RACE, GENDER, AND THE CONTEXTS OF UNARMED FATAL INTERACTIONS WITH POLICE[1]

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ABSTRACT
In the post-Ferguson era, public opinion remains divided about the ways that race and gender intersect in relation to law enforcement's use of lethal force. Addressing this tension within research, we explored race-gender differences in the likelihood of being killed while unarmed. Specifically, we asked: 1) are the odds that black males will be unarmed when killed by police greater than they are for other male racial groups, 2) are the odds that an unarmed fatality has occurred related to the characteristics of the location in which it happened, and/or the agency of the officer(s) responsible, and 3) how might the odds that a women is unarmed when killed by police vary across racial/ethnic groups after considering contextual and agency characteristics? To answer these questions, we identified 1762 fatal interactions with police that occurred over a 20 month time period, and merged them with the nationally representative Law Enforcement Management and Administrative Statistics survey, Uniform Crime Reports data, and census characteristics. Using hierarchical linear models, we find the odds that black Americans will be killed by police when unarmed are nearly 7 to 1—more than double the odds found in research to date—and due primarily to the unarmed status of black women. We conclude with a discussion of this study's implications for policy and future directions for research.

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INTRODUCTION

Multiple news outlets declared in 2015 that "hands up, don't shoot" did not happen in Ferguson (Capehart 2017), with *Politico* in particular ranking it as one of the "biggest Pinocchios of 2015" (Gass 2015). While a grand jury and federal report cast doubt on the claim that Michael Brown, of Ferguson, Missouri, had his hands in the air before an Officer, Darren Wilson, fatally shot him, there remains a suspicion among black communities that police officers are more likely to use lethal force against them, relative to other racial/ethnic groups, even when they are unarmed. Although much of the media attention has been focused on the concerns of black communities, other racial/ethnic groups have voiced similar claims about their communities being targeted with excessive deadly force (Martinez 2007; Cheney-Rice 2015).

Related to these concerns about racial/ethnic disparities in the use of lethal force is the question of how race/ethnicity potentially intersects with gender to alter the odds of a fatal interaction with police, most notably for black males (Gilbert and Ray 2016). Michael Brown's shooting symbolized a history of strained relationships between male members of black and brown communities with police officers (Brunson and Miller 2006; Brunson 2007; Coates 2015), and his death led to claims, whether real or perceived, that being of color *and* male determined their odds of being killed by police more than the potential threat they posed to the public (ACLU 2009).

Of course, fatal interactions with police are not limited to men (Abbey 2015; Embrick 2015). While intersectionality as an epistemological and theoretical approach with roots in black feminist work (Collins 1990; Crenshaw 1991) holds that the intersectional oppression of men of color too should be examined (Carbado 1999), such recognition should not elevate their cause over that of women in liberationists discourse and work (Crenshaw 1999). Hence, the "say her name" social movement emerged to simultaneously challenge male-centered narratives about the intersection of race and gender in the context of police killings, and to elevate awareness about black women, such as Rekia Boyd, who were also killed while unarmed (Crenshaw et al. 2015; Savali 2014).

While these social themes appear frequently as hashtags in social media and continue to animate social movements, their empirical interrogation remains sparse and troubled by the limited availability of data. Recognizing this void, this study contributes knowledge about the racial/ethnic and gendered distribution of fatal interactions with police (FIPs). Using multiple federal and online databases, we estimate the odds that an unarmed individual was killed by law enforcement according to race-gender categories, and reveal to what extent those odds are related to the location in which the fatality occurred and the agency characteristics of the responsible officer(s). Our multi-level statistical analysis revealed the odds that black and Hispanic individuals were unarmed when killed by police become significantly greater than white Americans when black women and Latinas are included in the estimation. We conclude with a discussion of this study's implications for policy and future directions for research.

LITERATURE REVIEW

Race, Gender and Fatal Interactions with Police (FIPs)

A series of high profile uses of deadly force by police have led various sectors of the public to question whether their actions were racially biased, and prompted claims from law enforcement, police unions, grand juries, and frequently the courts, that those uses of lethal force were justified. Given these disagreements, research that examines racial/ethnic disparities in the use of lethal force has become increasingly important. However, research on this subject is neither extensive nor very conclusive. Earlier thoughts on the use of lethal force offered in Binder and Scharf's (1982) review of studies observed "explanations of police shootings based solely upon racial bigotry cannot be persuasive given so rich a source of alternative plausible hypotheses" (p. 22). Recent advances in research have enriched the body of evidence by using novel data sources and advanced statistical methodologies to examine these plausible hypotheses. Ross (2015) for example, used the U.S. Police-Shooting Database (USPSD) and multi-level statistical models to estimate the relative odds of police-involved homicides for racial/ethnic groups and how they are distributed within and across counties. The analysis reveals that unarmed black Americans are approximately 3.49 times as likely as whites of being shot by police. We suspect that these odds are somewhat depressed since shootings are not the only way in which individuals are killed by police.

Ross' work was followed by the release of another analysis using administrative data from numerous agencies and the Public Police Contact Survey, collected by the Bureau of Justice Statistics (Fryer 2016). While this analysis found that black Americans and Hispanics in Houston were "more than fifty percent more likely to experience some form of force in interactions with police," it found no racial/ethnic differences in officer involved shootings. One analytical decision complicating the generalizability of this study's findings is that the cases were selected from individuals who had been arrested, risking the chance that those individuals that were never arrested but also involved in shootings would be excluded from the estimation. In addition, the police homicides that were committed without the use of guns were left out. In yet another study, Nix et al. (2017) used data from the FBI's Uniform Crime Reports (UCR) Program and the *Washington Post*'s database on deaths nationwide in the year 2015 to estimate the odds of being killed while unarmed for black Americans and a collapsed category of "other racial/ethnic groups" relative to white Americans. The results indicate that black Americans were 2.41 times as likely as white Americans to have been unarmed when killed.

While understanding the situational dynamics behind the occurrence of each FIP remains reliant on the systematic, complete, and consequently rare disclosure of events by police, research offers a number of theoretical explanations for their occurrence. Criminogenic theories for instance have explored the reasons why individuals violate norms of order and social control (Shaw and McKay 1942). Within these perspectives, FIPs occur when agents of the state respond with a force appropriate to the level of threat that an individual poses to the public. Using this line of reasoning, researchers and public commentators alike have highlighted the higher rates of crime and incarceration in black communities, implying that higher rates of FIPs should be expected and plausibly unrelated to racial bias (Binder and Scharf 1982). This possibility that FIPs are due entirely to criminal behavior have not been supported by recent work, since the relatively higher

odds of FIPs for black Americans remained after studies have controlled for crime levels (Nix et al. 2017), and race-specific crime rates (Ross 2015).

