A NATIONAL STUDY OF USE OF DEADLY FORCE INCIDENTS

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THESIS ABSTRACT

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Police conduct, specifically in the form of deadly force, and its application to minorities, has been a hot-button political and public topic in recent years. There is understandable concern in many communities across the United States that law enforcement officers are more likely to use deadly force against minority suspects than white suspects, even after controlling for the seriousness of suspected crime. While some studies have sought to explain how the race of police officers and suspects moderate the outcome of police-citizen interactions, it is also important to consider a wider range of contextual factors which could influence the likelihood of deadly force. Building upon recent studies which emphasize the importance of police organizational characteristics, the objective of this thesis is to analyze data on law enforcement application of deadly force to minority offenders versus white offenders, and then assess how organizational and contextual factors are associated with the number of reported incidents across agencies. The results from a series of negative binomial models reveal many similarities in the correlates of deadly force incidents involving black and white suspects, although higher minority representation in police agencies was associated with fewer white-suspect incidents only. The implications for research and policy are discussed.

Introduction

Amidst widespread attention on police-community relations, the discretion afforded law enforcement officers when it comes the use of force has come under particular scrutiny. With variation across time and context, the law permits a law enforcement officer to use deadly force against a person in order to prevent harm to the officer or community at-large. Specifically, the use of deadly force by a law enforcement office is scrutinized through the lens of whether the officer had a "reasonable belief" to justify their actions. As defined by the New Jersey Attorney General Use of Force Policy, a "reasonable belief" is an objective assessment based upon an evaluation of how a reasonable law enforcement officer with comparable training and experience would react to, or draw inferences from, the facts and circumstances confronting and know by the law enforcement officer at the scene. Furthermore, to utilize deadly force, the law enforcement officer must reasonably believe that such action is immediately necessary to protect the officer or another person from imminent danger of death or serious bodily harm. The interpretation of reasonable belief has been debated and called into question by scholars, communities, politicians, and the media for decades (New Jersey Attorney General Use of Force Policy, June 2000), but brought back into focus after several high-profile killings of young black men.

While the use of deadly force incidents are rare compared to more common methods police use to gain compliance and most commonly employed during a lawful arrest (Fyfe, 1988; Hickman, 2006), the extent to which the race of the suspect plays a role in the officer's evaluation of whether or not to engage in lethal force is subject to much wider debate. According to Takagi (2014), "It is the actual experiences behind the

statistics like these that suggest that police have one trigger finger for Whites and another for Blacks" (p. 203). As just one recent flashpoint, the 2014 shooting of Michael Brown in Ferguson, Missouri ignited a social wave demanding justice and accountability for the believed racially motivated killings of black men at the hands of police officers all across the United States. Alternatively, several recent studies have emphasized the importance of examining organizational and structural predictors of police use of deadly force (Parker & Grey 2019; Pryor et al., 2019; Willits & Nowacki, 2014), hypothesizing that higher numbers of black victims may also be a function of living in neighborhoods with higher violent crime and larger police forces.

Research into this topic has been historically hampered, not least because of the absence of official national datasets tracking use of force incidents. Instead, researchers have come to rely on media-based data sources such as the Washington Post, the British newspaper the Guardian, or other online platforms such as Deadspin (Bacak et al., 2019). This thesis will leverage data collected from the Washington Post to examine incidents in which a law enforcement officer engaged in the use of the deadly force and the suspect was killed. Deadly force was used as the outcome because research has shown that media reporting of deadly force incidents more closely resembles the actual number incidents recorded by the police, whereas nonfatal shooting incidents are not as accurate (Bacak et al., 2019).

For the purposes of this thesis, The Washington post data were aggregated to the police agency level and combined with national level data from the American Communities Survey (ACS) and the Law Enforcement Management and Administrative Statistics (LEMAS, 2013) to investigate whether the relationship between use of force and race

varies across community contexts, departmental policies, police training standards, and hiring practices. Specifically I consider the local violent crime rate, local economic disadvantage, the racial make-up of the community, organization hiring requirements in education, and training requirements for community policing. Additionally, I consider whether these factors have different effects depending on the race of the suspect, the age and gender of the suspect, or whether the suspect was in possession of a weapon during the encounter.

This topic of inquiry is important for several reasons. Most of the past research on law enforcements use of deadly force focuses on the race/gender of the suspect and the officer, the personality of individual officers (e.g. Perkins & Bourgeois, 2006), and department policy. This study considers the macro-environmental factors within the community such as violent crime rates, resource deprivation, single parent households, and poverty that lead to the increased likelihood of police employing deadly force versus more socially stable communities. Also considered are the structural organizational theories of law enforcement agencies and their influence on law enforcement officers use of deadly force. These theories include the right to unions and collective bargaining, salary, educational requirements, and officers' exposure to methods of community policing. Below, I begin by considering theories of implicit bias as a framework within which to study this topic, before examining the existing literature surrounding how community and organizational contexts may relate to use of deadly force incidents.

