



The prevalence of fatal police shootings by U.S. police, 2015–2016: Patterns and answers from a new data set



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ABSTRACT

Purpose: Previous studies on police use of fatal force in the United States are limited to specific cities. This is the first analysis of its type to rely on incident-level national data and to establish state-level base rates for police shooting fatalities.

Methods: Publicly available data from the *Washington Post* were used to model the data, which cover the period from January 2, 2015 to December 29, 2016 ($n = 1948$).

Results: Although the data are limited, the patterns are not consistent with the national rhetoric that the police are killing Black people because of their race and that officer-involved shooting fatalities are increasing; fatalities are generally stable across both years and the evidence shows those who are attacking are more likely to be killed. The data help establish state-level base rates for fatal police shootings, which has yet to be done.

Conclusions: The United States government should develop a nationwide use of force database to assist police executives, elected leaders and researchers in understanding police use of force. Future research should rely on the situational context of the shooting and the micro-level factors the courts consider when analyzing the legal aspects of use of force instead of sociodemographic factors.

1. Introduction

Police use of force is arguably the most severe form of government intrusion into personal liberty and has been a source of a political, social and academic interest for several decades (Harding & Fahey, 1973; Jacobs & Britt, 1979; Kobler, 1975; Robin, 1963). When a police officer decides to use force it must be both proportional and immediately necessary. This assessment is idiosyncratic to the time, place, officer, and all of the situational conditions that inform the totality of the circumstances test (Illinois v. Gates, 1983), which ultimately determines reasonableness (Graham v. Connor, 1989) and reasonableness, in turn, establishes what is lawful. When a police officer confronts a situation that requires force, they are guided by three principles: 1) substantive law (statutory law on use of force in policing); 2) agency policy (e.g., use of force continuum); and 3) procedural law (case law on applying force). These principles converge with situational circumstances that include the offender and the environment and dictate the type and amount of force permitted. For example, among the many nuances courts will consider in its assessment is the degree of threat an offender poses to the officer or the public in terms of relative numbers or perceived strength. If the officer is outnumbered, is confronted by an unusually strong offender or adroit fighter (e.g., mixed martial artist),

then what constitutes necessary force is different from a relatively evenly-matched confrontation (Sharrar v. Felsing, 1997). Even when the confrontation is evenly matched a police officer is under no obligation to retreat or desist; indeed, the officer may press forward to achieve their lawful objective, which includes using force to overcome the offender's actual or threatened resistance.

In any use of force incident we expect the officer will use the necessary means to effect an arrest and protect themselves and other citizens. It is not the officer's responsibility to drop their gun belt and provide the offender with a "fair fight;" not only is that folly, but a police officer is not expected to delay taking action or to take action that could make a situation even more dangerous to themselves or others around them. This is true whether the offender is armed or unarmed. The offender's history of mental illness or level of impairment from alcohol or drugs also contributes to the court's assessment of the threat the offender poses (Krueger v. Fuhr, 1993; Hunt v. County of Whitman, 2006).

One factor that does not figure into the threat assessment is race. Race does not imply the need to use force, behavior does. The public has reacted harshly to portrayals that Blacks are killed by police in epidemic proportions compared to other racial groups, or that young, unarmed males are killed because of their race and without justification

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(Chamberlain, 2017; Howard, 2016; Kang, 2015; Lee, 2016; Poltermann & Ljunc, 2017; Younoussi & Pollock, 2017). The Black Lives Matter movement views the world as one where “...Black lives are systematically and intentionally targeted for demise.”¹ While the perceived need for this declaration is not specifically placed on the police, a number of high profile deadly force incidents across the United States have resulted in protests which specifically have. The Malcolm X Grassroots Movement declared “In 2012, police summarily executed more than 313 Black people—one every 28 hours. The use of deadly force against Black people is standard practice in the US—woven into the very fabric of society.”² The rhetoric is just as vociferous today as it was in the 1960s during the tumultuous civil rights era (Kerner Commission, 1968; Reiss, 1968); however, subsequent research dispelled some of the allegations of police use of force during that period (Friedrich, 1980).

Similarly today, there is empirical evidence that police shootings did not increase after the shooting of Michael Brown that prompted the riots in Ferguson, MO in August 2014 (Campbell, Nix, & Maguire, 2017), despite some reports of just the opposite (Perez-Pena, 2015). These reports skew public perception about the police in a negative direction (Nix & Wolfe, 2017; Pickett, Mancini, Mears, & Gertz, 2015; Weitzer, Tuch, & Skogan, 2008) and may be responsible for “de-policing” (a withdrawal from proactive police work) in certain places across the country, although the evidence is mixed (Morgan & Pally, 2016; Oliver, 2015; Shjarback, Pyrooz, Wolfe, & Decker, 2017). Some of this is perpetuated by studies that suggest African-Americans are “dehumanized” in the criminal justice system (Goff, Eberhardt, Williams, & Jackson, 2008; Owusu-Bempah, 2016), that Whites are implicitly favored in the criminal justice system (Smith, Levinson, & Robinson, 2014), that police officers tend to hold more implicitly biased views than others in society (Sidanius, Van Laar, Levin, & Sinclair, 2003), or that disproportionality indicates implicit bias (Nix, Campbell, Byers, & Alpert, 2017). Disproportionality is thought to be an indicator of implicit bias, which is when subconscious mental processes between race and crime are thought to explain the differences in treatment between African-Americans and others (Eberhardt, Goff, Purdie, & Davies, 2004; Greenwald, Nosek, & Banaji, 2003). Under this theory, even well-meaning police officers are supposedly acting on subconscious biases that “everyone” in the general public holds, which manifest in differential treatment of people of color. The validity of implicit bias tests has been questioned for quite some time and recent research strongly suggests “...the statistical evidence is simply too lacking for the [implicit bias] test to be used to predict individual behavior” (Singal, 2017, p. 8; see also Blanton & Jaccard, 2015; Blanton, Jaccard, & Burrows, 2015; James, Klinger, & Vila, 2014; Oswald, Mitchell, Blanton, Jaccard, & Tetlock, 2013, 2015).

Police shooting data has been sporadic, localized and incomplete, which has led to some fragmentation in the literature and public misperceptions about police shooting fatalities (Fyfe, 2002; Shane, 2016). Public discussions on police use of force tend to lack a great deal of context, except for race, sex, signs of mental illness, and unarmed status. Race in particular is socially inflammatory, unqualified and cannot be the full story. In this vacuum, an appeal to emotion arises; logic and reasoning grounded in facts are cast aside in favor of a few anecdotes and isolated incidents that signal a “crisis” to political and social pundits. Although appealing to emotion often carries more force than reason, it is still fallacious.

Unfortunately, there is no standardized incident-level national data collection effort on police use of force in the U.S. U.S. government

sources including the FBI Uniform Crime Report, Justifiable Homicide and the Centers for Disease Control, National Violent Death Reporting System are incomplete and rely on aggregate data. A new dataset has emerged, collected by the *Washington Post*, which reveals some interesting patterns that are not consistent with these perceptions of police use of deadly force. The data covers 2015 and 2016 for the entire country, not just individual cities. This paper examines the patterns that have emerged and tests a series of questions for significant differences. Although the data are limited and there is much room for improvement, they do provide some insight into this important social and political issue and the results are reassuring that fatal police shootings do not show an increasing trend. The data also help establish base rates, which are essential for future comparisons and for making informed policy decisions.

