Exploring the Link Between Violent Crime Workload and Officer-Involved Shootings of Unarmed Individuals*

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Abstract

The present author created a measure of officer workload in the U.S. and determined whether this measure predicted lethal officer-involved shootings (OISs) of unarmed individuals. Seventy-six OISs from the year 2016 were analyzed using archival data. Data were collected regarding population size, number of officers, and violent crime statistics for each city and state in which a lethal OIS of an unarmed decedent occurred. The present author hypothesized that states with more officer-involved shootings of unarmed individuals would have higher officer workloads than states with fewer shootings, and that officer workload would be higher in cities where shootings occurred, compared to those cities' state-level measures. Workload comparisons between states were not significant; however, city to state comparisons revealed meaningful workload differences. Specifically, cities with fatal OISs of unarmed decedents had higher officer workloads than the state in which the cities were located. Future research that includes data beyond 2016 could allow one to predict cities that are at risk for lethal OISs and offer evidence-based insights into methods designed to minimize the number of these events.

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Citizens and politicians alike have directed significant attention toward officer-involved shootings and use of force incidents in the past several years. In 2016 alone, 962 individuals were fatally shot by police officers in the United States, and 76 of those killed were unarmed ("Police Shootings," n.d.). As news coverage and awareness of these events have increased, public support of the police has become divided, often along political lines; this division makes taking unified actions to reduce the number of fatal shootings more difficult. Recent protests related to the Black Lives Matter movement and calls to defund police forces across the United States have highlighted this division, particularly in response to the deaths of unarmed individuals.

Given the polarized nature of this issue, this study aims to address officer-involved shootings from a nonpartisan standpoint by focusing on the workload of officers in the United States. Focusing on the effect of workload acknowledges officer fatigue and how this fatigue may affect an officer's responses rather than analyzing characteristics of the officer or the subject. Acknowledging that an officer's workload may need to be adjusted in light of officer fatigue does not vilify officers or unarmed decedents. The evidence-based insights that result from this study of lethal use of force incidents may help identify specific, practical remedies to reduce these events.

On the whole, scientific studies examining police use of force focus on the role population demographics play in actions taken by officers rather than on officer workload. In their use of force content analysis, Klahm and Tillyer (2010) found that the demographic variables researchers generally include (e.g., race/ethnicity, gender) either yield mixed results across studies or do not serve as good predictors of future use of force. For example, in the studies they analyzed, neither the race nor the gender of an officer was significantly related to overall officer use of force. Furthermore, the researchers found that the effect of the suspect's race on use of force by officers was mixed (Klahm & Tillyer, 2010).

Aside from these demographic characteristics, some environmental variables have also been considered in relation to these use of force cases. Brook, Piquero, and Cronin (1994) found that officers working in busier precincts with more calls for service generally have more negative attitudes regarding their department and community compared to officers in slower precincts. Such negative attitudes may impact how officers characterize individuals that they encounter or arrest. If officers view these community members negatively, then officers may be less reluctant to use force against these individuals, especially if the officers fear for their own safety in encountering members of their community. Similarly, Granot, Balcetis, and Stern (2017) report a positive relationship between the crime rate in an area and negative contact with police officers.

In fact, the relationship becomes even clearer when use of force cases are analyzed on a neighborhood-by-neighborhood basis. One study conducted by Terrill and Reisig (2003) sought to contextualize use of force cases by studying the neighborhoods in which these incidents occurred. The researchers found that individuals living in disadvantaged areas with high rates of homicide were met with higher levels of physical and verbal force (e.g., threats, restraints, and both lethal and nonlethal strikes with an object or hand) from police compared to those residing in more advantaged neighborhoods. This study and the studies formerly mentioned illustrate how workload and crime rate are associated with officers' attitudes and use of force. Unfortunately, none of these studies focus specifically on lethal use of force directed toward unarmed citizens, especially as those actions relate to a police force's capacity to respond to violent crime.

Given the same violent crime rate in a community, an officer employed in a precinct staffed with a relatively large number of officers would have a lower violent crime workload than would an officer working in a less adequately staffed precinct. Specifically, the latter would have, on average, a greater number of potentially life-threatening calls to respond to, and the volume of this type of work could potentially affect their responses to potential suspects. It is important to note that in many of the more recent, attitude-galvanizing events, the potential suspects in question were unarmed. Thus, the aim of this study was to test for a possible link between violent crime workloads (rather than precinct busyness or crime rates) and the fatal shooting of unarmed persons by police officers. To our knowledge, no prior published studies have examined this possible link.

