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Law enforcement worker suicide: an updated national assessment

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Abstract

Purpose ––—The purpose of this paper is to update the assessment of national data on law enforcement worker suicide based on the National Occupational Mortality Surveillance database (NOMS, Centers for Disease Control and Prevention).

Design/methodology/approach ––—Death certificate data for 4,441,814 decedents, age 18–90 who died in one of the 26 reporting states were the source of NOMS data. Utilizing proportionate mortality ratios (PMRs), the ratio of suicides in law enforcement occupations in those who are 18–90 years old with a designated usual occupation was calculated.

Findings ––—Findings indicate a significantly higher proportion of deaths from suicide for law enforcement officers (PMR = 154, 95% CI = 147–162), compared to all the US decedents in the study population who were employed during their lifetime. Law enforcement personnel are 54% more likely to die of suicide than all decedents with a usual occupation. PMRs were highest for African-Americans, Hispanic males and for females. PMRs were similar for detectives, corrections officers and all law enforcement jobs, when not stratified by race, ethnicity and sex.

Research limitations/implications ––—Bias may arise because a PMR can be affected by disproportionate increased or decreased mortality from causes of death other than suicide.

Practical implications ––—A better understanding of the scope of law enforcement suicide can inform policy focused on the planning and initiation of prevention programs.

Originality/value ––—The use of a national database to study law enforcement worker suicide adds to other information available on law enforcement worker suicide in specific geographic areas. The discussion on prevention in this paper presents ideas for policy.

Keywords

Law enforcement; Worker suicide; Police; Prevention; Etiology

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Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention or the state agencies providing data.

Introduction

Those in law enforcement occupations experience a variety of adverse exposures, including life-threatening situations, traumatic events, witnessing violence and assaults, child abuse and other similar events (Stuart, 2008; Chae and Boyle, 2013; Marmar *et al.*, 2006; Martin *et al.*, 2009; Gupta, 2013). Such an array of exposures can increase the potential for outcomes associated with suicidal ideation such as depression (Violanti *et al.*, 2008) and hopelessness (Berg *et al.*, 2003; Charbonneau, 2000; Violanti, 2018; Conner *et al.*, 2001; LeardMann *et al.*, 2013). The readily available access to firearms provides an immediate means for officers to act upon suicidal behaviors (Vena *et al.*, 1986; Violanti, 1997). Given these potential suicide related factors in police work, individuals in this occupation may be at increased risk (Violanti, 2018; Hem *et al.*, 2001; Chae *et al.*, 2013; Chopko *et al.*, 2014).

However, the majority of police suicide research is primarily based on specific geographic areas or departments and generally does not consider race, sex or type of law enforcement. To help remedy this, we previously conducted a national study of law enforcement suicide for the years 1999, 2003–2004 and 2007 utilizing the National Occupational Mortality Surveillance System (NOMS) (Violanti *et al.*, 2013). NOMS is maintained by the Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health (CDC/NIOSH) and contains cause of death data for workers by occupation and industry (http://www.cdc.gov/niosh/topics/surveillance/NOMS/). Results indicated 264 suicide deaths among law enforcement workers, making them 69% more likely to die of suicide in the United States compared to approximately 1.4m total employed decedents in the NOMS database (Proportionate mortality ratio (PMR) = 169, 95% confidence interval 150–191) (Violanti *et al.*, 2013). Since this study, NOMS data have been updated to include the years 2008–2014. The present study updates our previous work to include these additional years.

Methods

NOMS data come from the US death certificates, which include usual occupation of the decedent as asked of survivors by funeral directors. Usual occupation is defined as the type of work done during most of the decedent's working life. The data were contributed by the US states to the NOMS system maintained by NIOSH (NOMS 2018). (PMRs and methods are available at http://www.cdc.gov/niosh/topics/surveillance/NOMS/. Last accessed January 17, 2019). NOMS data include all men and women with employment information (industry and occupation) noted on the death certificate, age 18–90, who died at any time during the specified years of the analysis (for the present study: 1999, 2003–2004, 2007–2014, an 11-year period). For purposes of analysis, industry and occupation variables require standardized coding for use in mortality studies. Usual occupation and industry were coded by state health departments and/or NIOSH to Census classification systems (US Census 1990 and 2000) either manually or, in recent years, automatically and with computer assistance using the NIOSH-developed coding program (NIOSH Industry and Occupation Computerized Coding System [NIOCCS]; http://www.cdc.gov/niosh/topics/coding/). Quality control of occupation and industry coding was performed at NIOSH by trained coders and a coding specialist.

