



Occupational Homicides of Law Enforcement Officers, 2003–2013

Data From the National Violent Death Reporting System

Janet M. Blair, PhD, MPH, Katherine A. Fowler, PhD, Carter J. Betz, MS,
Jason L. Baumgardner, MSPH

Introduction: Law enforcement officers (LEOs) in the U.S. are at an increased risk for homicide. The purpose of this study is to describe the characteristics of homicides of LEOs in 17 U.S. states participating in the National Violent Death Reporting System. This active surveillance system uses data from death certificates, coroner/medical examiner reports, and law enforcement reports.

Methods: This study used quantitative and qualitative methods to analyze National Violent Death Reporting System data for 2003–2013. Deaths of LEOs feloniously killed in the line of duty were selected for analysis. LEO homicides and the circumstances preceding or occurring during the incident were characterized. Analyses were conducted October 2015–June 2016.

Results: A total of 128 officer homicides from 121 incidents were identified. Most (93.7%) LEO victims were male, 60.9% were aged 30–49 years (average age, 40.9 years). Approximately 21.9% of LEOs were killed during an ambush, and 19.5% were killed during traffic stops or pursuits. Of the 14.1% of LEOs killed responding to domestic disturbances, most disturbances were intimate partner violence related. More than half (57.0%) of homicides were precipitated by another crime, and of these, 71.2% involved crimes in progress. Most suspects were male. Ninety-one percent of homicides of LEOs were committed with a firearm.

Conclusions: This information is critical to help describe encounter situations faced by LEOs. The results of this study can be used to help educate and train LEOs on hazards, inform prevention efforts designed to promote LEO safety, and prevent homicide among this population.

(Am J Prev Med 2016;51(5S3):S188–S196) Published by Elsevier Inc. on behalf of American Journal of Preventive Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

According to the 2008 Bureau of Justice Statistics' Census of State and Local Law Enforcement Agencies, there are 17,985 law enforcement agencies that employ at least one full-time officer or the equivalent in part-time officers in the U.S., the majority being police officers.¹ State and local law enforcement agencies employed about 1,133,000 people on a full-time basis.¹ Law enforcement is a high-stress occupation^{2–5}

that involves exposure to potentially dangerous and violent situations such as conducting criminal investigations,⁶ responding to crimes in progress,⁷ conducting patrols,^{6,8} apprehending criminals,⁹ managing escalating hostile encounters such as disturbance calls⁷ including domestic disturbance calls,¹⁰ working late at night or during early morning hours,¹¹ pursuing fleeing or speeding motorists,⁹ and conducting traffic stops.⁷

Law enforcement officers (LEOs) are exposed to violence, suffering, and death as an inherent part of their profession.⁴ As a result of exposure to these situations, LEOs are also at an increased occupational risk for homicide; in 1992–2002, the occupational homicide rate among LEOs in the U.S. was 5.6 per 100,000.¹² This rate ranks fourth, after taxi drivers, liquor store employees, and gas station employees, respectively.¹³ According to the Federal Bureau of Investigation's (FBI's) Law Enforcement Officers Killed and Assaulted (LEOKA)

From the Division of Violence Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia

Address correspondence to: Janet M. Blair, PhD, MPH, Division of Violence Prevention, Centers for Disease Control and Prevention, 4770 Buford Highway NE, MS F63, Atlanta GA 30341. E-mail: jblair@cdc.gov.

This article is part of the supplement issue titled National Violent Death Reporting System: Analyses and Commentary.

0749-3797/\$36.00

<http://dx.doi.org/10.1016/j.amepre.2016.08.019>

Program, from 2005 to 2014, a total of 505 LEOs were feloniously killed in the line of duty.¹⁴

There is a growing body of literature regarding violence against LEOs.^{11,15–18} Previous studies that have examined occupational fatalities among LEOs have focused on homicides and transportation-related fatalities,^{12,19} or solely homicides.^{8,10} Commonly used databases for these studies include the U.S. Department of Labor's Census of Fatal Occupational Injuries,²⁰ FBI's LEOKA Reports,²¹ and National Law Enforcement Officers Memorial Fund database.²² Though LEOKA data include written summations, National Violent Death Reporting System (NVDRS) includes narrative data from two sources: coroner/medical examiner reports (CMEs) and law enforcement reports. CME reports provide a different and strong approach to measurement in that the circumstances of death are determined from experts trained to determine the cause of death. The law enforcement reports also provide a detailed understanding of the incident. The narrative data also provide detailed information regarding situational encounters of victim officers, which is an important area of contribution to the literature.

Using data obtained from the NVDRS, the current study describes the occurrence of and circumstances associated with occupational homicide of LEOs in 17 U.S. states. The objective of this analysis is to describe the demographics of LEO homicide victims, describe the detailed circumstances surrounding the deaths of these officers killed in the line of duty, and identify patterns of behavior and the situational context of such deaths. It is hoped that the findings will be used to inform prevention strategies for training of LEOs that promote officer safety and can help to minimize the risk of injury and death.

