Assaults against U.S. law enforcement officers in the line-of-duty: situational context and predictors of lethality

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A CENTURY OF SAVING LIVES
MILLIONS AT A TIME

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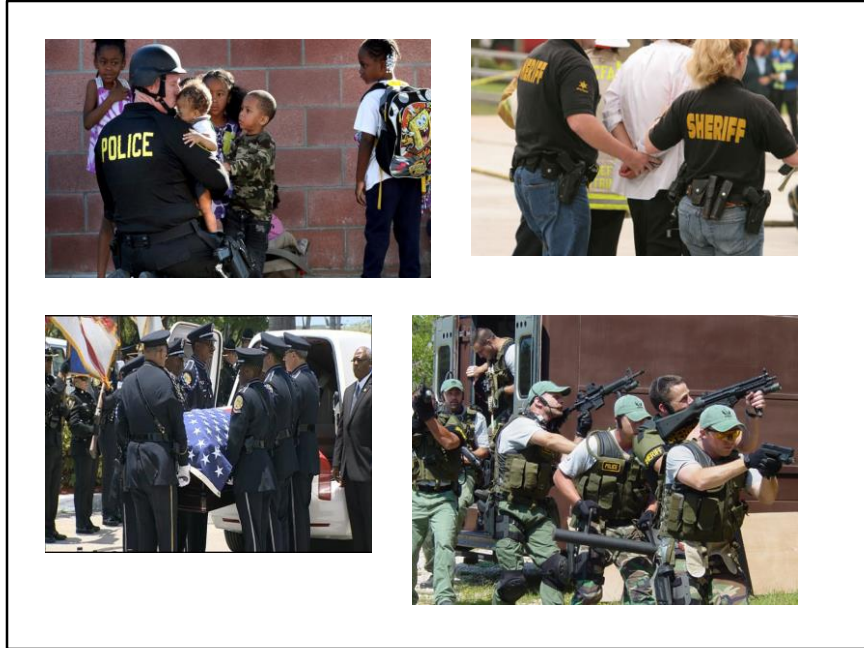
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Background

•Law enforcement is an occupation with inherent risks.

•LEOs face physical and psychological challenges while responding to scenes, pursuing and arresting suspects, and managing hostile situations to keep their communities safe.

•Law enforcement is also an occupation that is unique in its interaction with the public. LEOs are first on scene responding to a variety of dangerous or potentially dangerous situations

NIOSH Workplace Violence Risk Factors

1. Contact with the public
2. Mobile work place
3. Working with unstable or volatile people
4. Working alone or in small numbers
5. Working late at night or during early morning hours
6. Working in high crime areas
7. Working in community-based settings

NIOSH has identified 10 risk factors for workplace violence. 7 of the 10 are relevant to law enforcement

Epi of Fatal LEO Assaults

- Fatal occupational injury rate 5 times higher than the national average

- Occupational homicide rate 3 times higher than the national average

- Occupational homicide rate consistently higher than general population homicide rate

•It is important to note that LEOs do face a number of unintentional injury risks, such as motor vehicle collisions, which are partly responsible for LEOs having an overall fatal occupational injury rate that is 5 times higher than the national average of private

Factors Influencing Assaults

- Structural
  - Crime, arrest, and incarceration rates

- Situational
  - Suspects' weapon use, encounter characteristics, LEO body armor use

- Policy
  - Right-to-carry, three strikes, permit-to-purchase laws

•As with homicide in the general population, researchers have explored a variety of topics that may be related to fatal LEO assaults

•These include state structural factors such as crime, arrest, and incarceration rates; unemployment, poverty, and gun availability

•Situational or encounter factors including suspects' weapon use, encounter characteristics (such as type of call, presence of back up), and body armor use by LEOs

•And state policy factors such as three-strikes law, firearm sentencing enhancement, the death penalty, and right-to-carry laws which have the potential to influence the ways in which suspects interact with LEOs

•None of these factors have been evaluated for an impact on nonfatal

assaults

Body Armor

- More departments requiring body armor use
- Protective effects for LEOs shot in torso
- Other considerations
  - Suspects' weapons
  - Wound location

POLICE

POLICE

•Each year, more departments are requiring LEOs to wear body armor. In the 1990s only 30% of departments required LEOs to wear body armor at least some of the time while on duty, which increased to 80% as of 2010.