There have also been cultural explanations that emphasize the cyclical nature of police-citizen relations, wherein African Americans' accumulated adverse experiences and negative vicarious experiences with police have led them to distrust law enforcement, and police in turn use aggressive tactics and coercive authority that only reinforce African Americans' questioning of police legitimacy (Brunson and Miller 2006; Brunson 2007; Weitzer and Tuch 2005). Cultural perspectives postulate that African Americans' greater distrust of police would lead them to be less cooperative when engaged by law enforcement and increase the possibility of escalation to the use of lethal force. However, studies of situational behavior that examine how individuals interact with police find that hostile and disrespectful approaches by police at the onset of the encounter are perhaps the strongest predictors of non-compliance (Terrill 2003). Studies also show that despite the generally greater distrust black communities have of police, males and minorities are more likely to show compliance, and particularly when the officer is white (Mastrofski et al., 1996). Furthermore, when individuals of color believed that they were engaged by police in a fair and respectful manner, they were less likely to perceive such stops as racial profiling, even if they in fact were being profiled (Tyler and Waslak 2004, p. 276).

Yet another explanation considers the power of race in the broader social imagination and officer dispositions as a motivating factor behind uses of deadly force (Hughey 2015). On this point, Brunson and Miller (2006) state that young black men are widely viewed as "symbolic assailants" in the popular imagination. Quillian and Pager's (2001) study adds quantitative evidence in support of the symbolic assailants thesis, finding that the influence of racial composition on perceptions of crime is larger than the influence of measures of actual crime rates. In all of the cities in their multi-site study, the percentage of black men in neighborhoods was always significantly associated with the perception of more crime among white and Hispanic neighborhood residents (Quillian and Pager 2001). Observational studies such as these have been complemented by the results of experimental laboratory studies. These studies have demonstrated how depictions of black Americans led participants to claim to see a gun where there was none (Payne 2006); shoot targets with greater frequency (Correll et al. 2014); and led individuals and police officers to discern and associate crime-relevant objects with particular social groups (Eberhardt et al. 2004). As these contrived experiments reveal racially biased cognitive processes among their participants, a recent review of relevant research concluded that police officers' racial bias resulted in no pattern of biased shooting (Correll et al. 2014). In the present study, we do not claim to assess directly the racial attitudes and biases of police officers, nor do we presume that all unarmed individuals were not a threat to the public or law enforcement when killed. We nonetheless consider our analysis central to the conversation of racial bias because differences across racial/ethnic groups in unarmed fatalities may indicate that the same kind of "threat perception failure" found in lab studies of racial bias is a reality among law enforcement.

Unfortunately, the minimal attention given to other racial and gender groups in our exhaustive review is sadly indicative of the field of research. Qualitative, feminist, and legal studies have documented FIPs for women of color and black women in particular (Neely 2015; Ritchie 2017; Crenshaw et al 2015), but with few exceptions (see Desmond and Valdez 2013), the availability

of inferential studies of deadly force involving women is quite limited. Since this is in part due to men constituting the overwhelming majority of individuals killed by police, very few studies include gender in their statistical models, or report the gender estimates when they are included (see Fryer 2015). Likewise, Hispanic and Native American advocacy groups have called for more research (Martinez 2007) and media recognition (Cheney-Rice 2015) of the circumstances in which deadly force has been used by police in interactions with members of their communities. They point out at least 150 Hispanics are killed by police yearly, some of whom are women, like Jessie Hernandez who was killed by Denver police officers in 2015. Yet, we are unaware of a study that reports the odds that women of color would be killed by the police when unarmed. We address this dearth in research by including Hispanics in our analysis and a step-wise addition of women to the estimation of FIPs for racial/ethnic groups.

Ecological and Institutional Contexts

Sociologists and criminologists have acknowledged that micro-situational explanations of fatal interactions with police should be augmented by macro ecological and institutional perspectives to construct and investigate a more complete social structure of policing (Hughey 2015). Considering neighborhoods first, many researchers suggest that residents of racially and economically isolated neighborhoods tend to experience higher levels of force from police than other neighborhoods (Terrill and Reisig 2003; Smith and Holmes 2014), while others find that neither the racial composition of neighborhoods nor their level of economic disadvantage directly increase the frequency of police shootings, as much as does levels of violent crime (Klinger, Rosenfeld, Isom, Deckard 2015). The most direct evidence relating ecological characteristics to racial/ethnic variation in FIPs is found in the work of Ross (2015). He concluded that racially biased fatality rates were most likely to appear in "larger metropolitan counties with low median incomes and a sizable portion of black residents" (Ross 2015). Recall that his study found that racial differences in police fatalities persisted even when county crime rates and race-specific rates of crime were considered. Although most of the work featuring ecological models focus on the composition of black neighborhoods, others have argued that highly impoverished Hispanic neighborhoods, populated by immigrants and nonimmigrants alike, are targeted with coercive authority and police aggression (Martinez 2007).

As important as an area's composition is in ecological research, the norms arising in them can be factors associated with fatal interactions with police. For example, social disorganization theory holds that it is difficult for neighborhoods characterized by poverty, idle adults, and high mobility rates, among other conditions, to realize the shared behavioral norms that are essential to the establishment of social control among residents. Ultimately, social disorganization not only undermines residents' capacity to intervene against crime and disorder, but it also increases residents' powerlessness in the face of police misconduct and deviance (Brunson and Weitzer 2009; Kane 2002; Kubrin and Weitzer 2003). Brunson and Miller (2006) take the connection between social disorganization and aggressive police practices a step further stating that the characteristics indicative of neighborhood disorganization "are precisely the ecological contexts researchers have associated with both aggressive policing and police deviance" (p. 619). Inasmuch as this is true, we would observe estimates of greater magnitude for the residential characteristics that we include in our models of FIPs for unarmed individuals.

In the aftermath of the Ferguson protests and many that followed, there were calls for greater accountability—the increased use of body cameras, diversity on police forces, and training—implying that the organizational structure and practices of policing indeed matters. Recent research that explores the connection between organizational features of law enforcement and the use of lethal force considers whether the educational level and training of officers is associated with the likelihood of being killed by police (Smith 2004), and how racial and gender diversity within an agency relates to its prevailing beliefs about racial groups (LeCount 2017), its rate of excessive force complaints, and level of civil liability (Smith and Holmes 2014; Lonsway 2002). Smith (2004), for example, found that requiring college education, field training, and in-service training for law enforcement was unrelated to police fatalities in cities with a population greater than 250,000, except for whites where in-service training lowered the likelihood of a FIP. In cities of 100,000 residents or more, field training increased the odds of a police homicide for both blacks and whites. This research unfortunately does not consider gender and intersecting identities related to FIPs.