The underlying causes of death were coded and edited by the CDC's National Center for Health Statistics (NCHS) according to the International Classification of Diseases, Tenth Revision (ICD-10) (World Health Organization, 1992). Demographic data were also coded and edited by NCHS.

Death certificate data for 5,706,322 decedents, age 18–90 who died in one of the reporting states were available. We excluded those whose occupations were recorded as housewife/homemaker (953,564), volunteer (1,418), student (24,425), retired (5,626), did not work/patient/disabled/inmate (129,088), blank/unknown/do not know/refused/inadequate information to code (150,387). Retired police officers were not excluded from the data. This left 4,441,814 records for analysis.

Participating states for 1999, 2003–2004, and 2007 data were Colorado, Georgia, Hawaii, Idaho, Indiana, Kansas, Kentucky, Michigan, North Carolina, Nebraska, New Hampshire, New Jersey, New Mexico, Nevada, Ohio, Rhode Island, South Carolina, Texas, Utah, Vermont, Washington, Wisconsin and West Virginia. For 2008–2014, three states not in the previous analysis were added, Florida, Louisiana and North Dakota, totaling 26 states. The number of states that contributed data in any one year was 10–19 (participation varied related to funding and other concerns).

Identification of deaths

After edits of the data and elimination of the unemployed, those with no reported occupation or industry and housewives, remaining decedents age 18–90 years were included in an analysis file. It included the following variables: age, sex, race, ethnicity, underlying cause of death, and usual occupation and industry. Our outcome of interest was deaths due to suicide (intentional self-harm, ICD-10 codes X60-X84, Y87.0).

Law enforcement occupations of interest were selected from the protective service occupations, Standard Occupational Classification system (SOC) Major category 33 (excluding firefighting and Guard occupations). Three categories of law enforcement were identified: "Corrections Officers," "Detectives, Criminal investigators and Police," and "All law enforcement." Corrections officers included bailiffs, correctional institution officers, jailors and guard supervisors and managers (2000 Census occupation codes 370, 380; 1990 Census occupation codes 415, 424). Detectives/criminal investigators/police included public service police and detectives, detectives and criminal investigators, and police and sheriff's patrol officers (2000 Census occupation code 382 and 385; 1990 Census occupation code 418). The all law enforcement category included all occupations from these other two categories and the following: police and detective supervisors; sheriffs, bailiffs and other law enforcement officers; fish and game wardens and parking enforcement workers (2000 Census occupation codes 370, 371, 380, 382–385; 1990 Census occupation codes 414, 415, 418, 423, 424). The previously published analysis did not include 1990 code 415, or 2000 codes 370 or 385.

The comparison population was decedents in all occupations in the participating states. National death data are reported by the NCHS by age, race, sex, Hispanic origin (ethnicity), cause of death and other variables. For these data years, NCHS uses bridged race and

ethnicity categories consistent with 1977 Office of Management and Budget Standards (US OMB, 1997). Because Hispanic decedents may be of any race, there may be ethnicity and race overlap. We report results for White and African-American populations and for Hispanic ethnicity separately because these subpopulations had sufficient sample sizes. Total refers to all decedents, White, African-Americans, Asian, American Indian or Alaska Native or other.

Analysis: proportionate mortality ratio analysis (PMR)

PMRs are usually computed when data for the population at risk are not available and rates of death or standardized mortality ratios (SMR) cannot be calculated. The population at risk for this study included all men and women aged 18–90 with a usual occupation stated on the death certificate who were at risk of dying during the years 1999, 2003–2004, 2007–2014 in participating states. We only know the population of people who died. PMRs indicate whether the proportion of deaths due to a specific cause appears to be high or low for a particular occupation.

