Violence Against Police: What We Know and Need to Know *

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Abstract

American policing is a unique occupation, in part because officers are expected to confront violence. Understanding patterns in violence against police is vital to inform efforts aimed at enhancing both officer and public safety. To help researchers navigate the current landscape of data available to investigate violence against police, this chapter critically examines the fragmented and delayed nature of current federal, state, and non-profit data sources that include LEOKA, NIBRS, ODMP, NLEOMF, and the GVA. By highlighting the strengths and limitations of each dataset, we underscore the need for more comprehensive and timely data. Additionally, we review empirical research that has leveraged these datasets, exploring factors influencing trends in violence against officers and identifying key areas for future research. We conclude with recommendations for enhancing data collection and research to inform policies aimed at reducing violence against police and improving overall public safety.

Keywords: officer safety, gun violence, assaults, injuries, official data

Violence Against Police: What We Know and Need to Know

Introduction

Policing is a dangerous occupation. Recent studies suggest that each year in the United States, 250 to 300 officers are injured by civilian gunfire, with about 15 to 20% of those injuries being fatal (Sierra-Arévalo et al., 2023). More generally, 10% of U.S. police officers are assaulted each year (Bierie, 2017), and 25-30% of those who are assaulted sustain nonfatal injuries (Federal Bureau of Investigation [FBI], 2022). Such figures suggest that violence directed at U.S. police officers is routine. But against the backdrop of a country in which nearly 800,000 state and local officers police some 330 million civilians across more than 17,500 jurisdictions and engage in at least 61.5 million interactions each year (Gardner & Scott, 2022; Harrell, 2020), it is also true that violence against U.S. police is statistically rare. As such, while it is true that police in countries like the United Kingdom and Germany face a significantly lower risk of physical harm by civilians (Zimring, 2017), it is also the case that the number of felonious assaults on officers remains near historic lows (White et al., 2019).

Understanding the conditions that give rise to such violence is critical. So, too, is reckoning with the variation across and limitations of existing data sources on violence against police. Unfortunately, current data systems are scattered, incomplete, and (in some cases) slow to be shared publicly. To support future inquiry into the causes and consequences of violence against police, this chapter provides a concise review of available data on violence against police that cut across state, federal, and non-profit sources, as well as a review of empirical research using these data sources. We conclude with suggestions for future research and implications for practical efforts to enhance both public and officer safety.

The Current State of Data and Extant Research

A variety of organizations and government agencies track fatal and nonfatal violence against police. Notable datasets include Law Enforcement Officers Killed and Assaulted (LEOKA) published by the Federal Bureau of Investigation (FBI), the National Incident-Based Reporting System (NIBRS), the Officer Down Memorial Page (ODMP), the National Law Enforcement Officers Memorial Fund (NLEOMF), and the Gun Violence Archive (GVA). California and Texas also have comprehensive police use of deadly force databases that track firearm violence against police officers (see Table 1).[1] This section outlines the strengths and weaknesses of official datasets compiled by federal and state governments as well as unofficial datasets assembled primarily via crowdsourcing and/or web crawling in the United States. We review studies leveraging each data source.

[Table 1 here]

Federal and State Datasets

Law Enforcement Officers Killed and Assaulted (LEOKA)

The FBI started tracking police line-of-duty deaths in 1937 and nonlethal assaults on officers in 1960. Beginning in 1972, the FBI published annual reports detailing law enforcement officers killed and assaulted in the line of duty. These Law Enforcement Officers Killed and Assaulted (LEOKA) data document felonious killings, accidental line-of-duty deaths, and nonfatal assaults of sworn law enforcement officers who have full arrest authority and who were operating as an official law enforcement officer (including local, state, federal, and special

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[1] Beyond the United States, Germany and the United Kingdom have in-depth reporting systems that track officers who are assaulted in the line of duty. Here, we restrict our focus to the US context. For more on Germany and the UK, see BKA (2020), ONS (2023), and Zimring (2017, chapter 4).

jurisdiction officers). Suicides, natural causes of death, and events unrelated to the job such as off-duty, personal conflicts are not included in LEOKA.[2]

Several longstanding concerns about LEOKA's limitations must be noted. First, these data rely on the voluntary submission of data by state and local law enforcement agencies. Even small differences in the sample of agencies who submit complete or partial data each year prevents reliable year-to-year comparison, especially at sub-national levels of aggregation. A second concern is that information reported by state and local agencies is not audited by the FBI prior to its inclusion in LEOKA (Zimring, 2017). Since event details are not verified for accuracy, the statistics included in the annual LEOKA report may have some as of yet unmeasured level of error. Third, there is a lengthy lag between collection and public release of LEOKA data—between 12 and 18 months. This impedes timely analysis necessary to inform a significant public safety and policy concern (Kuhns et al., 2016; Nix et al., 2019; Sierra-Arévalo & Nix, 2020; Sierra-Arévalo et al., 2023)

These limitations notwithstanding, LEOKA is the only government effort that attempts to track lethal and non-lethal assaults on officers in the line of duty across the entire United States. This has made it arguably the most popular dataset for researchers who study violence against police (e.g., Jacobs & Carmichael, 2002; Kaminski & Stucky, 2009; Shjarback & Maguire, 2021). LEOKA data show that in the last two decades, on average, roughly 60,000 officers were assaulted each year, or about 160 assaults per day. Most of these assaults were minor, with only 25-30% resulting in any injuries to the officers involved and less than 0.1% resulting in death

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[2] Official LEOKA criteria retrieved from https://www.fbi.gov/how-we-can-help-you/more-fbi-services-and-information/ucr/leoka.