On the topic of agency diversity, recent work suggests that officers' threat perception may differ according to their own racial/ethnic background. LeCount's (2017) study for instance shows that white officers were more likely than white non-officers to view blacks as violent and their claims of discrimination as being without merit. In contrast, the views of black officers on these racial subjects did not differ significantly from those of black non-officers (LeCount 2017). To the extent that LeCount's (2017) findings reflect reality, a more diverse police force might lessen the occurrence of threat perception failure and, in turn, racial disparities in FIPs. Smith and Holmes (2014) provide mixed support for this speculation, finding that an agency's proportion of black officers to citizens is associated with lowered sustained excessive force complaints while, in contrast, the ratio of Hispanic officers to residents in the Southwest seemed to increase them. Despite there being little inferential research investigating whether the use of deadly force differs according to the gender of police officers, descriptive reports suggest that male officers are substantially more likely to receive excessive force complaints, and 8 times more likely than female officers to have an excessive force complaint sustained against them (Lonsway et al. 2002).

Another organizational feature that is particularly relevant to this study is what Fyfe (1981) described as law enforcement's "cult of secrecy"– formed through social cohesion among officers and the risk-adverse disposition of agencies – that resists the kind of transparency and disclosure that would expose police practices. Organizational cultures such as this underlie several recent revelations that police homicides are routinely underreported to the Bureau of Justice Statistics' Arrest-Related Deaths program and the FBI's Supplementary Homicide Reports (Feldman et al. 2017; Banks et al. 2015). Of course, underreporting is not as concerning as data that misrepresents the circumstances behind FIPs. Unfortunately, research has shown good reason to question the reliability of police administrative data. Alpert and MacDonald (2001), for example, found that agencies which require supervisors and other personnel to fill out use-of-force forms report significantly lower rates of force than agencies that allow officers to fill out their own forms, suggesting that an officer's decision to use force depends, in part, on whether they personally control the contents of the incident report. We should therefore be quite skeptical of research that features data about police homicides, or their suspects' behavior, that were provided by the same officers and police units that are subject to the threat of criminal or

civil liability about the substance of those data. Our study avoids granting potentially falsified data the credibility and authority of science by relying on third-party non-federal data catalogues of FIPs (see Nix et al. 2017).

Owing to the substance of the literature review, we ask the following research questions:

- Are the odds that black males will be unarmed when killed by police greater than they are for other male racial/ethnic groups?

- Are the odds that an unarmed fatality has occurred related to the characteristics of the location in which it happened or the agency of the officer(s) responsible?

- How might the odds that a women is unarmed when killed by police vary across racial/ethnic groups after considering contextual and agency characteristics?

DATA

Fatal Interactions with Police Study (FIPS) Data

We identified fatal interactions with police in the U.S. through a search of two online databases: Fatal Encounters (FE) and Killed by Police (KBP).[2] Data from these two sources were used to construct a comprehensive dataset of all FIPs that occurred from May 1, 2013 (when KBP began tracking fatal encounters) to January 1, 2015. When we started this study, there were 70 cases in KBP that were not in FE and 227 cases in FE that were not in KBP. We included the incidents that appeared in both databases, and in which an individual's death was caused directly by the actions of officers.[3] Although this eliminates from the sample the individuals that died in a car crash while being pursued by police found in the FE database, it also includes individuals that were killed when not suspected of criminal activity, like in domestic murder-suicides committed by officers or conflicts between officers that resulted in an officer death. Nonetheless, only one percent of all fatalities were committed by officers known to have had some kind of personal or collegial relationship with the deceased prior to the fatal interaction.

The information about the deceased and the incident found in the KBP and FE databases were supplemented by publicly accessible information that our team collected about each case from local news reports, statements from public officials, incident reports, video recordings, obituaries, coroner reports, and court records. Coding of these data sources was undertaken by three individuals to achieve inter-coder reliability. Using these sources, we created a number of additional variables including the age, gender, and race/ethnicity[4] of the deceased, the date and address of the incident, and whether the deceased was in possession of a weapon, among others. Our tedious cross-verification efforts yielded a final sample numbering 1762. This sample size is

[2] Fatal Encounters (http://www.fatalencounters.org/) Killed by Police (http://www.killedbypolice.net/).

[3] Our review of these cases found some that warranted inclusion in our final data file. The overwhelming majority of them did not warrant inclusion since the individual's death was not attributed directly to police actions in the official disposition of death (e.g. car crash, heart attack, suicide in police custody). We suspect that these unclear circumstances of the FIP that led to their inconsistent reporting across databases.

[4] In our analysis, Hispanics are classified as such even when their race is white or black.

comparable to the 2015 *Washington Post* sample that Nix (2017) and his colleagues use. In that sample, the daily fatality rate was 2.71 while ours, in comparison, is at minimum 2.80 and at most 2.88, if we extrapolate for those months of missing observations in the beginning of 2013.

Law Enforcement Management and Administrative Statistics (LEMAS), Census, and Uniform Crime Reports (UCR) Data

Merging the FIPS data with the Bureau of Justice Statistic's Law Enforcement Management and Administrative Statistics (LEMAS) survey was ideal for several reasons. First, we found that it was much more difficult to access information about the officer responsible for the homicide during our data collection period than it was about the deceased. LEMAS allows us to use the agency characteristics of the responsible officer(s) in place of individual officer characteristics. Second, LEMAS data are ideal since their collection—under no pretense of investigation into police actions—avoids some bias. Third, the data contains information on a nationally representative sample of agencies, whether they had fatal incidents or not, that were collected during the same time period in which we compiled information about FIPs.

The data merge used ARC GIS and near table analysis to match each FIP case to the closest zip code found in the LEMAS dataset using the 2013 shapefiles downloaded from the US Census Bureau. Since there were several agencies within range of each FIP, with an average distance between the two of 4.83 miles, we decided to link all agencies within a 10 mile radius to each FIP case. We then ran analyses to test whether there were significant differences among the analysis variables across all possible agency matches and found there were none. We subsequently have chosen the agency nearest to the site of each FIP as the agency of the officer responsible for the homicide. Our merge results were also assisted by the identification of the responding agency in the narratives that our team generated for each FIP case.

Since each agency is likely to serve multiple neighborhoods, we augmented our data by merging each FIPs case to the tract level data of where the homicide occurred, and for those cases where a tract level merge was not possible, we linked those cases to zip code level data. The geographic unit of analysis for this paper is therefore the zip code to which all tract level cases have been aggregated. Our final merged sample retained 2794 agencies of the initial 2822.

Finally, we use the Federal Bureau of Investigations' Uniform Crime Reports (UCR) data for information about rates of violent crime in cities.[5] While the UCR program receives information from over 18,000 law enforcement agencies, it does not contain information on all of LEMAS agencies. Consequently, approximately 190 LEMAS agencies were missing UCR crime data. Moreover, the percentage of missing values for some variables made listwise deletion unacceptable. Rather than sacrifice the variation within each variable by inserting the variable mean where data were missing, we used multiple imputation methods to recover missing values.

