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Measuring and Studying Officer-Involve Shootings in the U.S.: Comparing Estimates from Multiple Open-Source Registries

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ABSTRACT

Historically, a lack of comprehensive data on police shootings has hindered a nuanced understanding of this critical issue. However, in the past decade, the research landscape has rapidly evolved with the emergence of improved data facilitated by crowd-sourced and non-governmental initiatives. This chapter explores the transformative potential of such data, reviewing recent findings that have significantly advanced our collective knowledge on the topic. We demonstrate numerous sources of bias in previous empirical work focusing on the effects of police shootings. Further, we emphasize the caution required when navigating this newfound wealth of information, outlining some of the inherent challenges and potential pitfalls associated with the analysis of crowdsourced data. Our aim is to contribute to more informed public and academic dialogues on police shootings.

Introduction

Roughly 1,000 people are killed by police gunfire each year in the United States – or about three each day, on average. Males comprise 95% of those killed. The most common decedent is white, but in per capita terms, Black people are disproportionately killed (Edwards et al., 2019; Mentch, 2020). Most decedents were armed with a firearm, cutting instrument, or blunt object (Nix et al., 2017), and about 1 in 4 displayed signs of mental illness in the moments leading up to their death (Saleh et al., 2018). Unsurprisingly, there is substantial geographic variation as well, with western and midwestern metropolitan statistical areas demonstrating higher rates of fatal police shootings than their northeastern counterparts (Schwartz & Jahn, 2020).

Just a decade ago, we could not have opened our chapter this way, because at the time, no one knew precisely how often police shot and killed people, let alone situational patterns and trends therein. Although it was understood that the FBI's official data on "justifiable homicides" was incomplete (Fyfe, 2002; Klinger, 2012; Zimring, 2017), unofficial data compiled by Fatal Encounters, Mapping Police Violence, and *The Washington Post* emerged in the mid 2010's and showed just how inadequate the FBI's data were. These more comprehensive data have certainly been a welcome addition, but they are not without their own limitations.

In this chapter, we provide a brief overview of each dataset (plus a few others) and discuss challenges and pitfalls associated with unofficial data being the "go-to" source for information about police shootings. We wish to be clear at the outset that we have set aside discussion of deaths attributed to conducted energy weapons (e.g., TASERs; see White et al., 2013), vehicular pursuits (Alpert & Lum, 2014), restraint asphyxiation (Karch, 2016), and other causes – and instead focus strictly on police shootings, which significantly outnumber other such police deadly force incidents (Schwartz & Jahn, 2020; Nix, 2020). We also exclude from our discussion various state-level databases, whether official (e.g., California's Use of Force Incident Reporting System) or unofficial (e.g., *Tampa Bay Times'* data on police shootings in Florida from 2009 to 2014).

Unofficial Police Shooting Data: A Review of the Landscape

We are aware of seven "unofficial" databases (i.e., not maintained by the U.S. government) that provide estimates of the number of police shootings in the United States: *Fatal Force*, *Mapping Police Violence*, *Fatal Encounters*, *Gun Violence Archive*, *The Counted*, *SPOTLITE*, and *PoliceShootingsData.com*.[1] Table 1 provides more information about each dataset, including what it sets out to track as well as the number of police shootings it estimates from 2015 to 2020.

Table 1. Seven unofficial databases that track and publicly share information about police shootings.

Dataset	Years Included	Creator(s)	Inclusion Criteria	# of fatal police shootings, 2015-2020 [a]	# of nonfatal police shootings, 2015-2020 [a]
Fatal Force	2015-present	*The Washington Post*	Incidents in which a police officer, in the line of duty, shoots and kills a civilian	5,946	Not included
Mapping Police Violence	2013-present	Mapping Police Violence, Inc.	All people who die "as a result of being shot, beaten, restrained, intentionally hit by a police vehicle, pepper sprayed, tasered, or otherwise harmed by police officers, whether on-duty or off-duty"	6,187	Not included
Fatal Encounters	2000-2022	D. Brian Burghart	All people "killed during interactions with police"	6,505	Not included
Gun Violence Archive	2014-present	Michael Klein and Mark Bryant	"…all types of shootings are included, whether OIS, accidental, children shooting themselves, murders, armed robberies, familicide, mass shootings, DGU, Home Invasions, drivebys and everything else"	5,790[b]	4,595[b, c]
The Counted	2015-2016	*The Guardian*	"Any deaths arising directly from encounters with law enforcement. This will inevitably include, but will likely not be limited to, people who were shot, tasered and struck by police vehicles as well those who died in police custody."	NA	Not included
SPOTLITE	2014-2021	Cline Center for Advanced Social Research	"any incident where police use firearms—including those with non-fatal outcomes—as well as any other use of force that results in a death"	6,201	Included, but unclear in current version
PoliceShootingsData.com	1970-2024[d]	Clark et al. (2025)	Fatal and nonfatal police shootings in the 302 largest US cities (i.e., has 100,000+ residents and their own police department)	1,091	1,437[d]

