

Validating the National Violent Death Reporting System as a Source of Data on Fatal Shootings of Civilians by Law Enforcement Officers

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Objectives. To evaluate the National Violent Death Reporting System (NVDRS) as a surveillance system for fatal shootings of civilians by law enforcement in the United States.

Methods. We cross-linked individual-level mortality data from the 2015 NVDRS and 5 open-source data sets (FatalEncounters.org, Mapping Police Violence, the *Guardian's* "The Counted," Gun Violence Archive, and *The Washington Post's* "Fatal Force Database"). Using the comprehensive cross-linked data set, we assessed the proportion of study-identified fatal police shootings that were captured by NVDRS, overall and by state, and by each open-source data set.

Results. There were 404 unique study-identified fatal shootings by law enforcement in the 27 states for which data were available from NVDRS, 393 (97%) of which were captured in NVDRS. The proportion of shootings captured by NVDRS varied only slightly by state.

Conclusions. The NVDRS provides a comprehensive count of fatal police shootings.

Public Health Implications. Expanding NVDRS to all 50 states would provide comprehensive counts of fatal police shootings and detailed circumstantial information about these deaths at the national level. Open-source data can continue to provide real-time data collection as well as more complete information about nonfirearm officer-involved deaths. (*Am J Public Health.* 2019;109:578–584. doi:10.2105/AJPH.2018.304904)

 See also McDowall, p. 537.

Since 2013, media organizations, including *The Washington Post* and the *Guardian*, and research collaboratives, including FatalEncounters.org (FE), Mapping Police Violence (MPV), and Gun Violence Archive (GVA), have used open-source methods to compile incidents in which civilians die in (or subsequent to) an encounter with the police.¹ These open-source repositories have been used by researchers to study officer-involved lethal violence,^{2–14} largely because they identify far more officer-involved homicides than do official sources of national data, such as the Supplementary Homicide Reports, the National Vital Statistics System, and the Bureau of Justice Statistics' Deaths in Custody program.^{1,15–19}

The National Violent Death Reporting System (NVDRS), established by the Centers for Disease Control and Prevention (CDC) in 2002, is a promising source of official data on police homicides of civilians, for several reasons.^{20,21} First, NVDRS captures a greater number of homicides by police than do either the Supplementary Homicide Reports or National Vital Statistics System.²⁰ Second, the CDC has recently received funding to expand

NVDRS from 40 to all 50 states.²² Third, NVDRS provides detailed uniformly coded information about incidents, drawn from coroner or medical examiner reports, including data about victim demographics, toxicology, and precipitating circumstances (e.g., whether the victim had an active mental health problem or ongoing substance use, whether the encounter occurred in the context of intimate partner violence vs in response to a crime).²³ However, the completeness of NVDRS as a source of information about the number of officer-involved killings of civilians is not known.

The present study is the first we know of to assess the completeness of NVDRS counts of officer-involved killings of civilians compared with comprehensive open-source data. In fact, previous efforts to cross-validate open-source and official data on officer-involved homicides at the individual rather than aggregate level have been limited to a single, city-level study.²⁴ The primary aim of our study was to validate NVDRS, focusing on officer-involved homicides that are firearm-related (91%–94% of all homicides by police^{7,25}). Our secondary aim was to describe the completeness of counts of these deaths derived from commonly used open-source databases. We accomplished these aims by linking open-source and NVDRS data at the individual rather than aggregate level to be able to describe not only how the aggregate number of such incidents compare across data sources but also the nature of identified discrepancies in count data.

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METHODS

We cross-linked individual-level mortality data from the 2015 NVDRS and 5 publicly available open-source databases to estimate the proportion of study-identified fatal police shootings of civilians that were captured by NVDRS, overall and by state, and by each open-source data set.

Data Sources

Data came from the 27 states reporting to NVDRS in 2015 and 5 open-source databases: FE, MPV, The Counted, GVA, and *The Washington Post*. Because the CDC does not generally allow NVDRS data to be linked to sources that include victim names, we requested (and were granted) permission to link nonidentified NVDRS data to identified data from open-source data sets.

The absolute count of deaths that were included in each data source varies because of different inclusion criteria. Table A (available as a supplement to the online version of this article at <http://www.ajph.org>) lists inclusion criteria used by each open-source database and the total number of deaths and firearm deaths captured by each source (in the 27 NVDRS states in 2015).