[5] These data are available at the University of Michigan's ICPSR data repository (https://www.icpsr.umich.edu/icpsrweb/ICPSR/series/57).

METHODS

Hierarchical Linear Models

Since the fatalities in this study are nested within zip codes, and multiple zip codes are served by any one agency, we use hierarchical linear models version 7.01 (Raudenbush and Bryk 2002) to model the odds that agencies will have a fatal interaction with someone that is unarmed. We estimate a 3-Level Bernoulli model via EM-Laplace 2 in which, at Level 1, the odds that agencies will have unarmed fatalities, η_{ijk}, are conditioned on the *Black male, Hispanic male* or *other race male* identification of the victim:

$$\text{Prob}(\textit{Unarmed Fatality}_{ijk}=1|\pi_{jk}) = \phi_{ijk}$$
$$\log[\phi_{ijk}/(1 - \phi_{ijk})] = \eta_{ijk}$$
$$\eta_{ijk} = \pi_{0jk} + \pi_{1jk}*(\textit{Black Male}_{ijk}) + \pi_{2jk}*(\textit{Hispanic Male}_{ijk}) + \pi_{3jk}*(\textit{Other Race Male}_{ijk})$$

Level 2 of the multilevel model included the census and crime characteristics of the location where the fatality took place. Each Level 2 parameter represents the adjustment in the average unarmed fatality slope, β_{00k}. In this specification, the probability that an agency has killed someone that was unarmed is predicted by the mean percentage of *residents of color* to reflect the relationship police have with racially segregated communities; the percentage *single female heads of households* and *unemployment rate*, indicating an area's level of social disorganization; the *violent crime rate* per 100,000 residents to account for geographic variation in the concentration of crime; the *large size of the city* to capture dynamics that are unique to social life in major urban areas; and, the *log median household income* to takes into account the level of disadvantage where the fatal interaction occurred. The equation reads:

$$\pi_{0jk} = \beta_{00k} + \beta_{01k}*(\textit{Percentage Residents of Color}_{jk}) + \beta_{02k}*(\textit{Percentage Single Female Head of Household}_{jk}) + \beta_{03k}*(\textit{Unemployment Rate}_{jk}) + \beta_{04k}*(\textit{Large City}_{jk}) + \beta_{05k}*(\textit{Crime Rate}_{jk}) + \beta_{06k}*(\textit{Log Median Household Income}_{jk}) + r_{0jk}$$

At Level 3, we model between agency variation in their characteristics related to the odds that an unarmed fatality occurred. Hence, an unarmed fatality is viewed as a function of agencies' *proportion of sworn officers that are female* to gauge whether female officers reduce uses of lethal force; the number of *sworn officers terminated* and average number of *use of force incident reports per officer* to reflect aggressive policing; and the *educational level of officers*, all grand mean centered. We also consider un-centered measures of whether additional *training is required for preservice or lateral officer* hires and whether *body or weapon cameras* are used. These measures will account for agency policies that could potentially curb the occurrence of "threat perception failure" or the use of excessive force. The model also includes the *officer of color-to-population ratio* to understand how the most and least diverse agencies relate to unarmed FIPs. Finally, the *agency budget-to-population ratio* for the lower or higher third of all agencies is included to control for variation in the size of the agencies that might otherwise be erroneously reflected in the properties of other model covariates. All un-centered variables are coded 1 = yes, 0 = no.

$$\beta_{00k} = \gamma_{000} + \gamma_{001}(\textit{Female Officers}_{k}) + \gamma_{002}(\textit{Number of Personnel Terminated}_{k}) + \gamma_{003}(\textit{Use of Force Incidents}_{k}) + \gamma_{004}(\textit{Additional Training}_{k}) + \gamma_{005}(\textit{Educational Level of Officers}_{k}) + \gamma_{006}(\textit{Cameras on}$$

$Body\ or\ Weapon_k) + \gamma_{007}(Low\ 3^{rd}\ of\ Officers\ of\ Color\ Ratio_k) + \gamma_{008}(High\ 3^{rd}\ of\ Officers\ of\ Color\ Ratio_k) + \gamma_{009}(Low\ 3^{rd}\ of\ Agency\ Budget\ Ratio_k) + \gamma_{0010}(High\ 3^{rd}\ of\ Agency\ Budget\ Ratio_k) + u_{00k}$

The first four grand mean centered parameters, γ_{001} - γ_{003} indicate the estimated deviation from the agency mean associated with a point increase among those characteristics. The remaining parameters are categorical and represent the average change in the probability that an unarmed fatality had occurred given an agency's indication as having those characteristics.

Exponentiated Coefficients

Although we report odds-ratios in the tables that follow, we at times offer the probabilities of an unarmed FIP for each race-gender group as another way to understand the impact of the odds-ratios. To do this, we exponentiate the Level-1 coefficients. The coefficients for a particular case measure the difference in logarithm of the odds of being unarmed when killed, when all other variables are held constant. We express this equation as:

$$P = \frac{1}{1+e^{-c}}$$

Where *e* is the base of natural logarithms (approximately 2.7182) and *c* is the coefficient, where the Intercept + Slope = *c* when the variable equals 1, and the intercept alone when the variable equals 0.

ANALYSIS

Descriptive Statistics

Table 1 provides descriptive information of the agency sample and the sample of fatalities. Our samples reveal that a fifth (20%) of all fatalities were of unarmed individuals (column 3), and that they were committed by approximately 9 percent of the agencies in our sample (column 1). Looking at the race-gender break-down next, table 1 shows black male fatalities constitute over a quarter of all fatalities (column 3) and were committed by approximately 12 percent of all agencies (column 1). The corresponding figures for Hispanic males were 16 and 7 percent, and 9 and 4 percent for males of other racial/ethnic groups, respectively. Considering fatalities by race only, again, black Americans experienced the largest share of fatalities among all fatalities of color (27%) and agencies (12%), both proportions being equal to the combined total of Hispanics and other races in each sample. When the proportions of racial/ethnic groups are combined, the proportion of male fatalities of color, at 51 percent, also exceeds the total share of white individuals killed by police, women included. In contrast, the percentage of white non-Hispanic individuals in the U.S. stood at 62 in 2015, leaving their share of FIPS at least 16 percentage points below their total population share.

Table 1 also presents characteristics of the locales and agencies of both samples. Considering the large city variable first, agencies serving large populations had the highest number of fatalities and accounted for roughly 23 percent of all fatalities (column 3). This share might seem lower than expected given the frequency of highly publicized police killings in major cities, heightened surveillance of urban communities of color, and alarming levels of urban violence in cities like

Chicago, it nonetheless is disproportionately larger than the percentage of agencies within large population centers (column 1, 14%). A higher share of fatalities in larger cities may explain, in part, why the average median household income, proportion of female sworn officers, and number of officers terminated were much higher for agencies that committed fatalities than the sample of agencies as a whole.