(see Figure 1). Of these fatal assaults, the overwhelming majority were committed with a firearm (ranging from 88 to 98 percent each year).

[Figure 1 here]

Because it spans several decades, LEOKA enables examination of longitudinal trends in fatal and non-fatal assaults of police. For instance, after peaking in the early 1970s, line-of-duty deaths declined substantially until the mid-1990s (see Figure 1). Meanwhile, the number of officers nonfatally assaulted in the line of duty climbed steadily from the 1960s to the 1980s before stabilizing in the 1990s and holding relatively steady in the time since. Of course, these raw frequencies do not consider changes in the number of officers employed over this period. Accordingly, Figure 2 plots the rates of killings and assaults of officers per 10,000 each year. For the most part, the historical trend in the rate of officers killed in the line of duty closely resembles that of the frequency of these killings. However, in contrast to the frequency of assaults on officers, which plateaued in the 1990s and has remained essentially stable since, the *rate* of such assaults flattened in the 1980s before falling in the 1990s and 2000s.

The ability to examine long-term longitudinal patterns in fatal and nonfatal assaults is useful for contextualizing more recent temporal variation. For example, although there has been much hemming and hawing about a "war on cops" in recent years (Mac Donald, 2016), LEOKA data show that officers appear to be at much lower risk of being assaulted, injured, or killed than they were in previous generations (Figure 2; see also Shjarback & Maguire, 2021).[3]

[Figure 2 here]

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[3] These rates do not take into account changes in police behavior over this period (e.g., rates of stopping or making arrests) that expose them to the risk of being assaulted. For more, see discussion in Sierra-Arévalo et al. (2023, pp. 396-398).

Documenting these trends is informative, but it is also important to empirically test hypotheses about what factors are driving long-term trends. The diffusion of body armor, for example, appears to be a key reason for the decline in felonious killings of officers since the early 1970s. Using LEOKA data from 2002 to 2011, Liu and Taylor (2017) showed that among 637 officers who had been shot in the torso, those who were wearing body armor were 76% less likely to die than those who were not wearing body armor. The study also found that individual factors like age, body mass index, rank, region, and assignment type were all correlated with the likelihood of an officer wearing body armor on patrol.[4] Meanwhile, the decline in injurious assaults from the early 1990s to the mid-2010s closely tracks the broader decline in violent crime America witnessed during that period (Zimring, 2006).

[Figure 3 here]

In addition to documenting decades-long declines in fatal and nonfatal assaults of officers across the U.S., LEOKA suggests a great deal of place-based variation in violence against police (see Figure 3). One explanation for the observed variation in fatal and nonfatal assaults on police centers on state-level differences in firearm ownership. For example, Swedler et al. (2015) examined the relationship between household firearm ownership and felonious killings of police officers at the state level. They found that felonious killing rates were about 3 times greater in states with higher levels of firearm ownership as compared to those with lower firearm ownership rates. Expanding this research to include nonfatal firearm assaults, Gobaud et al. (2022) report that states with higher gun ownership experienced increased odds of officers being

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[4] Unlike the observed decline over time in line-of-duty deaths caused by firearm assaults, LEOKA data indicate there has been no comparable decline in deaths caused by motor vehicle crashes (Tiesman et al., 2010; Tiesman et al., 2013). Researchers who have studied this issue consistently find that a substantial portion of officers do not wear their seatbelts and/or drive at high speeds when pursuing drivers who flee traffic stops (Alpert & Fridell, 1992; Alpert & Lum, 2014) or responding to "hot" calls (Sierra-Arévalo, 2024; Wolfe et al., 2020), thus putting themselves at greater risk of being involved in a deadly collision (von Kuenssberg Jehle et al., 2005).

assaulted with firearms, but that this association was moderated by laws requiring universal background checks. That is, "in states without a universal background check law, for every 1% increase in state-level firearm ownership…there was a 12.4% increase in the odds of an LEO assault with a firearm when adjusting for confounders."

National Incident-Based Reporting System (NIBRS)

The National Incident-Based Reporting System (NIBRS) is a relatively new crime database intended to improve on the FBI's Uniform Crime Report. Established in 1989 but not rolled out nationally until 2021, the goal of NIBRS is to collect more detailed information about crime incidents than previously collected via the UCR. Rather than record data according to the "hierarchy rule" that codes incidents according to the most severe offense, NIBRS is flexible enough to record multiple offenses and relevant offense-level characteristics (e.g., setting, time of day, whether the offense was cleared by law enforcement), as well as victim- and offender-level characteristics (e.g., the relationship between the two parties) (see e.g., Strom & Smith, 2017). NIBRS also captures information about fatal and nonfatal assaults of police officers, making it another useful dataset for studying violence against police (Fridell et al., 2009; Nix et al., 2019; Willits, 2014). Unlike LEOKA, NIBRS requires several quality checks that improve its reliability.[5]

Unfortunately, participation rates have been abysmal for most of NIBRS's existence, and though they have improved recently, they remain below federally required thresholds for public release of disaggregated data (see Bates, 2022). For example, in 2016, just 37% of agencies submitted data. In 2022, the most recent data available at the time of this writing, 44% of

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[5] Of course, this is not to suggest the data are error-free. Cross et al. (2023), for example, reviewed the accuracy of NIBRS arrest and summons data in Massachusetts and found a small number of false negatives (i.e., they were incorrectly documented as "not cleared" in NIBRS) and false positives (i.e., there were incorrectly documented as "cleared" in NIBRS).

agencies submitted all 12 months of crime data, 25% submitted partial data, and 32% submitted no data (Li & Ricard, 2023). Additionally, the bulk of collected NIBRS data overrepresents southern agencies and underrepresents large cities (Addington, 2008; Chilton & Regoeczi, 2007; McCormack et al., 2017). Case in point, in 2021 and 2022, agencies in New York City, Los Angeles, Chicago, Phoenix, and Philadelphia either did not participate or only submitted partial data (Li & Ricard, 2023). At present, these notable gaps in agency participation make NIBRS less suitable than LEOKA for understanding national-level trends in violence against officers.