Methods

The NVDRS is an active, state-based surveillance system that collects information on violent deaths in participating states. The NVDRS case definition for violent deaths includes homicides, suicides, deaths due to legal intervention, deaths of undetermined intent, unintentional firearm deaths, and deaths due to terrorism. The methods of NVDRS have been described previously.^{23–27} The system links data from three required sources—death certificates, CME reports, and law enforcement reports—into a single record. The CME reports and law enforcement reports contain narratives with detailed information regarding the violent death and precipitating circumstances. Trained abstractors review these records and abstract the information into variables coded according to standardized Centers for Disease Control and Prevention guidance. The abstractors also create an incident narrative that includes a description of the precipitating circumstances of death. Information is collected on victims (deceased individuals) and limited information is collected on alleged perpetrators (deceased or live suspects).²⁴ An incident is defined as a single violent death, or multiple violent deaths if the deaths are related and the fatal

injuries were inflicted <24 hours apart. The incidents in this analysis were from data submitted by the 17 states participating in NVDRS during the study period: Alaska, Maryland, Massachusetts, New Jersey, Oregon, South Carolina, and Virginia (2003–2013); Colorado, Georgia, North Carolina, Oklahoma, Rhode Island, and Wisconsin (2004–2013); Kentucky, New Mexico, and Utah (2005–2013); and Ohio (2011–2013). Analyses were conducted from December 2015 through June 2016.

Case Identification

Homicides of LEOs were identified by an NVDRS variable designed to specifically capture deaths of LEOs killed in the line of duty. To ensure that all LEO deaths were included, in addition to selecting and reviewing cases where this variable was checked, a text search of the occupation variables in NVDRS, which are based upon data from the U.S. Death Certificate and would include a victim's usual occupation,²⁸ was conducted. The occupation field was missing or unknown in 8 of 128 (6.3%) incidents. Search terms^a were also used. Cases identified uniquely by the text search were then reviewed and checked for inclusion or exclusion in the analysis. The text search yielded two additional cases, illustrating the reliability of this NVDRS variable.

For the purposes of this analysis, the term “LEO” can include people who are employed by local, county, state, tribal, or federal entities in occupations such as municipal or county police, constables, state police, highway patrol officers, sheriffs and deputies, marshals, and special agents.²⁹ The term “line of duty” designates on- or off-duty LEOs acting in an official capacity (i.e., reacting to a situation that would ordinarily fall within the scope of their official duties as an LEO).²⁹

Bail bondsmen, private security guards, and emergency responders such as firefighters or emergency medical technicians were excluded from this analysis.

Demographic Characteristics of Law Enforcement Officer Victims

The demographic characteristics of victim LEOs included sex, age, race/ethnicity, history of prior military service, and occupation. The list of occupations was put into general categories: police, law enforcement, sheriff, state trooper, and constable.

Incident Characteristics of Law Enforcement Officer Homicides

Contextual variables such as type of assignment (i.e., if the LEO was on patrol alone), and if the LEO died at the scene were coded from NVDRS narratives based upon definitions developed for the study. Type of location where injured; primary cause of fatal injury (i.e., method used); wound location; and time of day are collected routinely in the NVDRS system and are also presented.

^aSearch terms included *agent, ATF, BIA, CBP, C/O, constable, cop, corrections officer, correctional, correctional facility, correctional officer, county deputy, DEA, deputy, detective, DUSM, FBI, Federal Bureau of Investigation, code enforcement officer, highway patrol, ICE, immigration officer, jail, law enforcement, law officer, LEO, LE officer, marshal, MP, officer, parole, parole officer, peace officer, P/O, police, prison, probation, probation officer, public safety officer, sheriff, task force, TFO, USMS, and trooper.*

Table 1. Demographic Characteristics of Law Enforcement Officer Victims of Occupational Homicide: NVDRS, 17 States, 2003–2013

Characteristic	n ^a (%) ^b
Sex	
Male	120 (93.7)
Female	8 (6.3)
Age (years)	
20–29	22 (17.2)
30–39	41 (32.0)
40–49	37 (28.9)
50–59	18 (14.1)
60–69	6 (4.7)
≥ 70	4 (3.1)
Race/ethnicity	
White, non-Hispanic	104 (81.2)
Black, non-Hispanic	15 (11.7)
More than one race	7 (5.5)
Other ^c	2 (1.6)
Served in the U.S. Armed Forces	
No	75 (58.6)
Yes	38 (29.7)
Unknown	15 (11.7)
Occupation	
Police	81 (63.3)
Other Law Enforcement ^d	26 (20.3)
Sheriff	14 (10.9)
State Trooper	4 (3.1)
Constable	3 (2.3)

^aTotal no. of victims=128. Numbers may not add to total because of missing data.

^bPercentages may not add to 100% because of rounding.

^cOther includes Hispanic/Latino, and Asian officer victims; these categories are not presented separately because of small cell sizes.

^dIncludes records that noted law enforcement (i.e., not otherwise specified), and federal agents.

NVDRS, National Violent Death Reporting System.