2. Literature review

Egon Bittner (1970) suggested that a defining characteristic of the police is the capacity and authority to use force in pursuit of their duties. While it is understood that the actual use of force is a relatively rare event, with estimates ranging from 0.1% to 31.8% (Hickman, Piquero, & Garner, 2008), these incidents are often high-profile, and because of their severity, garner an inordinate amount of attention as compared to the duties and responsibilities of the police. It comes as no surprise then that these relatively rare events have been studied so diligently.

Understanding the discretionary power of the police and their capacity to use force has been weighed in the courts (Graham v. Connor, 1989; Tennessee v. Garner, 1985), allowing the judiciary to clarify factors of police citizen interactions where force is permitted, and identifying factors of interactions where it is not. Building off of this, criminologists have sought to understand and delineate the characteristics associated with use of force incidents. These characteristics often fit broadly into categories of incident (situational) factors and community (ecological) factors.

2.1. Situational factors

There is a large body of research surrounding situational factors of police use of force. Race of the citizen has repeatedly been examined for evidence of implicit bias (Nix, Campbell, Byers, & Alpert, 2017), heightened risk (Jacobs & O'Brien, 1998), greater force (Schuck, 2004), and support of force (Johnson & Kuhns, 2009), to name only a few. However, other research findings have failed to find support for the impact of race (Lawton, 2007) and suggest that non-situational factors may account for variation observed. Race of the officer has also been examined for its relationship to the force used during a police citizen encounter, again with mixed findings. Alpert and Dunham (2004) found support for the relationship between officer race and level of force, while other research has failed to find a similar relation (Garner, Buchanan, Schade, & Hepburn, 1996).

2.2. Ecological factors

One limiting factor of much research in the area of police use of force is the lack of availability of data across agencies. The inability to compare across different agencies has highlighted the importance of considering use of force within an agency by examining ecological factors related to the use of force. Klinger (1997) in particular highlights the importance of considering the context of use of force incidents with his development of an Ecological Theory. Other theories such as the Racial Threat Theory (Blalock, 1967) highlight the importance of community characteristics on an officer's discretion. The importance of the context is not a new idea, with early work (Fyfe, 1980) using large geographic regions for comparison and more recent work examining use of force trends at the city (Jacobs & O'Brien, 1998; Sorensen,

¹ Retrieved on February 10, 2017 from <http://blacklivesmatter.com/guiding-principles/>.

² Retrieved on February 10, 2017 from <https://mxgm.org/wp-content/uploads/2013/05/we-charge-genocide-FINAL.pdf>.

Marquart, & Brock, 1993; Willits & Nowacki, 2014), neighborhood (Bayley & Mendelsohn, 1969; Klinger, Rosenfeld, Isom, & Deckard, 2016; Lawton, 2007; Terrill & Reisig, 2003) and micro-levels (Lee, Vaughn, & Lim, 2014).

The literature described above is not intended to bear any semblance to an exhaustive list of research on police use of force, but instead represents articles selected to demonstrate broader themes of research in the area. For an excellent summary of research surrounding non-lethal use of police force, refer to Hickman, Piquero, & Garner (2008).

2.3. A national estimate of police use of force

Like any scientific endeavor, the research is limited by the availability of the data. The current study relies on data collected and archived by the *Washington Post* because there is no active requirement that this information be recorded, reported and studied. In light of a series of recent high profile shootings, there has been a renewed interest, and public support for developing a national data collection of police use of force to develop estimates on its incidence and prevalence.

Recently, Alpert (2015) highlighted that the media has become the source of the best available data on officer involved shootings, and iterates the importance of good data and the need to develop a system that would collect information relevant to both an administrative and academic audience. In this same issue, Klinger, Rosenfeld, Isom, & Deckard (2016) provide a series of policy recommendations including, at a minimum, what data would need to be systematically collected to augment our knowledge of police use of deadly force. Interestingly, Hickman, Piquero, & Garner (2008) demonstrate the wide variation in reported use of force incidents across 36 studies. They utilize the Police-Public Contact Survey (PPCS) in conjunction with the Survey of Inmates in Local Jails (SILJ) to weight a sample of almost 7000 interviews to provide a nationally representative sample.

These calls and innovations aside, it should be clear that this focus on a national reporting system is not new. Prior researchers (Alpert & Fridell, 1992; Fyfe, 1988; Sherman & Langworthy, 1979) have all called for increased transparency in the count, rate and details of police use of force incidents.

3. Methods

The data are publicly available and were obtained freely from the *Washington Post* ("Fatal Force Database," 2015–2016).³ The *Post* data project is intended to collect publicly available reports on police use of force incidents that result in death from news reports, law enforcement websites, social media, and independent databases such as Killed by Police and Fatal Encounters to get a better sense of the number of police fatalities in the United States. The database is rolling, which means that it is updated periodically as fatalities occur; there are only two full calendar years of data available and the data for this study are from January 2, 2015 to December 29, 2016 ($n = 1948$). The data are collected at the incident level; however, given that police shootings are rare events, the data were aggregated to the state level to ensure sufficient variability for the analyses. The unit of analysis is the shooting incident. The dependent variable is the mean fatality rate per 100,000 population (based on 2015 U.S. Census Bureau state populations) to eliminate the effects of any gross influences. To address research question 4, a second set of rates were calculated to control for racial composition by state (Table 4), which were calculated by using the incidents of a particular race with the denominator of that rate in the population and calculated per 100,000. Early adulthood offenders were measured as those between 20 and 39, which was conceptualized by

Erikson's (1963, 1959/1980) psychosocial development scale and is consistent with similar studies involving young adults (Whitbourne, Zuschlag, Elliot, & Waterman, 1992). The independent variables are nominal and were dichotomized for analysis, except for age and year, which are scale level; age, race, flight status, weapon type, and region of the country were also grouped for additional analysis. The research questions are:

1. Which U.S. cities present the greatest risk of a police shooting fatality?
2. Is the mean rate of police shooting fatalities significantly different between various situational factors?
3. How does the mean rate of police shooting fatalities vary across the states?
4. Does the state level rate of police fatalities vary by race when controlling for state racial composition?

The data do suffer from some issues raised by Jacob (1984) concerning published data, which may lead to problems drawing accurate conclusions (Williams, Bowman, & Jung, 2016). Other limitations include: 1) all of the cases involve fatalities, so comparing nonfatal shootings is not possible; 2) there is no data on the officers' characteristics, which limits demographic comparisons; 3) there is no data on environmental characteristics, which limits controlling for the tactics, approach, crime type, offender resistance, and the immediate situation; 4) the data on offenders and the incident are very limited and do not thoroughly describe the situation facing the officers; and 5) the data do not differentiate intentional and unintentional shootings. Despite these limitations, the data are suitable for generalizing about patterns of police shooting fatalities since there is excellent geographical distribution (all of the states and Washington, D.C. are captured), the data represent the population of interest, not a sample, and there is a relatively high degree of similarity between the data for both years.

4. Analysis

The prevalence of police shooting fatalities at the state level has remained relatively stable between 2015 ($M = 0.336$; $n = 51$) and 2016 ($M = 0.350$; $n = 51$). Fatalities declined 3.4% with monthly averages at $81.2, \pm 3.4$ and a monthly rate average of 0.057 (Fig. 1). There is no significant difference between years, $t(49) = -0.339$, $p = 0.735$. Despite some fluctuations in the data, there is no statistical difference in the fatality rate across months, $F(11, 600) = 1.011$, $p = 0.435$, or days of the week, $F(6, 350) = 0.358$, $p = 0.905$.

