamentally racialized. Indeed, the output from this model reveals that the complaint of a white person leads to disciplinary action nearly 19% of the time, while the success rate of a Hispanic or Black person’s complaint sit at only 7.6% and 2.6%, respectively. In other words, even though a black person in Chicago is far more likely to be on the receiving end of actions that qualify as police misconduct, their complaints are more than 7 times less likely to lead to the disciplinary action than a white complainant. To visualize this difference, the figure below illustrates the effect that a complainant’s race has on the success rate of their complaint:



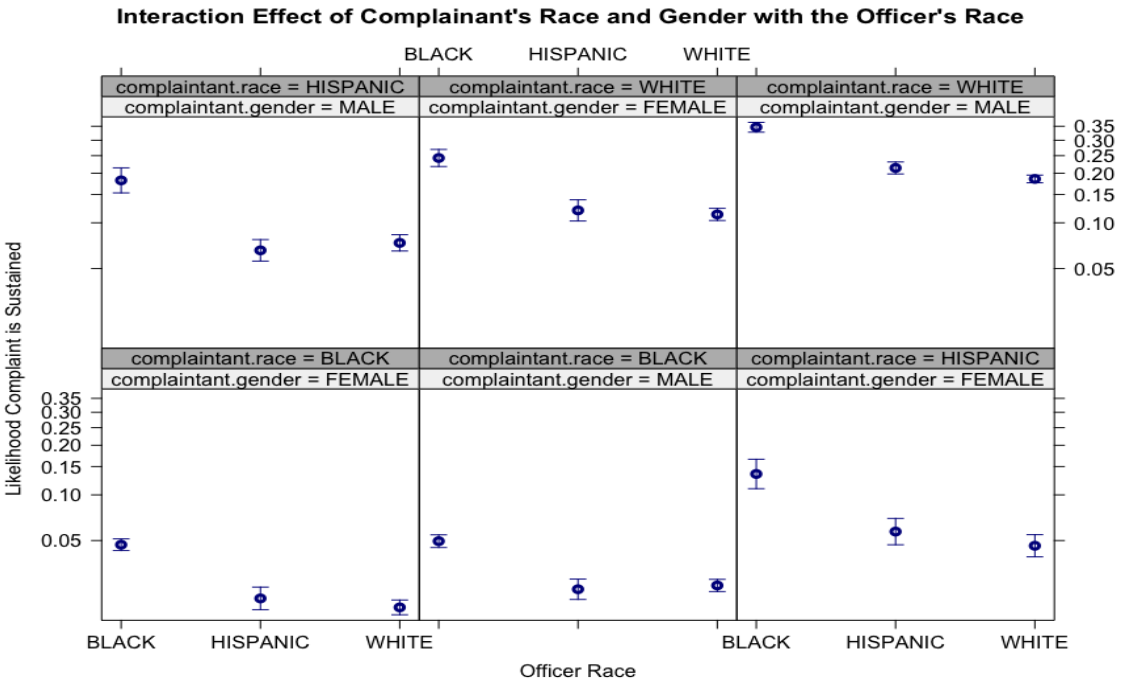
Not only is the complainant’s race a strong predictor for the outcome of a complaint, but the race of the officer accused of misconduct is an influential and statistically significant factor as well. On average, when the officer accused of misconduct

is white, disciplinary action is taken only 3.6% of the time. However, when a black officer is accused of the same violation, the rate of disciplinary action jumps to roughly 8.3%. To put it another way, an African American officer is over two times more likely to face discipline for misconduct than his White peers. Thus, while the effect of an officer being Black is less dramatic than the ~16% difference in the success rates between Black and White complainants, the fact that African American officers are punished at a higher rate suggest that simply being Black disadvantages those involved in the police misconduct complaint process. It is interesting to note, however, that Hispanic officers (3.7%) are disciplined at nearly the same rate as White officers (3.4%), which reveals that being Hispanic has a far greater effect on a complaint's outcome when this is the race of the complainant than it does when it is the race of an accused officer.

With regard to the effect of a complainant's gender, male complainants have a higher rate of success than female complainants, a finding which does not conform with my initial hypothesis that the complaints of women will be taken more seriously than those of men. For male complainants, the likelihood that their complaint will result in the disciplining of the accused officer sits at slighly over 5.4%. In comparison, the rate of disciplinary action being taken on the complaints of female complainants is roughly 3.6%. Indeed, not only do my models indicates that female complainants as a whole are at a slight disadvantage, it also shows that female officers are more likely to be disciplined for misconduct than their male peers, with female officers being disciplined nearly 6% of the time in comparison to 4.3% for male officers. While this difference is small, it is statistically significant. This finding, which does conform to my hypothesis on the effect of an officer's gender, suggests that gender bias does appear to play a role in the police misconduct complaint system.



