Leadership Matters: Police Chief Race and Fatal Shootings by Police Officers

Stephen Wu

Hamilton College

October 2020

Abstract: This study analyses factors affecting fatal shootings by police officers in the 100 largest cities in the United States. I find that during the time period 2015-2020, the per capita rate of fatal shootings by officers is almost 50% higher in cities with police forces led by White police chiefs than in cities with Black police chiefs. Hispanic led police departments have per capita shooting rates that are in between these two rates. Of the 30 cities with the highest rates of fatal shootings, 23 have police departments led by Whites and only four have departments led by Blacks, while of the 30 cities with the lowest rates, 16 have police departments led by Blacks and only eleven are led by Whites. These differences in fatal shooting rates persist after controlling for cities' crime rates, racial diversity of their police departments and overall population, and access to trauma centers.

Stephen Wu
Hamilton College
Economics Department
198 College Hill Road
Clinton, NY 13323
swu@hamilton.edu

Each year, there are approximately one thousand fatal shootings by police officers across the United States, a statistic that has been fairly steady over the course of the last several years. With recent efforts to track and compile more comprehensive data, researchers have been increasingly studying the factors that contribute to these deaths. Prior research has looked at many factors surrounding fatal officer involved shootings, including racial and demographic information of both officers and victims, situational and location characteristics, and structural and organizational factors. This study contributes to the literature by looking at one as of yet unstudied factor: the race of a city's police chief.[1,2]

Much of the prior work on police shootings has focused on the demographics of victims. Edwards et al. (2019) show that age and race are significant factors in determining the risk of being killed by police. Specifically, individuals between the ages of 20 and 35 have the highest risk of all different age groups. They also find that Blacks, Latinos, and Native Americans are significantly more likely to be killed by police than Whites. Engel and Calnon (2004) also find that Black suspects are more likely to be the victims of police force than White suspects, and a paper by Nix et al. (2017) shows that Black victims who were shot were twice as likely to be unarmed as White victims. Scott et al. (2017) account for the differential characteristics of crimes committed by individuals of different races and show that Blacks are more likely to be shot by police officers after controlling for these differences. Some researchers point to the possibility of subconscious bias in explaining the differential rates of shooting Black and White

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[1] The leader of a police department is sometimes given other titles such as commissioner, commander, captain, superintendent, or sheriff. For the purposes of this paper, I will use the term "chief" to represent the highest ranking official of the city's police force.

[2] One important distinction between sheriffs and police chiefs (or commanders, commissioners, captains, and superintendents) is that sheriffs are directly elected, while other top leaders are appointed by the mayor or city council. Sheriff's departments also may have additional duties for their jurisdictions including supervision of correctional facilities and providing court security. There are only two cities in the data with elected sheriffs, and the analysis is not affected by eliminating these two departments.

suspects (Correll et al. 2007; Mekawi and Bresin 2015). However, Wheeler et al. (2017) show that by including control cases where officers drew their weapons but did not shoot, Black suspects were actually much *less* likely to be shot than White suspects, though this study only looks at incidents for one particular city (Dallas, Texas). Similarly, Worrall et al. (2018) use a sample of shoot/don't shoot cases from one particular department and conclude that Black suspects are one third as likely to be shot as other suspects.

Another branch of research studies the role played by differences in characteristics of individual officers. Officer race has been found to be an important predictor in many studies of police use of force. McElvain and Kposowa (2008) find that White non-Hispanic officers are more likely to shoot than Hispanic officers, though they do not find significant differences in the likelihood to shoot between Hispanic and Black officers. In a similar study by the same authors (McElvain and Kposowa 2004), citizens' complaints of the use of force in police encounters were not found to depend on officer race. Studies by Geller and Scott (1992) and Ridgeway (2016) show that Black officers have a higher likelihood of shooting relative to other officers, though some of this association may be related to the fact that Black officers were more likely to be working in departments with higher rates of crime. Consistent with this notion, in research by Fyfe (1981), officer race was not correlated with the incidence of police shootings once characteristics of the neighborhood assignments were accounted for.