In order to examine this link, the present author created an officer workload measure for each city and state in which an unarmed citizen was fatally shot by the police in 2016. It should be noted that in many cases the actual location was a town or smaller municipality rather than a city. However, for the sake of presentation efficiency, the term "city" is used throughout this report. Workload, in this case, was defined as the average number of violent crimes an officer would have to respond to in their respective patrol area. These violent crimes include robbery, aggravated assault, and nonnegligent manslaughter. Officer workload served as this study's predictor variable, while the dependent variable was the number of unarmed, lethal shootings that occurred in a particular city or state. Shootings in this sample were defined as those in which an unarmed, non-incarcerated citizen was fatally shot by an on-duty police officer with a firearm in 2016. Use of force cases can take up to a year to be processed and accounted for in federal data; therefore, the present study focused on less recent cases (Beck & Uchidna, 2019).

The present author hypothesized that American states with more officer-involved shootings of unarmed individuals (e.g., California) would have higher officer

workloads than states with fewer shootings (e.g., New York). These higher workloads may affect officers in ways that increase the lethality of their response to suspects. For example, responding to a large number of violent crimes in the line of duty may fatigue officers or increase their perceptions of threat, thereby affecting their ability to make decisions about how much force to use during an interaction. Secondly, the author hypothesized that officer workload would be higher in cities where shootings occurred compared to those cities' corresponding state-level workload measures. This prediction would act as a second test of the fatigue-lethal response model. By comparing cities to the states in which they are located, this approach controls for potential confounds such as between-state differences in population demographics, policing norms, officer training standards, and use of force policies.

Methods

Archival Cases

There were 76 cases from 2016 included in this research. Individuals were not included in the present analyses if they were driving a vehicle in the direction of one or more officers at the scene (n = 8). This exclusion criterion was adopted because police officers often consider such vehicular maneuvers as hostile, since the vehicle could be used as a weapon and harm officers on the scene. In addition, the death of one individual who died during a police training accident (n = 1) was omitted because such events usually involve equipment malfunctions that accidentally harm someone who was not being arrested or investigated by an officer. Finally, inmates attempting to escape from a prison facility (n = 2) were not included, even if they were unarmed. Though officers often need to make use of force judgments when apprehending escaped inmates, comparing individuals who are trying to escape a prison facility with those encountered by police outside of these institutions is problematic, as escaped prisoners may be characterized by the police as inherently more dangerous, among other assumptions.

The cities analyzed in this study corresponded to those in which each lethal officer-involved shooting took place in 2016. Information gathered about each of the 71 cities in which a case occurred was also collected for each of the 50 U.S. states, and 32 total states included one or more cities with a lethal OIS. In five of these 71 cities, two fatal OISs occurred in 2016; however, no city had more than two lethal OISs during the course of 2016.

Materials and Data

The 76 cases were identified and recorded from two main databases: the *Washington Post* "Police Shootings" database and a similar, independently maintained database

provided by the *Guardian* (Swaine, Laughland, Lartey, & McCarthy, n.d.). These databases were used to gather the decedents' names, the shooting locations, and the basic circumstances surrounding each shooting. After the cases were identified, population estimates for each city where a lethal shooting occurred were obtained from census data compiled by the United States Census Bureau. Population estimates from 2017-2018 were recorded for most cities; however, 2010 census values for cities were recorded when 2017-2018 population estimates were not available. In the case of Arvonia, Virginia, population data was not available in the census and was instead pulled from the website *Best Places*, which compares crime rates and cost of living across cities ("Arvonia," n.d.).

For each city, the number of officers employed in that area was derived from the Federal Bureau of Investigation's Uniform Crime Reporting (UCR) data. UCR data was also utilized to collect information on both the overall number of violent crimes and the number of specific violent crimes (i.e., murders, robberies, and aggravated assaults) committed in each city and its corresponding state where one of these cases occurred. Information about the number of overall violent crimes and the number of violent crimes per citizen in each city was specifically accessed through a *Detroit Free Press* database that consisted of organized UCR data (Tanner, 2017). In the few cases where UCR data was missing regarding the number of officers employed in a city, the present author checked official police websites for each city and emailed police departments to ask how many police officers were employed in 2016. Information about the number of police officers per ten thousand residents for each city was recorded from a database compiled by Governing (2018) or hand calculated before it was converted into a measurement per one thousand residents using Microsoft Excel.