Circumstances/Scenarios of Law Enforcement Officers Killed in the Line of Duty

To identify the proportion of homicides of LEOs that are related to criminal activity, specifically felonies (e.g., robbery or drug trafficking), NVDRS includes information about crimes that precipitated the violent death (e.g., hours to days prior) but that did not occur immediately prior to the LEO death. Thus, NVDRS uses a broader definition of criminal activity than the one used by

FBI's Supplementary Homicide Report system. This system only counts felony-related deaths as those that occur while another felony is in progress.³⁰ An "in-progress crime" is a serious or felony-related crime that was being committed or attempted at the time of the incident. Other precipitating events captured for this analysis included whether the LEO victim used a weapon during the course of the incident; whether an argument or conflict preceded the victim's death; intimate partner violence (IPV)-related circumstances; drug involvement (drug dealing, drug trade, or drug use is suspected to have played a role in precipitating the incident); brawls (mutual physical fights); and random violence.

Coded Circumstances and Encounter Situations

Categories used for coded circumstances and encounter situations were based upon a literature review. To identify patterns of LEO homicides and circumstances, most categories for encounter situations used in this analysis were based largely upon the FBI categories that are used for the LEOKA system.²¹ The categories used for this analysis were:

1. ambush, where an LEO is unexpectedly assaulted as the result of premeditated design by the perpetrator;
2. arrest, where an LEO is arresting or attempting to arrest an offender either through verbal advisement or through physical contact;
3. traffic stops or vehicle pursuits;
4. disturbance calls;
5. domestic disturbances (breaches of the peace or crimes against persons occurring in a family or among other members of the household resulting in a call for law enforcement to respond); and
6. IPV-related domestic disturbances. IPV-related domestic disturbances were also counted as domestic disturbances, but this category was also used to determine what proportion of domestic disturbances were IPV-related.

Other categories for encounter situations in this analysis included:

7. handling/transporting of prisoners;
8. tactical situations (e.g., serving a search warrant); and
9. whether the officer was serving a warrant.

More than one encounter situation for a given incident could be coded. Incidents were coded and classified into these categories. Narrative reviews were also conducted to identify and code additional contextual variables such as whether the officer struggled with the suspect, and whether the officer's firearm was used against the officer by the suspect. Narrative review is a method that has been used in previous injury studies,^{31,32} including studies of LEO homicides.^{8,10}

Suspect Circumstances

The NVDRS collects information as to whether homicide suspects attempted suicide (fatally or non-fatally) after the death of the victim officer. Additional variables for suspects were coded. These variables included whether the suspect was arrested, if the suspect was killed during the incident, whether the incident was directly related to the suspect's mental health problems, whether the suspect used the victim officer's (or another LEO's) service

weapon, and whether the suspect was under the influence of drugs or alcohol.

Descriptive analyses were conducted. To code cases, narratives were manually reviewed. Cases were double coded by two reviewers, checked to determine concordance, and re-reviewed. A sample of 10% of cases were re-reviewed to check accuracy. Inconsistencies were resolved through a third coder. All data were analyzed using SAS, version 9.3.

Results

Table 1 displays the demographic characteristics of LEO victims of occupational homicides. In 17 NVDRS states, from 2003 through 2013, there were 128 LEOs killed in occupational homicides in 121 incidents. Overall, 120 (93.7%) were male. The average age for victim officers was 40.9 years (range, 23–82 years). Of those killed, 104 (81.2%) LEO victims were non-Hispanic white, 15 (11.7%) were non-Hispanic black, and 7 (5.5%) were more than one race. Thirty-eight (29.7%) LEO victims ever served in the U.S. Armed Forces. Most (63.3%) were employed by police departments. For some LEOs, the agency of employment was missing, and these victim officers were categorized in the “other law enforcement” category.

Type of assignment, place where the injury occurred, whether the victim LEO died at the scene, primary cause of fatal injury, wound location, location of injury, time of day, and day of week are presented in **Table 2**. Victim LEOs were working alone in 50 cases (39.1%), but were accompanied by other law enforcement personnel in 56 (43.8%) of cases. Most homicides occurred on highways/streets/roads or in automobiles (46.1%) and homes/apartments/yards/driveways (31.3%). Officers died at the scene in 14 (10.9%) of the homicides. However, information as to whether an LEO died at the scene was unavailable or unknown for 40 (31.3%) of the victims. The vast majority of LEO homicides (91.4%) were committed with firearms. Most officers had injuries to the thorax (44.9%) and head (39.8%). Most LEO homicides occurred between the hours of 4:01PM to 12AM (35.9%) and 8:01AM to 4:00PM (30.5%). The most common day of the week that officers were victims of homicide was Thursday ($n=26$, 20.3%).

Table 3 displays the encounter scenarios that preceded the homicides. Circumstances that were associated with law enforcement homicides included the LEO homicide being precipitated by another serious crime (e.g., drug dealing, robbery) in 73 (57.0%) cases. Of these 73 homicides, 52 (71.2%) involved a crime in progress. In 31 (24.2%) homicides, the victim used a weapon during the course of the incident (meaning that the LEO fought back). In 14 (10.9%) of the homicides, an argument or conflict was related to the victim’s death. A total of six

(4.7%) involved drugs; two (1.6%) involved a mutual physical fight; and two (1.6%) involved random violence.