Implicit Bias

Much of the debate surrounding deadly confrontations between law enforcement and civilians has been cast along racial lines. Much of the attention, especially media attention, has been focused on white law enforcement officers shooting and killing black civilians, typically young black males. Less than 13% of the United States population identifies as African American, according to recent data from the US Census Bureau (2018). According to the Washington Post Fatal Force Report (2018), 992 people were killed by police, 229 of those people were African American. and 219 were African American males. Utilizing the same data sets, the Caucasian population account for approximately 72% of the total United States population while 46% of those killed by police were Caucasian.

The disproportionately high rate of killing of African American people by police relative to their population share raises several difficult questions about the source, whether it is located in police culture, police organizational practices, or the attitudes of some individual officers. In one recent study of the phenomenon, Nix, Campbell, Byers, and Alpert (2017) provided an explanation that the influence of less than conscious attitudes can influence police behavior (see also Dovidio, Glick and Rudman, 2005) and perceptions of police behavior (Perkins & Bourgeois, 2006). Guided by a previous study (Smith and Alpert 2007), the authors theorized that overtime, police officers become *unconsciously* biased towards minorities through social conditioning (i.e. repeated contact with minorities involved in crime) developing into an implicit bias mechanism that influences police officers ability to evaluate a situation or scenario. Others have

conceptualized these practices as shortcuts and ways of operating which are a natural reaction to the conditions of the job (e.g. Lipsky, 1980).

Clearly, there is no way to evaluate what is going through a police officer's mind when confronted with a situation they believe calls for the use of deadly force. The limitations of mimicking these scenarios are an obvious hurdle. Technological advancements in recent years has made it possible to partially mimic deadly force scenarios. Nix and Colleagues (2017) utilize previous research (Cox et al., 2014) to address these limitations through the use of modern technology. Cox et. al., (2014) randomly assigned 54 police officers to participate in a shooter simulation using realistic duty weapons. The setting of the shooting simulation took place in one of two neighborhoods; a predominately White, low-crime neighborhood and a non-White, high-crime neighborhood. The officers were told that there was an individual in the area armed with a weapon and were presented with both photos and videos of suspects. The results indicated that officers were faster to shoot armed Black suspects when presented with photos but slower to shoot them when presented with videos.

Related to implicit bias, other recent studies of police use of force behavior invoke the threat hypothesis (Blalock, 1967; Liska & Yu, 1992). Born out of the conflict perspective in sociology, some research on police behavior has suggested that a growing share of culturally and racially dissimilar groups in a community may represent a threat to social order to authorities, or may represent a criminal or economic threat to majority members of a community who in turn support harsh social control of the outgroup (D'Alessio, Eitle, & Stolzenberg, 2005; Liska et al., 1982). In simple terms, it is predicted that as the percentage of nonwhites increase in a community, the threat

perceived by police (either consciously or subconsciously) may increase, and in turn increase the amount of policing behavior against black citizens (Eitle et al., 2002; Eitle & Monahan, 2009; Parker, Stults, & Rice, 2005). As Nix and Colleagues (2017) conclude, the different outcomes of such studies make it difficult to conclude whether implicit bias or perceived threat is a major factor in the decision making of police officers when confronted with a situation where they must decide to exercise deadly force against a civilian. Also, the inability to realistically construct deadly force scenarios in a research setting really puts to question the validity of data derived from such research.

Officer Perception

Significant research has shown that disadvantaged communities that experience various symptoms of resource deprivation get policed one way while communities that are not resource deprived get policed differently, but the research is limited on the influence that such neighborhoods, which tend to have more gang activity, violence, and drugs, influence officers' perceptions of how residents of these communities feel about officers. Shjarback, Nix and Wolfe (2017) state that this gap is very important because the officers' perceptions of citizen cooperation may be able to explain different "tactics" while interacting with citizens in violent, disadvantaged neighborhoods. Shjarback, Nix and Wolfe (2017) used data from The Project on Policing Neighborhoods and examined the neighborhood effects on officers' perceptions of citizen cooperation. Shjarback et. al. found that police officers who are deployed to police neighborhoods that suffer from concentrated disadvantage with higher homicide rates were less likely to perceive citizens as being cooperative with law enforcement.

Of course, such findings do not always jive with how citizens in disadvantaged and predominantly minority neighborhoods perceive the police. For example, in some cases residents may be more likely to work with the police to solve problems given then absence of few viable alternatives and greater need (Carr, Napolitano, & Keating, 2007; Skogan, 2006). Secondly it is also unclear how strained police and citizen perceptions of each other impact the behavior of police in a given situation. It is clear however that police-community relations, perceptions of citizen cooperation, and organizational justice (defined as an environment where officers are treated fairly by their supervisors and feel supported by their agency, Shjarback, Nix and Wolfe 2017) can all impact a police

officer's job satisfaction and job stress. Shjarback and colleagues controlled for organizational justice by introducing an additive index where officers were asked questions regarding their perceptions towards reward for good behavior and public performance recognition, internal discipline, and recognized team building actions. The analysis found that officers with a favorable view of their department experience less stress and reduced cynicism and in turn have a more favorable view of citizen cooperation. Some evidence suggests that more stress, depersonalization and job burnout can all increase the use of force by individual police officers (Kop & Euwema, 2001; Manzoni & Eisner, 2006).