Table 1 is the state ranking per 100,000 population. All fifty states and D.C. are represented with California (16.8%), Texas (9.2%) and Florida (6.0%) comprising 32.0% of the fatalities ($n = 624$). New Mexico has the highest mean rate (1.97) followed by Alaska (1.48) and Oklahoma (1.48); Connecticut (0.17), New York (0.18) and Rhode Island (0.19) are lowest. The national mean fatality rate is 0.686 with a standard deviation of 0.390 and a range of 1.80. Although the base rate shows wide variability across states, those with the highest gross number of fatalities do not emerge as leaders when the data are normalized per population.

An important principle of risk analysis is that outcomes are highly concentrated among particular people, places and situations. This implies that focusing efforts where police shooting fatalities are concentrated will yield the greatest preventive benefits. To examine risk further, the Pareto principle (also known as the 80/20 rule) was applied at the city level (Table 2) to answer the first research question: *Which U.S. cities present the greatest risk of a police shooting fatality?* The 80/20 rule describes the phenomenon that 80% of outcomes (in this case police shooting fatalities) are attributable to 20% of the input (in this case locations) (Clarke & Eck, 2005, pp. 48–49). There are 1211 cities represented, where the top 20 cities ($n = 278$), 1.7%, account for

³ <https://www.washingtonpost.com/graphics/national/police-shootings/>. Retrieved on January 20, 2017.

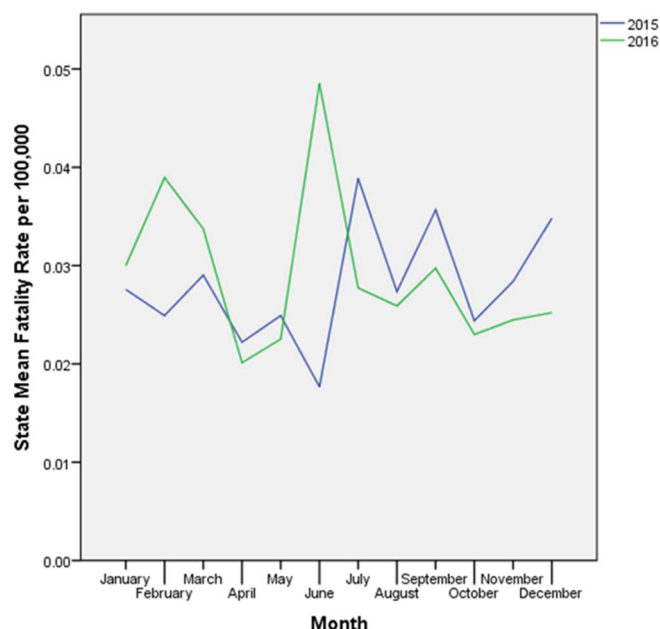


Fig. 1. Police shooting fatality comparison, 2015–2016.

Table 1
State ranking of police shooting fatalities per 100,000 population, 2015–2016.

| Rank | State | n | M | Rank | State | n | M |
|------|-------|-----|------|------|-------|-----|------|
| 1 | NM | 41 | 1.97 | 25 | FL | 117 | 0.58 |
| 2 | AK | 11 | 1.49 | 26 | HI | 8 | 0.56 |
| 3 | OK | 58 | 1.48 | | NC | 56 | 0.56 |
| 4 | WY | 8 | 1.36 | 27 | GA | 55 | 0.54 |
| 5 | DC | 9 | 1.34 | 28 | MS | 16 | 0.53 |
| 6 | AZ | 91 | 1.33 | 29 | MD | 30 | 0.50 |
| 7 | WV | 22 | 1.19 | | IN | 33 | 0.50 |
| 8 | NV | 33 | 1.14 | 30 | WI | 28 | 0.49 |
| 9 | CO | 60 | 1.10 | 31 | VT | 3 | 0.48 |
| 1 | LA | 46 | 0.98 | 32 | OH | 55 | 0.47 |
| 11 | MT | 9 | 0.87 | 33 | MN | 25 | 0.46 |
| 12 | AL | 42 | 0.86 | 34 | DE | 4 | 0.42 |
| 13 | CA | 327 | 0.84 | | VA | 35 | 0.42 |
| 14 | SD | 7 | 0.82 | 35 | NH | 5 | 0.38 |
| 15 | NE | 15 | 0.79 | 36 | IL | 47 | 0.37 |
| | ID | 13 | 0.79 | 37 | IA | 10 | 0.32 |
| 16 | KY | 34 | 0.77 | 38 | MA | 21 | 0.31 |
| 17 | OR | 30 | 0.74 | 39 | PA | 39 | 0.30 |
| | SC | 36 | 0.74 | | NJ | 27 | 0.30 |
| 18 | MO | 42 | 0.69 | | ME | 4 | 0.30 |
| 19 | AR | 20 | 0.67 | 40 | MI | 29 | 0.29 |
| 20 | TX | 180 | 0.66 | 41 | ND | 2 | 0.26 |
| 21 | KS | 19 | 0.65 | 42 | RI | 2 | 0.19 |
| 22 | TN | 42 | 0.63 | 43 | NY | 36 | 0.18 |
| 23 | UT | 18 | 0.60 | 44 | CT | 6 | 0.17 |
| 24 | WA | 42 | 0.59 | | | | |

14.3% of the fatalities. As expected, major U.S. cities present the greatest risk of a fatality, which is likely correlated with crime rate and neighborhood context (MacDonald, Kaminski, Alpert, & Tennenbaum, 2001; Terrill & Reisig, 2003). In theory, focusing preventive action such as policy development, training and education on these 20 cities, rather than on all 1211 cities, could be an efficient strategy for reducing police fatalities nationwide. Although risk presents itself at the aggregate (city) level, greater analysis is required at the incident level to determine the context and situational nuances of each individual shooting to determine how and why each shooting occurred. Unknown and hidden vulnerabilities can increase risk, so it is important to tease out those nuances that are susceptible to training and policy provisions in each city. That analysis is beyond the *Post* data.

Table 2

Top 20 riskiest U.S. cities for police shooting fatalities, 2015–2016.