PMR analysis based on the underlying cause of death was used to evaluate suicide patterns by occupation. Race, sex, ethnicity and age group-specific age-adjusted PMRs were calculated for all, White, African-American and Hispanic men and women using a computer program developed at NIOSH (Dubrow *et al.*, 1987). This program was designed to calculate PMRs for occupation or industry specifically for population-based data. It calculates age-adjusted PMRs by comparing the proportion of deaths from a specified cause within a specified occupation or industry group with the proportion of deaths due to that cause among the comparison population. We also stratified our analysis on race (White and African-American), ethnicity (Hispanic) and age (18–45, 46–64 and 65–90). A PMR greater than 100 indicates that there is a higher proportion of deaths from a specific cause in that occupation than there is from that cause for all deaths in all occupations included in the dataset for that sex, race, age category. In total, 95%confidence intervals (95% CIs) for the observed PMRs were calculated. If the observed number of deaths was 1,000 or less, the 95% CI was computed based on the Poisson distribution (Bailar and Ederer, 1964); otherwise, test-based CIs were calculated using the Mantel and Haenszel χ^2 test (Mantel and Haenszel, 1959). The 95% CIs should be evaluated in the context of hypothesis generation because multiple comparisons were made (Rothman, 1986). Due to confidentiality agreements with states, the number of deaths was reported in the tables as “<5” when a cell is based on fewer than five deaths. Categories that would allow the calculation of cells with fewer than five deaths are suppressed as well.

Logistic regression models were employed to test for differences by Census region and to examine whether there was a time trend within each occupation group. Testing for a trend in suicide by year was restricted to data from consecutive years, 2007–2014. Models were adjusted for age, sex and race.

Results

Table 1 displays PMRs for all law enforcement, detectives/criminal investigators/police and corrections officer suicide listed by race, ethnicity and sex for the years 1999, 2003–2004,

2007–2014. There were 1,241 suicide deaths in the category all law enforcement workers which encompassed police, detectives, sheriffs, police supervisors, and corrections personnel, fish and game wardens and parking enforcement workers. Findings indicated a significantly higher PMR for suicide than expected (PMR = 154, 95% CI = 147–160) for this category, making them 54% more likely to die of suicide compared to all worker decedents in the study population.

For the detectives/criminal investigators/police category, 737 deaths by suicide were recorded resulting in a significantly higher PMR than expected (PMR = 164, 95% CI = 153–176), representing a 64% higher proportion of suicide deaths compared to all workers in the study. Corrections officers suicide was also higher than expected for suicide with 374 suicides recorded (PMR = 134, 95% CI = 121–149), representing a 34% higher proportion of suicides for corrections officers compared to all workers in the study.

PMRs for race and sex were also assessed. Among White males, 1,035 deaths (PMR = 133, 95% CI = 126–140) were recorded among all law enforcement workers, indicating they are 33% more likely to die of suicide than expected for this population. Significant PMR's were noted for White male detectives/criminal investigators/police and corrections officer categories (PMR = 134, 95% CI = 123–144; and PMR = 129, 95% CI = 115–145, respectively). For African-American males in the all law enforcement category suicide was elevated with 66 suicide deaths recorded (PMR = 188, 95% CI = 146–240). Suicide was also elevated for African-American male detectives/criminal investigators/police and corrections officers, (38 deaths, PMR = 237, 95% CI = 168–326; and 27 deaths, PMR = 160, 95% CI = 106–234, respectively), each significantly high for this population. Hispanic male suicide in the all law enforcement and the detectives/criminal investigators/police categories was significantly high (PMR = 182, 95% CI = 142–229; PMR 229 CI = 173–298, respectively). PMRs among White females in each category were significantly elevated: All law enforcement category (PMR = 160, 95% CI = 129–197); detectives/criminal investigators/police (PMR = 172, 95% CI = 125–232) and corrections officers category (PMR = 171, 95% CI = 125–228). For African-American females there were few suicides; PMRs were elevated but the confidence intervals included 100 so they were not statistically significant. There was a similar increase in suicide in the all law enforcement worker category (OR 1.05, 95% CI 1.02–1.08) and detectives/criminal investigators/police (OR = 1.04, 95% CI 1.01–1.08) for the years 2007–2014.

Table 2 displays PMRs for law enforcement worker suicide by age and sex groups. For the category all law enforcement, the highest number of suicide deaths (n = 484) was in the 18–45 year age category indicating early career officers. Although the number of deaths was lower in the higher (65–90) and middle age groups (46–64 years of age), they had higher proportions of suicide, 94% higher (PMR = 194) and 46% higher (PMR = 146) respectively, compared to the working population in those age groups. Results were similar for detectives and corrections officers and across sex.