We downloaded individual-level data for all 50 states from FE (2000–2018) on February 14, 2018; from MPV (2013–2017), The Counted (2015–2016), and *The Washington Post* (2015–2017) on December 12, 2017; and from GVA (2014–2015) on February 2, 2018. We received individual-level NVDRS data from the CDC by using their Researcher Access Data request process.

National Violent Death Reporting System. Established by the CDC in 2002, NVDRS captures all deaths in participating states that result from homicide, suicide, legal intervention (excluding legal execution), unintentional shooting, and injuries of undetermined intent.²⁶ The NVDRS does not capture deaths ruled as “natural” or “accidental” (with the exception of firearm deaths). In 2003, 6 states participated; as of 2018, 40 states, the District of Columbia, and Puerto Rico participated, with the most recent individual-level data available from deaths occurring in 2015 (available for 27 states). The NVDRS has been fully described elsewhere.²⁷ Briefly, abstractors at the state level code detailed information from, at a

minimum, the death certificate, coroner or medical examiner’s report, and law enforcement report to provide standardized information about victims, weapons, suspects, victim–suspect relationships, location, and precipitating circumstances for each incident. The abstractor assigns a “type of death” code to the case; one option is “legal intervention,” which the NVDRS coding manual specifies abstractors should use when the “decedent was killed by a police officer or other peace officer (persons with specified legal authority to use deadly force), including military police, acting in the line of duty.” The abstractor also writes 2 brief narratives on each incident to summarize the coroner or medical examiner report and the police report.

FatalEncounters.org. The FE Web site contains a searchable national database of people killed during interactions with law enforcement that includes incidents in which the victim sustained a fatal injury, though not always an injury inflicted by a police officer (e.g., victim died from a self-inflicted gunshot wound following a pursuit by law enforcement). In 2013, FE began prospectively collecting data on these deaths in all 50 states and the District of Columbia. Since then, FE has added 2000–2012 deaths retrospectively. Data collection by FE has gone through several iterations over time but relies primarily on crowdsourcing methods; Internet searches; Web sites such as Newsbank, Newspapers.com, and Lexis-Nexus; and regular alerts from other Internet sources.

Mapping Police Violence. The MPV research collaborative collects data on police killings nationwide (2013–present) identified from other crowdsourced databases on police killings in the United States including FE. The MPV collaborative also conducts original research to improve the quality and completeness of their data (e.g., case finding through social media searches, review of obituaries).

The Counted. The Counted is a project by the *Guardian*, a British newspaper, that counts the number of people killed by law enforcement in the United States (2015–2016). The database combines *Guardian* reporting with crowdsourced information by monitoring regional news outlets, research groups, and other open-source reporting projects. The Counted does not include self-inflicted deaths during encounters with law

enforcement or in police custody or detention facilities. The Counted includes incidents regardless of whether they occurred in the line of duty.

Gun Violence Archive. The GVA is a not-for-profit corporation formed in 2013 to provide a near-real-time online archive of firearm violence incidents (both fatal and nonfatal) in all 50 states and the District of Columbia. Data are collected from more than 2500 media, law enforcement, government, and commercial sources daily. The GVA codes and labels incidents with broad categories (e.g., suicide, homicide) including officer-involved shootings.

The GVA provided us with incident-level data on all officer-involved shootings in which the suspect or perpetrator was shot and killed (including incidents in which the victim died from a self-inflicted gunshot wound) for all 50 states in 2015. We identified incidents in which more than 1 individual was killed and disaggregated the data to construct an individual-level (rather than incident-level) data set.

The Washington Post. Since 2015, *The Washington Post* has tracked details about fatal shootings in the United States by a police officer—including decedent’s race, shooting circumstances, whether the victim was armed or was experiencing a mental-health crisis or both—by culling local news reports, law enforcement Web sites, and social media, and by monitoring independent databases including FE. *The Washington Post* conducted additional reporting in many cases. Compared with other open-source data sets used in this study, *The Washington Post* applies the most restrictive case definition, only including shootings in which a police officer, in the line of duty, fatally shoots a civilian. It does not track deaths of people in police custody, fatal shootings by off-duty officers, or nonfirearm deaths.²⁸

Sample

Identifying legal intervention homicides in the National Violent Death Reporting System and study-specific case definition. We identified potential legal intervention homicides in NVDRS by using an algorithm developed by Barber et al.²⁰ The algorithm uses available codes in NVDRS to identify deaths as potential legal intervention homicides for

incidents in which any of the following apply: the NVDRS abstractor coded “type of death” as legal intervention (i.e., not homicide, suicide, unintentional, or undetermined), a homicide circumstance code is “justifiable,” the victim–suspect relationship is “killed by law enforcement,” the *International Classification of Diseases, Tenth Revision (ICD-10)*, underlying cause of death code is in the legal intervention range (Y35.0–Y35.4, Y35.6, Y35.7, Y89.0), or the death occurred while “in custody.”