| City | Fatalities | % of fatalities | Cumulative % of fatalities | Cumulative % of cities |
|-------------------------|-------------|-----------------|----------------------------|------------------------|
| Los Angeles | 29 | 1.5% | 1.5% | 0.1% |
| Phoenix | 22 | 1.1% | 2.6% | 0.2% |
| Houston | 21 | 1.1% | 3.7% | 0.2% |
| Chicago | 20 | 1.0% | 4.7% | 0.3% |
| Las Vegas | 16 | 0.8% | 5.5% | 0.4% |
| San Antonio | 15 | 0.8% | 6.3% | 0.5% |
| New York | 14 | 0.7% | 7.0% | 0.6% |
| Columbus (OH) | 13 | 0.7% | 7.7% | 0.7% |
| Indianapolis | 13 | 0.7% | 8.4% | 0.7% |
| Miami | 13 | 0.7% | 9.0% | 0.8% |
| Austin | 12 | 0.6% | 9.7% | 0.9% |
| Tucson | 12 | 0.6% | 10.3% | 1.0% |
| Albuquerque | 11 | 0.6% | 10.8% | 1.1% |
| Oklahoma City | 11 | 0.6% | 11.4% | 1.2% |
| Bakersfield | 10 | 0.5% | 11.9% | 1.2% |
| Denver | 10 | 0.5% | 12.4% | 1.3% |
| Charlotte | 9 | 0.5% | 12.9% | 1.4% |
| San Bernardino | 9 | 0.5% | 13.3% | 1.5% |
| San Francisco | 9 | 0.5% | 13.8% | 1.6% |
| Washington, D.C. | 9 | 0.5% | 14.3% | 1.7% |
| 7 cities, 8 incidents | 56 | 2.9% | 17.1% | 2.2% |
| 10 cities, 7 incidents | 70 | 3.6% | 20.7% | 3.1% |
| 7 cities, 6 incidents | 42 | 2.2% | 22.9% | 3.6% |
| 11 cities, 5 incidents | 55 | 2.8% | 25.7% | 4.5% |
| 13 cities, 4 incidents | 52 | 2.7% | 28.4% | 5.6% |
| 51 cities, 3 incidents | 153 | 7.9% | 36.2% | 9.8% |
| 150 cities, 2 incidents | 300 | 15.4% | 51.6% | 22.2% |
| 942 cities, 1 incident | 942 | 48.4% | 100.0% | 100.0% |
| 1211 cities | 1948 | 100.0% | | |

Table 3 presents the descriptive statistics. At a national level, the offender's mean age is 36.6 with a wide standard deviation of 12.9 years; the most common offender was 31 years old. Early adulthood offenders (ages 20–39) account for 58.8% of the fatalities. Offenders are overwhelmingly male (95.8%), and Whites comprise the largest group (51.5%). Almost two-thirds of offenders (64.9%) were attacking the officer when killed, and the overwhelming majority (92.3%) were armed when they were killed. Most offenders were not fleeing (69.8%), and most officers were not wearing a body camera (89.2%). As for weapons, 59 different types of weapons were used in 1700 incidents; weapons were undetermined ($n = 90$), or unknown ($n = 12$) in 5.3% of the incidents, and offenders were unarmed ($n = 141$) in 7.7% of incidents. Guns were most prevalent over all other weapons (63.5%); six types of weapons (10.2%)—gun, knife, vehicle, toy weapon, machete, and sword—accounted for 93.5% of the fatalities. Most of the fatalities occurred in the South region⁴ (41.2%), followed by the West (35.5%); the Northeast region was well below the other regions (7.3%). Fatalities were almost evenly split between 2015 (50.9%) and 2016 (49.1%).

Given that differences emerged at the national level for sex and race, which are often most contentious, we felt it important to examine these more closely at the state level (**Table 4**). The rate of fatalities for males is almost 24 times higher (23.7) for males than for females, which

⁴ U.S. regions according to the FBI Uniform Crime Report: Northeast: ME, NH, VT, MA, CT, RI, NY, PA, NJ; South: TX, OK, AR, LA, AL, GA, KY, TN, WV, VA, DE, MD, DC, NC, SC, FL, MS; Midwest: ND, SD, NB, KS, MN, IA, MO, MI, WI, IL, IN, OH; West: WA, OR, CA, HI, AK, ID, NV, MT, WY, CO, AZ, UT, NM.

Table 3
Descriptive statistics in the *Washington Post* use of force data ($n = 51$).

| Variables and metrics | National level | | State level | |
|--|----------------|-------|-------------------------|-------|
| | N | % | Mean fatality base rate | S.D. |
| Dependent variable | | | | |
| Police shooting fatalities per 100,000 | 1948 | – | 0.686 | 0.390 |
| Grouping variables | | | | |
| Offender's age (grouped) | 1910 | 100.0 | – | – |
| < 18 (1) | 34 | 1.8 | 0.007 | 0.014 |
| 18–27 (2) | 495 | 25.9 | 0.157 | 0.104 |
| 28–37 (3) | 610 | 31.9 | 0.222 | 0.177 |
| 38–47 (4) | 368 | 19.3 | 0.131 | 0.119 |
| 48–57 (5) | 259 | 13.6 | 0.103 | 0.087 |
| 58–67 (6) | 109 | 5.7 | 0.041 | 0.054 |
| 68–77 (7) | 29 | 1.5 | 0.012 | 0.025 |
| 78–87 (8) | 6 | 0.3 | 0.004 | 0.016 |
| Offender's median age (binary) | 1910 | 100.0 | – | – |
| Under 35 (1) | 955 | 50.0 | 0.317 | 0.201 |
| Over 35 (0) | 955 | 50.0 | 0.359 | 0.218 |
| Early adulthood offenders | 1910 | 100.0 | – | – |
| 20–39 | 1124 | 58.8 | 0.394 | 0.253 |
| All Others | 786 | 41.2 | 0.282 | 0.168 |
| Offender's sex | 1948 | 100.0 | – | – |
| Male (1) | 1866 | 95.8 | 0.657 | 0.367 |
| Female (0) | 82 | 4.2 | 0.028 | 0.040 |
| Offender's race | 1859 | 100.0 | – | – |
| White (2) | 957 | 51.5 | 0.381 | 0.241 |
| Black (4) | 490 | 26.4 | 0.146 | 0.202 |
| Hispanic (3) | 332 | 17.9 | 0.078 | 0.183 |
| Asian (1) | 29 | 1.6 | 0.006 | 0.013 |
| Other (6) | 26 | 1.4 | 0.013 | 0.059 |
| Native American (5) | 25 | 1.3 | 0.032 | 0.105 |
| Offender's attack status | 1948 | 100.0 | – | – |
| Under attack (1) | 1265 | 64.9 | 0.461 | 0.291 |
| Not under attack (0) | 683 | 35.1 | 0.225 | 0.140 |
| Offender's armed status | 1841 | 100.0 | – | – |
| Armed (1) | 1700 | 92.3 | 0.605 | 0.360 |
| Unarmed (0) | 141 | 7.7 | 0.045 | 0.046 |
| Offender's flight status | 1921 | 100.0 | – | – |
| Not fleeing | 1340 | 69.8 | 0.470 | 0.263 |
| Car | 285 | 14.8 | 0.103 | 0.094 |
| Foot | 227 | 11.8 | 0.080 | 0.061 |
| Other | 69 | 3.6 | 0.021 | 0.033 |
| Officer wearing body camera | 1948 | 100.0 | – | – |
| Officer not wearing body camera (0) | 1737 | 89.2 | 0.594 | 0.342 |
| Officer wearing body camera (1) | 211 | 10.8 | 0.092 | 0.107 |
| Weapon type (grouped) | 1700 | 100.0 | – | – |
| Guns (1) | 1080 | 63.5 | 0.393 | 0.273 |
| Cutting instruments (2) | 343 | 20.2 | 0.110 | 0.088 |
| Blunt instruments (3) | 45 | 2.6 | 0.013 | 0.022 |
| Other weapons (4) | 112 | 6.6 | 0.043 | 0.052 |
| Vehicles (5) | 120 | 7.1 | 0.046 | 0.051 |
| Weapon type (binary) | 1700 | 100.0 | – | – |
| Gun (1) | 1080 | 63.5 | 0.393 | 0.273 |
| Other weapon (0) | 620 | 36.5 | 0.212 | 0.139 |
| Region | 1948 | 100.0 | – | – |
| South (2) | 802 | 41.2 | 0.253 | 0.403 |
| West (4) | 691 | 35.5 | 0.262 | 0.497 |
| Midwest (3) | 312 | 16.0 | 0.120 | 0.235 |
| Northeast (1) | 143 | 7.3 | 0.051 | 0.119 |
| Year | 1948 | 100.0 | – | – |
| 2015 | 991 | 50.9 | 0.336 | 0.215 |
| 2016 | 957 | 49.1 | 0.350 | 0.205 |

is somewhat expected given that males are historically involved in crime at greater levels than females. Differences based on race show that Blacks are 2.3 times higher than Whites (0.559) to be killed during encounters. The rate for Hispanics (0.398) is similar to Whites and Asians are lowest (0.302). Although the rate for Native Americans is