[a] Unless otherwise noted, these calculations were performed by the authors. For Fatal Force, Mapping Police Violence, and Gun Violence Archive, we restricted to fatal shootings by on-duty officers (as Fatal Force does not track off-duty shootings, and we were interested in making as close to apples-to-apples comparisons as possible). Fatal Encounters and SPOTLITE do not include a filter for on/off-duty status of the officer(s) involved, so we expect these totals inevitably include a small number of off-duty shootings. Any errors are ours.
[b] According to Ward et al. (2024, Table C2, "on-duty" + "on- and off-duty" totals).
[c] Note that this number refers to persons nonfatally injured by police gunfire. It *does not* include people whom officers shot at but did not injure.
[d] Note that the authors only have OIS data for a handful of agencies dating back to 1970. Note also that for this row, the "nonfatal" column *does* include people whom police shot at and missed.

There are several takeaways from Table 1. For starters, each database has slightly different inclusion criteria, which have implications for both the type and number of police shootings that they observe. On the more restrictive end of the continuum, *The Washington Post's* "Fatal Force" database applies the most conservative definition, strictly tracking fatal shootings by on-duty police officers. The benefit of such a narrow definition is that it leaves little room for disagreement about the officer's intent to use deadly force. Of course, the drawback is that it excludes the highly publicized and consequential deaths of Eric Garner, Freddie Gray, and George Floyd, to name but a few. None of these individuals were shot by police officers, and so their cases would not be tracked by *The Washington Post*, yet few would argue that they were not killed as a result of police action. At the other end of the continuum is the Gun Violence Archive, which attempts to track *all* instances of gun violence in the United States, including the small subset that involves police officers, whether as perpetrators or victims (Sierra-Arévalo et al., 2023).[2] Between these two extremes is Fatal Encounters, which tracks all deaths that occur during police-citizen interactions. Thus, it *does* capture the deaths of Garner, Gray, Floyd, and others who were not killed by gunfire. But it also includes, for example, thousands of individuals who committed suicide during standoffs with police officers.[3]

It is also noteworthy that the databases were launched by people from a variety of different backgrounds. Two of the databases – Fatal Force and The Counted – were created by teams of journalists (i.e., *The Washington Post* and *The Guardian*). Fatal Encounters was created by an individual, D. Brian Burghart, who had

previously been a newspaper editor and journalism instructor. Meanwhile, SPOTLITE was created by a team of researchers at the University of Illinois' Cline Center for Advanced Social Research (Jennings et al., 2023), and PoliceShootingsData.com was created by a team of political scientists for their book *Deadly Force: Police Shootings in Urban America* (Clark et al., 2025). Gun Violence Archive was launched by Mark Bryant, a "shooting enthusiast" who "fell into the job by accident" (Cheves, 2017), and finally, members of the team that operates Mapping Police Violence also co-founded Campaign Zero, an activist group whose stated goal is to "live in a world beyond policing." We raise this point not to advocate for one database over others, but to caution that each was created with its own goals or agendas in mind. The diverse origins of each source underscore the importance of critically evaluating each database's methodology, potential biases, and limitations. While all these efforts contribute valuable data to the field, users should approach the information with an awareness of the varying perspectives and objectives that may have shaped data collection and presentation.

Table 1's headline counts might appear tightly clustered to some readers. Only 715 deaths separate the lowest (Gun Violence Archive, 5,790) and highest (Mapping Police Violence, 6,505) estimates for 2015-2020 (roughly, an average of 120 pear year). Yet even this modest spread can redirect statistical conclusions. Because fatal police shootings are statistically rare and scholars often analyze thin slices of the data (for example, unarmed victims, race-specific victims, or single city-year strata), adding or subtracting a few incidents can reshape denominators, alter subgroup composition, and meaningfully shift coefficients.