The shooting death of Michael Brown not only changed the public's perception of policing but also may have changed law enforcement's perception of itself. The "Ferguson Effect" is the broad term used to capture the post-Ferguson shift in law enforcements internal views of their role within the community, the public's perception of police, and the motivation/hesitation to proactively engage in policing, especially in minority neighborhoods, because of fear of reprisal both publicly and professionally. Torres, Reling, and Hawdon (2018) study on police officers apprehensiveness toward the use-of-force and policing in minority neighborhoods. They found higher levels of apprehensiveness among patrol officers expressing post-Ferguson decreases in motivation and cynicism but also found post-Ferguson increases in apprehensiveness to be predictive of current motivation and cynicism for patrol officers. Torres, Reling, and Hawdon (2018) concluded that further research is needed but believed that their research did provided enough evidence to conclude that officers are apprehensive about performing their job duties, especially in minority communities.

Organizational Characteristics

Several other features of police organizations may also be related to work related stresses and the likelihood of using force.

As an example, collective bargaining agreements and union representation is a major part of the organizational structure of law enforcement agencies across the United States. Hickman & Piquero (2008) analyzed the impact collective bargaining agreements on use of force complaints. The study focused on 496 large municipal police departments in the United States. According to their research, 73% of the departments studied had collective bargaining agreements. The researchers theorized that departments with collective bargaining agreements specify processes relating to procedure of civilian use of force complaints. These processes may be different than departments that do not have collective bargaining agreements because aggressive defenses of officers may result is lower sustained complaint rates whereas departments that do not have collective bargaining agreements may be subjected to higher sustain rates. Alpert & McDonald (2001) also theorized that collectively bargaining unit could affect the likelihood of use of force incidents, although their study based on 265 police agencies found other organizational factors were more significant.

Technology in America has also changed policing dramatically in the last five years. The post-Michael Brown era of policing has given way to many reforms. On December 18th, 2014, President Barack Obama initiated an executive order creating a 11 member Federal Task Force. The mission of the task force was clear: "The Task Force shall, consistent with applicable law, identify best practices and otherwise make recommendations to the President on how policing practices can promote effective crime

reduction while building public trust" . The findings and suggestions of the task force were completed in May 2015 and can be viewed in the "The President's Task Force on 21st Century Policing Implementation Guideline".

Over the last four years, several of the suggestions have been, and are still being, adopted by police departments across the country. These suggestions include utilizing technology as both a training aid and a tool in the field. De-escalation training for law enforcement officers is one of the central tenets of the President's Policing Implementation Guideline. De-escalation training aims to provide officers with the basic understanding of how to identify and interact effectively to de-escalate a potentially dangerous scenario with an individual who is displaying signs of mental illness before deadly force is used. In past years, such directives may have been directed verbally or through the use of a multi-media tools. Modern technology, such as interactive computer simulation aids, have allowed officers to safely practice de-escalation techniques interactively so that officers can visually observe the signs of mental illness. Cox et. al., (2014) examined officer use of deadly force while utilizing interactive computer simulation training aids also provided evidence of how modern technology can be used effectively as an advanced training tool that can better prepare officers for different high stress scenarios.

Modern technology has proven extremely useful not just as a training aid, but also as a field tool. The introduction of body worn cameras into policing has added a layer of accountability for both law enforcement and the community. Among several recent studies of body warn cameras and use of force, Ariel and colleagues (2016) conducted an analysis of ten randomized experiments on the effects of body worn cameras and police

use of force. The researchers found that when officers adhered to the policy of mandatory activation for all citizen encounters, there was a 37% decline is use of force reports. The effectiveness of body worn cameras and law enforcements use of force is largely dependent on the departments activation policy (mandatory vs. discretionary). When controlling for a mandatory activation policy upon police-citizen contact, there is a significant reduction in the reported use of force between police and the community.

Women in Policing

This thesis will also account for the percentage of female officers in an organization, hypothesizing that a higher female police force should decrease the use of deadly force. Several recent studies found that women receive less use of force complaints/allegations than their male counterparts. Schuck & Rabe-Hemp (2005) conducted an analysis analyzing the roles of women and the use of force. The data used for their analysis came from a study conducted by Garner and Marshal (2001). The sample for the study consisted of 7,365 police officers who were provided surveys between 1996-1997. 765 of the respondents were female. The Schuck & Rabe-Hemp (2005) findings suggest that female officers and female-female officer pairs use less force than their male counterparts. The findings also suggest that the influence of gender remained significant even when other factors were considered in the need to utilize high levels of force and that less use of force was associated with greater female involvement. The researchers theorize that the gender influence of female officers and their lower propensity to use excessive force, women could have a significant domino effect on police and community relations (Schuck & Rabe-Hemp 2005).