In addition to race, there are other officer characteristics that have been found to predict use of force by police. Being more experienced (Terrill and Mastrofski 2002), joining the police force at a later age (Ridgeway 2016, 2020) and having a college education (Rydberg and Terrill 2010) have all been found to mitigate an officer's use of force during police encounters. In spite of all of the research that documents the importance of officer characteristics in predicting police

violence, recent work by Ridgeway et al. (2020) suggests that these correlations may be spurious. They use a large and detailed data set across 55 agencies in the U.S. and find that no officer characteristics predict officer-involved shootings once information about the time, place, and environment of the shootings are controlled for.

There is also research that looks at broader characteristics of police departments. There is some conflicting evidence on the effect of racial composition and diversity of the police force on police violence. Smith (2003) finds no effect of the racial composition of a police force and its incidence of police killings of felons, while Ochs (2011) shows that rates of lethal force are higher when the proportion of Black officers in a department increases. In research by Legewie and Fagan (2016), a more diverse police force reduces the rates at which Blacks are killed by police officers. Meanwhile, Nicholson-Crotty et al. (2017) find that an increase in Black officers reduces the number of Black civilians that are killed by police, but only after the proportion reaches a sufficiently high critical mass.

A large body of work has linked homicides by police with neighborhood and community characteristics. The use of force is higher in neighborhoods that are poorer (Smith 1986), have high rates of crime (Klinger et al. 2016), or are perceived to be less safe (Kahn et al. 2107). Research has also shown that police shooting deaths are higher in states with a higher prevalence of gun ownership (Hemenway et al. 2019; Nagin 2020). Another important predictor of police violence is the racial makeup of the community. The racial threat hypothesis contends that racial minorities will be perceived as threats to Whites in areas with large minority populations, leading to a higher rate of violence against minorities as compared to Whites. Evidence supporting this theory is found in Smith (2004), Jacobs and O'Brien (1998), Holmes (2018), Holmes et al. (2019), and Gray and Parker (2020). Related work has shown that racially and ethnically diverse

communities may suffer from a lack of trust and have more conflict between different groups, potentially heightening tensions in police encounters with civilians (Sampson and Groves 1989; Putnam 2007).

There are also many papers analyzing the effects of the circumstances surrounding a particular encounter with police on the likelihood that officers use force in such an encounter, such as victims being under the influence of alcohol (Parker 1998 and Langan 2001), being armed (Kaminski et al. 2004), or resisting arrest during an encounter (Langan 2001). An analysis by White (2002) concludes that police are more likely to shoot armed suspects during the early stages of an encounter, highlighting the importance of de-escalation tactics in decreasing the use of deadly force.

Finally, there is a strand of the literature that looks at the impact of policing strategies, departmental policies, and leadership on the use of force by officers. Fyfe (1986) argues that the time constrained and high pressure environments of police work make it difficult to train officers for the specific situations that they will face because they often must make split-second decisions on whether or not to engage a suspect. However, Adang (2012) points out that officers that end up in potentially life threatening situations have often had many decisions to make prior to that point, and there are a number of principles and policies that can be applied in the early stages of an encounter. Jennings and Rubado (2017) show that requiring officers to file a report after each encounter where they aim their gun at a suspect, even without firing, is correlated with significantly lower rates of gun deaths. Oberfield (2012) discusses how training and culture can impact officers' attitudes about using force, though these effects tend to be temporary, as officers often revert to their originally held views over time. White (2001) uses the case study of the Philadelphia Police Department and concludes that although administrative policy can have