We reviewed incident narratives from deaths identified through the algorithm to confirm whether the death met our criteria as a legal intervention homicide: (1) the manner of death (on case review) was homicide (i.e., not suicide, unintentional, or undetermined), (2) the suspect was a law enforcement officer (including police, sheriff, federal law enforcement agent, military police, corrections officer, or other sworn officer, but not including security guards), and (3) the incident occurred in the line of duty (an off-duty officer who responds to an actual or suspected crime and intercedes as an officer is acting in the line of duty; if the off-duty officer was himself or herself the victim of the crime, the incident was not considered a legal intervention homicide). Of 508 deaths identified by the algorithm as potential law enforcement homicides, we found 81.5%, on review of the narratives, to meet this definition—including both firearm and nonfirearm deaths. For this study, a death met our case definition of a fatal police shooting if it satisfied these 3 conditions and the lethal injury was caused by a projectile fired from a firearm.

We excluded 4 legal intervention homicides in which the fatal injury occurred outside of the 27 NVDRS reporting states. We additionally excluded 4 legal intervention homicides in which the fatal injury was inflicted before 2015.

Linking data sources. Legal intervention homicides from our NVDRS sample and officer-involved deaths reported by the open-source data sets were linked 1-to-1, by using a multistep process that combined both deterministic and probabilistic processes. Figure 1 depicts the procedure for linking all available deaths and identifying deaths that met our case definition (i.e., nonaccidental shooting deaths of a civilian by a law enforcement officer acting in the line of duty). Table B (available as a supplement to the

online version of this article at <http://www.ajph.org>) shows the variables that were available to link deaths across the 6 data sources. Decedent age and sex, incident date, and the state in which the incident occurred were available for record-linkage across all sources (NVDRS and open source). Decedent name and the city in which the incident occurred were available for record linkage across all open-source databases.

We first linked all open-source data sets to create a single data set consisting of unique deaths identified by any of the 5 open-source data sets. Next, we linked the resulting data set to our NVDRS “legal intervention” data set to create a comprehensive data set of all deaths reported in any of the data sources (including nonfirearm deaths) and then selected deaths meeting our specific case definition for fatal police shootings as our final data set (hereafter referred to as “study-identified cases”) for primary analyses. We reviewed incident narratives from NVDRS and open-source data for each linked death to ensure accurate linkage.

Descriptive Analyses

We describe the proportion of study-identified cases that were captured by each data source. Because accuracy of reporting may be influenced by state-level factors, we assessed the proportion of study-identified cases that were captured by NVDRS by state, by type of death investigation system, and by the year a state entered NVDRS.

RESULTS

Using both NVDRS and the 5 open-source data sets, we identified 404 unique study-identified cases in which a law enforcement officer acting in the line of duty fatally shot a civilian in 2015 in the 27 NVDRS states (Table 1). Of these cases, 390 were found in both NVDRS and at least 1 open-source data set, 11 were identified in the open-source data only, and 3 were found only in NVDRS.

Among the 11 cases not identified in NVDRS, the mean age of decedents was 46 years, 10 were male, and all were non-Hispanic White (when race/ethnicity was reported). These 11 deaths occurred in 9 different states, with 3 occurring in Arizona (2 of which were by the same law enforcement

agency). Among the 3 cases found only in NVDRS, the age of the victim ranged from 16 to 45 years, all were male, 1 was non-Hispanic White, and 2 were non-Hispanic American Indian/Alaska Native. These 3 deaths occurred in different states.

In our study period, the NVDRS abstractor-coded “type of death” variable identified 379 “legal intervention” firearm homicides, of which 5 did not meet our specific case definition (4 security guards and 1 off-duty law enforcement officer who was responding to a crime against himself). Following the algorithm developed by Barber et al.,²⁰ we identified an additional 9 fatal police shootings not coded as “legal intervention” in NVDRS ($n = 383$).