Notably, when modeling the interaction effects of race and gender, clear patterns emerge of how the police misconduct system is biased against marginalized demographics. For instance, after creating a models of the interaction of complainant' race and gender with the officer race, the output reveals that complaining about misconduct as a woman of color, particularly an African American woman, will almost never result in the discipline of a white officer (only a 1.7% chance). In constrast, when a White male complainant accuses an African American officer of misconduct, there is roughly a 35% chance that the Black officer is punished. To put this into perspective, a Black officer accused by a White man is 20 times more likely to be punished than a White officer accused by a Black woman. Below is a compilation of plots mapping the effect of race and gender of all six possible demographic combinations:



Discussion:

The various logistic regression models support the notion that racial and gender bias pervade the police misconduct complaint system. The first clue was that the logistic model was able to classify complaints with incredible accuracy (over 93%) simply using the race and gender of the officer and complainant as explanatory variables. While the complainant's race is the strongest predictor to the outcome of the complaint, the model's output reflects that the complainant's gender, along with the race and gender of the officer, have a clear effect on the outcome of a misconduct complaint as well. When these explanatory variables interact, as shown in the graph above, the privilege of white men, in particular, sharply contrasts the distinct disadvantage faced by African Americans, especially women from this community.

While many of these results were expected, I found some of the results surprising. For instance, despite the fact that the complaints of White complainants were twice as likely to lead to disciplinary action than Hispanic complainants, Hispanic and White police officers were disciplined at nearly identical rates (with both demographics being half as likely to face discipline as Black officers). While I can only infer as to why this could be the case, one possibility is that Hispanic officers are more integrated and socially accepted in their police departments than African American officers. Evidence for the comparatively high levels of social support and inclusion of Latino officers can be found in the CPD's recent demographic trends. In the past several years, there has been a steady surge in the amount of CPD officers that identify as Latino. As a result, Latinos now comprise over 25% of Chicago's police force, which is roughly representational of the city's racial demographics.[25] This same degree of diversity and

[25] Hinkel, Dan, and Jennifer Smith Richards. "Despite Hiring Push, Chicago Police Still Falling Short in Attracting Black Officers." chicagotribune.com, May 4, 2018. https://www.chicagotribune.com/news/breaking/ct-met-chicago-police-hiring-20180503-story.html.

inclusion in the CPD, however, cannot be said for African Americans, whose numbers in the force have been decreasing in the past few years. Indeed, according to a report from 2018, Black people represented only 14 percent of the officers hired that year by the police department.[26] Given the contentious history between the African American community and the CPD, this is hardly surprising. Thus, it is likely that the similar levels of disciplinary action between White and Latino officers is, in part, a reflection of the increasing inclusion of Latino's within the CPD; and perhaps the disproportionate disciplining of Black officers can be partially attributed to the strained relationship that persists between Black Chicagoans and the CPD.

Another finding that completely diverges from my original hypothesis is the role that a complainant's gender plays in shaping the probability that a complaint is sustained. As previously discussed, I expected that there be a devaluation of a male complainant's claim to victimhood due to persisting social norms that men ought to be able to be self-reliant and resilient in conflict sitautions.[27] Given that a woman's complaint was slightly less likely to lead to disciplinary action, however, suggests that this gender theory does not apply as directly to the complaint process as anticipated. Rather, it appears as though the general theme of gender bias against women is reflected in the models' output. Complaints by Black women, in particular, had a strikingly low success rate. One possible explanation for this disparity can be found in theories around the devaluation of the testimony and claims of women, especially those of color. A often cited example of the manifestation of this theory is the significantly higher mortality rate of Black pregnant women that, despite going to the hospital several times to describe their pain, are

[26] Hinkel, Dan, and Jennifer Smith Richards. "Despite Hiring Push, Chicago Police Still Falling Short in Attracting Black Officers."
[27] Apa.org. (2018). *Harmful masculinity and violence*. [https://www.apa.org/pi/about/newsletter/2018/09/harmful-masculinity. Accessed 08 Dec. 2019.

often not believed by their doctors until it is too late.[28] While claims of police misconduct are clearly made under different circumstances, it is certainly possible that this pattern of a woman's claims being perceived as less valid than that of men has extended to the police misconduct complaint system. In other words, the gender disparity in a complaint's success may be another example of this gender theory manifesting in serious ways.

Other than the role of a complainant's gender, the majority of the results conformed to some extent to my initial hypotheses that African Americans will be the most severely impacted by racial bias in the police misconduct system, and that their White peers will experience a morally unjustifiable privilege. The harrowing truth is, despite the police misconduct system emerging as a means to hold officers accountable for their actions and bridge the divide between the CPD and marginalized communities, there is an inherent racial and ethnic bias. Communities who are impacted most by racialized police violence and abuse are deprived of their right to hold officer's accountable for the violation of their civil rights. Indeed, while merely being Black may be the officer's justification for the harsh treatment of a civilian, it is also what will lead to the City disregarding their appeal for justice.

[28] Carroll, Aaron E. "Doctors and Racial Bias: Still a Long Way to Go." The New York Times. The New York Times, February 25, 2019. https://www.nytimes.com/2019/02/25/upshot/doctors-and-racial-bias-still-a-long-way-to-go.html.