We emphasize this issue because both over-inclusion and omission of cases demonstrably change findings. Nix and Lozada (2021) re-coded the cases used in Bor et al. (2018) and showed that ninety-one of the cases arguably lay outside the study's own definition of a police killing of an unarmed subject. Removing them reduced every reported coefficient and rendered the headline claim that "police killings of unarmed Black Americans have effects on mental health among Black American adults in the general population" (p. 302) statistically null. A similar audit of Legewie (2019) uncovered numerous classification errors; once corrected, the purported spill-over from police killings to adverse Black infant health vanished, prompting voluntary retraction. Definitions also drive contradictory inferences: appearing just one month apart in top political science journals, Markarian (2023) and Morris and Shoub (2023) each reported a significant causal link between police killings and voter turnout, but in opposite directions, a divergence traceable to different inclusion rules and database snapshots. These examples arose in widely read medical, general-science, and top field journals that attract post-publication scrutiny; the incidence of similar problems in less-examined venues is unknowable, though the underlying dependence on shifting public databases is identical.

In the last column of Table 1, we attempted to identify the number of shootings by on-duty police officers logged by each database from 2015 to 2020. Alas, this was an imperfect exercise as we could not easily filter shootings by off-duty officers in the Fatal Encounters and SPOTLITE datasets. Nevertheless, even among those where we could restrict to on-duty shootings – Fatal Force, Mapping Police Violence, and Gun Violence

Archive – we observed notable discrepancies (see also Comer & Ingram, 2023). Gun Violence Archive logged 5,790 fatal shootings, while Fatal Force and Mapping Police Violence logged 5,946 and 6,187, respectively. Ultimately, these discrepancies might boil down to minor differences in other inclusion criteria (e.g., whether to include shootings by federal agents), duplicates, and/or a small number of false positives and negatives. Regardless, the differences highlighted in Table 1 should concern researchers attempting to study Officer Involved Shootings (OIS) – a statistically rare outcome – or subsets of OIS that are even rarer (e.g., police shootings of women, unarmed individuals, juveniles, or persons displaying signs of mental illness).

One final takeaway from Table 1 is that only three of the seven databases – Gun Violence Archive, SPOTLITE, and PoliceShootingsData.com – attempt to track nonfatal police shootings. Gun Violence Archive suggests that over 40% of people struck by police gunfire from 2015 to 2020 did not die (n = 4,595). PoliceShootingsData.com estimates that during the same period in 208 mid to large U.S. cities, upwards of 56% of people shot at by police officers did not die (n = 1,437).[4] Indeed, the omission of nonfatal police shootings from the other databases amounts to a significant limitation. As the late criminologist James Fyfe, a pioneer in the study of OIS, observed:

> *Deadly force is physical force capable of or likely to kill; it does not always kill. The true frequency of police decisions to employ firearms as a means of deadly force, therefore, can best be determined by considering woundings and off-target shots as only fortuitous variations of fatal shootings. All are of a kind* (1978, p. 32, emphasis in original).

When using their firearms, police officers are trained to aim at their target's torso (as it is the largest and therefore easiest target to hit) and to continue firing until the threat has been neutralized (Clark et al., 2025). Thus, to strictly track people killed by police officers (by any means) is to track a nonrandom subset of less than half the universe of deadly force incidents (Baćak et al., 2023; Klinger, 2012; Klinger et al., 2016; McCann et al., 2017; Ward et al., 2024; White, 2006).[5] In other words, "deadly force" is only sometimes deadly, and the characteristics of people killed by police may not adequately resemble the characteristics of people who were the recipients of police deadly force (see e.g., Clark et al., 2025; Nix & Shjarback, 2021; Ward et al., 2024). This, in turn, frustrates efforts by researchers to measure the causes and impacts of various environmental, organizational, officer, and civilian characteristics on police use of deadly force (Nix, 2020).

In fact, the majority of what we think we know about police use of deadly force comes from published studies that did not include any information on nonfatal police shootings. But it turns out this is just one of many potential threats to the validity of such studies – a point we expand upon in the next section.