These limitations notwithstanding, a distinct strength of NIBRS is that assaults of officers are a subset of the larger crime incident dataset. This enables researchers to investigate how often officers respond to incidents *without being assaulted or killed*. Whereas some prior research examines assaults on police to find underlying similarities that might predict future assaults (Crifasi et al., 2016; Petersen & Ouellet, 2023; Swedler et al., 2015), such research is severely limited by its selection on the dependent variable. For example, police have long been taught that domestic disturbances are uniquely dangerous for responding officers (Black, 1980; Davis, 1981; Parnas, 1967; Westley, 1970), and official reports drawing on LEOKA data often seem to justify this point of view because a sizeable proportion of recorded assaults occur during such calls (Breul & Keith, 2016). Such analyses, however, cannot speak to domestic disturbance calls in which no assault occurs. NIBRS, by contrast, allows researchers to compare incidents which resulted in an assault to those in which no assault occurred. In a more robust analysis of assault on police that used 2016 NIBRS data, Nix et al. (2019) showed that police officers were

significantly *less* likely to be assaulted or injured when responding to domestic incidents relative to non-domestic incidents.[6,7]

More generally, because NIBRS offers richer information about the offenders who assault (and do not assault) officers, this dataset permits researchers to examine suspect- and incident-level characteristics that predict the likelihood of assault on officers. Bierie (2017) found that female or all-female groups presented the lowest risk of assaulting officers (relative to male or all-male groups and multiple-gender groups), and incidents involving Black suspects were more likely to result in assaults on officers than those involving White or Hispanic suspects. Additionally, officers were at a much greater risk of being assaulted when responding to calls involving assaults, destruction of property, and robbery, relative to calls about property crimes. In a separate study focused solely on gun assaults, Bierie et al. (2016, p. 512) found that "risk grew as the number of offenders, and their average age, increased." The research team also found that risk increased when at least one offender was under the influence of alcohol. Such research is, of course, limited to the extent that data are highly dependent on police discretion regarding whether to engage and if and how to report street-level incidents (Cook & Fortunato, 2022; Huff, 2021). And similar to the limitations of research which examines incident-level correlates of assault on police, suspect-focused studies using NIBRS are unable to shed light on the micro-

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[6] It bears mentioning that researchers disagree on what universe of incidents should be included in the denominator. Bierie (2017), for example, used a case-control method where he compared all assaults of police officers to a random sample of arrests where officers were not assaulted, using NIBRS data that spanned 2002 to 2010. Nevertheless, his findings were consistent with those of Nix et al. (2021): "domestic violence was not unique and extraordinary relative to other types of calls for service" (p. 919).

[7] Importantly, the researchers could not determine why this was the case. On the one hand, domestic incidents might objectively pose less risk to officers. On the other hand, agency policy or culture might dictate that officers wait for backup before responding to domestic disturbances. Even absent formal or informal rules, it is possible that officers approach such calls with a heightened sensitivity to cues signaling potential danger (MacDonald et al., 2003).

level interactional dynamics between officers and suspects that prefaced an assault (Alpert & Dunham, 2004; Alpert et al., 2020; Mastrofski et al., 2002; Reisig et al., 2004; Voigt et al., 2017).

Other studies have used NIBRS data to evaluate the effects of agency policies and community context on violence against police. Fridell et al. (2009) analyzed census data, survey data, and NIBRS data submitted by 158 local police departments in 2001, and found that body armor policies, their measure of "agency accountability" (e.g., two-person patrols, dispatch follow up practices, use of force reviews), and violent crime were each significantly associated with the number of officers assaulted and killed over a three-year period.

Despite its benefits relative to LEOKA, NIBRS is relatively less "user friendly" than LEOKA (and other datasets discussed below), which likely explains the slow incorporation of NIBRS into research on violence against the police. Unlike LEOKA, a single year of NIBRS data is spread across multiple, large files that require significant pre-processing before they can be used in any analysis (e.g., merging, handling missing data). This obstacle is only compounded when analyzing multiple years of data. But given the decided strengths it offers in comparison to LEOKA (namely, the ability to analyze incidents that do not result in violence alongside those that do), and that participation rates have slowly improved in recent years (Li & Ricard, 2023), we hope that researchers will call upon it more often going forward (for more, see Lantz, 2022).

State-Level Data: California and Texas

At the state level, California has emerged as a trailblazer in the collection and publication of detailed information about police-citizen interactions that result in violence. Since 2016, its *Use of Force Reporting System* (UFRS, formerly known as "URSUS") has tracked:

1. Incidents involving the shooting of a civilian by a peace officer,

2. Incidents involving the shooting of a peace officer by a civilian,

3. Incidents in which the use of force by a peace officer against a civilian results in serious bodily injury or death, and

4. Incidents in which use of force by a civilian against a police officer results in serious bodily injury or death

Of particular note is that UFRS tracks information about both police and non-police who are party to an act of violence. Rather than focus on only characteristics of those who assault police or those assaulted by police, UFRS records rich incident- and individual-level information about serious violence committed against *and* by police officers (e.g., date, time, location, reason for contact, demographic information about victims, what type of weapon was used, injuries sustained, wound locations, etc.). And unlike LEOKA and NIBRS, California's system neatly categorizes shooting incidents into those that result in fatalities, non-fatal injuries, or no injuries. However, a key limitation of this dataset is that it only tracks the most serious assaults, including incidents that involve a shooting, serious bodily injury, or death.