Minority Police Officers

In the wake of high-profile law enforcement involved homicides cross the country, law enforcement agencies are increasingly adopting community policing models and attempting to diversify their department personnel to reflect the community which they serve. There has been suggestion that increasing the number of black police officers within law enforcement agencies will decrease the rates of deadly force by law enforcement. Nicholson-Crotty, Nicholson-Crotty, & Fernandez (2017) analyze this assertion by utilizing the concept of critical mass, the idea that once the percentage of black police officers reaches a larger threshold, the number of black victims of police involved homicide will drop. The researchers define critical mass as comprising 30%-40% of an organization. The researchers further state that the concept centers around the premise that minorities will only begin to act to help other minorities, within the organization or the community, when they feel empowered. Nicholson-Crotty, Nicholson-Crotty, & Fernandez (2017) analyzed data from police involved homicides in large U.S. cities between 2014 and 2015.

The researchers observed mixed results. The 2015 data showed a positive and significant relationship between black police officers and fatal encounters with black citizens across the majority of U.S. cities. The results also suggest that there is an inflection point as to where black officers assume more positions of minority advocacy, though the number of observations are limited (Nicholson-Crotty, Nicholson-Crotty, & Fernandez 2017). The 2015 data point that showed the positive relationship between the increase of black police officers and fatal encounters with black citizens is concerning. Nicholson-Crotty, Nicholson-Crotty, & Fernandez (2017) cite a Williams and Wilkins (2008) study that theorizes that police departments are effective at socializing and

enforcing compliance of cultural norms that may suppress representative behavior for black officers.

Personnel Practices

Law enforcement agencies across the country are trying to find progressive ways to bridge the divide between police and the community. A recent study by Pryor, Boman,, Mowen, & Mccamman (2019) analyzed how community and agency practices effect sustained use of force complaints against law enforcement officers, including hiring practices. Their results indicated that departments that have a strong community policing strategy had significantly higher numbers of sustained use of force complaints. They believe that this is because the nature of community policing, i.e. being active within the community, leads to more officer-community exposure. A second theory attempting to explain the increase in higher numbers of sustained use of force complaints was that improved relationships between law enforcement and the community lead to a more transparent complaint-review process.

Pryor and colleagues (2019) also explored the validity of citizen review boards and how they impact the use of force complaint-review process. They acknowledged that previous research has provided a mixed bag of results, but their data makes it clear that agencies that utilize citizen review boards have significantly more sustained use of force complaints than those without. The most interesting finding that the researchers observed in their study was the influence that pre-employment screening have on the training hours officers undertake as recruits and as training officers take on as in-service training once sworn. Pre-employment screening was categorized as an assessment of volunteer service hours and a personality test. Throughout their model building, training hours proved

statistically significant in the number of sustained use of force complaints until pre-employment screening practices were added to the final model. Once added, training hours proved insignificant. They conclude that based on the results of their study, departments that are looking to lower the sustained complaint rate should adopt pre-screening hiring processes that evaluate the candidates community service and volunteer history as a service-minded candidate translate well for police work (Pryor, Boman,, Mowen, & Mccamman 2019).

Community Characteristics

The effects of resource deprivation on the health of communities has been well researched for nearly a century. Scholars are continuing to expand their research to account for homicide in their community focused models of police agency behavior. The effects of violent crime on a community are felt far beyond just the suspect and the victim (Sharkey et al., 2012). The lasting effects on the community, especially young people, of chronic violent crime can have spiraling effects. Ross & Arsenault (2017) suggested that early trauma had a positive and highly statistically significant impact on future violence. More specifically, their results showed that males who had early contact with law enforcement as either a victim or a witness was 20.9% percent more likely to be perpetrator, victim, or witness of a violent crime later in life. A male who had early contact with law enforcement as a witness was 21.2% more likely to be involved in a violent incident later in life as a victim, witness, or perpetrator (Ross & Arsenault 2017). If the hypothesis that violent crime rates have a significant influence on the rate of law enforcements use of force then factors such as resource deprivation and income inequality that are known contributors to community violence also must be considered.

Current Study

The above discussion reveals the difficulty in understanding disparate use of force against offenders depending on race. Prior evidence reveals that variation in use of force may be an artifact of differences in police organizations (Pryor et al., 2019) and the communities within which they police (Parker & Grey, 2018), yet even in studies that try to control for this contexts, important racial differences are still observed. This thesis seeks to first further understand the racial differences in use of force by exploring the details of the incidents in greater detail. Secondly, I also seek to further understand how community characteristics and agency characteristics relate to use of force incidents.