Draw the DAG

A Directed Acyclic Graph (DAG) is an essential tool for mapping the complex causal relationships that influence the occurrence and outcomes of officer-involved shootings (OIS). By visually representing these relationships, a DAG clarifies the pathways through which various factors interact to produce specific

outcomes. The strength of this approach lies in its ability to identify confounding variables, highlight potential causal mechanisms, indicate sources of bias, and guide the selection of appropriately-specified statistical models (Pearl & Mackenzie, 2018). DAGs allow researchers to precisely state their estimand and relate it to their statistical model.

While DAGs are important for any inferential research, we argue they are especially important for studying police use of force incidence. This particular use case, and the illustration we create below, demonstrates that both the data generating process *and* the causal question are downstream of important, non-trivial assumptions. Without the structured approach DAGs facilitate, researchers may be generating quantities of interest related to OIS that are biased (with unknown magnitude and direction) – or, in the worst case, quantities entirely unrelated to their actual empirical objective.

In the context of policing and the use of deadly force, a DAG enables researchers to systematically explore how different levels of influence—ranging from organizational policies to community characteristics—intersect to affect police-civilian encounters and their outcomes and what we are able to observe in the data. In other words, *the dataset itself is downstream of a complex causal process* (see Knox, Lowe and Mummolo, 2020). This approach enables researchers to determine which features of the policing environment are downstream to their independent variable(s) ("post-treatment") and thus would introduce bias when included in a regression. To facilitate this analysis, we have identified the key nodes that should be included in the DAG, representing the various factors that contribute to and result from OIS incidents:

1. **Organizational Context**: Factors such as staffing levels, training, culture, policies, and deployment patterns that influence officer characteristics and behaviors, as well as the likelihood of an OIS directly.

2. **Officer Characteristics and Behaviors**: The attributes and actions of officers that directly impact the nature of police-civilian encounters and the likelihood of an OIS occurring, as well as the OIS's likelihood of being covered by news media or mentioned on social media.

3. **Civilian Characteristics and Behaviors**: The attributes and actions of civilians that directly affect police-civilian encounters and the likelihood of an OIS occurring, as well as the OIS's likelihood of being covered by news media or mentioned on social media.

4. **Community Context**: Environmental factors such as 911 call volume, crime rates, poverty, segregation, and (dis)trust in police that influence civilian characteristics and behaviors, as well as the likelihood of police-civilian encounters, and news or social media coverage should an OIS occur. Community context can also indirectly influence the outcome of an OIS through its direct relationship with the healthcare environment.

5. **Police-Civilian Encounter**: The interaction between officers and civilians, influenced by all the above factors, which can lead to an OIS.

6. **Outcome of OIS**: The possible results of an OIS, which can include fatality, non-fatal injury, or no injury.

7. **Healthcare Environment**: The community's healthcare infrastructure, such as the availability and quality of trauma centers, can influence the outcome of an OIS.

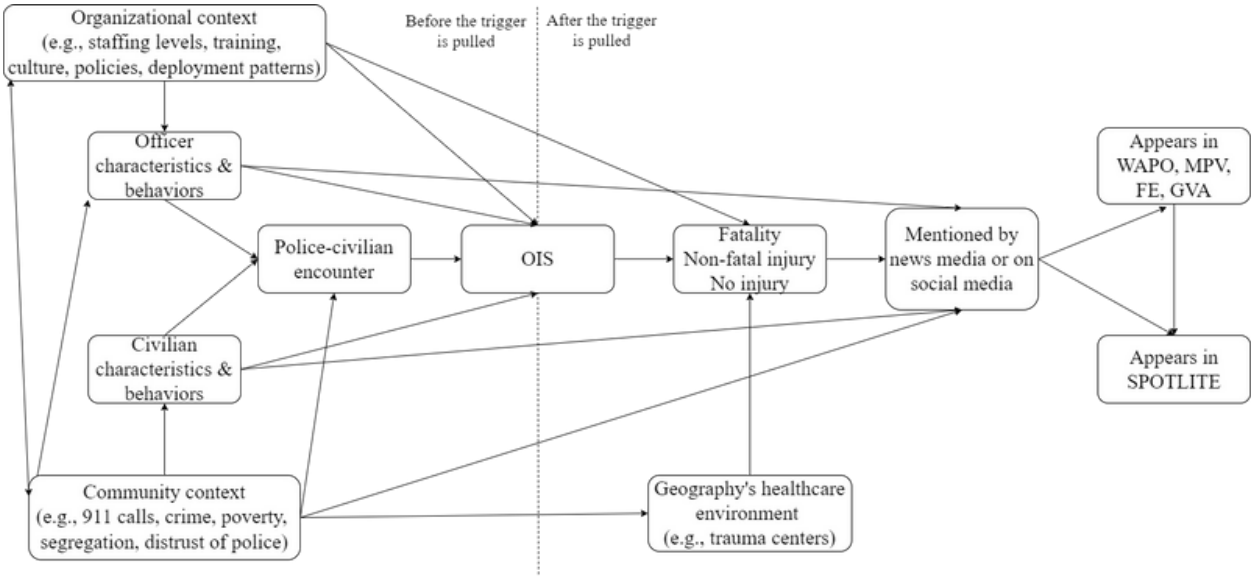
8. **Media Coverage**: The extent to which an OIS is mentioned in news media or on social media is influenced by the OIS outcome and other factors, including characteristics and behaviors of both the officer(s) and civilian(s), and both the organizational and community contexts.