effects on officers' likelihood of the use of deadly force, these effects may be outweighed by the personal philosophies of a police chief. Additional research in other non-police settings has shown that leaders can have meaningful impacts on the performance of those under their authority. Bertrand and Schoar (2003) and Koane (2002) document the existence of a relationship between leadership styles and financial performance of firms. Bass et al. (2003) calculate positive correlations between leadership ratings of rifle platoon leaders in the U.S. Army and performance by platoon units. And leaders can also impact the well-being and satisfaction of others in their charge. Judge (2004) finds that traits of a leader such as consideration and structure are positively related to follower satisfaction, while Santa Maria et al. (2019) find that police leadership that stresses health and well-being decreases the level of burnout, depression, and complaints among police officers. This line of research suggests that the heads of police agencies have the potential to greatly impact the behavior of the department's police force, not only through the policies and training they introduce, but also through the influence that their personal philosophies and leadership styles have on the ethos of the department.

Data Sources and Methodology

A major difficulty in any study of police use of force is the availability and reliability of appropriate data. Chanin and Espinosa (2016) discuss the difficulties police departments have in establishing public trust due to the lack of transparency in providing data on officer involved shootings. Matusiak et al. (2020) echo this concern and find that a large number of police agencies and sheriff's offices do not make data on shootings available. Recently, there have been a number of initiatives to crowd-source data on civilian deaths caused by police officers. An

advantage to crowd-sourced data is the potential to have a much larger sample of police homicides across all departments, as compared to official databases that rely on voluntary reporting of agencies. But there are also limitations to these crowd-sourced databases. Work by Holmes (2020) highlights some of these limitations, such as the inability to separately estimate the effects of officer characteristics, police culture, or other variables associated with an incident due a lack of these variables in the unofficial data. Gray and Parker (2019) analyze both official and unofficial databases and find that while there are some consistencies in the predictors of police use of lethal force, there are also a number of discrepancies. Campbell et al. (2018) also discuss the potential for misclassifying demographic information of victims when using media-based or crowd-sourced data. However, Feldman et al. (2017) report that for data on police killings in Massachusetts, several different media-based sources provided reliable demographic data on victims when matched with death certificate information.

In the interest of obtaining a comprehensive set of rates of fatal shootings across difference cities, I use the Washington Post's *Fatal Force Database*[3], considered to be one of the most comprehensive databases of lethal shootings by law enforcement officers. The data contains information on the date and location of the incident, as well as the age, race, and gender of the victim. The data used for this paper contains shootings between January 1, 2015 and June 1, 2020. This incident-level data is aggregated to the city level to generate a total number of fatal shootings for each unique location in the data. These numbers are then divided by recent 2020 estimates for city population (as determined by the United States Census Bureau) in order to generate a per capita rate of fatal shootings for each jurisdiction in the sample.[4] For ease of

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[3] Link to Fatal Force database: https://github.com/washingtonpost/data-police-shootings/blob/master/fatal-police-shootings-data.csv

[4] There are several police departments whose jurisdictions include areas outside of a city proper, so for those cities, I have included any fatal shootings within the jurisdiction and have used the population of the jurisdiction as the

comparison, I have multiplied these per capita rates by 100,000 to generate the number of fatal

shootings per 100,000 people for each of the cities. To determine the racial makeup of various

police forces, I use data obtained from the law enforcement periodical *Governing.*[5] City level

crime rates are derived from the Federal Bureau of Investigation's Uniform Crime Report for the

years 2015-2019 and are averaged over this five year period.[6] Finally, I conduct internet searches

to determine the races of the police chiefs for each of the cities in the sample during the entire

sample period. This information has been gathered for each of the 100 largest cities in the United

States, as measured by 2020 population estimates.

Results

Table 1 shows the summary statistics for the sample of the 100 most populous U.S. cities.

For the time period between January 1, 2015 through June 1, 2020, the average number of fatal

shootings per 100,000 people in our sample is 2.53, with a range spanning from 0 (Lexington,

Kentucky) to 9.4 (St. Louis, Missouri). 33 percent of cities currently (as of June 1, 2020) have a

Black police chief, while 12 percent of cities currently have a Hispanic led police department,

with the remaining 55 percent of departments being led by a White police chief.[7] There is a large

range in the racial makeup of police forces across these cities, with the fraction of Black officers

ranging from under 1 percent (Laredo, Texas) to over 62 percent (Detroit) and the fraction of

Hispanic officers ranging from under 1 percent (Cincinnati) to over 97 percent (Laredo). The

average city records about 4.1 crimes per 100 people in a year.