We also found increased odds of suicide among all law enforcement workers in the West compared to the Northeast (OR = 1.37, 95% CI 1.12–1.67), the Midwest (OR = 1.39, 95% CI 1.17–1.64) and the South (OR = 1.58, 95% CI 1.35–1.86). Detectives/criminal

investigators/ police had increased odds of suicide in the West compared to the Midwest (OR = 136, 95% CI 1.09–1.69) and the South (OR = 1.59, 95% CI 1.29–1.96) but were similar to the Northeast; OR = 1.27, 95% CI 0.99–1.64). A similar pattern was seen with corrections officers in the West having increased odds of suicide compared to the Midwest (OR = 1.49, 95% CI 1.09–2.02) and South (OR = 1.81, 95% CI1.33–2.46) but no significant difference compared to the Northeast (OR = 1.40, 95% CI 0.95–2.07).

Discussion

The present study assessed updated NOMS data on law enforcement suicide to now include the years 1999, 2003–2004, 2007–2014. As seen in Table 1, overall, suicide remained significantly elevated across all categories, within the subcategories of detectives/criminal investigators/police and corrections officers, and within multiple race, ethnicity and sex categories. Additional results indicated a slight increase in suicide in the all law enforcement officer category for the years 2007–2014. The results also suggested that law enforcement personnel in the western part of the US had increased odds of suicide compared to other regions of the country. This result is preliminary and requires further investigation as to the reason for this difference. Judging from results in Table 2, it appears that mental health and suicide awareness prevention efforts should be focused on older (possibly retired) police officers especially but not limited to this group. The toll of police work exposure over time may play an integral part in mental health issues among police.

The present results reflect the fact that policing is a male-dominated occupation given the relatively higher number of suicides among male officers. However, White female officers in each of the three law enforcement occupation categories were also more likely to die of suicide than White women in all occupations. This finding coincides with previous research. Marzuk *et al.* (2002) found that the female officer suicide rate was elevated among New York City officers from 1977 to 1996 (Marzuk *et al.*, 2002). In a medium-sized northeast US police department, the prevalence of depression was higher among female than male personnel (12.5 vs. 6.2%) (Violanti *et al.*, 2010). It appears to be a consistent finding that psychosocial symptoms are predictive of suicidal ideation in female officers (Violanti *et al.*, 2008). In one study intrusive memories associated with post-traumatic stress disorder explained 46% of the variance in suicidal ideation among female officers (Pienaar *et al.*, 2007). The often high, yet disparate female officer suicide rates combined with findings on suicidal ideation in this population warrant further investigation into suicide ideation, attempts and completion rates (Violanti *et al.*, 2010). In the present study, 66 deaths were recorded for African-American males in the all law enforcement category, making them almost two times more likely to commit suicide (PMR = 188, 95% CI = 146–240) than African Americans in all occupation categories. Non-White officers are a group with limited information on suicide. Implications of minority status may confer additional risks regarding suicidality.

Prevention considerations

In view of the present results, it is important to consider potential strategies for preventing police suicide. Strategies such as implementing practices that encourage help-seeking,

decreasing stigma and educating employers about suicide are suggested. Stone *et al.* (2017), for example, authored a technical package which lists CDC recommendations for policy, programs and practices, a comprehensive approach to suicide prevention. These recommendations may be applied to police work as follows:

1. Strengthening access and delivery of suicide care: This is especially relevant for smaller police agencies in rural areas who have little access to mental health providers and do not have adequate to develop training of officers.
2. Organizational policies and culture: Likely the biggest problem in police suicide prevention is the hesitancy of officers to seek professional mental health help due to the strong influence of the police culture. Officers are socialized into feeling that they must always be impervious to any problems (Violanti, 2018). Additionally there is a strong stigma attached to mental health problems.
3. Reduce access to lethal means among persons at risk of suicide: One strategy employed by police departments is to remove the firearm from officers which is considered a suicide threat. Officers may feel that removing their firearms will subject them to being taken of patrol and placed somewhere at a desk or nonthreatening task. Others may feel this will subject them to be ridiculed by coworkers. Stanley *et al.* (2020) found that safety intervention for lethal means that deemphasized fear and emphasized temporariness were significantly more likely for adherence to limiting access to firearms. Thus, police departments should suggest to officers that the removal of their firearm is only temporary instead of inducing fear of permanent weapon seizure. Suicide prevention is not about taking away guns permanently but rather placing distance between an individual and firearms during at-risk periods (Stanley *et al.*, 2020).
4. Peer support programs: A recent review by Chinman *et al.* (2016) concluded that peer support programs bring significant benefits to those with mental problems, over and above the benefits of traditional care. Police officers are at first more trusting with police peer support persons for help rather than mental health professionals.
5. Suicide training: Suicide awareness and prevention should be included as part of any police training curriculum. Gatekeeping suicide programs are good alternatives for police.
6. Postvention: Given the serious nature of a suicide death and the disturbing aftereffects on family, friends, other officers and the department, it is imperative that police leaders understand what to do and why should an officer suicide occur in their jurisdiction. Since suicide is considered different from line-of-duty deaths, questions will arise as to coworker debriefings, contagion, military funeral protocols and morale after effects. Leadership relying on an informal, unwritten policy is not a prudent approach given the potentially harmful after effects of a suicide is this close-knit occupation.