Texas, meanwhile, has required all agencies in the state to report all officer-involved injuries or deaths caused by a firearm to its Attorney General since September 1, 2015. The information is compiled into annual reports made publicly available by the Office of the Attorney General. Though both datasets have been around for over seven years now, little empirical research has used Texas or California's data to study violence against police officers in either state.[8] One exception is a study by Shjarback and Nix (2020), who used each state's data on officers shot in the line of duty to benchmark racial disparities in police shootings of civilians.

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[8] A few other studies have used the data to study police use of force. See, e.g., Shjarback et al. (forthcoming) and Premkumar et al. (2021).

Their analysis found that, relative to their involvement in shootings of police officers, Black civilians were less likely to be shot by police in Texas than white civilians, and Black civilians were more likely to be shot by police in California than white civilians.

We are unaware of any other states that systematically collect and publish similar individual- or incident-level data. Given that the federal government has failed to compile timely, complete, and reliable data, we see great potential in state-level efforts like these. That two of the most populous (and quite dissimilar) U.S. states can compile such rich data in a timely fashion suggests that other states can and should follow suit.

Unofficial Datasets

Officer Down Memorial Page (ODMP) and National Law Enforcement Officers Memorial Fund (NLEOMF)

Founded in 1996, the Officer Down Memorial Page (ODMP) is a non-profit organization dedicated to tracking the work-related deaths of local, state, and federal law enforcement officers, including correctional officers and K9s. ODMP records all deaths, including those that resulted from violence, accidental deaths, and health related causes such as COVID-19 or September 11-related illnesses.[9] Natural causes are included if they directly result from law enforcement duties (e.g., heart attack, aneurysm, etc.). Off-duty deaths are included if the officer was operating in an official capacity or if they were targeted because of their position as a law enforcement officer. ODMP gathers information about line-of-duty deaths through an online submission form that can be filled out by law enforcement agencies, family members of a fallen officer, and civilians. ODMP also proactively reviews news sources. Once a submission is

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[9] Official ODMP criteria retrieved from https://www.odmp.org/info/criteria-for-inclusion.

received or a news article is identified by ODMP, it is reviewed by a board member before being added to their official database. Submissions that cannot be verified by a board member are reviewed by the entire board and included if a majority approve. Though it does not include officer suicides in its dataset, ODMP collaborates with Blue H.E.L.P., a suicide-focused non-profit, to disseminate information about officer suicides and mental health.[10]

The National Law Enforcement Officers Memorial Fund (NLEOMF) is another non-profit organization that tracks line-of-duty deaths and promotes a variety of resources for officer health and wellness. Applications to have a fallen officer considered for inclusion can be submitted via the NLEOMF website, but notably, require the signature of an agency head. Their criteria specify that the officer must have been working in a sworn capacity with full arrest authority. Like ODMP, NLEOMF tracks all job-related fatalities, including illnesses contracted while on the job.[11]

Notable limitations of both datasets include that they only track line-of-duty deaths (to the exclusion of nonfatal assaults) and provide little in the way of information about the suspects involved or details about the assault. For example, ODMP groups fatalities into several categories, such as *assault, automobile crash, duty-related illness, gunfire,* and *struck by vehicle* (among others). Meanwhile, NLEOMF categorizes fatalities more broadly as either *firearms-related, traffic-related, other,* or (since 2020) *COVID-19*. LEOKA and NIBRS provide much more context about fatalities (as well as nonfatal assaults), including, for example, the profile of alleged known assailants (age, height and weight, gender, race, prior criminal history, and

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[10] See https://bluehelp.org/.
[11] Official NLEOMF criteria retrieved from https://nleomf.org/wp-content/uploads/2022/04/Criteria_for_Inclusion_4_5_22.pdf

whether s/he was under the influence at the time of the assault), the type of firearm or other weapon used, and whether the officer was wearing body armor.

One decided strength of these datasets, relative to official data, is their historical coverage. Both ODMP and NLEOMF track line-of-duty deaths back as far as the late 1700s, which permits examination of high-level trends in officer fatalities across multiple generations, presidencies, social movements, economic cycles, crime waves, technological innovations, and so on. Batton and Wilson (2006), for example, used NLEOMF data to calculate the rates of police murders from 1947 to 1998, and in so doing, provide evidence that at the national level, economic deprivation and deterrence theories are helpful for understanding trends in police murders, but social disorganization and control theories not so much.[12] A separate study using NLEOMF data found evidence that declines in police killings over time resulted from economic growth, inflation decline, growth in the prison population, and World War II (Kaminski & Marvell, 2002). Interestingly, Kaminski & Marvell (2002) found that long-term trends in civilian homicides were impacted by the percentage of people in high-crime age groups, but this did not hold true for killings of police. In other words, the factors that impact homicide rates broadly did not seem to dictate long-term trends in killings of police in the same way.