9. **Database Inclusion**: The likelihood of an OIS being captured in unofficial databases like those maintained by *The Washington Post*, Mapping Police Violence, Fatal Encounters, Gun Violence Archive, SPOTLITE, and others, often driven primarily by media coverage.

By mapping these nodes, we gain a clearer understanding of the pathways leading to OIS and their subsequent documentation.

Each item in the list above becomes a “node” in the DAG, and the researcher’s task then is to map out the relationships among them. Figure 1 is our attempt to map out the factors known to influence the likelihood of an OIS, and in turn, the factors that influence an OIS being captured by any of the aforementioned unofficial databases. To analyze these pathways effectively, we conceptually divide the DAG into two primary phases: "Before the Trigger is Pulled" and "After the Trigger is Pulled." This division allows for a more nuanced examination of the distinct causal mechanisms at play in each phase.

Figure 1. Factors that influence the likelihood of a police shooting and its inclusion in various unofficial datasets.



A group of white rectangular objects with black text. Description automatically generated.

Before the Trigger is Pulled

Before the trigger is pulled, a confluence of factors establishes the conditions under which an OIS may occur. Organizational context plays a foundational role, influencing both officer behavior and departmental strategies. Key elements such as staffing levels, training protocols, organizational culture, and deployment patterns directly affect how officers engage with civilians (Ingram et al., 2018; Mourtgos et al., 2024; Sierra-Arévalo, 2024). For example, agencies that implement comprehensive use-of-force policies and prioritize de-escalation training tend to experience fewer incidents of excessive force (Engel et al., 2022) and OIS (Jennings & Rubado, 2017; Shjarback et al., 2021).

The community context also exerts a significant influence on the likelihood of an OIS. Variables such as crime rates, levels of poverty, 911 call volume, and the degree of community trust in the police shape both officer and civilian behavior and, by extension, the nature of police-civilian encounters (Bottoms & Tankebe, 2012; Fyfe, 1980; Klinger et al., 2016; MacDonald et al., 2001; Maksuta et al., 2024; Nix et al., 2020; Smith & Alpert, 2007). In areas with high levels of crime, concentrated disadvantage, and/or strained police-community relations, these encounters are often more frequent and volatile, increasing the potential for escalation to an OIS (Keller et al., 2017).

During police-civilian interactions, the behaviors and decisions of both parties are influenced by a host of factors. Civilian demeanor, perceived threat, and compliance play critical roles in shaping how officers respond (Alpert et al., 2020; Nix et al., 2019). At the same time, officers' stress levels and their ability to make decisions under pressure can determine whether a situation escalates into violence (James et al., 2019). The presence of multiple officers further complicates these dynamics, with evidence suggesting that "contagious fire" can occur when one officer's use of force triggers others to fire as well, independent of the situation's initial threat level (DeCarlo et al., 2024).

After the Trigger is Pulled

Once the trigger is pulled, the focus shifts to the immediate and long-term consequences of the OIS. The outcome—whether it results in a fatality, non-fatal injury, or no injury at all—is influenced by various factors beyond the shooting itself. One crucial determinant is the surrounding healthcare environment. The availability and quality of trauma care in the vicinity can significantly impact whether an injury from an OIS leads to death (Crandall et al., 2013; Hou, 2022). This aspect is often overlooked in existing literature, which predominantly focuses on fatalities, potentially missing more than 50% of all instances of lethal force by officers (Baćak et al., 2021; Klinger, 2012; Klinger et al., 2016; McCann et al., 2017; Ward et al., 2024; White, 2006).