Procedure

City-level officer workload values were calculated by dividing the number of officers per thousand citizens employed in the city in 2016 by that city's violent crime rate in 2016 (i.e., the combined number of homicides, aggravated assaults, and robberies committed per 1,000 citizens). This crime rate calculation represents the number of violent crimes that each officer, on average, would have encountered in the city during that year. Thus, for cities that employed a large number of officers (per citizen population) while experiencing few violent crimes, the calculated workload rate was relatively low. Conversely, for cities that employed fewer officers while experiencing more violent crimes, the workload rate was high relative to other calculated rates in the sample. Similarly, state-level officer workload values were calculated by dividing the number of officers per 1,000 citizens employed in a state by the state's overall violent crime rate. Thus, each city's and each state's officer workload number reflected the number of violent crimes to which

a typical officer employed by that city or state had to respond to in the year 2016.

Hypothesis one proposed that states with more officer-involved shootings of unarmed decedents would have higher officer workloads than states with fewer shootings. To test this hypothesis, a Pearson correlation coefficient was calculated for state-level violent crime workload values and the number of unarmed individuals lethally shot by law enforcement in the corresponding state in 2016. A separate analysis was conducted for the second hypothesis, which predicted that officer workload would be higher in cities where shootings occurred, compared to the corresponding state-level workload value. To test the second hypothesis, a paired samples *t*-test was conducted. Violent crime-based workload served as the dependent variable, and city vs. state workload was the grouping variable. Only the 32 states where one or more unarmed shootings occurred were included in this analysis. This analysis compared overall officer workload values, which meant that these values were calculated from a combination of violent crimes; however, in a third analysis, the present author also compared individual workload indices based on specific categories of crime (i.e., nonnegligent manslaughter, robbery, and aggravated assault) on state and city levels using the same paired *t*-test.

Results

A Pearson correlation coefficient was calculated to compare state-level officer workload to the number of unarmed, lethal OIS in a corresponding state (which ranged from 0 to 15). Contrary to the prediction reflected in the first hypothesis, state-level officer workload and the number of unarmed shootings were not significantly correlated, $r(48) = -0.22$, $p = 0.93$. The data are illustrated in Figure 1.

Regarding the second hypothesis, a paired samples *t*-test was conducted to compare each OISs' city-based officer workload value to its state level officer workload value. Although marginally statistically significant, city-level workload values were higher (M =

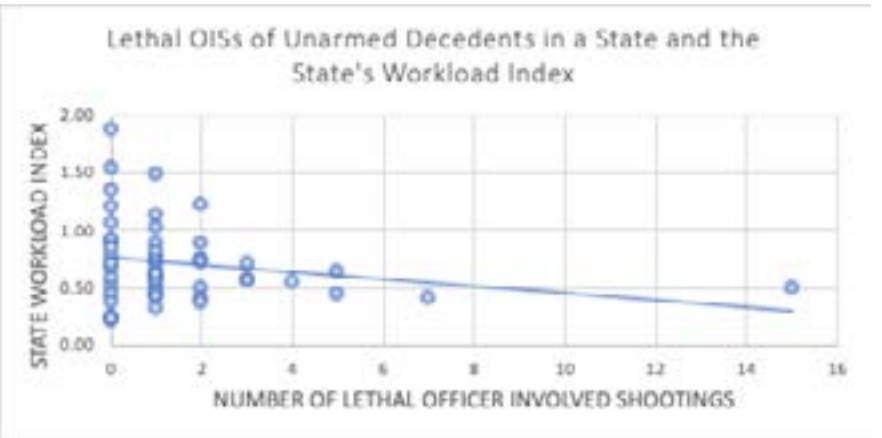

Fig. 1. The number of lethal OISs and the workload index for each state.

1.31, SD = 2.19) than corresponding state-level workload values (M = 0.66, SD = 0.26); t(31) = 1.62, p = .06, d = .29. For exploratory purposes, similar paired sample t-tests were conducted to compare cities to their corresponding states on each of the 3 specific violent crimes that made up the overall violent crime-based workload values (i.e., non-negligent manslaughter, robbery, and aggravated assault). None of these analyses revealed significant differences, likely due to the variability of such specific indices across cities and states.

Discussion

The first prediction, that states with more officer-involved shootings of unarmed individuals would have higher officer workloads than states with fewer shootings, was not supported. A large degree of variability between workday lengths, policing laws, and training standards likely limits the extent to which officer workload alone can predict state-to-state patterns of lethal use of force. For example, the number of hours of de-escalation and mental health awareness training police officers receive differs widely across states, with a minimum of two and a maximum of 40 hours across the 31 states that mandate such training (Plotkin & Peckerman, 2017). This large range serves to illustrate the varying nature of state laws related to policing.