Twenty-one additional deaths identified as fatal police shootings in the open-source data had no matching record in our algorithm-derived NVDRS sample of fatal police shootings. Of these 21, we were able to match 10 to cases within the universe of all NVDRS records ($n = 393$; i.e., 11 could not be found in NVDRS at all) by using victim demographics and incident location and date, and by reviewing incident narratives (Figure 1).

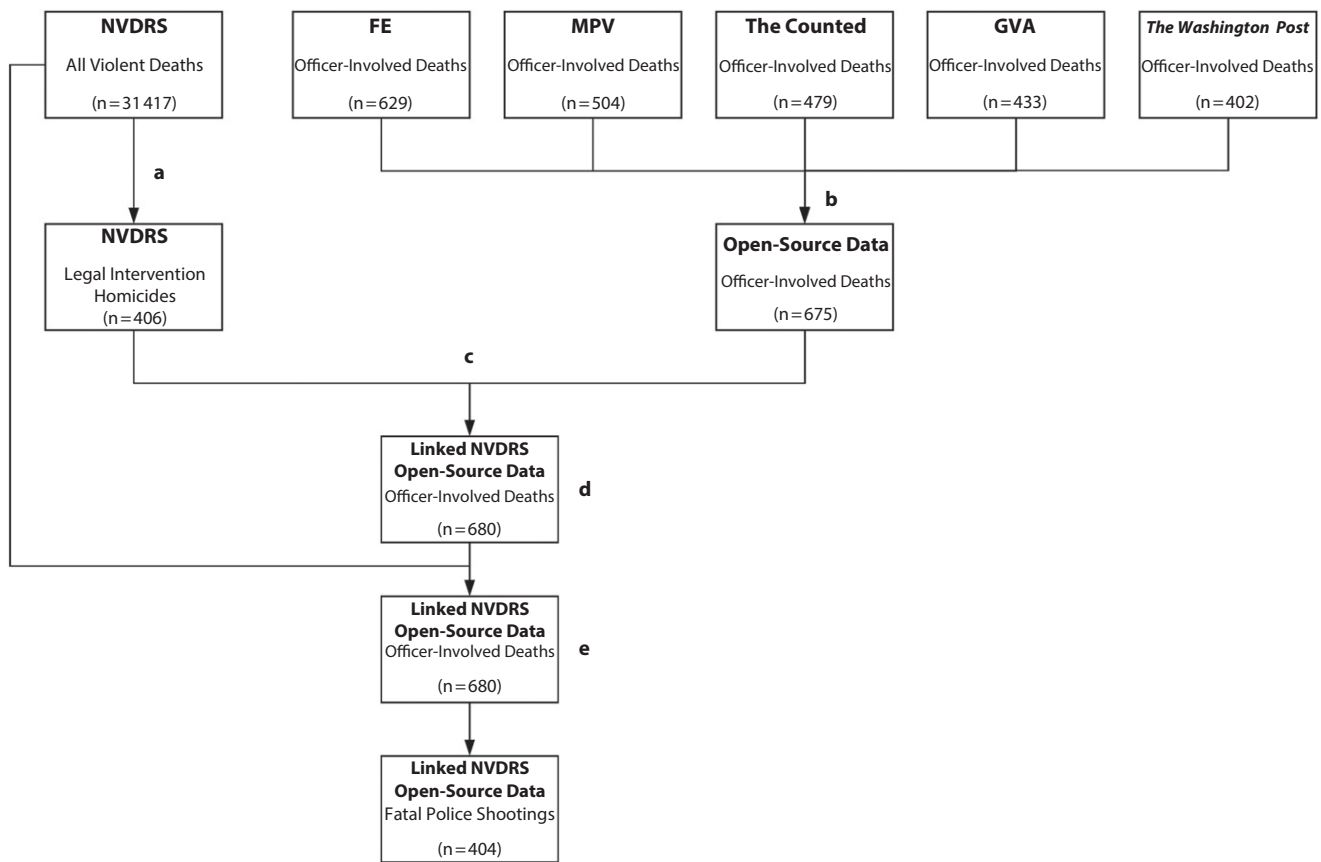
Each data source captured between 94.3% and 98.5% of the study-identified fatal police shootings (Table 1). Of these cases, 97.3% were captured in NVDRS by using our full linkage procedure, 94.8% were captured by using the algorithm following Barber et al.,²⁰ and 92.6% were captured using the NVDRS “type of death” variable.