The aftermath of an OIS also involves a complex web of causal factors that determine how the incident is perceived and recorded. Media coverage is a key element in this phase, influencing public awareness and the inclusion of incidents in various databases. Factors such as the race of the civilian involved (Schroedel & Chin, 2020; Zuckerman et al., 2019), the circumstances of the shooting (Moreno-Medina et al., 2022), and the

broader sociopolitical context can affect whether and how an OIS is reported in the news or on social media. This media coverage, in turn, largely determines whether an incident is captured in various unofficial databases.

This reliance on media reports introduces significant biases into the data collected by these databases. Incidents that result in fatalities or receive significant media attention are more likely to be documented, while non-fatal incidents and misses, or OIS occurring in areas with less local news coverage, are more likely to be overlooked (Baćak et al., 2023; Gobaud et al., 2023; Kaufman et al., 2020). This selective reporting skews the data, leading to an incomplete understanding of the true scope and nature of OIS incidents. For example, if one would like to study differences in OIS incident effects in rural versus urban areas, one must be willing to make the unrealistically strong assumptions that a) the dataset is as complete in rural areas as in urban areas; and b) if this is not the case, the missingness is as-if random. Given the differences in news coverage, policies, transparency, reporting requirements, etc. each type of area would face, such an assumption is obviously insurmountable. By breaking down the DAG into the phases before and after the trigger is pulled, researchers can better account for these biases and develop more comprehensive strategies for studying and addressing police use of deadly force.

Cross-Over Relationships

Our before-and-after structure is not intended to suggest that there are no causal considerations that cross over that period. Indeed, an additional challenge in studying this topic is that some nodes cross over the "trigger line," meaning they influence both the likelihood of an OIS occurring and the way that OIS is subsequently recorded and reported. These cross-over nodes represent complex, multi-directional relationships that likely require more interdisciplinary research to fully understand. For instance, community characteristics such as crime rates, socioeconomic status, and the level of trust in law enforcement not only affect the dynamics of police-civilian encounters (Nix et al., 2020) but also influence the amount and nature of media coverage these incidents receive. Similarly, organizational characteristics—such as departmental transparency and fairness (Trinkner et al., 2016), public relations strategies (Cheng, 2023), and the presence of body-worn cameras (Lum et al., 2020; White & Malm, 2020)—can shape both officer behavior during an encounter and how the incident is portrayed in the media (Cheng, 2021; Tregle et al., 2022).

These cross-over relationships are particularly challenging to study because they straddle the line between pre- and post-incident factors, making it difficult to disentangle their effects. To better understand these dynamics, scholars need to draw on expertise from fields such as media studies, sociology, and communications, in addition to criminology and policing research. By fostering interdisciplinary collaborations, researchers can develop more nuanced theories and models that account for these complex interactions, ultimately leading to a more comprehensive understanding of the factors that influence both the occurrence of OIS and their representation in public discourse.

Empirical Implications

One could argue that the above DAG is incomplete or inconsistent with a particular worldview. One could similarly state that the world is much more complex than the DAG presented here, and in fact, there are many other observed or unobserved factors unspecified in this stylized model. Further, one could tell a straightforward story about how police shootings in time *t-1* predict police shootings in time *t*. These are all valid points and again emphasize the importance of the research being explicit about the assumptions made in their implied (or explicitly stated) causal model. Adjusting the DAG to account for these very reasonable critiques would only serve to make it more complex.

How do these considerations matter for your regression specification? Specifically, there are numerous concerns that the applied research should be acutely aware of. First, making the DAG even more complex than the one presented here would introduce more confounding (much of which is unobserved and thus not in our data), and indicate more sources of post-treatment bias. In the case of confounding, unless the regression specification includes all confounders, it will always be biased (with potentially unknown size if the confounders are unobserved).