In contrast, hypothesis two received support. Cities in which a fatal OIS of an unarmed decedent occurred had significantly higher officer workloads than their overall state's officer workload average. Put another way, police working in population centers that witnessed lethal OISs had violent crime workloads twice that of the average officer in their state. It should be noted that, due to the degree of variability in city-level workload values, analyses indicated this difference was marginally significant and small-to-moderate in size.

Due to the archival, non-experimental nature of the data, this study is not equipped to determine potential causal mechanisms behind this finding. As previously described, perhaps higher workloads affect one or more physiological or psychological characteristics of police in ways that increase their odds of using lethal force during citizen interactions. For example, high violent crime workloads may impact officer fatigue, morale, and/or perceptions of threat. Alternatively, one or more confounding variables (e.g., police-community relations, local revenue capacities) could potentially account for the observed difference. Even so, controlling for state-to-state differences in policing variables by comparing OIS locations to their respective region did help clarify OIS patterns. For example, cities and towns within one state, such as Arizona, are likely to have similar, state-mandated police selection and training requirements. Within this more homogeneous context, one can more clearly observe that lethal OISs of unarmed citizens in 2016 occurred in areas where officers had relatively high workloads.

The results of the present study align with past research findings showing that officer workload may influence officers' use of force and attitudes towards the citizens they serve. Recall that Terrill and Reisig (2003) found that individuals living in neighborhoods with higher crime rates were generally responded to with higher use of force by officers. The current study found that cities where an OIS occurred had both higher workloads and higher crime rates than the state in which they were located. Furthermore, though Brooks et al. (1994) focused on the effect of police attitudes rather than on the rate of lethal OISs, both their study and the present study reveal the potential effects of workloads on officer responses.

One strength of the present study is how easy it would be to replicate. The procedures could be repeated on more recent UCR data and easily compared with this study's results. Also, databases that contain archival data regarding these OIS cases, though few in number, are maintained and accessible remotely for ease of access. A second strength is that, to the best of the author's knowledge, the present study is the first to comprehensively study cases of lethal force across all 50 American states over the course of a calendar year. Most importantly, this study is the first to single out cases in which the use of lethal force was directed toward unarmed persons. Though more general research regarding use of force is certainly important, taking a closer look at cases involving unarmed decedents is also necessary to have a clear picture of use of force as a whole.

Regarding limitations of the present study, the reported findings might have been stronger if a more refined, centralized source of police data existed. Currently, the U.S. has a fragmented system of reporting violent crimes and the number of police in an area; though UCR data provides researchers with a number of important statistics, some law enforcement agencies do not provide any data to the FBI (Banks et al., 2016). As reporting to the FBI is voluntary, the issue of missing data is difficult to resolve. Unarmed shootings and other uses of police force also take time for departments to process and submit; therefore, these incidents may not be properly represented in more recent datasets (Beck & Uchidna, 2019). Even so, analyzing the data that are available does provide valuable insights to use of force behavior and knowledge about officer workloads. Further examination of these variables could provide valuable insights on improving both the U.S. system of policing and the well-being of fatigued officers.

While being mindful of the aforementioned time lag, further research should expand the present analyses beyond 2016. Taking action to expand this present study's scope could reveal trends in officer workload across cities and states and, in turn, add weight to the results observed in the present study. For example, if cities where these OISs occur maintain higher workloads over time than the state in which they are located, the present

study's conclusions could be further supported. If this pattern does persist, researchers could also attempt to predict cities in which shootings were likely to occur based on workload values. Then, policy makers and police agencies could take actions that reduced each officer's workload. These actions could come in the form of (1) hiring more officers in understaffed areas, (2) allocating resources to entities (e.g., social workers) that could respond to situations currently included in officers' workloads (e.g., non-violent mental health crises), or (3) implementing interventions that address officer fatigue, morale, or threat perceptions. Ideally, no matter what solutions are employed to lower officer workload, this alert could lower the number of lethal OISs that occur in the United States.

In closing, the present study represents a first of its kind. It examines a crucial, polarizing phenomenon in a manner tied to actual incidents and relevant to recent events. Insights from this study and future research modeled after it has the potential to generate practical, nonpartisan solutions aimed at minimizing the loss of life during policing interactions.

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