The proportion of study-identified shootings captured by NVDRS by using our fully linked study data set varied only slightly by reporting state (Table 2), ranging from 100% in nearly two thirds ($n = 17$) of the states to 93% in Arizona.

The percentage of study-identified cases captured by NVDRS using our fully linked study data set varied minimally by the state death investigation system, whether a state had a medical examiner, or by the year a state began reporting to NVDRS (Table C, available as a supplement to the online version of this article at <http://www.ajph.org>).

DISCUSSION

Creating the study-identified police shootings data set was a labor intensive,



Note. FE = FatalEncounters.org; GVA = Gun Violence Archive; MPV = Mapping Police Violence; NVDRS = National Violent Death Reporting System.

^aFollowing Barber et al.,²⁰ potential legal intervention homicides were identified in NVDRS (2015, 27 US states). We reviewed these deaths, of which 406 were legal intervention homicides.

^bOfficer-involved deaths from all five open-source data sets were linked with a two-step process. First a deterministic record linkage was conducted by using all available variables (Table 2). Among records that did not match deterministically, we then used The Link King software (the-link-king.com) to identify potential matches based on probabilistic linkage protocols that support linkage in cases of data entry error, again using all available variables for linkage. Duplicate death records in each source were removed when found, retaining a single death record.

^cOfficer-involved deaths from the linked open-source data set (n = 675) were linked to our NVDRS sample (n = 406) with the same 2-step process using all available variables. To ensure accurate linkage of deaths, we reviewed incident narratives for each linked record.

^dOfficer-involved deaths found in open-source data but not matched to any legal intervention homicide in the NVDRS algorithmic sample (n = 274; 111 firearm deaths + 163 nonfirearm deaths) were linked to deaths found in the entire NVDRS 2015 data set (i.e., the universe of homicides, suicides, and unintentional firearm deaths captured by NVDRS) by repeating the 2-step linkage process described above. Potential matches were then reviewed manually by the authors to determine the correct 1-to-1 match. Of these 274 deaths, we were able to identify 104 (87 firearm deaths—10 of which met case definition of a fatal police shooting) in NVDRS. Among these 10 cases identified in NVDRS, the abstractor-coded type of death was homicide for 9 cases and suicide for 1 case.

^eOfficer-involved deaths in our final linked NVDRS open-source data set (n = 680) were classified into 5 categories: (1) fatal police shootings (n = 404), (2) other firearm deaths (e.g., suicides [84.4%], non-line-of-duty shootings [15.6%]; n = 90), (3) motor vehicle-related deaths (n = 123), (4) Taser-related deaths (n = 38), and (5) other (e.g., deaths following physical restraint by law enforcement, medical emergencies in police custody; n = 25). We then selected those that we identified as fatal police shootings for our primary analysis. See Table D, available as a supplement to the online version of this article at <http://www.ajph.org>, for the total number of officer-involved deaths in our final linked data set of both firearm and nonfirearm deaths, the percentage of these deaths that were linked to records in NVDRS, and the marginal contribution each database made, by the type of death.

FIGURE 1—Procedure for Linking All Available Officer-Involved Deaths and Selection of Fatal Police Shootings: 27 US States, 2015

iterative process that allowed us to identify, within NVDRS, 97% of the fatal police shootings reported by all our sources in the 27 reporting states in 2015. A majority of NVDRS reporting states captured 100% of known police shootings; no state captured less than 93%. Because of the relatively high accuracy of reporting by state, NVDRS appears

to be a better data source for macro-level analyses involving overall counts of fatal police shootings than either the Supplementary Homicide Reports or National Vital Statistics System, the latter having been shown to underreport cases substantially and to varying degrees across states.^{1,16,17,20} We did not find reporting to vary considerably by

the reporting state's death investigation system or year of entry into NVDRS, which augurs well for the validity of NVDRS when all 50 states begin reporting, presumably in the near future.

To the extent that NVDRS seeks to become the leading official data source for legal intervention homicides, specifically those that

TABLE 1—The Number of Study-Identified Fatal Police Shootings and Percentage Captured, by Data Source: 27 US States, 2015

Data Source	Cases Found in Data Set, No. (% of Total Cases)
Linked data sources	404 (100)
Open-source only	11 (2.8)
NVDRS ^a and ≥ 1 open-source data set	390 (96.5)
NVDRS ^a	393 (97.3)
Fatal Encounters	398 (98.5)
Mapping Police Violence	397 (98.3)
The Counted	396 (98.0)
Gun Violence Archive	381 (94.3)
<i>The Washington Post</i>	395 (97.8)

Note. NVDRS = National Violent Death Reporting System.