For a concrete example, imagine your research question includes the relationship between how officers interact with the public and the propensity of police use of force. An obvious confounder in this relationship is public mood/opinion towards policing in a given community, because that shared sentiment shapes both sides of the encounter: residents who distrust the police are more likely to display non-compliance, verbal resistance, or hostile body language (Engel, 2003), while officers who anticipate such hostility shorten their verbal warning sequence, escalate commands, and are quicker to resort to force (Nix & Pickett, 2017; Nix, Pickett, & Mitchell, 2019; Van Maanen, 1978). We may be able to capture a coarse survey-based measure of quantity and include it in the regression, potentially alleviating some concern over this source of bias. However, that quantity may not exist or even be measurable at all; in such a case, this regression will always be biased. Similarly, we may be interested in how department policies and procedures predict police use of force. An obvious quantity downstream from department policy is how/whether officers interact with individuals in a community. If we include some measure capturing that officer-civilian interaction in a regression, we are introducing post-treatment bias into our regression.

Concluding Thoughts

This chapter has examined the complexities of OIS and the challenges in accurately capturing and analyzing related data. Using a Directed Acyclic Graph (DAG) approach, we emphasized the importance of considering both the factors leading up to an OIS ("Before the Trigger is Pulled") and those influencing its aftermath ("After the Trigger is Pulled").

One key takeaway is the significant limitation in relying solely on fatal OIS data. Ward et al. (2024) demonstrate that fatalities constitute only about 55% of all injurious police shootings (i.e., excluding when

officers shoot and miss). This undercount skews our understanding of police use of lethal force and overlooks crucial factors that determine whether an OIS results in a fatality, injury, or no harm (Nix & Shjarback, 2021).

While unofficial databases have filled a critical gap in understanding police shootings, they are not without limitations. Scholars must approach these data with caution, ensuring their analyses are grounded in a comprehensive understanding of the factors influencing both the occurrence of OIS and its documentation. Only through such rigorous research can we advance knowledge and contribute meaningfully to discussions on police use of force.

We have summarized how the factors leading up to an OIS involve multiple critical variables, including organizational context, officer and civilian characteristics, and community context. Equally important are the factors that dictate whether an OIS, once it occurs, is captured in various crowdsourced databases. The reliance on non-random samples driven by media coverage and other post-incident factors introduces biases that can distort scholarly analysis and public understanding. To address these critical shortcomings in the literature, we advocate for the explicit use of DAGs in research on police shootings. A well-constructed DAG provides a clear framework for identifying causal relationships and confounding variables, and forces the researcher to confront potential issues in their data-generating process. "Showing your DAG" enhances transparency and rigor in analysis, ensuring that assumptions are clearly stated and evaluated.

Much of the research produced since 2014 has been limited by dependence on these non-random samples. It is essential for researchers to critically assess the databases they use and be clear about any filtering or cleaning of the data performed prior to analysis. Scholars must be wary of studies that engage superficially with these datasets without accounting for their inherent complexities and biases. For scholars looking to impact an important area of research, this may come as good news—dozens, if not hundreds, of study designs are available and ready to be tested under better conditions. The Gun Violence Archive and SPOTLITE datasets, for example, provide researchers with information about nonfatal police shootings, thereby providing a more complete account of deadly force incidents in the United States.

By leveraging more rigorous methods, expanding statistical models to include non-fatal shootings, including the use of DAGs, and a critical approach to data sources, researchers can address the significant gaps left by earlier studies. This presents an opportunity to produce more accurate, comprehensive insights into police use of force, ultimately contributing to more informed policy decisions and better outcomes in policing practices.

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Footnotes

1. SPOTLITE is an acronym for “Systematic Policing Oversight Through Lethal-force Incident Tracking Environment.” ↩

2. Unfortunately, it is not easy to filter out all the gun violence that does not involve police officers. Incidents can be tagged with a variety of characteristics (e.g., “officer-involved shooting,” “mass shooting”), requiring users to manually review incidents that have multiple tags. As but one example, there are 500 rows in the database pertaining to the 2017 Las Vegas mas shooting, and they all include a tag for “officer-involved shooting.” ↩

3. Another example: in a since-deleted tweet, @FatalEncounters announced on May 26, 2022, that each of the 19 victims of the Uvalde school shooting would be added to the database, since officers were on scene. Whether such incidents amount to “fatal encounters” between police and civilians is clearly more subjective than incidents involving the fatal shooting of a civilian by a police officer. ↩

4. Note that the outcome was undetermined for ~20% of shootings over this period (n=617), so the true number of nonfatal shootings is undoubtedly higher. ↩

5. Clark et al. (2025) show systematic differences in what predicts a fatality conditional on being shot. ↩