Further workplace prevention resources are available through the National Action Alliance for Suicide Prevention (https://theactionalliance.org/), including examining the etiology of occupation-associated suicide.

Prevention of suicide specifically in law enforcement occupations warrants research that focuses on societal, psychosocial and behavioral etiology. Thus far, our knowledge about police suicide has been derived primarily from retrospective mortality studies, and very little work has been done on suicide risk factors. One of the persistent problems in police suicide prevention is the hesitancy of officers to seek professional mental health help. Officers are socialized into a state of invulnerability and feel that they must always be impervious to complications such as depression (Violanti, 2018). Additionally, among those in the police culture there is a strong stigma attached to mental health problems (Violanti, 2018). Stigma is one of the most frequently identified barriers to mental healthcare and is prevalent among first responders such as the police. For example, Jayasinghe *et al.* (2005) found that after the September 11, 2001, terrorist attack disaster, slightly less than half of workers deployed to the World Trade Center accepted referrals for mental health treatment. Officers may feel that if they admit mental health problems and seek help they will be less trusted by peers and supervisors to do their job and may lose opportunities for promotions. There is a need for more education for police concerning mental health and effective treatment.

Alcohol is a widespread coping strategy for those in law enforcement occupations (Violanti, 2004). It is thus not surprising that alcohol has been cited in several police suicide cases (Cavanaugh *et al.*, 2003; Violanti, 2007; Barron, 2010). Studies of alcohol use and suicidal ideation have found problematic alcohol use to be a correlate of suicidal ideation (Bishopp *et al.*, 2014; Chopko *et al.*, 2014). For example, in a study by Violanti (2004), increased alcohol use was associated with 4.45 times greater odds of suicidal ideation among police (odds ratio (OR) = 4.45, 95% CI: 1.42–18.5). Addressing the culture of drinking in police officers may be an important suicide prevention goal. In a topic related to alcohol use, domestic problems were often cited in case series and retrospective cohorts of law enforcement suicide (Lindsay and Lester, 2001; Violanti, 2007; Stanley *et al.*, 2016). Suicide–homicide was the most extreme form of domestic violence investigated (Violanti, 2007). Contentious domestic relationships were cited as a correlate of post-traumatic stress disorder (PTSD), suicidal ideation and suicide completion for men (Chae and Boyle, 2013).

A viable preventive approach for law enforcement occupations is the development of a peer support program. This will allow distressed officers to initially talk with other officers first trained in basic counseling and afterward seek professional help if necessary. An assumption underlying peer support is that trained police peers are more trusted by officers in distress (Landers and Zhou, 2011). Peer supporters draw on their shared experiences in order to provide empathic understanding, information and advice. Davidson *et al.* (1999) reported that peer support reduced symptoms for participants and increased their social integration, an important factor in suicide prevention.

In order to learn further possible precipitants of police suicide, the psychological autopsy is well-established as the means for obtaining comprehensive information. The psychological autopsy obtains comprehensive retrospective information about victims of completed suicide

(Robins *et al.*, 1959; Beskow *et al.*, 1990). A study by Brent *et al.* (1988) showed that the psychiatric disorders reported in suicides also tended to aggregate in families. This finding was interpreted as a strong argument for the diagnostic data obtained by the psychological autopsy procedure being valid. Perhaps the best indicator of the reliability and validity of the method could be inferred from the consistency of findings across psychological autopsy studies (Brent *et al.*, 1988).