^aIncludes fatal police shootings identified in NVDRS by using a labor-intensive protocol.

are firearm-related, there is room for improvement, especially in how these deaths are correctly and consistently categorized. For example, only 93% of the study-identified police shootings (374/404) could be (efficiently) identified by using the NVDRS abstractor-coded “type of death” variable. Indeed, we observed misclassification of the abstractor-coded “type of death” field among the fatal police shootings we identified within NVDRS. For example, among the 393 study-identified shootings that we found in NVDRS, NVDRS abstractors miscoded the death as a homicide (4%; i.e., not as legal intervention) or, less often, a suicide (1%). Of these misclassified deaths, most (72%) carried some indication that they were in fact legal intervention homicides, whether it was from one of the NVDRS variables used in the algorithm to identify these deaths (e.g., the relationship of victim to suspect was classified as “victim injured by law enforcement officer”) or from the incident narratives. A possible technical remedy, at least for the former type of misclassification, as suggested by Barber et al.²⁰ previously, is a pop-up reminder that would ask abstractors whether “legal intervention” is the appropriate code for abstractor-assigned “type of death” whenever one of the other variables in the algorithm (in-custody death, justifiable homicide, victim–suspect relationship, or ICD-10 code) suggests a potential police homicide and “type of death” does not.

Open-source databases such as FE, MPV, The Counted, GVA, and *The Washington Post*

serve a useful purpose for researchers and journalists, most obviously by providing near-real-time information about officer-involved deaths (there is an 18-month lag before NVDRS data become available). In addition, some of these data sources (i.e., FE, MPV, and The Counted) may be more suitable than NVDRS for studying nonfirearm officer-involved deaths (e.g., Taser-related deaths and unintentional deaths resulting from motor vehicle collisions). This is to be expected because NVDRS is not designed to capture deaths in which the manner of death was ruled as an accident or natural. In fact, a previous study²⁹ found that nearly a quarter (22%) of Taser-related deaths reported by The Counted in 2015 had “accident” as the underlying cause of death reported in National Vital Statistics System, 15% had “circulatory/respiratory diseases” as the underlying cause of death, and 11% had “mental/behavioral disorders.” Among the motor vehicle deaths, three quarters had “accident” as the underlying cause of death. In our study, 42% of Taser-related deaths and 94% of motor vehicle-related deaths reported by any of the data sources were not discoverable in NVDRS (Table D, available as a supplement to the online version of this article at <http://www.ajph.org>). Although open-source databases may provide a more complete count of non-firearm-related deaths following encounters between civilians and law enforcement, regardless of the outcome of the death investigation, the accuracy of these data sources with respect to providing a complete

count of these subgroups of officer-involved deaths remains uncertain. Future empirical studies could take on this uncertainty by using, for example, the Fatality Analysis Reporting System, a nationwide census providing yearly data regarding fatal injuries suffered in motor vehicle traffic crashes, which has a code for “legal intervention,” the way we used NVDRS in the current study.

Three additional cross-validation findings are worth noting. First, 6 of the firearm deaths reported by open-source databases that claim not to include suicides (individuals who take their own life when confronted by police) were ruled by the coroner or medical examiner (as assessed in NVDRS) to be suicides. As might be expected, there is a trade-off between real-time case identification and data from NVDRS, as the latter, but not the former, draws from the report filed by the coroner or medical examiner following a completed death investigation. Second, 10 fatal police shootings were only identified as such within NVDRS by virtue of linking to open-source data (i.e., within NVDRS there was no indication anywhere that they were officer-involved deaths). One possible explanation as to why some, albeit few, shootings in NVDRS have no sign of being officer-involved is that this information had not been available to abstractors at the time the death was entered into the system (perhaps because of an ongoing investigation). And third, 11 fatal police shootings found in the open-source data (8 of which were found in all open-source data repositories) could not be identified in NVDRS at all. As all shooting deaths, regardless of intent, should be captured in NVDRS, we cannot explain their absence.