Summary of Analysis Results

To answer our first analysis question of whether the odds that black males will be unarmed when killed by police are greater than they are for other male racial groups, we turn to the analysis results presented in Table 2. Table 2 reports the odds-ratios (OR) that an unarmed fatality occurred considering race-gender in model 1, adding our location variables in model 2, and finally including agency characteristics in model 3. In this first model, the association between being a black male and unarmed when killed by police generates an odds-ratio of 2.91:1, but nonetheless does not quite achieve significance (p. = .065). The estimated odds-ratios for Hispanic males and males of other racial/ethnic groups are relatively smaller and insignificant, which would imply that none of these race-gender groups have odds of being killed while unarmed that are greater than those of white Americans, the referent group.[6]

Variables reflecting the characteristics of the location in which the fatality occurred have been added in model 2 to address our second analysis question of whether the odds that an unarmed fatality occurred are related to the characteristics of the location in which it happened. Surprisingly, none of the locale characteristics significantly predicted the likelihood that individuals would be killed by police when unarmed. The addition of these neighborhood characteristics resulted in a trivial increase in the odds of an unarmed FIP for black men to 3.03, but again the estimate just missed achieving significance (p. = 062). There were no statistically significant associations for Hispanic males or males of other races/ethnicities.

In model 3 of Table 2, agency characteristics of the responding officer(s) were added to the analysis. The addition of the agency level characteristics altered the odds of a FIP while unarmed for black males, which became significant at 2.78:1 (p = .044). However, an unexpected finding is that agencies with a relatively higher number of officers of color are more likely to have killed someone who was unarmed than agencies with fewer non-white officers (OR = 1.46:1). The overall results for this analysis suggest that significant differences among race-gender groups emerge after considering agency level characteristics more so than residential characteristics.

Running a similar kind of analysis for women presented an estimation challenge because so few were in our sample. Roughly 93 percent of all fatalities were of males, leaving only 115 women with which to produce race-gender estimates for women. Our fix to this dilemma was to add women to the models of Table 2 by using the total of all racial subgroups, knowing that any change in the estimates of otherwise identical models would be due to the addition of women to the analysis. The results are presented in Table 3.

[6] We ran alternative models in which “white male” was included in place of the “other race male” variable. The results included no significant odds ratios for white males, and no difference in the individual or relative significance of the other race-gender estimates that have been reported here.

Turning our attention to model 1, the odds of experiencing an unarmed fatality increased sharply for our gender-inclusive measure of black Americans in comparison to the black-male odds ratios of Table 2. Black fatalities are over seven times (OR = 7.33:1, *p*. < .001) as likely as white fatalities to have been of unarmed individuals. Hispanic Americans in comparison also have a significant chance of a fatal encounter with police while being unarmed. Although their odds are not as great as they are for black individuals, they are a non-trivial 5.25:1 (*p*. < .001). The estimated odds are not significant for other racial/ethnic groups.

In model 2, Table 3, the analysis added characteristics of the location where the fatality occurred, identical to those used in the race-gender analysis. None of these neighborhood characteristics significantly predicted unarmed police fatalities, and their addition slightly decreased the magnitude of the ORs for both black (OR = 7.13, *p*. < .001) and Hispanic (OR = 5.13, *p*. = .003) Americans. In model 3, we see that the introduction of agency level factors to the analysis reduced, most prominently, the odds differential for both blacks (OR = 6.64, *p*. < .001) and Hispanics (OR = 4.76, *p*. = .014), the former group remaining nearly 7 times as likely as whites to have been killed by police while unarmed. At the agency level, we find that agency diversity continued to be, as it was in the race-gender analysis, significantly predictive of unarmed fatalities. Agencies with a number of non-White officers that ranks them in the upper third of all agencies were more likely than other agencies to kill someone who was unarmed (OR=1.43, *p*. = .019).

DISCUSSION

Noting disagreement about the salience of particular race-gender identities in the distribution of FIPs, we sought to fill the void within research about race-gender differences in the likelihood of being killed while unarmed. Relying on work that unearths the motivating factors behind the uses of deadly force, we concluded that threat perception failure, as a kind of racial bias, would be most evident in disproportionate killings of unarmed individuals of color. More specifically, we explored: 1) whether the odds that black males were unarmed when killed by police would be greater than they were for other male racial groups, 2) whether the odds of an unarmed fatality are related to the characteristics of the location in which it happened or the agency of the officer(s) responsible, and, 3) how might the odds that a women is unarmed when killed by police vary across racial/ethnic groups after considering contextual and agency characteristics? To answer these questions, we compiled a data set that spans a 20 month time period, and links the 1762 FIPs that occurred during that time with the nearly 2800 agencies of the LEMAS survey, UCR data, and census characteristics.

Related to our first question about the relative odds for black males of an unarmed FIP, we found their odds were significant, while the odds for Hispanic males and other-race males were no different than their white counterparts. Apparently, when gender is in reference to “male” it appears to have functioned discriminately across race/ethnicity in determining the distribution of unarmed FIPs, which gives some support for the “hands up, don’t shoot” post-Ferguson refrain. This outcome became significant as we considered ecological conditions and agency characteristics, implying that, rather than accounting for an unequal distribution of FIPs across

social categories, aspects of the broader social structure somewhat facilitated these race-gender differences.

We also sought to specify a similar model for women, however the number of women fatalities was too low to avoid a near singularity during estimation. So instead, women were added to the men by using the total of all racial subgroups, knowing that any change in the outcomes would be due to the addition of women to the analysis. In this model, the odds that black individuals would be killed when unarmed more than doubled in magnitude, suggesting that the proportion of women that were unarmed when killed shouldered an majority of the burden for their racial group as a whole. A closer look into the individual female cases revealed that 57.2 percent of the black women in our sample were unarmed—in fact, the only race-gender group to have a majority of its individuals unarmed when killed. White males, in contrast, comprised the intersected group with the lowest percentage of them found unarmed (19.8 percent). Perhaps the gender differences were most prominent among Hispanics, since the odds of an unarmed fatality for them as a whole gained significance only once Latinas were included in the analysis. These outcomes present a paradox worthy of additional exploration, since women tend to be regarded as less threatening within social patriarchy, but in this study appear to be the group for which officers' threat perception failure is greatest. While some may conclude that our findings suggest gender becomes especially determinative when it is female, they also imply that black women are racialized in ways that other female racial/ethnic groups are not, in ways that puts them at a greater relative risk of FIPs when unarmed. We therefore remain curious about the role of race—and blackness especially—as it intersects with womanhood in police encounters.