A more recent intervention which may be useful in police work is mindfulness. Mindfulness can be used by officers to manage stress and increase cognitive flexibility in dealing with trauma and crises (Kabat-Zinn, 2003) and has been found to reduce mental difficulties often seen in suicidal persons. Chesin *et al.* (2016), in a review of mindfulness studies, reported that many studies show an improvement in suicidal persons of attentional control, problem-solving and altered stress responses. In a longitudinal study of police officers, Williams *et al.* (2010) found that mindfulness predicted improved emotion identification skill and general mental health among police officers. Christopher *et al.* (2016) applied a mindfulness-based intervention among police officers and found improvement in several areas including reduced stress and increased resilience.

The International Association of Chiefs of Police (IACP) suicide prevention initiative (Brower, 2013) developed a national strategy to address police suicide prevention, built on the following four cornerstones: (1) culture change, (2) early warning and prevention protocols, (3) training and (4) event response protocols. These proactive goals involve policy changes in police organizations and an acceptance that suicide is a real problem in this occupation. The chief obstacles to effective stress management programs include recognition of the need for stress services, the lack of empirical evidence indicating their benefits or effectiveness (for personnel and the agency) and the lack of funding to support such programs (Brower, 2013).

Strengths and limitations

Strengths of the present study include (1) full coverage of states that participate, all death records with occupation data are included; (2) a large number of records allow analysis of more specific occupation groups, as well as demographic groups; (3) broad geographic coverage and (4) data that can be used to inform policy and direct intervention or prevention efforts to specific occupations and demographic groups.

There are limitations to the present study. PMR analysis can be affected by disproportionately increased or decreased mortality from causes of death other than suicide. For example, very high PMRs due to common causes of death such as heart disease or injury can lower cancer PMRs (McDowall, 1983). However, more recent studies suggest that PMR analysis, when used for population-based studies of workers, may be less biased than SMR analysis. This is because comparison with other workers limits the impact of the healthy worker effect—i.e. all-cause mortality in workers is low during the working years compared to the general population due to selection processes in employment (Park *et al.*, 1991; Checkoway *et al.*, 2004).

Present NOMS data represents suicide deaths to 2014 which limits our results. These are the most recent data available. We are not aware of any other source of these data. The NOMS database will begin a new program starting in 2020 where data will be coded for 2020 in the same year as deaths occur and expanded the program to 47 jurisdictions. These data will be available in ~January 2022, so we will be able to update the analyses in a much more timely manner. In order for this to be possible, we discontinued our previous program working directly with states to code industry and occupation on death certificates after 2014 data. No data were coded for 2015–2018 and only 10 for 2019, so data will not be available for that year.

To our knowledge, there has not been a study similar to the present study using nationally based rates on police suicide. There has been a recent national study on an occupational group called protective services, which includes an array of first responders including police, fire and other types. Tiesman *et al.* (2015) found that the workplace suicide rate for protective service occupations was 3.5 times greater than the overall US worker rate. In a qualitative sense, recent information from two of the nation's largest police agencies suggests that suicide may be increasing among police. The New York City Police Department (NYPD) experienced ten suicides in 2019, recording the highest number in recent years and five Chicago police officers in the first six months of 2019 died by suicide. Misclassification may be a source of bias due to inaccurate reporting of usual occupation, the underlying cause of death and the lack of data on occupational exposures. Usual occupation and industry on death certificates are identified by informants, not the deceased worker, and could have been inaccurate in some cases, resulting in some misclassification. Four case-control studies of long-term White workers across all occupations (Peterson and Milham, 1974; Wegman and Peterson, 1978; Steenland and Beaumont, 1984; Milham, 1997) have reported 75–80% agreement between occupations as listed on the death certificate and those determined by interviewing next of kin.

Law enforcement suicide data may be further biased by possible misclassification of suicides, resulting in lowered rates. A previous study found that approximately 17% of police suicides were misclassified as undetermined deaths (Violanti *et al.*, 1996). There may be several reasons for this. It could mean that the medical examiner could not determine the cause of death due to insufficient evidence of a suicide. Additionally, it may mean that investigating officers at the scene of the death sought to protect the fellow officer and their families from the stigma of suicide by concluding that their investigation pointed to an accidental death (Violanti *et al.*, 1996). Although usual occupation and industry listed on the death certificate are reasonably accurate for the usual or longest held occupation, they do not provide a complete description of occupational exposure for the workers. The impact of many job changes on the risk of suicide by occupation or industry, although not assessed, may obscure some associations. In general, however, those who choose a career in law enforcement tend to stay until retirement (Violanti, 1992).