Drawing from prior literature, I make the following hypotheses:

- A higher percentage of female and minority officers will be associated with lower deadly use of force incidents
- Male and female officers should be associated with fewer force incidents regardless of the race of the suspect
- Higher community violent crime rates will be associated with more deadly encounters between law enforcement and civilians
- Mandatory community policing training will be associated with fewer force incidents

Data and Methods

Three primary sources of data were used to answer my research questions. Each source is publicly available. The first source, regarding law enforcement use of deadly force, was the Washington Post-Fatal Force data collection project that includes information on all deadly force incidents nationally from January 1st 2015 until March of 2019. Journalists gathered the data for the project by culling news reports, law enforcement websites and social media, and monitoring independent databases such as Killed by Police and Fatal Encounters. Additionally, open records requests were also filed with police departments and law enforcement agencies for more information. The Post cites their comprehensive collection of data compared to government databases tracking law enforcement instances of deadly force such as the FBI and Center for Disease Control and Prevention , which for the year 2015, reported two times less deadly force incidents than reported by The Post (Tate et al., 2016).

For the purposes of this study, data on police use of force incidents were collected for 121 of the largest cities in the United States, including the largest city from each state as of 2020. A city-level analysis was chosen given that cities provide a large enough unit for aggregating force incidents and allow us to match data with corresponding police agency information (i.e. information about city police agencies). This level of analysis has been used in several recent examinations of police use of force, police agency, and community characteristics (Grey & Parker, 2019; Pryor et al., 2019).

The second source of data used, which provided information for the independent variables related to police agency characteristics, was the Law Enforcement Management and Administrative Statistics (LEMAS). The LEMAS data were used to gather

information pertaining to police organizational variables including the racial and gender composition of officers, salary, supervisory gender composition, presence of collective bargaining, community policing training, in-service training, and the use of the SARA model in policing.. The LEMAS survey collects data from a nationally representative sample of state and local law enforcement agencies in the United States. The 2013 LEMAS sample design called for the survey questionnaire to be sent to 3,336 general purpose state and local law enforcement agencies including 2,353 local police departments, 933 sheriffs' offices, and the 50 primary state law enforcement agencies. The design called for all agencies employing 100 or sworn personnel to be included with certainty (self-representing) and for smaller agencies to be sampled from strata based on number of officers employed. This included information from the 121 city agencies that are the focus of this thesis.

Finally, community-level characteristics commonly employed in city-level analyses, including measures of economic disadvantage, population size, and other demographic data were obtained from the American Communities Survey 5 Year estimates 2012-2016, and extracted from the National Historical and Geographic Information System organization (NHGIS). These data sources were merged into one dataset so that all measures were available for each of the 121 city-agencies.

Dependent Variables

The dependent variables in the analysis were derived from the Washington Post-Fatal Force data and represent the total number of deadly force incidents occurring between January 1st 2015 and March 2019 for each of the121 cities in the sample. The data used provided information of each incident documenting the suspects race, gender, age, whether or not the suspect had a weapon, showed signs of mental illness, and whether the suspect was attempting to flee the scene. To examine whether there were differential effects of agency or community characteristics on the use of force by these categorizations, count measures were also generated for the total number of force incidents against white, black, Hispanic, young, old and mentally ill suspects. Although each of these criteria were explored, the focus of this thesis is on the total number of deadly force incidents and the race of the suspect.

Independent Variables

Organization Factors

To capture the racial and gender make-up of police agencies, I generated a measure of the percentage of total sworn officers that are black (number of black officers divided by total sworn officers) and the percent of officers that are female (number of female officers divided by total sworn officers). Additionally, I included the percentage of women in supervisory positions, measured as the number of female officers as intermediate supervisors or chiefs, divided by the total number of officers in supervisory positions.

Based on the review of the literature, several measures were also included that capture the financial and job security of officers in a department. These factors could subconsciously impact the decision-making and reporting of officers. To capture the minimum salary of officers in a police agency, I obtained the minimum salary (in total dollars) from the LEMAS data. Given the large standard deviation associated with this measure, the natural log of salary was taken. I also included a dichotomous measure indicating whether the agency had a collective bargaining unit.

In-line with theories suggesting that policing styles are associated with the prevalence of force used by its officers, I generated measures capturing the commitment to community policing and SARA principles. This includes the percentage of officers required to complete a minimum of 8 hours of community policing training in the police academy, and the percentage of officers required to complete community policing in-service training. I also included a dichotomous measure indicating whether an agency had a SARA plan.

Community Factors

Finally, several community level factors were obtained from the NHGIS and FBI to capture variation in drivers of crime which could be associated with an increased risk for police violence. The violent crime rate for each agency was captured from the FBI's UCR data tool and represents the average violent crime rate for the years 2014-2016. Centering the variable around 2015 was important so that it occurs prior to the force incidents being tracked in our dependent variable. Additional measures include the percentage of the population that is Hispanic, the percentage Black, and the age-structure – measured as the percentage of the population aged between 15 and 29. Following a recent article by Parkey and Grey (2019), I also include several measures of economic inequality that may be theoretically linked with police shootings. This includes the unemployment rate, measured as the number of people ages 16-64 who are in the labor force and currently unemployed, divided by the total working age population in the labor force. Racial economic inequality is measured the same way as Parker and Grey (2019), the median black income divided by the median white income. Finally, residential instability was measured as the percentage of the population who resided at a different location in a different city 1 year prior.