Table 4
Descriptive statistics in the *Washington Post* use of force data ($n = 51$).

| Variables and metrics | N | % | State level specified rate | S.D. |
|-----------------------|------|-------|----------------------------|-------|
| Offender's sex | 1948 | 100.0 | – | – |
| Male (1) | 1866 | 95.8 | 1.328 | 0.734 |
| Female (0) | 82 | 4.2 | 0.056 | 0.080 |
| Offender's race | 1859 | 100.0 | – | – |
| White (2) | 957 | 51.5 | 0.559 | 0.376 |
| Black (4) | 490 | 26.4 | 1.313 | 1.180 |
| Hispanic (3) | 332 | 17.9 | 0.398 | 0.558 |
| Asian (1) | 29 | 1.6 | 0.129 | 0.302 |
| Other (6) | 26 | 1.4 | 0.207 | 0.570 |
| Native American (5) | 25 | 1.3 | 1.500 | 6.280 |

highest (1.500), the data are skewed by an outlier⁵; the outlier was retained in the analysis in the interest of full disclosure.

Table 5 is a comparison of means for the police shooting fatality rate, which is intended to examine differences between various factors. Age differences emerged with fatality rates for those between 28 and 37 significantly higher than all other groups (0.222). Early adulthood offenders, those believed to be in greatest contact with the police (see Eith & Durose, 2011), was also significant ($t(50) = -2.657$, $p = 0.009$), which is expected. Offenders who were attacking the officer was significantly higher than those who were not, which is also expected. This generally supports the officer's contention that they were defending against an active assault against them or a third person and that the offender was taking offensive action. Offenders who were armed with guns were also significantly more likely to be killed than those who were armed with other weapons. This generally supports the notion that the officers do not resort to deadly force when confronted by offender with weapons other than guns.

The next set of significant differences is those surrounding the offender's flight status. Those who were not fleeing from the officer had the highest fatality rate (0.470), which suggests that the offender was standing their ground and—given what we know about attack status—were likely attacking the officer. Fatality rates for offenders who were fleeing in a vehicle were significantly higher (0.103) than for those who were fleeing on foot (0.080) or fleeing by other means (0.021). This suggests that offenders who were fleeing in vehicle may have posed an imminent threat to the officer or a third person and the vehicle itself could potentially be used as a weapon, which necessitated deadly force. Those who were fleeing on foot had a lower rate (0.080) than those fleeing in a vehicle or those who were not fleeing. This suggests that when an offender is fleeing on foot they are not necessarily subject to deadly force, but those who were fleeing on foot may have posed an imminent threat to the public such as being armed during their flight, running toward a crowd, or taking cover while armed.

The presence of body-worn cameras (BWC) is also significantly different. The mean rate of fatalities is lower for officers wearing a body camera (0.092) compared to those who were not wearing a camera (0.594). This may be a function of the increasing proliferation of that technology resulting from a moral panic about police shootings (Shane, 2016; Wasserman, 2014) and the rarity of police shootings. While BWCs are popular, they may not likely affect the officer's decision to use deadly force when required. Research on body cameras used during police shootings suggests that citizens prefer officers use them and that when BWC video is coupled with audio, perceptions of an unjustified shooting are lowest (Culhane, Boman, & Schweitzer, 2016). There are also significant differences among the regions of the country. The rate

⁵ One state (Vermont) had a single fatality of Native Americans, resulting in a rate of 43.92 per 100,000 in the population. Dropping this outlier would lower the rate to 0.6521. Due to these outliers, the results for this racial category should be treated with caution.

Table 5
Differences in state rates of police fatalities 2015–2016, per 100,000 ($n = 51$).

| Variables | Questions Is the rate of fatalities significantly different between... | Finding | n | t-Test | | ANOVA | p |
|--|---|---------|----|----------|--|---------|-------|
| | | | | t | | F | |
| Age | | | | | | | |
| Age (grouped, see Table 3) | ... the offenders' age groups? | Yes | 51 | – | | 39.616 | 0.000 |
| Age (< 35, > 35) | ... offenders under and over 35? | No | 51 | 1.019 | | – | 0.311 |
| Early adulthood (20–39, others) | ...early adulthood offenders (20–39) and others? | Yes | 51 | – 2.657 | | – | 0.009 |
| Sex | | | | | | | |
| Sex (male, female) | ... offenders who are male or female? | Yes | | – 12.161 | | – | 0.000 |
| Sex (male, female, see Table 4) ^a | ... offenders who are male or female? | Yes | 51 | – 12.301 | | – | 0.000 |
| Time | | | | | | | |
| Year | ... 2015 and 2016? | No | 51 | – 0.339 | | – | 0.735 |
| Day of week (1–7) | ...days of the week? | No | 51 | – | | 0.358 | 0.905 |
| Attack status | | | | | | | |
| Attacking (yes, no) | ... offenders who were attacking or not attacking the officer? | Yes | 51 | – 5.221 | | – | 0.000 |
| Weapon type | | | | | | | |
| Guns and other weapons | ...guns and other weapons? | Yes | 51 | – 4.228 | | – | 0.000 |
| Armed status | | | | | | | |
| Armed (yes, no) | ... offenders who were armed or unarmed? | Yes | 51 | – 11.029 | | – | 0.000 |
| Flight status | | | | | | | |
| Fleeing (grouped, see Table 3) | ... offenders' flight status? | Yes | 51 | – | | 102.544 | 0.000 |
| Officer wearing body camera | | | | | | | |
| Body camera (yes, no) | ... officers with and without a body camera? | Yes | 51 | 10.019 | | – | 0.000 |
| Region of the country | | | | | | | |
| Region (grouped, see Table 3) | ... different regions of the country? | Yes | 51 | – | | 4.536 | 0.004 |
| Racial category | | | | | | | |
| Race (grouped, see Table 3) | ... offenders' racial groups? | Yes | 51 | – | | 42.596 | 0.000 |
| Race (grouped, see Table 4) ^b | ... offenders' racial groups? | Yes | 51 | – | | 2.488 | 0.032 |

^a Rates were calculated per 100,000 male/female in the population (see Table 4).

^b Rates were calculated per 100,000 Asian, Black, Hispanic, Native American, White and Other in the population (see Table 4).

of fatalities in the Northeast (0.051) was significantly lower than all other regions. The West (0.262) and South (0.253) were highest. The differences may be attributed to policy prescriptions, deployment strategies, training or culture, but this requires much further inquiry and is not resolved with the *Post* data.

The last set of differences to emerge is those between racial groups. When controlling for total population, Whites more than twice as likely to be fatally wounded in an interaction with the police than Black citizens and almost five times more likely than Hispanic (see Table 3). However, White citizens outnumber other racial categories. A second set of analyses (see Table 4) controls for these differences by calculating rates for race within the respective racial population (i.e., Asian fatalities by Asian population in the state). Once again significant differences are found, however, Black citizens are now twice as likely as Whites to be fatally wounded in an interaction with the police.