Another strength of these datasets is their timeliness. Both provide near-real time updates on their websites, enabling timely analyses of pressing research questions.[13] Thus, using ODMP data, White et al. (2019) demonstrate that policing has slowly transitioned into a much safer profession, with both felonious killings (↓ 80%) and accidental deaths (↓ 69%) of police officers

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[12] Of course, the authors acknowledge that the lack of support for the latter frameworks could be a result of aggregation bias (i.e., these theories may have more predictive power at the state-, city-, or neighborhood-level).
[13] How quickly the results of such timely analyses can be written up, peer reviewed, and published is a topic for another chapter.

decreasing significantly between 1970 and 2016. The authors attribute these reductions to the proliferation of better equipment (e.g., body armor; Liu & Taylor, 2017; Pate & Fridell, 1993), training (e.g., gun safety, use of force, de-escalation, crisis intervention training, and tactical engagement; Fyfe, 1986; President's Task Force on 21st Century Policing, 2015), and administrative policy (White & Fradella, 2016). Meanwhile, Maguire et al. (2017) used ODMP data to evaluate whether the number of police officers murdered in the line of duty increased significantly after protests surrounding the killing of Michael Brown in Ferguson in August 2014. They found no evidence of such an increase. Along similar lines, White (2020) investigated ambush-style killings of police officers from 1970 to 2018 using ODMP data. He found that ambush killings had declined by more than 90% since 1970, and despite noticeable spikes in 2016 and 2018, there was no evidence of a significant increase in ambush killings in the past decade.

Gun Violence Archive (GVA)

The Gun Violence Archive (GVA) is a non-profit corporation formed in 2013 that tracks gun violence in near-real time "from over 7500 law enforcement, media, government and commercial sources daily." In their data, *gun violence* includes (attempted or completed) homicides, murders, or suicides committed with firearms, unintentional shootings, defensive gun uses, mass shootings, and officer-involved shootings (including shootings by *and* of law enforcement officers). Thus, unlike the aforementioned datasets, GVA focuses solely on gun violence and excludes fatal or nonfatal assaults perpetrated with anything other than a firearm. To the best of our knowledge, the validity of these data remain largely untested. One study found that GVA failed to capture roughly 1 out of every 5 gun violence incidents reported over a six-year period by police departments in Philadelphia, New York City, Cincinnati, and Chicago;

however, it improved steadily over time (Gobaud et al., 2023). The authors conclude that GVA is appropriate for gun violence research in large cities but warn about an "apparent bias toward shootings involving multiple persons and those involving women and children." With respect to the subset of the data involving officers as victims of gun violence, Sierra-Arévalo and Nix (2020) reviewed each incident from 2014 to 2019 and were able to independently verify 1963 out of 1977 incidents, or 99.3% of the raw data.[14]

For present purposes, GVA's greatest strengths are: (1) it tracks both fatal and nonfatal instances of firearm assaults on officers, (2) it provides geocoded location data, and (3) it is updated in near-real time. To date, we are aware of three studies that have used GVA data to study gun violence against police officers. Sierra-Arévalo and Nix (2020) performed a descriptive analysis that examined monthly trends in fatal and nonfatal firearm assaults on officers as well as state-level variation in rates of firearm assaults on officers. Results indicated that officers in Mississippi, New Mexico, and Alaska experienced the highest rates of firearm assault victimization from 2014 to 2019; meanwhile, officers in Connecticut, New York, and New Jersey experienced the lowest rates.

In a separate study, Sierra-Arévalo et al. (2022) combined GVA data with location data for trauma care centers to determine whether travel time to trauma care was significantly associated with the odds of mortality among officers who had been shot in the contiguous US from 2014 to 2020. The authors found not significant relationship between travel time to trauma care and officer fatality but did find marked variation in firearm assault mortality across states.

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[14] See Sierra-Arévalo & Nix (2020) at Appendix A. The authors report they could not verify 6 incidents and another 8 involved "unclear circumstances." Another 18 incidents were duplicates. They excluded many more incidents that did not meet the inclusion criteria for their study, but one should bear in mind that such inclusion criteria necessarily vary according to the research questions being asked.

Finally, Sierra-Arévalo et al. (2023) used Bayesian structural time series analysis to estimate the effect of the murder of George Floyd (and subsequent protest movement) on the daily number of firearm assaults of officers. The authors conclude that the murder of Floyd was associated with a 3-week spike in firearm assaults on officers, which then dissipated to levels "only slightly above that which were predicted by pre-Floyd data" (p. 389). They estimate Floyd's murder was associated with an additional ~37 officers shot in the line of duty from May 25 to December 31, 2020.

Future Research and Implications for Officer Safety

Violence against police demands concerted attention from researchers for several reasons. Most simply, the injury and death of police impacts not only officers themselves, but also their co-workers and families. What's more, violence against police also has implications for the broader public. The threat of violence is deeply tied to the function of the police institution writ large, cutting across police training, culture, and behavior. In particular, the danger of police work vis-a-vis physical violence is linked to a host of negative externalities that include resistance to reform and police misconduct (Sierra-Arévalo, 2024). In the interest of protecting officers and the public, it is vital to expand our empirical understanding of what causes violence against police and how it can be reduced.

A major challenge in studying this topic stems from how decentralized policing is in the United States. An estimated 18,000 law enforcement agencies exist in the U.S., each operating under their own policies, procedures, and informal rules. Further complicating matters, agencies differ by size, funding source, whether executives are selected through hiring or election, and what local communities expect of them. Unsurprisingly, reporting standards and record keeping also vary greatly. This decentralized decentralization nature of U.S. will continue to

complicate efforts to understand violence toward against police officers at the local, state, and national level.