Analysis

Given that the data represent counts of law enforcements use of deadly force incidents at the city level, negative binomial regression models were used to assess the association of incidents of deadly force while controlling for a range of organizational and community level factors. Negative binomial models were needed because in looking at a histogram of deadly force incidents, a large number of cities had comparatively low numbers of incidents between 2015 and 2019. The data was also over dispersed with a standard deviation slightly larger than the value of the mean (See Table 1). Deadly force incident counts were offset using the total population for each city (log transformed).

Results

Table 1: Descriptive Characteristics

	Mean	SD	Range	
Total Incidents	9.63	10.21	1	61
Male Suspects	8.91	9.61	1	58
Armed Suspects	5.73	6.32	0	39
Young 15-24	2.13	2.61	0	12
Over 25	7.21	7.69	0	48
Fleeing	3.35	3.89	0	20
Mental Illness	1.97	2.43	0	17
Black suspect	3.53	4.57	0	26
White	3.11	3.38	0	22
Hispanic	2.07	4.48	0	29

Table 1 displays the mean, standard deviation and range for counts of force incidents during the time period studied. In this sample, there was an average of 9.63 incidents per city, but one city in the sample, Phoenix, Arizona, had 61 incidents of law enforcement deadly force during the time period in which the data was collected. The majority of suspects in the incidents were male, with an average of 8.91 force incidents against male suspects. One city in the sample, Phoenix, Arizona, had 58 male suspect victims during the time period the data was collected. The average number of armed suspects per city is 5.73. One city in the sample, Phoenix, Arizona had 39 armed suspects

during the time period the data was collected. Although conventional wisdom suggests that young males may be the most likely victims of deadly police force, the average number of "young suspects" (ages 15-24) per city was only 2.13. This ranged from zero to a high of 12 recorded in Los Angeles, California. The victims were likely to be aged 25 or over, with cities in the sample having an average of 7.21. One city in the sample, Phoenix, Arizona, had 48 suspects older than 25 during the time period the data was collected. The average number of suspects fleeing was 3.35 per city. One city in the sample, Phoenix, Arizona, had 20 during the time period the data was collected. The average of suspects observed or reported showing signs of mental illness was 1.97 per city. One city in the sample, Las Vegas, Nevada, had 17 suspects reported or observed showing signs of mental illness during the time period the data was collected. The average black suspects per city is 3.53. One city in the sample, Chicago, Illinois, had 26 black suspects during the time period the data was collected. The average white suspects per city is 3.11. One city in the sample, Phoenix, Arizona, had 22 white suspects during the time period the data was collected. The average Hispanic suspect per city is 2.07. One city in the sample, Los Angeles, California, had 29 Hispanic suspects during the time period the data was collected.

Tables 2, 3 and 4 display the results of the negative binomial analyses of total (Table 2), white victim (Table 3) and black victim (Table 4) incidents. In each table, data are displayed in two models. In the first model I assessed the relation of police agency organizational characteristics on the likelihood of force incidents. In the second model, I introduced several community level variables theoretically linked to deadly force (Grey & Parker, 2018).

Table 2: Negative Binomial Regression Analysis of Total Force Incidents (*n* = 121 cities)

	Model 1			Model 2		
	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
% Black Officers	-0.029	0.009	0.002			
% Female Officers	0.060	0.022	0.006			
Total Officer Rate	0.311	0.084	0.000			
Min Salary	-0.176	0.555	0.751			
Female Chief	-0.152	0.357	0.671			
Female Supervisors	-0.015	0.004	0.000			
Coll Bargaining	-0.245	0.353	0.487			
All recruits CP Training	0.482	0.239	0.043			
Inservice CP Training	-0.035	0.229	0.879			
Sara	0.338	0.202	0.093			
Economic Inequality				-0.17	0.156	0.275
Residential Instability				0.133	0.04	0.001
Unemployed				-0.073	0.058	0.212
Young				-0.021	0.036	0.557
Black				-0.007	0.005	0.148
Hispanic				0.002	0.005	0.592

Violent Crime Rate (lg)		0.512	0.15 0.001
Chi 2	48.400	26.49	

Table 2 displays the results of the negative binomial regression model estimating the incidence of Total Force. Cities with higher percentages of black police officers tended to have a lower rate of total use of force incidents as a 1% increase in black officers on the force, the expected log count of deadly force incidents decreases by .029. Cities whose police departments employed female officers in supervisory positions saw a decrease in total force complaints as a one unit increase in female supervisory positions within a department lowered the total use of force incidents by 1.5%. Surprisingly, cities with higher rates of female police officers showed the opposite, for every 1% increase in female police officers, an increase of 6% was observed in force incidence. Cities that employed larger police departments saw an increase in total force incidents as well, for every one unit increase in the rate of total office, a 31.1% increase in total force incidents was observed. Cities that employed community policing training strategies to their cadets during the recruit/training level saw an increase in total force complaints, for every one unit increase in community policing training an increase of 48.2% was observed in total force incidents.