5. Discussion

It is reassuring that fatal police shootings do not show an increasing trend and the results are not necessarily consistent with beliefs espoused in popular culture. The findings suggest that the public may have a misconception about police use of fatal force. Some social and media sources suggest that Blacks are being killed by police at higher rates due to police officer racial bias. The results presented here do reveal higher rates for Blacks in fatal encounters, but these findings are aggregated incidents that fail to account for characteristics of the encounter. Whether these differences are attributed to bias or something else, such as disproportionate involvement in crime remains unanswered.

Disproportionality in the aggregate rate of fatalities by itself is not evidence of bias-based policing and it does not empirically explain the cause of this phenomenon based on explicit theory, which is critical for police policy makers, such as agency policy or individual officer attitudes (Bernard & Ritti, 1990). Although the fatality rates are higher for some groups and in some regions of the country, the data stop short of answering how and why this is occurring. Previous research does show

a correlation between age, race and sex with local crime rates and neighborhood composition, which may be a factor. However, that same research relies on data that is localized and does not account for the situational and contextual circumstances the officer was facing when the shooting occurred. The *Post* data do not capture some very critical explanatory factors about the offender and the environment; however, those factors that are present in the *Post* data such as armed status and attack status do show that offenders who engage in these behaviors have higher fatality rates than those who do not engage in those behaviors, which is expected. This generally lends support to the police account that their safety or that of a third person was threatened when deadly force was used.

Despite the data limitations, we find it necessary to speculate about possible causes for the differences to engender debate and discussion about better national data and continued research in this area. One potential explanation for the higher proportion of non-whites and males (Table 3) may lie in the opportunity and motivation to offend. Violating the law requires three components: 1) a motivated offender; 2) a suitable target; and 3) the absence of a capable guardian⁶ (Cohen & Felson, 1979; Felson & Clarke, 1998). When these three factors are present, offending is more likely, but it is not inevitable. For example, environmental conditions that are conducive to offending combine with personal circumstances (e.g., thrill, peer pressure, desperation, social identity, anger, masculinity) to provide suitable motivation to commit an offense. Some previous research speculates about the relationship between personal characteristics, particularly race and police behavior. Engel, Calnon and Bernard (2002, p. 263) discussed "...antagonistic, disrespectful, and hostile behavior toward the police. For example, many have suggested that nonwhite suspects, particularly young black males, are more likely to be disrespectful toward the police. The

⁶ Even when a capable guardian is present an offender who is sufficiently motivated may violate the law for any number of reasons, such as irresistible impulse, thrill, or desperation.

perceived relationship between demeanor and race has been used to explain higher arrest rates for young black males.” There is nothing in these data to suggest antagonistic, hostile or disrespectful attitudes from offenders toward the officers that could explain motivation, but it is certainly worthwhile to explore these factors.

Previous research also suggests that disproportionate non-white contact with the criminal justice system in general may be explained by unique attributes of Black masculinity and Black socialization (Anderson, 1999; McFarlane, 2013; Oliver, 2006), as well as disproportionate use of police service (Werling & Cardner, 2013). Research has identified urban Black males as engaging in hypermasculinity including deviant (McClure, 2006) and aggressive behaviors (Spencer, Fegley, Harpalani, & Seaton, 2004; Oliver, 1998) associated with “... masculine identities that place emphasis on toughness...and street hustling” (Oliver, 2006, p. 921). These data also do not exist in this study and there is no evidence of such behavior.

Embedded in the individual's decision to offend is the element of rational choice (Cornish, 1994; Cornish & Clarke, 1986, 2003), which states that humans are rational actors who weigh the means and ends, costs and benefits, then make informed (i.e., rational) choices to offend or desist. The theory suggests that crime is purposive behavior designed to meet the offender's immediate and commonplace needs for something (e.g., money from drug sales). The decision to offend is weighed against personal limits and motivation (e.g., age, height, weight, physical capabilities, anger), the vulnerability of the target (e.g., single officer, isolated area, under concealment of darkness) and other available information at the moment that implicates the perceived risk of being caught (high or low), the perceived effort to commit the offense (high or low) and the perceived rewards (high or low). For example, once a given neighborhood is known for its ease of offending (e.g., drug sales, gun shots, car theft), offenses may be repeated among motivated individuals (drug dealers, gang members). As offenses increase, patterns emerge (e.g., day, time, location, age, sex, peer group). Inevitably, the police respond to the crime patterns and to an increase in calls for service with enforcement action (e.g., citations, field interviews, arrests, searches). Enforcement action leads to encounters with offenders (Werling & Cardner, 2013), which increases the chance of a violent encounter. This suggests that police-citizen contacts is an important consideration of who has interaction with the police and why (Eith & Durose, 2011).

The rate of fatalities may also be related to the agency's expectations for output (Campbell & Pritchard, 1976; Mitchell, 1974), where individual officers see value in their work from different perspectives including personal capabilities, expectations from supervisors and the value of rewards stemming from expected performance. If officers perceive that their police department expects them to stop suspicious people and vehicles and to take enforcement action, then the result will likely be an increase in these activities. The *Post* data do not capture any agency-level variables that imply management's expectations, individual police officers' perceptions about agency performance criteria, or police supervisors' priorities, which might indicate a preference for specific goals based on community priorities (e.g., reduce crime, reduce disorder) as a matter of official policy. Greater police enforcement action, particularly any differences between citizen-initiated and officer-initiated effort is an important factor to consider.

Although there is some over representation of non-whites and males in fatalities, there is no data to infer offender motivation such as that from peer pressure, strain, frustration, disdain for rules or authority, social identity (see Tedeschi & Felson, 1994), masculinity or any other technique for neutralizing one's deviant behavior (Sykes & Matza, 1957). Likewise, there is no data to support a specific officer's motivation for using deadly force beyond observing a deadly threat. If, for example, there is some belief that the officers' motivation for using deadly force against non-whites is grounded in the officers' attitude or disposition (i.e., that the officer's attitude or disposition influences their decision making process), then measuring both the officers' attitudes

and the social influences that may mediate the relationship between attitude and behavior is required (Engel, Calnon and Bernard, 2002, p. 263). That did not occur in this research and the *Post* data do not capture the required variables. Consequently, it is not possible to infer from these data that police officers are transforming citizens into offenders based on extralegal factors and any such suggestions based on disproportionality alone is not appropriate.

One interesting finding is the difference across geographical regions. One possibility for these differences may be policies, training and/or culture of the police agencies in those regions, as well as gun laws. Although there is procedural uniformity in police use of force across the country based on U.S Supreme Court decisions (Graham v. Connor, 1989; Tennessee v. Garner, 1985), police agencies retain a great deal of discretion and autonomy in hiring, training and policy development, which influences how laws and policies are implemented at the line level. Police are also subject to wide variation in guns laws (e.g., stand your ground, self-defense or castle doctrines; open or concealed carry; possession of assault weapons; peaceable journey) across the country that may expose officers to more actual or perceived threats, or at least place them in a heightened state of caution during citizen encounters.