In 28 (21.9%) homicides, the victim LEO was ambushed. In 25 (19.5%) homicides, the officer’s death was precipitated by a traffic stop or pursuit. In 22 (17.2%) homicides, the LEO struggled with the suspect. Tactical situations were noted in 21 (16.4%) homicides; disturbance calls were noted in 20 (15.6%) of cases; and domestic disturbances in 18 (14.1%). IPV-related domestic disturbances were noted in 13 (10.2%); arrest situations in ten (7.8%); serving a warrant in ten (7.8%); and handling/transporting of prisoners in six (4.7%) homicides.

Information regarding known characteristics of primary suspects are presented in **Table 4**. Most (84.4%) suspects were male; 1.6% of suspects were female; and 14.1% were unknown. The average age of suspects was 34.1 years (range, 15–88 years). A total of 50 (39.1%) suspects were non-Hispanic white; 46 (35.9%) were non-Hispanic black; and 25 (19.5%) were of unknown race, non-Hispanic.

The suspect attempted suicide (or died by suicide) after the death of the victim LEO in 14 (10.9%) cases. The suspect was arrested or taken into custody after the incident in 39 (30.5%) cases. In 29 (22.7%) cases, the suspect was killed during the incident. Mental health issues of suspects were noted in 17 (13.3%) of the cases. In 13 (10.2%) of the cases, the suspect used the victim’s service weapon (or another LEO’s service weapon) against the LEO. The suspect was under the influence of drugs or alcohol in 11 (8.6%) homicides.

Discussion

This analysis used NVDRS data from 17 states to examine occupational homicides of LEOs. The results add to the body of literature on this subject by providing information regarding LEO victims, the nature of injuries, encounter situations, and circumstances. The results demonstrate the value of the system for collecting information regarding LEO homicides.

Data from NVDRS indicate that the most common precipitating factors in LEO homicides were another crime (57.0%) and another crime in progress (71.2%). This is a common scenario that has been previously documented in the literature, finding that LEO homicides often occur during a crime²¹ or when suspects were eluding capture after committing a crime.³³

One of the most common situational encounters noted in this analysis was ambushes (21.9%). In these situations, LEOs were faced with some of the characteristic circumstances of ambushes: the element of surprise, concealment of the assailant, their intentions or weapon, suddenness of the attack, and a lack of provocation.³⁴ From 2003 to 2014, ambushes constituted 13%–31% of

Table 2. Incident^a Characteristics of Occupational Homicides of Law Enforcement Officers: NVDRS, 17 States, 2003–2013

Characteristic	n ^b (%) ^c
Officer alone ^d	
No	56 (43.8)
Yes	50 (39.1)
Unknown	22 (17.2)
Place at which the injury occurred	
Highway/street/road/automobile	59 (46.1)
House/apartment/yard/driveway	40 (31.3)
Commercial/farm/industrial/construction area	12 (9.4)
Other including schools/sports areas	8 (6.3)
Natural area/countryside/forest	3 (2.3)
Recreational/cultural area/public building	3 (2.3)
Unknown/missing	2 (1.6)
Residential institution/shelter/prison	1 (< 1)
Officer died at the scene ^d	
No	74 (57.8)
Yes	14 (10.9)
Unknown	40 (31.3)
Primary cause of fatal injury	
Firearm	117 (91.4)
Motor vehicles, including buses and motorcycles	7 (5.5)
Explosive	2 (1.6)
Sharp instrument/blunt instrument/personal weapons (i.e., hands, feet, fists)	2 (1.6)
Wound location ^e	
Thorax	53 (44.9)
Head	47 (39.8)
Upper extremity	35 (29.7)
Neck	22 (18.6)
Face	20 (17.0)
Abdomen	18 (15.3)
Lower extremity	16 (13.6)
Spine	6 (5.1)
Time of day	
12:01AM to 8AM	32 (25.0)

(continued)

Table 2. (continued)

Characteristic	n ^b (%) ^c
8:01AM to 4PM	39 (30.5)
4:01PM to 12AM	46 (35.9)
Unknown	11 (8.60)
Day of week	
Monday	18 (14.1)
Tuesday	12 (9.4)
Wednesday	21 (16.4)
Thursday	26 (20.3)
Friday	14 (10.9)
Saturday	17 (13.3)
Sunday	20 (15.6)

^aTotal no. of victims=128; no. of incidents=121.
^bNumbers may not add to total because of missing data.
^cPercentages may not add to 100% because of rounding.
^dInformation coded from coroner/medical examiner and/or law enforcement narratives.
^eApplies to firearm injuries and sharp instrument wounds only (n=118); more than one wound location category can be selected.
 NVDRS, National Violent Death Reporting System.

felonious deaths among LEOs.³⁵ In 2011, the U.S. Attorney General identified developing approaches to counter ambush-style attacks as a top priority for LEO safety.³⁶ The information from this analysis can be used to inform such efforts and help law enforcement agencies characterize and prevent ambush attacks.