As we have suggested throughout this chapter, research on violence directed at police demands more and better data. Every data source we have discussed has notable limitations, particularly at the national level. We are not optimistic that a timely and high-quality national database on the full gamut of violence against police will become available anytime soon. That said, state-level efforts in California and Texas could be replicated in other states, and ideally, these efforts could be supported by existing federal resources (e.g., NIJ, BJA). Alternatively, unofficial datasets like that compiled by the Gun Violence Archive or the Officer Down Memorial Page could expand on their efforts and address existing limitations if they were provided the necessary resources.

The limitations of current data notwithstanding, there remain many promising areas of research. For example, though there is marked state-level variation in firearm laws like permitless carry, there is limited research on how such legislation affects police firearm victimization rates. One notable exception is a study by Crifasi et al. (2016b), which showed that permitless carry laws were not consistently related to changes in fatal assaults of officers from 1984 to 2013 or nonfatal assaults of officers from 1998 to 2013. However, the study has at least two key limitations. First, several states have adopted permitless carry legislation after 2013, meaning that more recent changes in permitless carry laws were not included at the time of their study. Second, their analysis used LEOKA data which, as we have discussed, is limited by reporting biases (Kuhns et al., 2016; Maguire et al., 2017; Nix et al., 2019). Future research might build on this work by analyzing more recent data from the Gun Violence Archive and accounting for recent expansion of permitless carry legislation to new states.

Agency-level variation in policies that might impact officer behavior, and thus the likelihood of assaults, also merit further research. Fortunately, agency-level policy data is compiled periodically by the Bureau of Justice Statistics for its Law Enforcement Management and Administrative Survey (LEMAS). Prior research has merged these data with NIBRS data to examine the impact of agency policies and organizational structures on violence against police (Fridell et al., 2009; Willits, 2011). More granular studies like these would be a welcomed addition to the literature and would provide better understand understanding of the equipment, policies, and procedures that help ensure officers and citizen safety. Such evidence is especially critical in the current moment, as many jurisdictions are struggling to adequately staff their departments (Adams et al., 2023) and respond to citizen calls for service (Mourtgos et al., forthcoming).

In addition, future research must consider the dynamic relationship between firearm violence exerted against and by police officers. For example, analyzing ODMP data and fatal officer-involved shooting data compiled by *The Washington Post,* Bejan et al. (2018) provide evidence of "retaliatory violence" by police against minority citizens, but not vice versa. That is, "an unexpected shock to the number of law enforcement officers shot in the line of duty is associated with a significant increase in the number of minorities killed in the same day" (p. 20). However, their study was limited to a 21-month period and lacked data on nonfatal shootings. To address these limitations, researchers could replicate Bejan et al. (2018) with data from the Gun Violence Archive, which tracks nonfatal shootings and now spans 10+ years. Researchers might also be able to explore the retaliatory violence hypothesis at lower levels of aggregation, such as the state or county level. Unfortunately, to date, researchers drawing on GVA to study

police-involved gun violence have largely restricted their attention either to shootings by police (Ward, 2023) *or* of police (Sierra-Arévalo et al., 2023).

Conclusion

At present, ensuring officer safety is a task largely left to individual departments and their officers. As a result, enhancing officer safety is approached through important but ultimately highly individualized means, including firearms training, ballistic vests, and tourniquets. Firearms are used by officers to attempt to stop lethal threats; however, they also present the opportunity for deadly mistakes (e.g., friendly fire, self-inflicted wounds, or avoidable shootings of citizens). Ballistic vests and tourniquets can prevent officers from dying once they've been shot, but they do nothing to minimize the risk of an officer being shot in the first place. Officer-level interventions like ballistic vests or discrete training will never shift the structural conditions that generate violence against police.

Rather than continually default to interventions that reify officer safety as the sole responsibility of police themselves, we believe it vital to recognize that officer safety and public safety are neither mutually exclusive nor distinct goals (Sierra-Arévalo, 2024). From this vantage, efforts to enhance public safety through the reduction of community violence also stand to enhance the safety of officers tasked with responding to and confronting that violence in the course of their duties. And such efforts need not rely on the direct intervention of officers. A growing body of research shows that non-enforcement interventions can reduce violence, including that directed specifically at police. For example, improvements in street lighting can reduce crime (Chalfin et al., 2022). An evaluation of the Rapid Employment and Development Initiative (READI) program in Chicago found that shooting and homicide arrests declined 65% in the treatment group (Bhatt et al., 2023). Revitalizing abandoned homes has been shown to

reduce nearby weapons violations, firearm assaults, and shootings (South et al., 2023).

Increasing the availability of behavioral health treatment can reduce assaults against police (Deza

et al., 2023). In terms of legislation, permit-to-purchase laws, red flag laws, and safe storage laws

have been shown to save lives and prevent stolen firearms from making their way into the black

market where would-be offenders can more easily obtain them to commit violence (Crifasi et al.,

2018; Hemenway et al., 2017; Rudolph et al., 2015; Swanson et al., 2017; Webster et al., 2014).

Whether and to what degree these varied interventions influence violence against police

is, of course, an open empirical question. As we have repeatedly highlighted in this

chapter, stubborn data limitations will likely present challenges to answering these and other

questions related to violence against police. These challenges must not be allowed to

deter attempts to answer these pressing policy questions. Instead, we believe that these expected

difficulties should spur cooperative efforts by researchers, policy makers, and police to remake

our data infrastructure and subsequent inquiry with these challenges in mind. A collective

investment of time, funding, and resources will undoubtedly benefit our ability to quickly and

rigorously answer such pressing questions. In turn, we stand to enhance officer and public

safety alike.