Overall, the findings suggest that some of the trope conveyed by news outlets and social media sources based on age, race and sex are not necessarily grounded in evidence, yet they have had a profound effect on police policy. For example, adopting body-worn cameras has proliferated throughout U.S. police departments to enhance transparency, with the objective of reducing the number of incidents of unjustified use of force and preventing another Ferguson-type riot. While body-worn cameras do have their benefits, they are not a panacea. Public policy requires more data before wholesale changes to police operations and administration.

For an officer's use of force to be deemed “objectively reasonable” and consistent with current procedural law (Graham v. Connor, 1989; Tennessee v. Garner, 1985), his or her response (“what” and “how”) must be reasonably balanced with the governmental interests at stake (“why”). The officer's quantum of force can be measured by evaluating “what” force option was used, and “how” it was used. The level of force an officer applies will vary based on the situation. Because of this variation, policies for applying force are based on many factors, including the officer's assignment (patrol vs. detective vs. SWAT), level of training and experience, along with the environmental context the officer is facing. Most, if not all, past and present research on use of force is not undertaken within this framework and, as such, does not accurately tell the story of police shootings. This shortcoming severely restricts policing's ability to evolve tactics in response to a changing environment and potentially avoid a fatal encounter. Consequently, policing fails to learn from past experiences and cannot rule out chance alone as the reason for a justifiable or unjustifiable shooting. Unfortunately, the *Post* data do not enable such analysis since many of the variables needed to evaluate the encounter are not captured.

The *Post* data also help establish statistical base rates for lethal use of force incidents by police, which has yet to be done. Base rates are a statistic, usually depicted as a proportion or a percentage of a population that exhibits some characteristic or outcome (in this case fatality from a police shooting) and which indicate probability based on the absence of controls or other information. When judging the probability of an event (e.g., dying in a police shooting), there are two types of information that are typically available: 1) generic information about the prevalence of events of that type; and 2) specific information about a given case (e.g., Michael Brown, Ferguson, MO). Knowledge about the number of police shooting fatalities in the general population is termed distributional or base rate information. Knowledge about a single fatal police shooting is termed individuating or case-based information. When given information about a single fatality and information about the fatality base rate, people tend to base their judgments on case-based information and either underutilize or ignore base-rate evidence

(Bar-Hillel, 1980; Tversky & Kahneman, 1974).

Underutilizing or ignoring base rate evidence when reaching a decision is known as the base rate fallacy and helps explain why people are fearful or overly concerned about rare events (dying in a plane crash; dying from a police shooting). It also helps explain why people too often make hasty judgements based on stereotypes and preexisting beliefs about a limited number of category attributes (e.g., age, race, sex, mental illness, unarmed status). Although these attributes can sometimes be useful, they often lead to severe systematic errors (Funder, 1996). Since the outcome of many police shooting fatalities end in a courtroom, whether criminal or civil, base rates that are closely linked to the particulars of a specific case are more likely to be admitted as relevant evidence (Koehler, 2002).

To overcome the stereotypes about dying from a police shooting, a much stronger social message is needed about base rate fatalities instead of anecdotes (e.g., case-based information) because perception often becomes reality (Malmin, 2015). Overcoming emotional arguments with reason means not vilifying and dismissing critics as illegitimate and listening to the “other side’s” point of view. This does not mean compromising on principles, but it does mean expressing empathy, which goes a long way toward shared public safety responsibility.

6. Limitations

The *Post* data have not been independently verified for their validity, although they purport to capture more fatalities than government sources such as the FBI Uniform Crime Report, Supplemental Homicide Report and the Centers for Disease Control and Prevention, National Violent Death Reporting System. The U.S. Bureau of Justice Statistics readily acknowledges the incomplete structure of the FBI’s data, where some records at the state level are completely missing and other instances where there are too many records (Brown & Langan, 2001; see also Maxfield, 1989). The FBI data have been criticized because they are derived from voluntary reports from law enforcement agencies, 20–30% of which do not report the information in a given year. However, the majority of these agencies are small and do not frequently experience violent crime (Johnson, 2016). The Center of Disease Control Mortality Reports are derived from a supplemental federal form completed by physicians and coroners when they complete a death certificate. As it takes time to determine the cause of death and analyze the data received, the FBI and CDC reports may lag by as much as two years (Johnson, 2016). If, for example, data were captured on non-fatal police shootings, then it would be possible to calculate the number of shots fired by officers and the number of officers that discharged their weapons in relation to the situational context. This would provide trainers and policymakers with a better understanding of how deadly force is applied (Klinger, Rosenfeld, Isom, & Deckard, 2016), which is the best preventative.

Also, the data were collected by journalists who are not likely trained in research methods; as such, there is some conceptual ambiguity with key variables. The terms “fleeing” and “unarmed” lack context. At best they are crude definitions that are not informed by science, police practices or law. For example, was the offender fleeing: 1) recklessly in a vehicle that endangered the officers or the public? 2) while armed? or 3) taking a hostage? Was the unarmed offender: 1) reaching for a weapon? 2) trying to disarm the officer? 3) attacking the officer? 4) did less-lethal options fail against the offender who continued to attack the officer or resist arrest? 5) failing to follow verbal commands while making threatening gestures with concealed hands during the commission of a crime or flight therefrom? 6) assisted by an accomplice as both attacked the officer when the officer shot and killed one of them? 7) attacking a third person? 8) winning a physical fight against the officer? The conceptual definitions for fleeing and unarmed are not specified in the methodology provided by the *Post* and they do not indicate whether the offender posed a threat, was harmful, or was

surrendering or regrouping. The armed-unarmed dichotomy offered by the *Post* is not the correct triggering condition for police use of force. Police officers can use force when they perceive an imminent threat of serious bodily injury⁷ to themselves or a third person, notwithstanding whether a physical weapon is present. Any one of the aforementioned conditions could justifiably merit deadly force against an offender who is fleeing or unarmed depending on the totality of the circumstances, which could render the plain meaning of those terms meaningless.⁸ Similarly, the *Post*’s variable “signs of mental illness” was purposely excluded from analysis. Mental illness is a complex condition that is not defined by the *Post*’s methodology. Also, there is no data source upon which to calculate base rates so deriving reliable estimates was not possible. Given the complexity of the phenomenon, we felt it best to avoid drawing unreliable conclusions from flawed data.

Although risk of a shooting fatality presents itself at the aggregate (city) level, greater analysis is required at the incident level to determine the context and situational nuances of each individual shooting to determine how and why the shootings occurred. Aggregate data and the statistics that flow from them summarize a set of observations that communicate the largest amount of information as simply as possible, but they do not measure the fine details. Aggregate data may mask incident-level details that are necessary to identify trends and patterns, as well as the factors that may be correlated with use of force across similar cities and various contexts, such as level of offender resistance, offender’s crime (felony, misdemeanor, traffic), officer assignment (patrol, investigative), type of contact (reactive, self-initiated), years of service, neighborhood composition, type of incident and organizational composition, among the many. It is distinctly possible that multivariate analysis involving situational variables will yield results similar to Friedrich (1980) who found that “police use of force depends primarily on two types of factors: how the offender behaves and whether or not other citizens and police are present...The manner of the offender toward the police has the greatest impact...” (p. 95).