Traffic stops are another precipitating circumstance noted in this analysis, and according to the Bureau of Justice Statistics, the most common reason for contact with the police is being a driver in a traffic stop.³⁷ In 2011, an estimated 42% of face-to-face contacts that U.S. residents had with police occurred for this reason.³⁸ Although traffic stops are relatively common occurrences, they pose a unique risk in that they involve elements of uncertainty and can escalate quickly, resulting in ambushes or pursuits. From 2005 to 2014, a total of 93 LEOs were killed in the U.S. during routine traffic stops.³⁹ Although some studies have found that homicide deaths among LEOs occur less often during traffic stops,⁴⁰ of the precipitating circumstance variables that were coded through reviews of CME and law enforcement narratives, 19.5% of LEO homicides in this study involved traffic stops or pursuits. These results are also consistent with a study using LEOKA data,⁸ suggesting that discussions of traffic stops should be an integral part

Table 3. Circumstances and Encounter Situations^a of Occupational Homicides of Law Enforcement Officers: NVDRS, 17 States, 2003–2013

Circumstances	n ^b (%) ^c
Death was precipitated by another crime (e.g., drug dealing, robbery)	73 (57.0)
Precipitating crime was in progress at the time of the incident	52 (71.2)
Officer used weapon during the course of incident	31 (24.2)
Argument or conflict was related to the victim's death	14 (10.9)
Drug involvement ^d	6 (4.7)
Brawl (mutual physical fight)	2 (1.6)
Random violence ^e	2 (1.6)
Encounter situations coded from narratives	
Officer ambushed	28 (21.9)
Traffic stop or pursuit	25 (19.5)
Officer struggled with suspect	22 (17.2)
Tactical situation (includes serving a warrant)	21 (16.4)
Disturbance call	20 (15.6)
Domestic disturbance call (includes IPV-related domestic disturbances)	18 (14.1)
IPV-related domestic disturbance	13 (10.2)
Arrest situation	10 (7.8)
Serving a warrant	10 (7.8)
Handling, transporting of prisoners	6 (4.7)

^aMore than one circumstance could be selected and more than one encounter situation could be coded.

^bTotal no. of victims=128; no. of incidents=121; numbers may not add to total because of missing data.

^cPercentages may not add to 100% because of rounding.

^dDrug dealing, drug trade, or drug use is suspected to have played a role in precipitating the incident.

^eA random act of violence is one in which the suspect is not concerned with who is being harmed, just that someone is being harmed (e.g., an act where a person shoots randomly into a crowd of people).

IPV, intimate partner violence; NVDRS, National Violent Death Reporting System.

of LEO training in order to decrease assaults and fatal injuries and enhance LEO safety.

Non-domestic disturbance calls were also noted as a precipitating factor with involvement in 15.6% of cases. These calls involved a range of circumstances. Domestic disturbance calls also pose a significant threat to LEO safety¹⁰ and result in more assaults and injuries than any other type of assignment or circumstance. In 2014, according to the FBI, 31% of the 48,315 assaults on LEOs occurred during disturbance calls.⁴¹ In this analysis, domestic disturbances were a precipitating factor in 14.1% of all LEO homicides, which corroborates with studies of LEOKA data that found that domestic disturbances accounted for nearly 14%–15% of officer homicides.^{10,42} Kercher et al.¹⁰ found that nearly half of the domestic disturbance calls that resulted in officer homicides were specific to IPV. After a careful review of

narratives, this analysis found that of the domestic disturbance calls that resulted in LEO homicides, 72.2% (13/18) were considered IPV-related. The discrepancy may be the result of differences in methods, availability of detailed information, a small sample (i.e., not nationally representative), and the way that IPV-related incidents were captured in NVDRS coding practices. A study of National Incident-Based Reporting System assault data found that other types of incidents can be just as dangerous as domestic violence incidents; however, the authors stated that future research should investigate whether certain subgroups of domestic violence present a special risk.¹⁸

The findings in this study are also consistent with other studies that have shown that 90% of homicides of LEOs are committed with firearms.^{6,8,12} In 10% of cases, the suspect used the officer's service firearm. As firearms contribute to such a large proportion of deaths among

LEOs, researchers have suggested that efforts are needed to examine the impact of access to firearms and service weapon “takeaways” and how they affect LEO homicides.⁸

Limitations

Some limitations of NVDRS have been noted previously.²⁶ First, because this is an analysis of 17 states that participate in the NVDRS, the findings are not nationally representative of all LEO homicides. The goal is to ultimately increase the number of states participating in the NVDRS to include all 50 states, the District of Columbia, and U.S. territories to achieve full national representation.