Several other city-level measures were also associated with total force incidents. Residential instability and violent crime rates were significantly associated with more total use of force incidents. Measures of income equality, unemployment, age, and racial / ethnic composition were not statistically significant.

Tables 3 and 4 display the results of the negative binomial regression model estimating the incidence of Total Force Incidents separately for white (Table 3) and black (Table 4) victims. Cities with higher rates of black police officers tended to have a lower rate of total use of force incidents with white victims as a 1% increase in black officers on the force, total force incidents drop approximately by 6.1%. Cities whose police departments employed female officers in supervisory positions saw a decrease in Total Force Incidents with White Victims, as a one unit increase in female supervisory positions within a department lowered the total use of force incidents by 2.0%. Cities with higher rates of female police officers saw an increase in Total Force Incidents with White Victims, for every 1% percent increase in female police officers, an increase of 6.3% was observed in total use of force incidents

Cities whose police departments employed female officers in supervisory positions saw a decrease in Total Force Incidents among Black Victims as a one unit increase in female supervisory positions within a department lowered the total use of force incidents by 1.3%. Cities that employed larger police departments saw an increase in Total Force Incidents as well, for every one unit increase in the rate of total officers, a 36.6% increase in Total Force Incidents among Black Victims was observed.

Several other city-level measures were also associated with total force incidents. A one unit increase in the Black population within our city showed a decrease of 2.6% in Total Force Incidents involving Black Victims. A one unit increase in violent crime showed a significant increase of 72.3% in Total Force Incidents among Black Victims. The other city-level measures were not observed to be statistically significant in determining an outcome of Total Force Incidents among Black Victims.

Table 3: Negative Binomial Regression Analysis of Total Force Incidents with White Victims (*n* = 121 cities)

	Model 1			Model 2		
	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
% Black Officers	-0.061	0.013	0.000			
% Female Officers	0.063	0.030	0.036			
Total Officer Rate	0.271	0.075	0.000			
Min Salary	-0.523	0.745	0.483			
Female Chief	0.011	0.469	0.981			
Female Supervisors	-0.020	0.005	0.000			
Coll Bargaining	-0.436	0.460	0.344			
All recruits CP						
Training	0.634	0.318	0.046			
Inservice CP						
Training	0.325	0.298	0.275			
Sara	0.223	0.269	0.406			
Economic Inequality				-0.498	0.222	0.025
Residential Instability				0.18	0.056	0.001
Unemployed				-0.041	0.09	0.649
Young				-0.081	0.053	0.123
Black				-0.034	0.008	0

Hispanic	-0.023	0.007	0.001
Violent Crime Rate (lg)	0.373	0.201	0.064
Chi 2	48.120	56.38	

Table 4: Negative Binomial Regression Analysis of Total Force Incidents with Black Victims (*n* = 121 cities)

	Model 1			Model 2		
	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
% Black Officers	0.014	0.013	0.279			
% Female Officers	0.043	0.025	0.085			
Total Officer Rate	0.366	0.118	0.002			
Min Salary	-0.877	0.639	0.170			
Female Chief	-0.045	0.441	0.919			
Female Supervisors	-0.013	0.004	0.002			
Coll Bargaining	0.290	0.483	0.548			
All recruits CP Training	0.470	0.308	0.127			
Inservice CP Training	-0.542	0.298	0.069			
Sara	0.132	0.259	0.610			
Economic Inequality				0.159	0.199	0.426

Residential Instability		0.099	0.061	0.103
Unemployed		-0.126	0.077	0.1
Young		-0.029	0.053	0.58
Black		0.026	0.007	0
Hispanic		0.002	0.007	0.806
Violent Crime Rate (lg)		0.723	0.218	0.001
Chi 2	39.420		61.12	

Discussion and Conclusion

This study sought to expand research into police deadly force by taking a macro level approach to examine the role of organization and community factors. Furthermore, I aimed to test whether these same factors were equally related to deadly force against white and black suspects. This is an important step to consider when developing policies to reduce the deadly use of police force.

Findings of Community Factors

Although a relationship not always confirmed by empirical studies, this study found that that local violent crime rate was significantly related to the incidence of total deadly force and force against minority suspects, but not for white victims. In many ways this finding reaffirms the unequal conditions that many white and black suspects face in their communities (Krivo & Peterson, 2010). The higher likelihood of living in a neighborhood besieged by violence may alter the practices and sensitivities of police officers in responding to cases in predominantly black communities.

This study also found that residential instability was associated with force in each model. This finding may be explained by the turnover and heterogeneity that is more likely to accompany low-income communities. Past research has been clear that socioeconomic factors of community instability have a large influence on rises in crime, and crime in turn can influence instability (Hipp et al., 2014). As an example, Klinger et al., 2015 found during an analysis of police involved shootings in Saint Louis, Missouri that “neighborhoods with a comparatively large number of police shootings have significantly higher levels of firearm violence, lower rates of owner-occupancy, lower

college graduation rates, a larger fraction of young residents, and lower median household incomes than those with fewer shootings."