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denominator. Using an alternative methodology of only including shootings within a city's limits and dividing by
the city's population does not affect the results.

[5] Link to database: https://www.governing.com/gov-data/safety-justice/police-department-officer-demographics-minority-representation.html

[6] For a small number of cities, crime statistics were missing from one of more years during the 2015-2019 period, so
the average crime rates for non-missing years were used for these cities.

[7] On June 1, 2020, there were no police chiefs of any other race or ethnicity for cities in this sample.

I begin my analysis with a simple comparison of the rates of fatal officer involved shootings per 100,000 people for three groups of cities: those with a Black police chief, those with a Hispanic police chief, and those with a White police chief. As shown in Figure 1, the average number of fatal police shootings is just over 2.0 per 100,000 people for cities with a Black police chief. The analogous statistics are roughly 2.5 and 2.8 for cities with police departments led by Hispanics and Whites, respectively. These numbers imply that cities with police departments where Whites are in the highest position of power have 40% more fatal officer involved shootings than cities with Blacks in power. When ranked according to the per capita rates of fatal shootings, for the 30 cities with the highest rates, 23 have police departments led by Whites, while three have Hispanic led departments and four have Black led departments. By contrast, for the 30 cities in the sample with the lowest rates of fatal shootings, 16 have Blacks at the highest level of leadership for their police departments, while the number of Hispanics and Whites in those positions is three and eleven, respectively.

There are certainly a number of other factors that could contribute to the rates of police involved shootings, most notably the difference in crime rates and the racial makeup across cities. Table 2 shows the results of ordinary least squares regressions where the dependent variable is the number of fatal shootings per 100,000 people. In column 1, the independent variables are the crime rate per 100 people, Black and Hispanic shares of the city's population, and indicator variables for a Black police chief and a Hispanic police chief. Unsurprisingly, cities that have higher rates of crime also have higher rates of officers shooting and killing civilians. The coefficient is positive and statistically significant with a p-value of less than 0.01. Meanwhile, the incidence of fatal shootings is not related to either the fraction of Hispanic residents or the fraction of Black residents. After controlling for a city's overall crime rate and

racial breakdown, we see that the differential in fatal shooting rates between cities with Black and White police chiefs remains large and statistically significant, with a coefficient on the Black police chief indicator equaling -0.907, indicating a differential of nearly 50%. This coefficient is statistically significant with a p-value of just over 0.01. Meanwhile, the coefficient on Hispanic police chiefs is -0.237, though it is not statistically significant.

Another factor that could be correlated with shootings by police is the diversity of the officers in a police department. To test this relationship, the regression in column 2 includes variables for a police department's share of Black officers and its share of Hispanic officers, along with the city's overall crime rate. The coefficient on the share of Black officers is negative and statistically significant at the 5 percent level, though the coefficient for the share of Hispanic officers in a department is not statistically significant. The significant coefficient for the share of Black officers is consistent with Legewie and Fagan (2016) and Nicholson-Crotty et al. (2017), but at odds with Smith (2003) and Ochs (2011). Because the diversity of the overall police force is likely correlated with the chances that a department will have a non-white police chief, I enter the following variables into the regression in column 3: share of Black officers, share of Hispanic officers, and indicators for a Black police chief and a Hispanic police chief.[8] In this specification, the coefficient on the Black share of the police force is still negative (though the p-value is now a little over 0.1), and the indicator variable for having a Black police chief continues to have a large and statistically significant (p-value=0.012) negative coefficient (-0.833). Even after controlling for the racial makeup of a city's overall police force, leadership still matters; for two

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[8] The racial population shares are strongly correlated with the racial police force shares (correlation of 0.88 for Blacks and 0.92 for Hispanics), so including both sets of these variables introduces significant multicollinearity. Nonetheless, including both sets of racial share variables does not diminish the effect of having a Black police chief on fatal shootings by police officers.

similarly diverse police forces, there is a significantly lower rate of civilians shot and killed by officers for a city with a Black police chief than for one with a White police chief.