7. Policy implications

The Pareto analysis shows how ripe this topic is for industry advocates (e.g., Police Executive Research Forum; International Association of Chief of Police; National Sheriff’s Association; Fraternal Order of Police) and policing researchers (e.g., American Society of Criminology, Division of Policing; Academy of Criminal Justice Sciences, Police Section; Police Foundation) to convene a national summit of the top 20 cities to explore incident-level characteristics of

⁷ “Serious bodily injury” generally means bodily injury that creates a substantial risk of death or which causes serious, permanent disfigurement, or protracted loss or impairment of the function of any bodily member or organ (e.g., New Jersey Criminal Code, N.J.S.A. 2C:11-1, Definitions).

⁸ Examples of an imminent threat of serious bodily injury facing a police officer from an unarmed offender when deadly force was used include: Vicent (2015) when an offender “...tried to hold the officer’s head underwater and that [the officer] was able to fight his way above water and shoot [the offender];” Robinson (2015) when an offender “Suddenly, and without warning...hit the officer at least once and the two began struggling. A witness said [the offender] was pushing the officer against the railing and was afraid he was going to push the officer over the rail off the second floor balcony;” Winne (2017) when a fleeing offender was trying to “drive away with another detective hanging on to his car” when he was shot and killed by a second officer; Perry (2016) when an unarmed offender assumed a shooting stance and pointed a “metallic, cylindrical object at one of the officers,” which turned out to be a “vaping device;” Medina (2014) when an unarmed offender with “mental problems” struggled with responding officers and “spun around, tucked his head toward the officer’s gun and basically tackled him to the ground, trying to grab at the weapon;” Spielman (2016) when an unarmed offender “...who was under the influence of PCP attacked a female officer [and] viciously pounded her head into the street as her partner was trying to get him off of her. This attack went on for several minutes;” Associated Press (2015) when an unarmed offender “...knocked one officer to the ground and was grappling for the officer’s holstered weapon when the second officer fired two shots. The first officer pulled out a backup gun and shot [the offender] in the back...”. Also see MacDonald (2016) for a discussion of the limitations of the *Post*’s unarmed status classification and police shootings.

fatal police shooting in those cities. These groups have a long history of working with practitioners to generate research and to assist in translating research into practice. As part of policing's "new professionalism" (Stone & Travis, 2011), a summit of this sort could yield evidence-based solutions (such as less-lethal force options, de-escalation techniques and problem-oriented policing) that help mitigate the risks and harms associated with police use of force. This would add a measure of coherence to the national discussion of police use of force (Shane, 2016).

Without hard data, police departments and policymakers absorb a great deal of uncertainty and there is some degree of plausible deniability for senior police and elected officials about the nature and extent of the problem and no way to call them on it. By withholding accurate and timely information from the public by failing to collect the data (an act of omission rather than commission), police leaders and policymakers can shape and massage the account of police shooting fatalities that may serve political ends instead of rational discourse. Borrowing from Engel, Calnon & Bernard (2002, p. 268) provides a path for policy makers:

"Collectively, each of the theoretical frameworks reviewed here [race-based decision-making by individual officers, race-based decision making by police departments as a matter of policy, race-based trend differences in aggregate rates], establishes the need for the collection of additional types of data, including situational characteristics (e.g., suspects' characteristics, characteristics of the police-citizen encounter, and legal characteristics), officers' characteristics (e.g., sex, race, experience, and attitudes), organizational characteristics (e.g., formal and informal policies, and attitudes and preferences of administrators and first-line supervisors), and community characteristics (e.g., demographic, economic, and political). Unfortunately, much of the data on traffic and pedestrian stops that are currently being collected do not include the bulk of this information..."

As such, policing researchers should also lend their expertise toward developing a comprehensive national government database of incident-level use of force data to support pending federal legislation (H.R. 306, National Statistics on Deadly Force Transparency Act of 2015).⁹ A data source of this type would be consistent with the core mission of the: 1) National Police Research Platform, funded by the National Institute of Justice; 2) National Data Collection Committee of the Division of Policing at the American Society of Criminology; 3) findings from a joint report issued by the *National Sheriff's Association and the Treatment Advocacy Center* (2013) on justifiable homicides by law enforcement officers involving the mentally ill; 4) findings from the *Police Executive Research Forum* (2012) on being proactive about preventing use of force situations; 5) Police Foundation's report titled "5 Things You Need to Know About Open Data in Policing;" and 6) the President's "Police Data Initiative." An incident-based system is inherently flexible and can unmask relationships between victims, offenders, locations, and other micro-level details similar to the FBI's National Incident-based Reporting System (NIBRS). Incident-level data are superior to aggregate data for inferential purposes and can help explain the sequence of events that lead to police use of force, which will inform better tactics, better policies and a greater understanding of how a shooting occurs.

Given the limitations of the data, we do not make any specific policy recommendations for changing U.S. police policy as it relates to use of force in any specific police department, or police training setting since we do not have any definitive results suggesting the agency or individual officers are inappropriately considering extralegal factors when deciding to use force. Any assumption that U.S. officers are motivated by racial prejudice, or that a specific police department has adopted a policy (official or unofficial) contributing to racial prejudice

is premature and unsupported by the *Post* data. Only after it is determined that a specific police agency, or individual officer contributed to the disproportionality found in this research in a biased manner can it be addressed.

8. Directions for future research

Courts define the permissible scope of police action through decisions and statutory interpretation, and police policy becomes more or less restrictive based on the outcome of those decisions. Research can—and should—inform those decisions. Most of the past and present use of force research focuses on sociodemographic factors—age, race, sex, concentrated disadvantage—to explain the phenomenon in the same way it is used to explain crime (e.g., Cullen & Agnew, 2006). While interesting, they do little if anything to help understand the dynamics of a police shooting, or to help reduce use of force encounters, which should be the overriding goal of use of force research. To improve police use of force—and by improve we mean reducing the type and amount—policing researchers should turn to the factors courts consider when analyzing the legal aspects of a use of force episode (*City of Canton v. Harris*, 1989; *Graham v. Connor*, 1989; *Monell v. New York City Department of Social Services*, 1978; *Tennessee v. Garner*, 1985).

To exact accountability courts examine the micro actions of the offender and the officer, in relation to their environment,¹⁰ as set within the prevailing legal framework. This helps establish reasonableness, the cornerstone of the Fourth Amendment's seizure analysis. Reasonableness encompasses, but is not limited to: 1) the severity of the crime (s) at issue; 2) whether the offender poses an immediate threat to the safety of the officer(s) or others; 3) whether the offender is actively resisting arrest or attempting to evade arrest by flight; 4) the influence of drugs/alcohol or the mental capacity of the offender; 5) the time available to an officer to make a decision; 6) the availability of more officers, or resources to de-escalate the situation; 7) the proximity or access of weapons to the offender; and 8) any other imminent or exigent circumstances (e.g., Blair et al., 2011). Most currently available data sources on police use of force do not enable this type of analysis, but are very easily captured by the police agencies where they occur.

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¹⁰ To illustrate the complexity of a police shooting, author Shane conceptualized the interaction between the officer's ($n = 37$) and the offender's ($n = 24$) actions, in relation to their environment ($n = 9$). Shane conservatively estimates there are 54,740 unique combinations of conditions that could arise. A combination, not a permutation, is the number of ways to choose a sample of r elements from a set of n distinct objects, where the order does not matter and replacements are not permitted.

$C(n, r) = \frac{n!}{r!(n-r)!}$
 $C(70, 3) = \frac{70!}{3!(70-3)!}$
 $= 54,740$

⁹ Pending as of April 2017. Retrieved from <https://www.congress.gov/bill/114th-congress/house-bill/306/actions>, on April 1, 2017.

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