While our analysis finds that the "hands up, don't shoot" slogan of the post-Ferguson movement becomes most resonant if you also "say her name," the odds of an unarmed fatality for black Americans as a whole was nonetheless a staggering 6.6 to 1; double the odds found in previous studies. Hispanics' odds were also larger than any reported in research to date. There are a few realities that might explain the difference. First, the Black Lives Matter movement began in 2013 and could have been triggered by either the perceived injustice of a particular police homicide, the frequency of police homicides, or both. Our study is situated in this time period, and thus might reveal a FIPs peak, whether defined in terms of frequency or perceived injustice, in contrast to the relatively lower 2015 FIPs rate reported by Nix et al., (2017). We are interested in whether the decline in the rate of FIPs from 2.8 in our study to 2.7 in 2015 is evidence of a "Black Lives Matter Effect" that potentially curbed officers' use of deadly force against unarmed individuals. Second, without the estimation of additional FIPs rates over successive years, we do not know if either estimate is evidence of a trend or random fluctuation. More studies are needed of FIPs in recent years to put these rates in proper context.

Our study also generated knowledge about the context of unarmed FIPs by assessing ecological and organizational qualities in our models. The implications of this study follow from the area and agency characteristics that were found significant, as well as those found insignificant. Counter to research that has stressed the importance of ecological units in the use of lethal force, we found no significant relationships between those contextual features that typically serve as proxies for social disorganization and racial segregation. We suspect this result might be attributable to the variety of contexts in which the FIPs occurred; they took place both near and far from the neighborhoods where the deceased lived presenting a challenge to ecological

theories in that the social processes underlying a particular geographic characteristic applies to where the deceased lives, but not necessarily the place where they were killed by police.

Perhaps the most notable result of our agency level analysis is that the level of officer diversity appears positively related to unarmed fatalities. We recommend caution in interpreting this result since a limitation of this study is that the race of the responsible officer(s) was not connected to each fatality, so we are unable to say whether the actions of officers of color directly increase the odds of unarmed fatalities for racial/ethnic groups. However, our finding implies that an organizational culture exists within diverse agencies that is related to a higher likelihood of an unarmed FIP. While this may seem counterintuitive, it parallels the Smith and Holmes (2014) report that a greater number of Hispanics among law enforcement was related to a higher rate of excessive force complaints. It would be nonetheless premature to conclude that increasing agency diversity would not lead to greater procedural justice and lower the relative rate of FIPs for black and Hispanic Americans. A critical mass of officers of color within an agency, for example, may breach a threshold at which point the relationship diversity has with unarmed fatalities becomes non-linear and the odds begin to decline. Clearly, more research on this question is warranted.

Finally, the reform perhaps most frequently requested by activist, body cameras, was not found to be significant in our analysis. Our interpretation of this result emphasizes the fact that our measure of body/weapon cameras only reflects their presence, and not how they are used by law enforcement. Until camera footage is reviewed routinely by agency leadership, used as grounds for merit and termination, and reviewed by third-parties, we cannot assume an insignificant finding means the reform would not achieve the policy objective if implemented with fidelity. These and other aspects of law enforcement's organization await additional research.

In conclusion, many of the qualities that make this study timely and novel are also causes for caution. While our datasets are more comprehensive than the federal data used in previous studies, we can only be reasonably optimistic that they include all FIPs. While this work demonstrates the results of a systematic data mining effort that avoids a reliance on biased administrative data, it also underscores the need for the institutionalization of data collection efforts among third-parties—within medical centers in particular (Feldman et al. 2016; Knox 2015; Richardson, St. Vil and Cooper 2016). Many of the findings and questions raised by this study will require robust data collection to pursue answers.

REFERENCES

Abbey-Lambertz, K. 2015. The 15 black women were killed during police encounters. Their lives matter, too. *Huffington Post: Black Voices*. February 13. Available from https://www.huffingtonpost.com/2015/02/13/black-womens-lives-matter-police-shootings_n_6644276.html

ACLU. 2009. Final report on 'The persistence of racial and ethnic profiling in the United States'. Available from https://www.aclu.org/files/pdfs/humanrights/cerd_finalreport.pdf

Alpert, Geoffrey P., and J.M. MacDonald. 2001. Police use of force: An analysis of organizational characteristics. *Justice Quarterly* 18:393–409.

Alpert, Geoffrey P., Roger G. Dunham, and Michael R. Smith. 2007 Investigating racial profiling by the Miami-Dade Police Department: A multimethod approach. *Criminology & Public Policy* 6:25–55

Banks, Duren, Lance Couzens, Caroline Blanton, and Devon Cribb. 2015. Arrest-Related Deaths Program Assessment: Technical Report. Washington, DC: Bureau of Justice Statistics.

Binder, Arnold, and Peter Scharf. 1982. Deadly force in law enforcement. *Crime & Delinquency* 28:1–23.

Brunson, Rod K. 2007. "Police don't like Black people": African American young men's accumulated police experiences. *Criminology & Public Policy* 6: 71–102.

Brunson, Rod K., and Jody Miller. 2006. Young black men and urban policing in the United States. *British Journal of Criminology* 46: 613–640.

Brunson, Rod K., and Ronald Weitzer. 2009. Police relations with black and white youths in different urban neighborhoods. *Urban Affairs Review* 44: 858–885

Capehart, Jonathan. 2017. Yes, "hands up, don't shoot" was built on a lie. *Real Clear Politics*. March 19. Available from https://www.realclearpolitics.com/2017/03/19/yes_quothands_up_don039t_shootquot_was_built_on_a_lie_405344.html

Carbado, Devon W. 1999. *Black men on race, gender, and sexuality: a critical reader*. New York: NYU Press.

Cheney-Rice, Zac. 2015. The police are killing one group at a staggering rate, and nobody is talking about it. Identities. February 5. Available from http://mic.com/articles/109894/thepolice-are-killing-one-group-at-a-staggering-rate-and-nobody-is-talking-about-it

Coates, Rodney D. 2015. A perfect storm. *Critical Sociology* 41: 845 – 855.

Collins, Patricia. 1990. *Black feminist thought: Knowledge, consciousness, and the politics of empowerment*. New York: Routledge.

Correll, Joshua, Sean M. Hudson, Steffanie Guillermo, and Debbie S. Ma. 2014. The police officer's dilemma: A decade of research on racial bias in the decision to shoot. *Social and Personality Psychology Compass* 8:201-213.

Crenshaw, Kimberlé Williams. 1991. Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review* 43:1241-1299.

Crenshaw, Kimberlé Williams. 1999. “Why we can’t wait: Integrating gender and sexuality into anti-
racist politics.” Pp. xi-xiv in *Black men on race, gender, and sexuality: A critical reader* edited by Devon W. Carbado. New York: NYU Press.

Crenshaw, Kimberlé Williams, Andrea J. Ritchie, Rachel Anspach, Rachel Gilmer and Luke Harris. 2015. Say her name: Resisting police brutality against black women. African American Policy Forum and Center for Intersectionality and Social Policy Studies. NY: New York.