One limitation of using the Washington Post's *Fatal Force Database* is that police shootings that do not result in death are excluded from the observations. Nix (2020) discusses some of the challenges in studying this topic given the fact that police-involved deaths are not a random sample of all instances of the use of deadly force. This results in an imperfect measure of officers' use of deadly use of force because most victims who are shot do not end up dying, and research has shown that survival rates are strongly predicted by the distance from a trauma care center and the transport time one takes before receiving hospital care (Mackenzie et al. 2006; Crandall et al. 2013; Circo 2019).[9] To address this issue, I add to the regression an indicator variable equal to one if there is at least one level one or level two trauma center within a 10 mile radius of the city center and show the results in column 4. Indeed, cities with better access to a local trauma center have fewer police shootings that result in death, though the coefficient is not statistically significant. Importantly for our analysis, the result on the Black police chief variable remains unchanged. In additional analysis not shown here, I also conduct regressions where I include a city's population density and its land area as potential measures of the average distance needed to be transported until a victim receives medical attention. Once again, including these variables does not alter the magnitude or statistical significance of the main result: cities with Black police chiefs have considerably lower rates of fatal shootings by officers than cities with White police chiefs.

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[9] Another factor that could impact the survival rate of civilians shot by police officers is the variation in departmental policy or training in rendering emergency aid to gunshot victims, though I do not have information on this.

An additional potential concern about the methodology used in the analysis is that there can be significant turnover in leadership of police departments. As a result, a current police chief may not have been in office for all of the shootings that occurred in past years. To address this, I use alternative measures of the race of a city's police leadership: the fraction of the sample time period where there was a Black police chief and the fraction of the sample time period where there was a Hispanic police chief. Results for the analogous regressions using these alternative measures, shown in Table 3, are largely the same. After controlling for crime rates and either the racial makeup of a city's population or its general police force, cities with a higher fraction of time with a Black police chief have a lower rate of officer involved fatal shootings than otherwise similar cities, though fatal shooting rates are not significantly related to the fraction of time with a Hispanic police chief.

Discussion and Conclusion

In this study of the 100 most populous cities in the United States, those with a police department with a Black police chief have significantly lower per capita rates of civilian deaths caused by officer shootings than those with a White police chief. These results hold after controlling for difference in crime rates across cities. While a police department's fraction of Black officers is also negatively related to fatal police shootings, the effect of a department leader's race remains even after controlling for this.

There are a number of possible reasons for this demonstrated relationship between police leadership and fatal officer shootings. As discussed earlier, research has shown the administrative policies and culture of police agencies may be greatly influenced by their leaders. Black police chiefs may place a greater emphasis on training to deescalate encounters between

officers and civilians so that they are less likely to lead to force. It is also possible that other leaders in a city may decide that police violence is an important issue to tackle, and the appointment of a Black police chief may coincide with that overall initiative. Salzstein (1998) finds that cities with a Black mayors have greater representation of Black police officers and stronger policies related to citizen control of police departments, and research by Jacobs and O'Brien (1998) conclude that having a Black mayor decreases the rates of police killings of Blacks, though this finding has been challenged further analysis by Kaminsky and Stuckey (2009). In results now shown here, I also added variables to control for the political party affiliation of the city's mayor, as well as having a Black mayor. Neither of these variables was shown to be a significant predictor of fatal shootings by officers and their inclusion did not alter the large and significant effect of having a Black police chief.