  •There is no data on what percent of LEOs wear body armor, but LEOs are more likely to report wearing body armor if their department has a mandatory wear policy

•It has been estimated that among LEOs shot in the torso, those wearing body armor are three times more likely to survive

  •Between 1973 and 2001, body armor may have prevented as many as 1,500 LEO homicides

•Increased body armor use has the demonstrated potential to save lives, but there are other important issues to consider:

  •Suspects may use a firearm for which LEO body armor is not rated
  •A LEO may be shot in an area of the body not covered by his/her

body armor

Firearm Use in LEO Assaults

- Firearms most common weapon used in assaults

- Handguns are most common firearm used

- Long guns not traditionally thought of as a risk

•While the LEO homicide rates is on the decline, firearms remain the leading weapon used by suspects in assaults against LEOs
- •The percentage varies over time, but firearms consistently account for 75% to 95% of the weapons used in LEO homicides in a given year

•Among the firearms used, handguns are the most common type of firearm used to commit LEO homicides
- •Firearms are broken down into small, medium, and large caliber handgun, shotguns, and rifles

•While LEOs may encounter long guns (rifles and shotguns) while responding to homes (particularly in rural areas), they are not traditional thought of a representing as large an occupational risk as handguns, which LEOs encounter more frequently in assaults

Study Goals

- Explore relationships between weapon lethality, wound location, and body armor use and fatalities

- Understand contexts between fatal and nonfatal assaults

- Identify factors that increase risk of fatality to improve occupational safety

Methods

•Data for this study are from the LEOKA database which contains data on assaults from every state

•This is a publicly available database generated by the FBI with details on all line-of-duty fatal assaults and nonfatal assaults committed with a knife/cutting instrument that resulted in an injury.

  •Data were available for fatal and non-fatal assaults were available 1998 - 2013

•The data set includes a number of variables – I have listed a number of examples of the variables used in these analyses - which allow for comparisons of the contexts in fatal and nonfatal assaults, and stratifications by weapon type for more detailed and sensitive analyses

•This is a descriptive epidemiologic and case-control study to describe and compare fatal and nonfatal assaults at the national level and examine which factors predict whether an assault will result in a fatality

•Rates of fatal and nonfatal assaults were generated for each year to describe the trends in these injuries

•The prevalence of specific encounter characteristics were compared between fatal and nonfatal assaults

•Logistic regressions were used to generate odds ratios for specific encounter characteristics to determine which, if any, increased the odds that an encounter would be fatal for the LEO

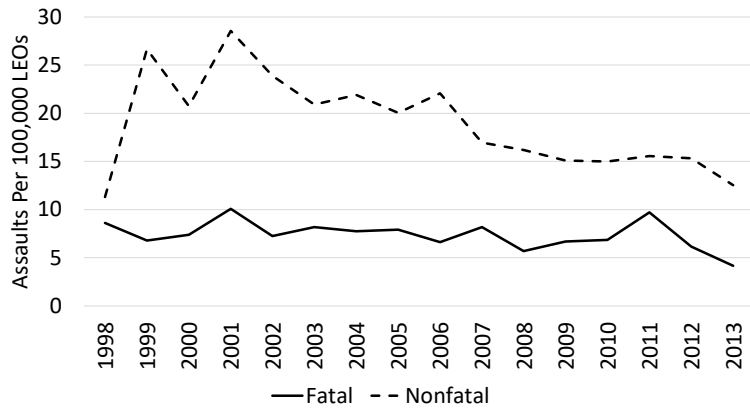Results

Descriptive Statistics

Characteristic	Fatal (N = 791)	Nonfatal (N = 2,022)
Mean Age in years	37.7	35.6
Average experience (months)	127.3	118.3
Male (%)	95	95
White (%)	85	87
Firearm (%)	*92*	*66*
Handgun	71	72
Rifle	21	15
Shotgun	8	13

Rates of LEO Assaults, 1998- 2013

Body Armor Use among Assaulted LEOs

Primary Wound Location
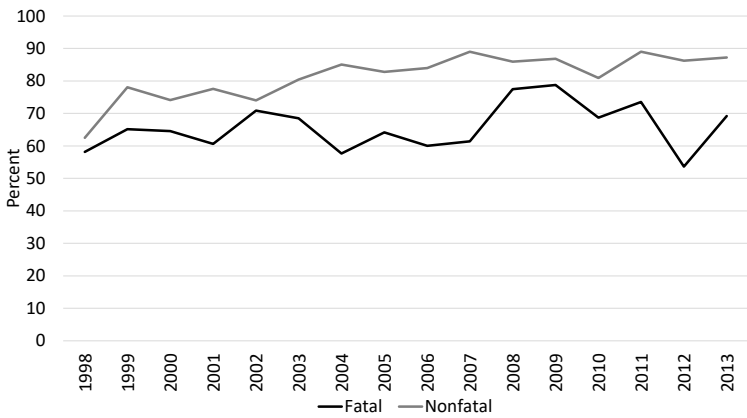
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Multiple Logistic Regression