In conclusion, based on updated national NOMS suicide data, the present study found a significantly higher likelihood of suicide among law enforcement personnel compared to all workers. Witnessing death, human misery, abused children and encountering violence at work weigh heavily as precipitants to depression, alcohol use and suicide among police

(O'Hara *et al.*, 2013). At present, we continue to estimate the scope of this problem based on information we presently have from very reliable sources such as NOMS. Looking to the future, the development of a national database developed for and by law enforcement agencies, specifically focused on police suicide, could help to establish a wider view of the scope of this tragic loss of life. We may be better informed for preventive actions if we know the inherent risk of police suicide in a quantitative, qualitative and contextual sense.

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Table 1.

Proportionate mortality ratios (PMRs) * for suicide: type of law enforcement by race, ethnicity, sex and age 18–90, vs all workers age 18–90. CDC/NIOSH NOMS, 1999, 2003–2004, 2007–2014 (11 years)

Type of law enforcement	Deaths	Total suicides PMR	95% CI**
All law enforcement	1,241	154	147–160
Detectives/criminal investigators/police	737	164	153–176
Corrections officers	374	134	121–149

	Suicides -race and sex: males								
	White Males			African-American Males			Hispanic Males		
	Deaths	PMR	95% CI	Deaths	PMR	95% CI	Deaths	PMR	95% CI
All law enforcement	1,035	133	126–140	66	188	146–240	72	182	142–229
Detectives/criminal investigators/police	629	134	123–144	38	237	168–326	55	229	173–298
Corrections officers	284	129	115–145	27	160	106–234	17	126	73–202

	Suicides -race and sex: females#					
	White Females			African- American Females		
	Deaths	PMR	95% CI	Deaths	PMR	95% CI
All law enforcement	91	160	129–197	9	172	78–326
Detectives/criminal investigators/police	43	172	125–232	<5	-	-
Corrections officers	46	171	125–228	6	189	69–411

Note(s): The “All Law Enforcement” category included all occupations from these other two categories and the following: police and detective supervisors; sheriffs, bailiffs and other law enforcement officers; fish and game wardens and parking enforcement workers (2000 Census occupation codes 370, 371, 380, 382–385; 1990 Census occupation codes 414, 415, 418, 423, 424)

*A PMR above 100 is considered elevated over the average for all occupations

**95% Confidence intervals

#Categories with fewer than five deaths, or in categories allowing calculation of categories with fewer than five deaths are not available for publication

Table 2.

Proportionate mortality ratios (PMRs) * for suicide: type of law enforcement by age groups and sex vs all workers in age–sex group. CDC/NIOSH NOMS, 1999, 2003–2004, 2007–2014 (11 years)

	AGE								
	18–45			46–64			65–90		
	Deaths	PMR	95% CI**	Deaths	PMR	95% CI	Deaths	PMR	95% CI
All law enforcement									
Total	484	142	130–155	459	146	133–160	298	194	173–218
Male	429	132	119–145	412	131	118–144	295	152	135–170
Female	55	155	117–201	47	153	112–203	<5		
Detectives/Criminal Investigators/Police									
Total	275	155	137–175	257	152	134–171	205	200	174–230
Male	247	140	123–158	234	132	115–150	205	152	132–175
Female	28	194	129–280	23	176	112–264	0	0	0
Corrections officers									
Total	181	130	112–150	143	131	110–154	50	168	124–221
Male	155	124	106–146	120	119	99–143	#		
Female	26	137	90–201	23	151	95–226	<5		

Note(s): The “All Law Enforcement” category included all occupations from these other two categories and the following: police and detective supervisors; sheriffs, bailiffs, and other law enforcement officers; fish and game wardens and parking enforcement workers (2000 Census occupation codes 370, 371, 380, 382–385; 1990 Census occupation codes 414, 415, 418, 423, 424)

*A PMR above 100 is considered elevated over the average for all occupations

**95% Confidence intervals

#Categories with fewer than five deaths, or in categories allowing calculation of categories with fewer than five deaths are not available for publication