There are a number of caveats to the results in this study. There are certainly many different factors that may contribute to the use of force by police, and the race of a department's leader is not a perfect predictor. Many high-profile cases of civilian deaths at the hands of police officers have been in departments led by Black police chiefs, and there are some cities with relatively low rates of fatal police shootings that are led by White police chiefs.[10] However, in looking at the overall trends in the period between 2015-2020, there is a large and significant negative effect of having a Black police chief on the rate of fatal police shootings in a city. This study also does not account for the race or other demographic information related to the offending officers or the victims. Nonetheless, the demonstrated effect of having a Black police

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[10] In fact, St. Louis, the city with the highest per capita rate of fatal shootings by officers, has had a Black police chief for much of the sample period. The fatal shooting rate for St. Louis (9.40) is an outlier, and is almost 50 percent higher than that of Kansas City (6.53), which has the second highest rate. Eliminating this one data point from the sample increases the differential in fatal shooting rates between cities with White chiefs and cities with Black chiefs from almost 50% to almost 60%.

chief on the incidence of fatal police shootings is large and significant. The results suggest that leaders in the highest position of authority may have a powerful effect on the culture of a police department and its resulting behavior. Further study of the channels through which the race of police leaders impacts the use of deadly force by officers would be a fruitful avenue for further research. This could consist of both quantitative work across a cross section of many different departments as well as qualitative case studies of individual agencies that have had changes in leadership over time.

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Table 1: Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Shootings per 100,000 people	2.530	1.580	0	9.396
Current Black Police Chief	0.330	0.473	0	1
Current Hispanic Police Chief	0.120	0.327	0	1
Fraction of time with Black Police Chief	0.275	0.369	0	1
Fraction of time with Hispanic Police Chief	0.119	0.292	0	1
Fraction of Blacks in City	0.201	0.173	0.004	0.820
Fraction of Hispanics in City	0.244	0.208	0.031	0.967
Fraction of Black Police Officers	0.138	0.137	0.002	0.626
Fraction of Hispanic Police Officers	0.154	0.171	0.005	0.975
Yearly Crimes per 100 people	4.110	1.626	1.302	8.191
Level 1,2 Trauma Center within 10 miles	0.880	0.327	0	1

Figure 1

Fatal Police Shootings per 100,000 people
for 100 largest U.S. cities (2015-2020)
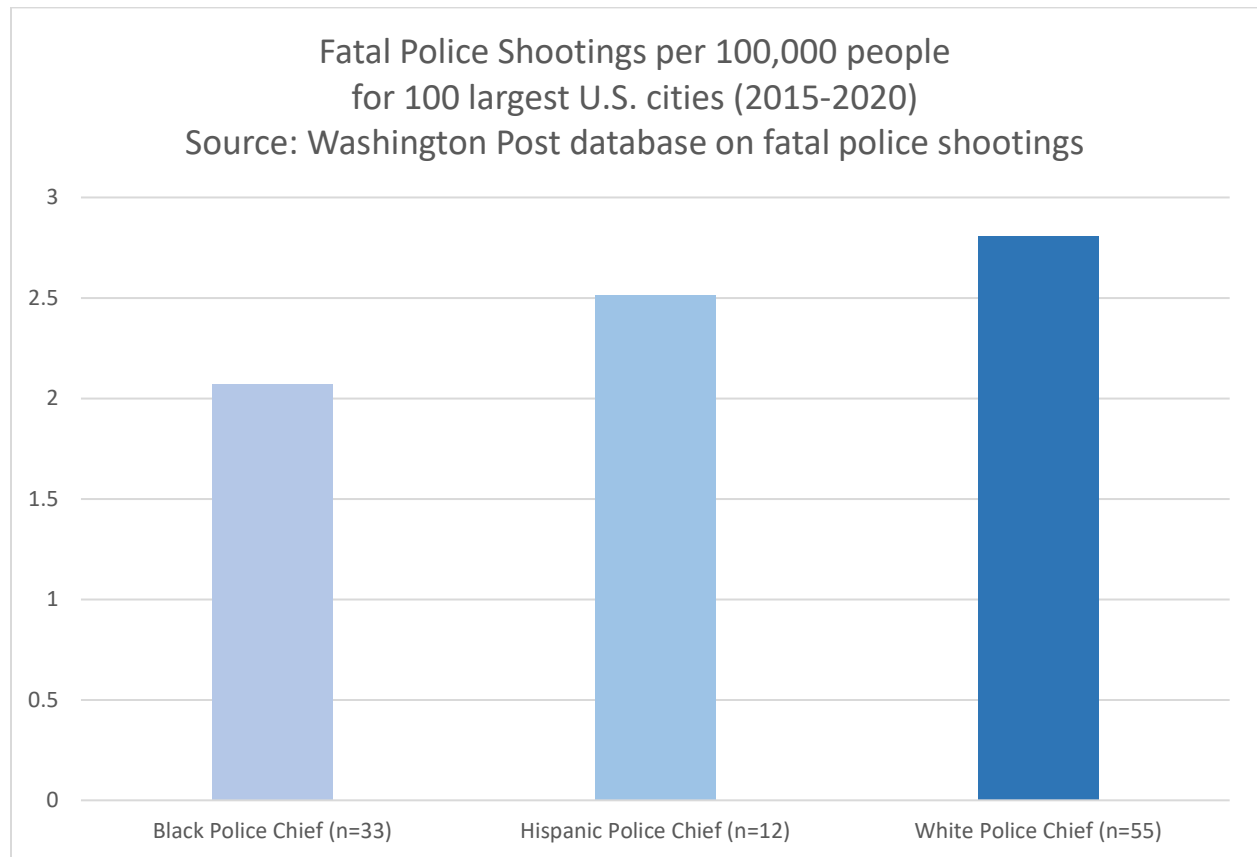Source: Washington Post database on fatal police shootings