Residential instability is a symptom of social deprivation relating the lack of quality housing, lack of quality schools and education, and limited resources for employment. Residential instability also breaks down the quality of the community as it hinders the development of interpersonal investment in the success of the community. These are just a few of the factors that contribute to the increase of violent crime such as homicide and robbery while also contributing to other criminal activities such as illicit drug dealing that are springboards not just for violent crime but are also a significant obstacle for communities to attract positive social investment in deprived areas. Law abiding residents of high crime communities become desperate and call for law enforcement to increase their presence in these areas. It is theorized that higher levels of police involved shootings in high crime areas are a result of police being deployed to these areas in larger numbers while being tasked with being more proactive in their engagement of individuals believed to be involved in criminal activity.

Organization Factors

A higher percent of black officers was associated with fewer force incidents, but not force incidents against black suspects specifically. It is surmised that black officers who are deployed in predominantly minority neighborhoods can build relationships and trust within the community and also have a tendency to be more concerned about the community and solving conflicts. However, future research may need to take a more culture approach to understand why a greater percentage of minority officers do not offer any protective impact on the deadly force against black suspects. Sun & Payne (2004)

found that black officers are significantly more likely to engage in conflict resolution than their white counterparts. It was also found that black police officers are more likely to engage in supportive community actions in black neighborhoods. Interestingly, however, more black officers were not associated with fewer force incidents against black victims specifically. Sun & Payne also found that black officers, depending on the performed policing activity, citizen race does not have an impact on the execution of law enforcement functions (use of force, arrest, and maintaining order). Other factors such as the citizens role, demeanor, emotional state, and evidence strength are signification influences on police action during conflict resolution.

Departments with more females in supervisory roles also experienced fewer lethal force incidents. (Rabe-Hemp 2008) observed that female officers in general were over 27 percent less likely than male officers to exhibit extreme controlling behaviors such as threats, physical restraint, searches and arrest in their interactions with citizens. Rabe-Hemp goes onto theorize that the ethic of care theory may explain female officers reluctance to utilize extremely forceful behaviors as physically forceful behavior are theoretically incongruent with empathy and negotiation. This may explain why departments with female officers in supervisory roles experience fewer lethal force incidents. The trickle-down effects of their management of personnel may influence the subordinate officers use of de-escalation and conflict resolution while on their beats.

Surprisingly, a minimum of 8 hours community police training for all new recruits was positively associated with more force incidents. While the positive association between community policing training for new recruits and use of force is concerning, it may be explained by the timing of the training during the training/academy

process rather than the ineffectiveness of community policing training in general. During training, recruits are in a classroom setting and are bombarded with many different subjects to master. Once graduated from the training program/academy, recruits are assigned to their specific assignments as police officers and gain the necessary experience to which community policing techniques can be applied too. Once experience is coupled with in-service community policing training, there is a clear association between the community policing training and fewer force incidents perpetrated against black victims. Community policing adds a significant degree of familiarity with citizens in the community as well as allowing the officer(s) to be familiar with both the criminal and non-criminal activities in a specific area.

Limitations

This thesis had several limitations, chiefly I only compiled force data for 121 urban cities. Some prior studies have found important differences in the relevance of organization factors for large versus small police agencies. It is possible that my findings would not be replicated among smaller police agencies who experience fewer cases of force over time, although several organization pressures would likely still be salient. Additionally, I was unable to capture several theoretically important variables related to police culture and on the job training. Similarly to others (e.g. Cesario et al., 2018) my unit of analysis was the city, not taking into account smaller cultural or local conditions that may fundamentally affect police-community relations, and ultimately, how officers engage with citizens on a daily basis.

The dataset used for these analyses were also missing data that speak to law enforcement agencies' threshold of deadly force when comparing races and similar

behavior. For example, if a black citizen is in possession of a firearm during an altercation, they may be shot, while a white person doing the same could be tased or verbally confronted (Cesario et al,. 2018). Nix and colleagues (2017) found that among those who were not assaulting police during arrest, the race of the individual was not significant in determining law enforcement decision to utilize deadly force. Others have theorized that given non-assault interactions between law enforcement and citizens are the most ambiguous and therefore most likely subject to the biasing influence of race of threat perception, this speaks against the threshold argument.

This research also shows clear significance that women in supervisory roles within law enforcement agencies have a negative effect on the use of deadly force by police officers. Furthermore, Rabe-Hemp (2008) observed that female officers in general were over 27 percent less likely than male officers to exhibit extreme controlling behaviors such as threats, physical restraint, searches and arrest in their interactions with citizen. The gaps in our data that pertains to women in law enforcement, and more specifically women in supervisory roles, that lead to a reduction in deadly force is that we did not analyze data that speaks specifically to the assignment, district/zone crime rates, and other factors that can possibly show differences between male and female officers and supervisors. For example, we do not know if women are assigned to patrol/supervise areas within communities that have lower crime rates versus their male counterparts.

Despite these limitations, the topic of deadly force is multifaceted and has influences in multiple spheres. The community context and police organization are two key areas that must remain part of future research to understand how force incidents may impact some groups more than others.

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