Second, reports received for the NVDRS system may not fully reflect all information known about an incident, particularly in the case of homicides when data are

Table 4. Characteristics of Primary Suspects and Suspect Encounter Scenarios in Occupational Homicides of Law Enforcement Officers: NVDRS, 17 States, 2003-2013

Characteristic	n ^a (%) ^b
Sex	
Male	108 (84.4)
Female	2 (1.6)
Unknown	18 (14.1)
Age (years)	
< 20	13 (10.2)
20–29	31 (24.2)
30–39	22 (17.2)
40–49	14 (10.9)
50–59	13 (10.2)
60–69	2 (1.6)
≥ 70	1 (< 1)
Unknown/missing	32 (25.0)
Race/ethnicity	
White, non-Hispanic	50 (39.1)
Black, non-Hispanic	46 (35.9)
Unknown race, non-Hispanic	25 (19.5)
Other ^c	7 (5.5)
Suspect encounter scenarios	
Suspect attempted suicide (fatally or non-fatally) after the death of the victim officer	14 (10.9)
Coded from incident narratives	
Suspect arrested or taken into custody after incident	39 (30.5)
Suspect killed during incident	29 (22.7)
Mental health-related	17 (13.3)
Suspect used service weapon against officer ^d	13 (10.2)
Suspect under influence of drugs or alcohol	11 (8.6)

^aTotal no. of victims=128; no. of incidents=121; no. of primary suspects=110 (110 of 121 incidents had a primary suspect identified); numbers may not add to total because of missing data.

^bPercentages may not add to 100% because of rounding.

^cIncludes suspects of various races and ethnicities including American Indian/Alaska Native, Asian Pacific Islander, Hispanic, and suspects of more than one race.

^dIncludes use of another officer's service weapon by the suspect.

NVDRS, National Violent Death Reporting System.

less readily available while cases are being adjudicated. Third, information regarding suspects' criminal history was not routinely available. Fourth, information on body armor was not available. However, protective factor data are not typically collected by NVDRS because CME and law enforcement narratives typically contain only circumstances associated with risk factors. Fifth,

NVDRS does not currently collect information for years on the force, or agency affiliation. These are variables that are often cited in other studies and is something that may be considered for inclusion in future NVDRS web-based software releases. However, it is a strength that NVDRS has a variable that specifically captures LEO homicides and that the information collected includes detailed narratives from CME and law enforcement reports.

Conclusions

Violence against law enforcement takes an adverse toll on individual officers, their families, colleagues, departments, the law enforcement profession in general,¹¹ and communities. Although the number of LEO homicides decreased in 2014,⁴³ officers are still at risk of dying violently. The National Occupational Research Agenda Strategic Goal 7, Injuries and Fatalities Due to Criminal Assaults, lists reducing homicides of law enforcement personnel as a strategic goal.⁴⁴ Several organizations such as the U.S. Department of Justice and International Association of Chiefs of Police have developed recommendations for improving LEO safety.^{45–47} The Final Report of the President's Task Force on 21st

Century Policing topic area (pillar) includes officer wellness and safety, and encourages the expansion of efforts to collect and analyze data not only on LEO deaths but also on injuries and "near misses."⁴⁷ Systems such as NVDRS are critical to ongoing surveillance of LEO homicides. The current study affords an opportunity to inform policymakers and individuals involved in training

federal, tribal, state, and local law enforcement personnel to help prevent deaths and serious injuries among this population.

Publication of this article was supported by the Centers for Disease Control and Prevention. The findings and conclusions in this article are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Janet Blair was responsible for the study concept and design, data analysis and interpretation, drafting the manuscript, and coding case narratives. Katherine Fowler was responsible for the study concept and study design, data analysis and interpretation, drafting, editing, and critical revision of the manuscript, and serving as the third reviewer for resolving discrepancies between coders. Carter Betz was responsible for the study concept and design, data analysis and interpretation, drafting, editing, and critical revision of the manuscript, and conducting analysis in SAS. Jason Baumgardner was responsible for assistance and input with the study design and data interpretation, draft editing, and coding case narratives.

No financial disclosures were reported by the authors of this paper.