Appendix

So as to ensure my research is entirely replicable, attached below is my error-free R code:

```
#Complainant Complaint Dataset

complaintant_complaint <- read.csv("~/Downloads/fully-unified-data/complaints/complaints-complainants.csv.gz")

#Accused Complaint Dataset
complaints_accused <- read.csv("~/Downloads/police-misconduct-code/accused.csv.gz")

#Merging Complainant & Accused Dataset by Case ID
merged_data <- merge(complaints_accused, complaintant_complaint, by= "cr_id")

#Creating Subset of Officer Race and Gender, Complainant Race and Gender, and Final Finding
merged_subset <- merged_data[, c(4, 5, 13, 18, 19)]

#Renaming Levels of 3 Explanatory Variables to Standardize
levels(merged_subset$race.x) <- c("OTHER", "BLACK", "OTHER", "HISPANIC", "OTHER", "WHITE", "HISPANIC")
levels(merged_subset$race.y) <- c("OTHER", "OTHER", "BLACK", "HISPANIC", "OTHER", "WHITE")
levels(merged_subset$gender.x) <- c("FEMALE", "MALE")

#Removing Missing Values in Gender of Complainant
merged_subset <- merged_subset[which(merged_subset$gender.y != ""), ]
merged_subset$gender.y <- factor(merged_subset$gender.y)

#Isolating Racial Demographics of Interest
merged_subset <- merged_subset[which(merged_subset$race.y != "OTHER"), ]
merged_subset$race.y <- factor(merged_subset$race.y)
merged_subset <- merged_subset[which(merged_subset$race.x != "OTHER"), ]
merged_subset$race.x <- factor(merged_subset$race.x)

#Making Outcome Binary DV for Logistic Regression
merged_subset$outcome <- ifelse(merged_subset$final_finding == "SU", 1, 0)
#Subset of Factorial Officer/Complaintant Race and Gender Variables plus Binary DV
totalsub <- merged_subset[, c(1, 2, 4, 5, 6)]

#Renaming Variables
totalsub <- rename.variable(totalsub, "race.x", "officer.race")
totalsub <- rename.variable(totalsub, "race.y", "complainant.race")
totalsub <- rename.variable(totalsub, "gender.x", "officer.gender")
totalsub <- rename.variable(totalsub, "gender.y", "complainant.gender")

#Exploring Data
plot(totalsub$officer.gender); plot(totalsub$officer.race); plot(totalsub$complaintant.race); plot(totalsub$complaintant.gender)

#Sampling data
samples1 <- sample(1:nrow(totalsub),
             nrow(totalsub)*0.8,
             replace = FALSE)
#TESTING/TRAINING
train1 <- totalsub[samples1, ]; test1 <- totalsub[-samples1, ]

#STORING TEST SET
outcome <- test1$outcome

logitmod213 <- glm(outcome ~ officer.race + officer.gender + complaintant.race + complaintant.gender,
          data = train1,
          family = binomial); summary(logitmod213); e.out <- allEffects(logitmod213)

logit.probs <- predict(logitmod213,
                 newdata = test1,
                 type="response")

head(logit.probs); logit.pred <- ifelse(logit.probs > 0.5, 1, 0); table(logit.pred, outcome)

#Computing Mean
mean(logit.pred == outcome)

#Creating Logit Models with Interactions
logitmod777 <- glm(outcome ~ officer.race + officer.gender + complaintant.gender*complaintant.race,
               data = totalsub,
               family = binomial); e777 <- allEffect(logitmod777)
```

```
logitmod1000 <- glm(outcome ~ officer.gender + (officer.race)*(complaintant.gender*complaintant.race),
                    data = totalsub,
                    family = binomial); e1000 <- allEffects(logitmod1000)

logitmod888 <- glm(outcome ~ officer.gender + complaintant.gender + officer.race*complaintant.race,
                    data = totalsub,
                    family = binomial); summary(logitmod888); e888 <- allEffects(logitmod888)

#Creating Plots
plot(e.out$officer.race, lty = 0, lwd = 4, main = "How an Officer's Race Affects Outcome of Complaint", xlab = "Officer Race", ylab = "Likelihood
Complaint is Sustained", colors = "dark blue")

plot(e.out$complaintant.race, lty = 0, lwd = 4, main = "How a Complainant's Race Affects Outcome of  Complaint", xlab = "Complainant Race", ylab
= "Likelihood Complaint is Sustained", colors = "dark red")
plot(e.out$complaintant.gender, lty = 0, lwd = 4, main = "How a Complainant's Gender Affects Outcome of Complaint", xlab = "Gender of
Complainant", ylab = "Likelihood Complaint is Sustained", colors = "purple")

plot(e.out$officer.gender, lty = 0, lwd = 4, main = "How an Officer's Gender Affects Outcome of Complaint", xlab = "Officer Gender", ylab =
"Likelihood Complaint is Sustained", colors = "dark green")

plot(e1000$`officer.race:complaintant.gender:complaintant.race`, lty = 0, main = "Interaction Effect of Complainant's Race and Gender with the
Officer's Race", xlab = "Officer Race", ylab = "Likelihood Complaint is Sustained", lwd = 3, colors = "dark blue")
summary(e888$`officer.race:complaintant.race`); plot(e888$`officer.race:complaintant.race`
```