Independent Variable	OR[a]	95% CI[b]	p-value
Age of LEO	1.02**	1.00 to 1.03	< 0.001
Suspect used Firearm	4.37**	3.10 to 6.10	< 0.001
LEO Wearing Body Armor	0.43**	0.32 to 0.58	< 0.001
LEO Disarmed	2.24**	1.48 to 3.38	< 0.001
LEO Fired Weapon	0.34**	0.27 to 0.44	< 0.001
Primary Wound (reference = head/neck/throat)			
Upper Torso/Back	0.68**	0.54 to 0.87	0.002
Lower Torso/Back	0.24**	0.17 to 0.36	< 0.001
Below Waist	0.03**	0.02 to 0.06	< 0.001
Assignment (reference = Two-officer Vehicle)			
One-officer Vehicle	1.45*	1.02 to 2.07	0.041
Detective	1.40	0.80 to 2.50	0.242
Off-duty	2.68**	1.50 to 4.81	0.001
Special Assignment	1.44	0.86 to 2.42	0.165
Undercover	1.18	0.59 to 2.39	0.641
Encounter (reference = Investigative Activities)			
Disturbance Call	0.99	0.63 to 1.55	0.948
Domestic Call	1.10	0.70 to 1.74	0.688
Attempting Other Arrest	1.46	0.96 to 2.21	0.076
Ambush	3.27**	1.83 to 5.85	< 0.001
Unprovoked Attack	2.24**	1.44 to 3.47	< 0.001
Burglary in Progress	1.06	0.48 to 2.36	0.887
Robbery in Progress	1.45	0.89 to 3.38	0.139
Tactical Situations	1.12	0.70 to 1.79	0.647
Traffic Pursuits and Stops	2.38**	1.64 to 3.46	< 0.001
Drug-related	1.75	0.90 to 3.40	0.097
Handling Mentally Deranged Persons	0.56	0.27 to 01.16	0.121
Handling/Transporting/Custody of Prisoners	0.95	0.45 to 2.00	0.887

Dropped experience, own weapon, type of firearm, caliber, and other LEOs assisted due to multicollinearity

Conclusions
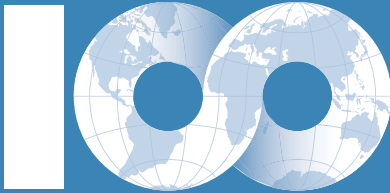
Conclusions

- Firearms continue to pose occupational risk to LEOs

- Body armor reduces lethality of assaults

- Increase in ambush and unprovoked attacks of LEOs are on the rise

•Ambush and unprovoked attacks of LEOs are on the rise, and the result of these assaults are often fatal. Jurisdictions should consider partnering LEOs to allow them to watch each others' backs. Alternatively, dispatch protocols that allow for back up to arrive before a LEO responds to a call could increase LEO safety

Limitations

- Potential for undercounting by data source

- Nonfatal data limited to firearms and knife/cutting instrument

- Lack of generalizability

•The FBI has a strict definition of "line-of-duty" homicides. LEOs must be on duty at the time of the assault or off-duty but performing actions as though on-duty. This definition has the potential to miss or undercount fatal and nonfatal assaults.

•There are likely to be assaults committed with other weapons (blunt objects or fists) that result in injury. Also, the reporting of nonfatal injuries may be restricted to only the most serious injuries. But both of these could make the nonfatal assaults more similar to fatal assaults

•Since this data only represents LEOs that were assaulted, we lack the ability to make comparisons between assaulted versus non-assaulted LEOs to garner information on how often LEOs are assaulted responding to specific types of calls or on specific types of assignments

Research and Policy Implications

- Policy evaluation
- Mandatory wear policies
- Drivers of ambush and unprovoked attack
- Use of force
- Personalized guns

•When one considers the burden of injuries in a population, fatalities are only the tip of the iceberg. For each fatality there are many more nonfatal injuries.

•There are enough similarities between fatal and nonfatal assaults, that policy evaluations should consider impacts on nonfatal assault rates in addition to those of fatal assaults

•The percent of LEOs wearing armor at the time of an assault is increasing; and, we found that wearing armor at the time of the assault decreased the odds of a fatality by 57%. Jurisdictions can apply for funding to purchase body armor through Matching Grant programs that would provide armor for all officers – these programs require that departments have a mandatory wear policy

•More than 2 fold increase in ambush/unprovoked attack. Proportion accounting for homicide increasing

•Odds of fatality decreased 67% when officers fires service weapon. Timelines based on narratives of assaults

•10% of LEO fatalities occurred when the subject gained control of the LEO's service weapon, additionally, the odds of an assault resulting in a fatality increased more than 2-fold when a LEO was disarmed. Little support by law enforcement for personalized guns

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