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Table 1. Official and Unofficial Datasets Tracking Violence Against Police.

| Dataset	Source	Scope	Time Span
Official Datasets			
LEOKA	Voluntary reports by LEAs	Felonious killings, Accidental deaths, Injurious assaults, Non-injurious assaults	1982-present
NIBRS	Voluntary reports by LEAs	Fatal and nonfatal assaults, Incidents not resulting in harm	1989-present
California Use of Force Reporting System	Mandatory reports from California LEAs	Firearm discharges, Assaults that result in great bodily harm or death	2016-present
Texas OAG Data	Mandatory reports from Texas LEAs	Fatal and injurious shootings of police officers	2015-present
Unofficial Datasets			
ODMP	Voluntary submission by LEAs or civilian	Line-of-duty deaths	1786-present
NLEOMF	Voluntary submission by LEAs or civilian	All workplace related deaths	1786-present
GVA	News reports and public federal, state, and local government data	Fatal shootings, Nonfatal shootings	2013-present

Note: "LEAs" = law enforcement agencies; "OAG" = Office of the Attorney General

Figure 1. Number of officers assaulted and killed each year according to LEOKA.
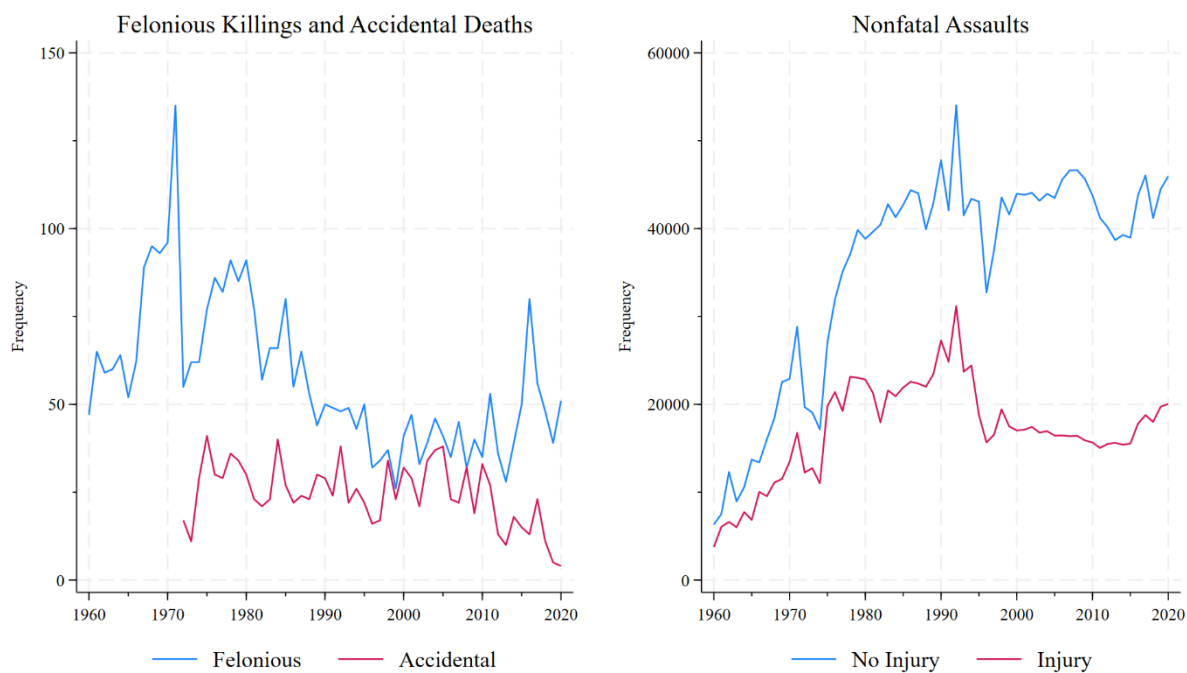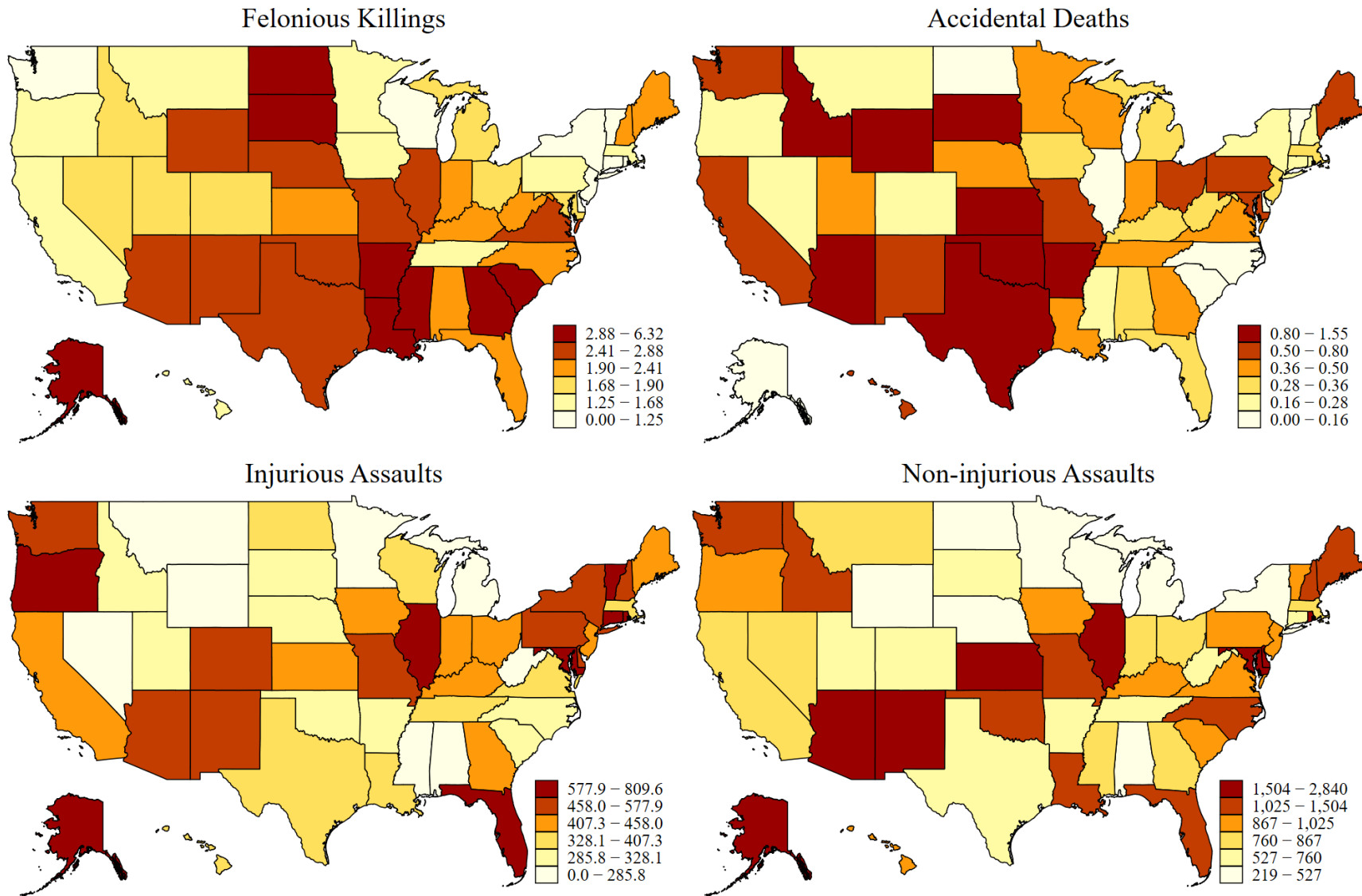