Our study is subject to limitations. First, there is no gold standard against which to validate the completeness of NVDRS. Instead, we compared NVDRS to a comprehensive data set of officer-involved deaths compiled by linking the largest open-source databases of these deaths available. In effect, the total count of fatal police shootings that we observed are only those that are known or identified in our study period, which is not necessarily the true number. Nonetheless, there were high rates of agreement across all 6 sources, and these open-source data sets report more deaths than do existing governmental sources. It appears likely, therefore,

TABLE 2—The Number of Study-Identified Fatal Police Shootings, Number and Percentage Identifiable in National Violent Death Reporting System, and Number Abstractor-Coded Legal Intervention Firearm Deaths, by Reporting State: 27 US States, 2015

State	NVDRS Abstractor-Coded Legal Intervention Firearm Deaths, ^a No.	Cases Found in NVDRS ^b , No. (% of Study-Identified Cases in That State)	Study-Identified Fatal Police Shootings, No.
Total	379 ^c	393 (97.3)	404
Alaska	^d	^d (100)	4
Arizona	37	40 (93.0)	43
Colorado	27	28 (96.6)	29
Connecticut	^d	^d (100)	2
Georgia	25	28 (96.7)	29
Hawaii	^d	^d (100)	2
Kansas	9	10 (100)	10
Kentucky	14	15 (93.8)	16
Maine	^d	^d (100)	2
Maryland	14	14 (100)	14
Massachusetts	10	9 (100)	9
Michigan	16	18 (94.7)	19
Minnesota	13	12 (100)	12
New Hampshire	^d	^d (100)	3
New Jersey	15	15 (100)	15
New Mexico	19	19 (95.0)	20
New York	16	18 (95.0)	19
North Carolina	23	23 (100)	23
Ohio	28	27 (96.4)	28
Oklahoma	35	32 (100)	32
Oregon	16	16 (100)	16
Rhode Island	0	0	0
South Carolina	16	19 (100)	19
Utah	9	9 (100)	9
Vermont	^d	^d (100)	1
Virginia	15	16 (94.1)	17
Wisconsin	11	11 (100)	11

Note. NVDRS = National Violent Death Reporting System.

^aFirearm deaths reported in NVDRS that the abstractor coded as “legal intervention” for “type of death.”

^bDeaths reported in NVDRS that we identified as fatal police shootings through our labor-intensive protocol.

^cIncludes 5 deaths that did not meet our specific case definition of fatal police shooting (4 security guards and 1 off-duty law enforcement officer who was responding to a crime against himself).

^dCenters for Disease Control and Prevention policy requires that cell sizes of 1 to 4 not be reported.

that just as systematically searched newspaper accounts have been found to be a credible injury data source for other death types of public concern, such as child abuse or neglect cases,^{30,31} the open-source data repositories used in our study likewise, and especially when linked, serve as a reliable source of fatal police shootings as well.

Second, we only validated the completeness of NVDRS for 1 year (2015) and only in the 27 states. To the extent that there have been trends over time in the completeness or accuracy of any data sources, findings from a single year may not reflect findings from other years. However, because we used the most recent year available and found that underreporting by NVDRS was low overall and that reporting did not vary appreciably across the states, it is likely that the limits inherent in using a single year of data do not undercut our finding that NVDRS provides accurate count data on identifiable fatal police shootings.

There is no a priori reason to believe that our findings would be markedly different if all 50 states and the District of Columbia reported to NVDRS. In fact, expanding NVDRS to all 50 states would likely provide not only an accurate count of fatal police shootings but also detailed circumstantial information about these deaths at the national level. Once NVDRS expands to all 50 states, open-source data will still be needed to satisfy the important complementary function of providing real-time data on fatal police shootings and data about non-firearm-related officer-involved deaths that NVDRS is not designed to fully capture. **AJPH**

CONTRIBUTORS

A. Conner and D. Azrael conceptualized the study. A. Conner and C. Barber reviewed National Violent Death Reporting System cases. A. Conner and V. H. Lyons conducted record linkages. A. Conner, D. Azrael, and V. H. Lyons reviewed record linkages. A. Conner conducted analyses and managed the data. A. Conner, D. Azrael, and M. Miller drafted the article. All authors contributed to interpretation of data, critical revision of the article, writing of final drafts, and review of final drafts. D. Azrael and M. Miller supervised the study.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

HUMAN PARTICIPANT PROTECTION

The Harvard T. H. Chan School of Public Health's institutional review board determined that the study was exempt from human participant review because the research involved only the collection of publicly available existing data. No living participants were recruited for this study. The Centers for Disease Control and Prevention granted permission to link nonidentified National Violent Death Reporting System data to identified data from open-source data sets.

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