Table 2: Current Police Chief Race and Per Capita Fatal Shootings
Dependent Variable is fatal shootings per 100,000 people across 100 largest U.S. cities

Independent Variables	(1)	(2)	(3)	(4)
Black Police Chief	-0.907**		-0.833**	-0.838**
	(0.358)		(0.331)	(0.334)
Hispanic Police Chief	-0.237		-0.0110	-0.0228
	(0.440)		(0.413)	(0.425)
Yearly Crimes per 100 people	0.484***	0.487***	0.497***	0.501***
	(0.131)	(0.128)	(0.133)	(0.133)
Black Share of Population	-0.208			
	(1.036)			
Hispanic Share of Population	0.603			
	(0.706)			
Black Share of Police Force		-2.484**	-1.573	-1.457
		(1.034)	(1.035)	(1.065)
Hispanic Share of Police Force		0.168	-0.157	-0.147
		(0.633)	(0.742)	(0.773)
Trauma Center Access				-0.262
				(0.341)
Constant	0.764	0.843*	1.004**	1.204**
	(0.514)	(0.473)	(0.505)	(0.570)
Observations	100	100	100	100
R-squared	0.271	0.227	0.280	0.283

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 3: Police Chief Race (Alternative Measure) and Fatal Shootings
Dependent Variable is fatal shootings per 100,000 people across 100 largest U.S. cities

Independent Variables	(1)	(2)
Fraction of Time Period with Black Police Chief	-0.853**	-0.671*
	(0.422)	(0.372)
Fraction of Time Period with Hispanic Police Chief	-0.217	0.122
	(0.431)	(0.376)
Yearly Crimes per 100 people	0.476***	0.489***
	(0.126)	(0.129)
Black Share of Population	-0.187	
	(1.165)	
Hispanic Share of Population	0.805	
	(0.763)	
Black Share of Police Force		-1.559
		(1.214)
Hispanic Share of Police Force		-0.0426
		(0.755)
Trauma Center Access	-0.451	-0.359
	(0.358)	(0.362)
Constant	1.073**	1.226**
	(0.537)	(0.539)
Observations	100	100
R-squared	0.248	0.251

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1