Desmond, Matthew and Nicol Valdez. 2013. Unpolicing the urban poor: Consequences of third-party policing for inner-city women. *American Sociological Review* 78: 117–141.

Eberhardt, Jennifer L., Phillip A. Goff, Valerie J. Purdie, and Paul G. Davies. 2004. Seeing black: race, crime, and visual processing. *Journal of Personality and Social Psychology* 87:876-893.

Embrick, David G. 2015. Two nations, revisited: The lynching of black and brown bodies, police brutality, and racial control in ‘post-racial’ Amerikkka. *Critical Sociology* 41:835-843.

Feldman Justin M., Sophia Gruskin, Brent A. Coull, and Nancy Krieger. 2017. Quantifying underreporting of law-enforcement-related deaths in United States vital statistics and news-media-based data sources: A capture-recapture analysis. PLoS Med 14(10): e1002399.

Feldman, Justin M., Jarvis T. Chen, Pamela D. Waterman, and Nancy Krieger. 2016. Temporal trends and racial/ethnic inequalities for legal intervention injuries treated in emergency departments: US men and women Age 15–34, 2001–2014. *Journal of Urban Health* Bulletin of the New York Academy of Medicine doi:10.1007/s11524-016-0076-3

Fryer, Jr., Roland G. 2016. An empirical analysis of racial differences in police use of force. Working Paper 22399 NBER. Available from http://www.nber.org/papers/w22399

Fyfe, James J. 1981. Observations on police deadly force. *Crime & Delinquency* 27:376–389. http://doi.org/10.1177/001112878102700305

Gass, Nick. 2015. ‘Hands up, don't shoot' ranked one of the biggest 'Pinocchios' of 2015. December 14. *Politico*. Available from https://www.politico.com/story/2015/12/hands-up-dont-shoot-false-216736

Gilbert, Keon L., and Rashawn Ray. 2016. Why police kill black males with impunity: Applying public health critical race praxis (PHCRP) to address the determinants of policing behaviors and "justifiable" homicides in the USA. *Journal of Urban Health* 93 Suppl 1:122-40.

Hughey, Matthew W. 2015. The five I's of five-o: Racial ideologies, institutions, interest, identities, and the interactions of police violence. *Critical Sociology* 41:857-871.

Kane, Robert. J. 2002. The social ecology of police misconduct. *Criminology* 40:867-896.

Klinger, David, Richard Rosenfeld, Daniel Isom, and Michael Deckard. 2015. Race, crime, and the micro-ecology of deadly force. *Criminology & Public Policy*15:1

Knox, Richard. 2015. Harvard researchers: Make police killings a matter of public health. December 8. http://www.wbur.org/commonhealth/2015/12/08/police-killings-public-health

Kim Lonsway, Michelle Wood, Megan Fickling, Alexandria De Leon, Margaret Moore, Penny Harrington, Eleanor Smeal, and Katherine Spillar. 2002. Men, women, and police excessive force: A tale of two genders. Los Angeles, CA: The National Center for Women & Policing, Feminist Majority Foundation

Kubrin, Charis, and Ronald Weitzer. 2003. New directions in social disorganization theory. *Journal of Research in Crime and Delinquency* 40:374-402.

LeCount, Ryan J. 2017. More black than blue? Comparing the racial attitudes of police to citizens. *Sociological Forum* 32:1051–1072.

Martinez, Jr., Ramiro. 2007. Incorporating Latinos and immigrants into policing research. *Criminology & Public Policy* 6: 57–64.

Mastrofski, Stephen, Jeffrey Snipes, and Anne Supina. 1996. Compliance on demand: The public's response to specific police requests. *Journal of Research in Crime and Delinquency* 33:269-305.

Miller, Ted R., Bruce A. Lawrence, Nancy N. Carlson, Delia Hendrie, Sean Randall, Ian R. H. Rockett, and Rebecca S. Spicer. 2016. Perils of police action: a cautionary tale from US data sets. *Injury Prevention* 23:1–6.

Neely, Cheryl. 2015 *You're dead—so what?: Media, police, and the invisibility of black women as victims of homicide*. Michigan State University Press.

Nix, Justin, Bradley A. Campbell, Edward H. Byers, and Geoffrey P. Alpert. 2017. A bird's eye view of civilians killed by police in 2015: Further evidence of shooter bias. *Criminology & Public Policy*16: 309–340.

Quillian, Lincoln and Devah Pager. 2001. Black neighbors, higher crime? The role of racial stereotypes in evaluations of neighborhood crime. *American Journal of Sociology* 107:717–67.

Payne, B. Keith. 2006. Weapon bias. Split-second decisions and unintended stereotyping. *Current Directions in Psychological Science*15: 287-291.

Reisig, Michael. 2010. Community and problem-oriented policing. *Crime and Justice* 39:1–53.

Richardson, Joseph, Christopher St. Vil and Carnell Cooper. 2015. Who Shot Ya? How Emergency Departments Can Collect Reliable Police Shooting Data. *Journal of Urban Health* 93, Supplement 1: 8–31.

Ritchie, Andrea J. 2017. *Invisible no more: Police violence against black women and women of color*. MA: Beacon Press

Ross, Cody T. 2015. A multi-level bayesian analysis of racial bias in police shootings at the county-level in the United States, 2011–2014. PLoS ONE10(11): e0141854. Available from https://doi.org/10.1371/journal.pone.0141854.

Savali, Kirsten W. 2014. Black women are killed by police, too. 24 August. *Salon*. Available from http://www.salon.com/2014/08/24/black_women_are_killed_by_police_too_partner/

Shaw, Clifford R. and Henry D. McKay. 1942. *Juvenile delinquency and urban areas*. Chicago: University of Chicago Press

Smith, Brad W. 2003. The impact of police officer diversity on police-caused homicides. *Policy Studies Journal* 31:147–162.

Smith, Brad W. 2004. Structural and organizational predictors of homicide by police. *International Journal of Police Strategies & Management* 27: 539–557.

Terrill, William and Michael J. Reisig. 2003. Neighborhood context of police use of force. *Journal of Research in Crime and Delinquency* 40: 291–321.

Tyler, T. R. and C.J. Wakslak. 2004. Profiling and police legitimacy: Procedural justice attributions of motive, and acceptance of police authority. *Criminology* 42: 253-

Weitzer, Ronald and Steven Tuch. 2005. Racially biased policing: Determinants of citizen perceptions. *Social Forces* 83:1009-1030.