References

1. Reaves BA, Census of State and Local Law Enforcement Agencies, 2008. U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.
2. Van Hasselt VB, Sheehan DC, Sellers AH, Baker MT, Feiner CA. A behavioral-analytic model for assessing stress in police officers: phase I. Development of the Law Enforcement Officer Stress Survey (LEOSS). *Int J Emerg Ment Health*. 2003;5(2):77–84.
3. Parsons, J. Occupational health and safety issues of police officers in Canada, the United States and Europe: a review essay, 2004. www.mun.ca/safetynet/library/OHandS/OccupationalHS.pdf.
4. National Institute of Justice. On the job stress in policing—reducing it, preventing it. www.ncjrs.gov/pdffiles1/jr000242d.pdf. Published January 2000. Accessed January 2016.
5. Craun SW, Bourke ML, Bierie DM, Williams KS. A longitudinal examination of secondary traumatic stress among law enforcement. *Vict Offender*. 2014;9(3):299–316. <http://dx.doi.org/10.1080/15564886.2013.848828>.
6. Bureau of Labor Statistics. Clarke C, Zak MJ. Fatalities to law enforcement officers and firefighters, 1992–1997. Compensation and Working Conditions. Emmitsburg, MD: National Emergency Training Center; 1999.
7. Federal Bureau of Investigation. *Law Enforcement Officers Killed and Assaulted 2014*. Washington, DC: U.S. Department of Justice. www.fbi.gov/about-us/cjis/ucr/leoka/2014/officers-feloniously-killed. Accessed June 2016.
8. Swedler DI, Kercher C, Simmons MM, et al. Occupational homicide of law enforcement officers in the U.S., 1996–2010. *Inj Prev*. 2014;20(1):35–40. <http://dx.doi.org/10.1136/injuryprev-2013-040799>.
9. Hessler SM. Introduction to the history, demographics, and health effects of law enforcement work. *Clin Occup Environ Med*. 2003;3(3):369–384. [http://dx.doi.org/10.1016/S1526-0046\(03\)00097-9](http://dx.doi.org/10.1016/S1526-0046(03)00097-9).
10. Kercher C, Swedler DI, Pollack KM, et al. Homicides of law enforcement officers responding to domestic disturbance calls. *Inj Prev*. 2013;19(5):331–335. <http://dx.doi.org/10.1136/injuryprev-2012-040723>.
11. Fridell L, Faggiani D, Taylor B, et al. The impact of agency context, policies and practices on violence against police. *J Crim Justice*. 2009;37(6):542–552. <http://dx.doi.org/10.1016/j.jcrimjus.2009.09.003>.
12. Tiesman HM, Hendrick SA, Bell JL, et al. Eleven years of occupational mortality in law enforcement: the census of fatal occupational injuries, 1992–2002. *Am J Ind Med*. 2010;53(9):940–949. <http://dx.doi.org/10.1002/ajim.20863>.
13. Hendricks SA, Jenkins EL, Anderson KR. Trends in workplace homicides in the U.S., 1993–2002: a decade of decline. *Am J Ind Med*. 2007;50(4):316–325. <http://dx.doi.org/10.1002/ajim.20442>.
14. U.S. Department of Justice, Federal Bureau of Investigation, Criminal Justice Information Services Division, Uniform Crime Report, Law Enforcement Officers Killed and Assaulted [LEOKA], 2014, Table 1, Law Enforcement Officers Feloniously Killed, Region, Geographic Division, and State, 2005–2014. www.fbi.gov/about-us/cjis/ucr/leoka/2014/tables/table_1_leos_fk_region_geographic_division_and_state_2005-2014.xls. Accessed June 2016.
15. Brandl SG, Stroschine MS. Toward an understanding of the physical hazards of police work. *Police Q*. 2003;6(2):172–191. <http://dx.doi.org/10.1177/1098611103006002003>.
16. Brandl SG, Stroschine MS. The physical hazards of police work revisited. *Police Q*. 2012;15(3):262–282. <http://dx.doi.org/10.1177/1098611112447757>.
17. Craun S, Detar P, Bierie D. Shots fired: examining lethal force used against Deputy U.S. Marshals. *Vict Offender*. 2013;8(1):56–69. <http://dx.doi.org/10.1080/15564886.2012.745459>.
18. Bierie DM. Assault of police. *Crime Delinq*. 2015:1–27. <http://dx.doi.org/10.1177/0011128715574977>.
19. Tiesman HM, Swedler DI, Konda S, et al. Fatal occupational injuries among U.S. Law Enforcement Officers: a comparison of national surveillance systems. *Am J Ind Med*. 2013;56(6):693–700. <http://dx.doi.org/10.1002/ajim.22182>.
20. U.S. Department of Labor, Bureau of Labor Statistics. Census of fatal occupational injuries. www.bls.gov/iif/oshfat1.htm. Accessed June 2016.
21. U.S. Department of Justice, Federal Bureau of Investigation, Criminal Justice Information Services Division, Uniform Crime Report, About Law Enforcement Officers Killed and Assaulted, 2014. www.fbi.gov/about-us/cjis/ucr/leoka/2014. Accessed June 2016.
22. NLEOMF. National Law Enforcement Officers Memorial Fund. Preliminary 2015 Law Enforcement Officer Fatalities Report. www.nleomf.org/facts/research-bulletins/. Accessed June 2016.
23. Paulozzi LJ, Mercy J, Frazier L Jr, et al. CDC's National Violent Death Reporting System: background and methodology. *Inj Prev*. 2004;10(1):47–52. <http://dx.doi.org/10.1136/ip.2003.003434>.
24. Steenkamp M, Frazier L, Lipskiy N, et al. The National Violent Death Reporting System: an exciting new tool for public health surveillance. *Inj Prev*. 2006;12(suppl 2):ii3–ii5. <http://dx.doi.org/10.1136/ip.2006.012518>.
25. Mercy JA, Barker L, Frazier L. The secrets of the National Violent Death Reporting System. *Inj Prev*. 2006;12(Suppl 2):ii1–ii2. <http://dx.doi.org/10.1136/ip.2006.012542>.
26. Parks SE, Johnson LL, McDaniel DD, et al. Centers for Disease Control and Prevention. Surveillance for Violent Deaths—National Violent Death Reporting System, 16 States, 2010. *MMWR Morb Mortal Wkly Rep*. 2014;63(No. SS-1).
27. Blair JM, Fowler KA, Jack SPD, et al. The National Violent Death Reporting System: overview and future directions. *Inj Prev*. 2016;22(suppl 1):i6–i11. <http://dx.doi.org/10.1136/injuryprev-2015-041819>.
28. CDC. U.S. Standard Certificate of Death. 2003.
29. U.S. Department of Justice. *Uniform Crime Reporting Handbook*. Clarkburg, WV: Federal Bureau of Investigation; 2004.
30. CDC. National Violent Death Reporting System (NVDRS) coding manual revised [Online]. National Center for Injury Prevention and Control, CDC. www.cdc.gov/violenceprevention/pdf/nvdrs_web_codingmanual.pdf. Published 2015. Accessed June 2016.