NOTE: For each year, only agencies that submitted all 12 months of data are included in the total.

Figure 2. Rate of officers assaulted and killed each year according to LEOKA.
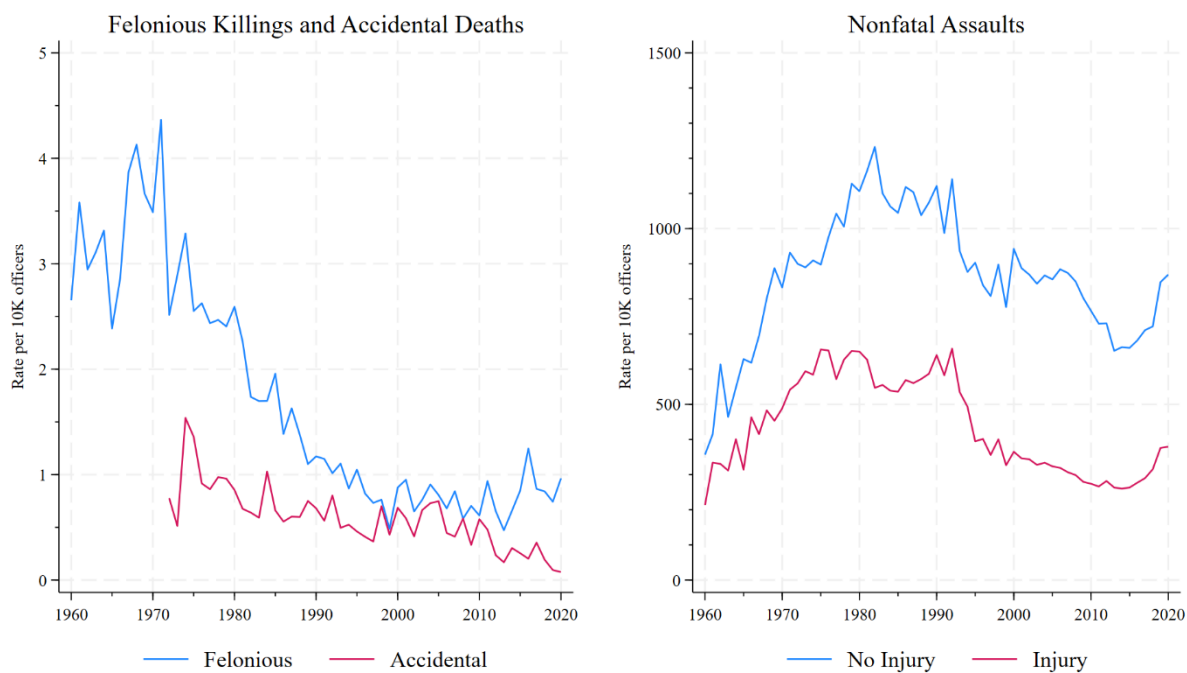
NOTE: For each year, only agencies that submitted all 12 months of data are included in the rate.

Figure 3. Mean annual rate of officers assaulted and killed by state, 1960-2020, according to LEOKA.

Note: For each year, only agencies that submitted all 12 months of data are included in the calculation of its state's rate.