TABLE 1. DESCRIPTIVE SAMPLE STATISTICS

	Of Agencies (N=2794)		Of Fatalities (N=1762)	
	Mean	STDV	Mean	STDV
Unarmed (1 = yes, 0 = no)	0.09	0.29	0.20	0.40
Black male (1 = yes, 0 = no)	0.12	0.32	0.26	0.44
Hispanic male (1 = yes, 0 = no)	0.07	0.26	0.16	0.36
Other race male (1 = yes, 0 = no)	0.04	0.20	0.09	0.29
Black (1 = yes, 0 = no)	0.12	0.33	0.27	0.44
Hispanic (1 = yes, 0 = no)	0.08	0.26	0.17	0.37
Other race (1 = yes, 0 = no)	0.04	0.21	0.10	0.30
% Non-white	0.44	0.33	0.50	0.46
% Female head of household	0.43	0.16	0.41	0.16
Unemployment rate	0.11	0.07	0.12	0.07
City >250,000 (1 = yes, 0 = no)	0.14	0.34	0.23	0.42
Median household income	47540.35	23585.40	53105.27	25706.84
Violent Crime rate per 100,000 city residents	345.67	1613.20	381.08	651.66
Proportion female of all sworn officers	0.09	0.09	10.00	0.08
Number of officers separated/terminated	0.70	2.07	1.46	3.99
Average number of use of force reports per officer	0.69	1.65	0.64	0.97
Training for lateral/preservice hires (1 = yes, 0 = no)	0.86	0.35	0.90	0.30
Officer educational level	2.15	0.43	2.07	0.50
Agency has body and/or weapon cameras (1 = yes, 0 = no)	0.33	0.47	0.39	0.49
Lower third ratio of non-white officers to population (1 = yes, 0 = no)	0.36	0.48	0.21	0.41
Top third ratio of non-white officers to population (1 = yes, 0 = no)	0.30	0.46	0.46	0.50
Lower third budgetary population average (1 = yes, 0 = no)	0.36	0.48	0.23	0.42
Top third budgetary population average (1 = yes, 0 = no)	0.30	0.45	0.44	0.50

NOTE: Median household income is reported in actual dollars for ease of interpretation while the log is used in the analysis.

TABLE 2. HIERARCHICAL GENERALIZED LINEAR MODELS OF VICTIM BEING UNARMED; RACE-MALE

	Model 1			Model 2			Model 3		
	b	SE	OR	*b*	SE	OR	*b*	SE	OR
Intercept	-4.23***	0.76	0.01***	-4.15**	0.92	0.02**	-4.35***	0.78	0.01***
VICTIM-LEVEL									
Black male	1.07+	0.48	2.91+	1.11+	0.46	3.03+	1.02*	0.44	2.78*
Hispanic male	0.49	0.67	1.63	0.47	0.78	1.61	0.42	0.67	1.53
Other race male	-0.05	0.90	0.95	-0.00	0.94	0.99	-0.12	0.88	0.89
LOCALE-LEVEL									
% Non-white				0.18	0.66	1.20	0.29	0.52	1.33
% Female head of household				-1.14	1.40	0.32	-1.10	1.25	0.33
Unemployment rate				0.00	0.00	1.00	0.00+	0.00	1.00+
City >250,000				0.10	0.21	1.11	0.18	0.26	1.20
Log of median household income				0.35	0.44	1.42	0.33	0.40	1.39
Violent Crime rate per 100,000 city residents				-0.00	0.00	1.00	-0.00	0.00	1.00
AGENCY-LEVEL									
Proportion female of all sworn officers							-0.51	1.01	0.60
Number of officers separated/terminated							0.01	0.02	1.01
Avg. number of use of force reports per officer							-0.00	0.03	1.00
Training for lateral/preservice hires							-0.11	0.25	0.90
Officer educational level							-0.40	0.32	0.67
Agency has body and/or weapon cameras							0.04	0.18	1.04
Low 3rd ratio of non-white officers to population							0.27	0.21	1.31
Top 3rd ratio of non-white officers to population							0.38*	0.17	1.46*
Low 3rd budgetary population average							0.18	0.19	1.19
Top 3rd budgetary population average							-0.21	0.17	0.81
RANDOM EFFECTS									
Level 1 & 2 variance			0.1538***			0.0029***			0.0089***
Standard deviation			0.3922			0.0538			0.0942
Level 3 variance			0.4703			0.0923			0.2386
Standard deviation			0.6858			0.3034			0.4885

*** = p < .001, ** = p < .01, * = p < .05, + = p < .10

NOTE: Table includes final estimation of pooled imputation results of robust standard errors, where, *b* = model coefficient, SE = standard error, and OR = odds ratio.

TABLE 3. HIERARCHICAL GENERALIZED LINEAR MODELS OF VICTIM BEING UNARMED; RACE

	Model 1			Model 2			Model 3		
	b	SE	OR	*b*	SE	OR	*b*	SE	OR
Intercept	-3.26***	0.21	0.04***	-3.24***	0.22	0.04***	-3.43***	0.77	0.03***
VICTIM-LEVEL									
Black	1.99***	0.21	7.33***	1.96***	0.23	7.13***	1.89***	0.27	6.64***
Hispanic	1.66**	0.54	5.25**	1.63**	0.54	5.13**	1.56*	0.63	4.76*
Other race	-0.93	0.92	2.55	0.89	0.89	2.43	0.78	1.02	2.19
LOCALE-LEVEL									
% Non-white				-0.39	0.42	0.67	-0.30	0.45	0.74
% Female head of household				-0.62	1.23	0.54	-0.68	1.16	0.51
Unemployment rate				0.00	0.00	1.00	0.00	0.00	1.00
City >250,000				0.11	0.22	1.11	0.22	0.23	1.24
Log of median household income				0.24	0.34	1.27	0.26	0.33	1.30
Violent Crime rate per 100,000 city residents				-0.00	0.00	1.00	-0.00	0.00	0.99
AGENCY-LEVEL									
Proportion female of all sworn officers							-0.63	1.03	0.53
Number of officers separated/terminated							0.00	0.02	1.00
Avg. number of use of force reports per officer							-0.00	0.02	0.99
Training for lateral/preservice hires							-0.09	0.27	0.91
Officer educational level							-0.49	0.37	0.61
Agency has body and/or weapon cameras							0.13	0.17	1.14
Low 3rd ratio of non-white officers to population							0.26	0.21	1.30
Top 3rd ratio of non-white officers to population							0.36*	0.15	1.43*
Low 3rd budgetary population average							0.13	0.20	1.14
Top 3rd budgetary population average							-0.23	0.16	0.79
RANDOM EFFECTS									
Level 1 & 2 variance			0.0024***			0.0021***			0.0038***
Standard deviation			0.0493			0.0457			0.0614
Level 3 variance			0.1071			0.0755			0.0799
Standard deviation			0.3273			0.2747			0.2826

*** = p < .001, ** = p < .01, * = p < .05, + = p < .10

NOTE: Table includes final estimation of pooled imputation results of robust standard errors, where, *b* = model coefficient, SE = standard error, and OR = odds ratio.