31. Sorock GS, Ranney TA, Lehto MR. Motor vehicle crashes in roadway construction workzones; an analysis using narrative text from insurance claims. *Accid Anal Prev*. 1996;28(1):131–138. [http://dx.doi.org/10.1016/0001-4575\(95\)00055-0](http://dx.doi.org/10.1016/0001-4575(95)00055-0).
32. Waller JA, Clemmer DI. A scheme for describing injury events. *J Trauma*. 1993;35(6):909–919. <http://dx.doi.org/10.1097/00005373-199312000-00018>.
33. Margarita M. Killing the police: myths and motives. *Ann Am Acad Pol Soc Sci*. 1980;452(1):63–71. <http://dx.doi.org/10.1177/000271628045200107>.
34. International Association of Chiefs of Police. Ambush fact sheet. www.theiacp.org/Portals/0/documents/pdfs/Ambush_Project/IACP_Ambush_Fact_Sheet.pdf. Accessed July 2016.
35. U.S. Department of Justice, Federal Bureau of Investigation, Criminal Justice Information Services (CJIS). Uniform Crime Reports, LEOKA, 2003; LEOKA, 2004; LEOKA, 2005; LEOKA, 2006; LEOKA, 2007; LEOKA, 2008; LEOKA, 2009; LEOKA, 2010; LEOKA, 2011; LEOKA, 2012; LEOKA, 2013; and LEOKA 2014.
36. U.S. Department of Justice, Office of Community Oriented Policing Services. National Officer Safety and Wellness Group–Priorities. www.cops.usdoj.gov/Default.asp?Item=2605. Accessed July 2016.
37. U.S. Department of Justice. Bureau of Justice Statistics. Traffic stops. www.bjs.gov/index.cfm?ty=tp&tid=702. Accessed June 2016.
38. Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. Police behavior during traffic and street stops, 2011. www.bjs.gov/index.cfm?ty=pbdetail&iid=4779. Accessed June 2016.
39. U.S. Department of Justice, Federal Bureau of Investigation, Criminal Justice Information Services Division. Uniform Crime Report, Law Enforcement Officers Killed and Assaulted [LEOKA], 2014; Table 22, Law enforcement officers feloniously killed during traffic pursuits/stops, activity of victim officer at scene of incident, 2005–2014. www.fbi.gov/about-us/cjis/ucr/leoka/2014/tables/table_22_leos_fk_activity_of_victim_officer_at_scene_of_incident_2005-2014.xls. Accessed June 2016.
40. Lichtenberg ID, Smith A. How dangerous are routine police-citizen traffic stops? A research note. *J Crim Just*. 2001;29(5):419–428. [http://dx.doi.org/10.1016/S0047-2352\(01\)00106-4](http://dx.doi.org/10.1016/S0047-2352(01)00106-4).
41. U.S. Department of Justice, Federal Bureau of Investigation, Criminal Justice Information Services Division. Uniform Crime Report, Law Enforcement Officers Killed and Assaulted [LEOKA], 2014; Table 75, Law enforcement officers assaulted: circumstance at scene of incident by type of assignment and percent distribution, 2014. www.fbi.gov/about-us/cjis/ucr/leoka/2014/tables/table_75_leos_asltd_circum_at_scene_of_incident_by_type_of_assignment_and_percent_distribution_2014.xls. Accessed June 2016.
42. Shannon M, Carroll RH. When officers die: understanding deadly domestic violence calls for service. *Police Chief*. 2011;78:24–27.
43. U.S. Department of Justice, Federal Bureau of Investigation, Criminal Justice Information Services Division. FBI releases 2015 preliminary statistics for law enforcement officers killed in the line of duty. www.fbi.gov/news/pressrel/press-releases/fbi-releases-2015-preliminary-statistics-for-law-enforcement-officers-killed-in-the-line-of-duty. Accessed June 2016.
44. National Occupational Research Agenda. National public safety research agenda for occupational safety and health research and practice in the U.S. public safety sector. 2013;15. www.cdc.gov/niosh/nora/comment/agendas/pubsafsub/pdfs/PubSafOct2013.pdf. Accessed June 2016.
45. Fiedler ML. *Officer Safety and Wellness: An Overview of the Issues*. Washington, DC: Office of Community Oriented Policing Services; 2011.
46. Kuhns JB, Maguire ER, Leach NR. *Health, Safety, and Wellness Program Case Studies in Law Enforcement*. Washington, DC: Office of Community Oriented Policing Services; 2015.
47. President's Task Force on 21st Century Policing. 2015. *Final Report of the President's Task Force on 21st Century Policing*. Washington, DC: Office of Community Oriented Policing Services; 2015.