Occupational Injury Surveillance Among Law Enforcement Officers Using Workers' Compensation Data, Illinois 1980 to 2008

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Objective: Injuries among law enforcement officers are common, but poorly understood; workers' compensation (WC) data are an underutilized tool for occupational surveillance. **Methods:** A stratified analysis of WC claims among four categories of law enforcement officers used descriptive techniques, linear and robust regression. **Results:** Eighteen thousand eight hundred ninety-two officers filed claims from 1980 to 2008. Correctional officers had the highest rates, with leading causes of falls and assaults; motor vehicle crashes were the most common cause of injury among state police. Total monetary compensation was lower for correctional officers, but was explained by lower time lost and lower average weekly wage. **Conclusion:** The rate and types of injuries varied by subgroups, with correctional officers having the majority of injuries, but lower severity. WC data elucidate causes and outcomes of occupational injuries, which can guide prevention.

Law enforcement has been ranked as the 10th most dangerous occupation in the United States, specifically for police and sheriff's patrol officers.[1] Data from different sources paint a variable picture of occupational injuries among law enforcement officers. On the basis of Federal Bureau of Investigation statistics in 2014, 9 of 100 sworn officers were assaulted in the line of duty, affecting 48,315 officers that year. Of the officers who were assaulted, 28.3% suffered an injury, 51 officers were feloniously killed, and another 45 officers were accidently killed in the line of duty. Two other studies have found that between 10% and 25% of officers are injured during incidents requiring use of force,[3–8] and the percentage of injuries increases to between 25% and 50% when the officers are assaulted.[8–11] Alpert and Dunham[7] found that 69% of the officers were injured when police subdued suspects using bodily force.

There are very few studies in the literature or government sources that describe nonviolence-related injuries and illnesses in this workforce.[2–11] According to the Bureau of Labor Statistics, in 2014, the rate of recordable cases of nonfatal injuries and illnesses resulting in days away from work among police and sheriff patrol officers was 485.8 per 10,000 full-time employees, and for correctional officers and jailers, it was 423.3 per 10,000 full-time employees, compared with a rate of 107.1 per 10,000 full-time employees across all occupations.[12]

At the state level, law enforcement can be divided into four major occupational subgroups: correctional officers, local/municipal police, sheriff's officers, and state police. The jurisdiction, work setting, job tasks, target civilian populations, officer demographics, and human resources issues (ie, wages, hours, benefits, reporting rules) differ among these four groups. Membership in each of these subsectors puts law enforcement officers at differential risk of acute injury and consequent health and economic outcomes.

There are limited research studies on U.S. law enforcement personnel that distinguish these occupational subsectors from one another and provide comprehensive information on long-term outcome measures such as permanent disability and workers' compensation costs. Research that differentiates between these subsectors may identify unique patterns of injury and health outcomes affecting recovery and return to work; specifically targeted interventions could improve outcomes for law enforcement officers.

This study uses workers' compensation claim data from the Illinois Workers' Compensation Commission to (1) determine the annual and cumulative claim rates for injuries suffered by law enforcement personnel; (2) describe the causes and nature of occupational injuries suffered by the four major groups of law enforcement officers: correctional officers, municipal police, sheriff's officers, and state police; and (3) evaluate three important workers' compensation outcomes related to long-term impacts of on-the-job injury or illness: temporary total disability (TTD), permanent partial disability (PPD), and Total Monetary Compensation.

METHODS

Data Sources

We received data on all claims filed through the Illinois Workers' Compensation Commission, the administrative court system that manages the workers' compensation program in Illinois. Workers' compensation covers two categories of cost: medical treatment and wage replacement for time lost from work. The Commission maintains a database of ''claims'' made by workers or their representatives in cases wherein the employee and employer are unable to resolve disputes over compensation for work-related illnesses and injuries. These claims are, in the vast majority, related to compensation for lost time, rather than the medical treatment portion of the claim (unpublished data; Friedman 2015). There are 50,000 to 70,000 claims filed each year. Any compensation paid before initiating a claim is not reported in the dataset. The dataset used in this analysis contains both active and closed cases from 1980 to 2008. The ''claims'' database includes the following variables: injury location, injury date, return to work date, date of decision, demographic characteristics of the employee, cause of injury, nature of injury, body part affected, weekly wage, percent impairment, total monetary compensation, and use of an attorney (vs self-representation). Law enforcement officers' weekly wages over the 28-year span of included cases were adjusted for inflation using the Urban Consumer Price Index.

Case Selection

The claims database does not include codes to identify industry or occupation. To identify law enforcement personnel in

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this study, a multistep, case-selection algorithm was used. Keywords were selected to search for law enforcement officers among employer/company names; the ''employer'' field is available for every case. Keywords included police, police department, sheriff, state police, department of corrections, prison, and jail. We also used variations of these search terms to identify records with misspellings or abbreviations. Employer address was used to confirm that each included case was employed as a law enforcement officer. Both support staff and field officers were included in the analysis. Correctional officers, municipal police, sheriff officers, and state police were identified separately to consider differential risk factors and outcomes and also to compare the four groups.

Outcome Variables

Total Monetary Compensation

The Total Monetary Compensation is the entire amount of money awarded to the employee in either settled (without arbitration) or arbitrated cases. This comprises all the individual components involved in a claim, including medical costs, attorney fees, penalties, rehabilitation, vocational training, missed work, disability, settlement payments, and other forms of compensation. Again, it should be noted that medical-only claims rarely appear in this database (ie, when there is no lost or restricted work time, injured workers rarely file a claim). Total compensation dollars were adjusted for inflation using the Urban Consumer Price Index for all urban consumers in year 2000 ''real'' dollars.

Temporary Total Disability

Injured employees are granted TTD when they are unable to return to work immediately following the injury. TTD is based on the average weekly wage X the time lost from work as a result of the injury; this is further adjusted by the number of dependents. The average weekly wage is calculated on the basis of the employee's gross income before taxes and includes income from additional jobs. There is a minimum and maximum benefit an employee can collect on TTD and this range varied between 1980 and 2008. In this analysis, TTD is described in terms of weeks of lost-time from work; ''weeks lost'' is a more comparable measure, as the salary scale of the four subsectors varies widely and influences the total dollars awarded. The minimum number of weeks used for analysis was 0.14, which is equivalent to one day.

Permanent Partial Disability

Permanent partial disability is compensation paid to injured workers for a partial loss of body function at the point of maximum medical improvement, that is, when the case is settled. In Illinois, the PPD settlement is based on the degree of impairment as determined by a health care provider, the average weekly wage, and several employment and demographic factors (age, experience, education, number of dependents). During the study period, use of impairment rating guidelines was not required in Illinois (this changed in 2011). To determine PPD, the percent impairment is multiplied by the average weekly wage and multiplied by the number of weeks listed in the Illinois statute for specified injuries. The impairment rating is either agreed upon by both parties in nonarbitrated decisions or by the arbitrator when the case is adjudicated. We used the % impairment rating, a measure of severity, as the measure of PPD because it could be compared across groups. When there was more than one body part with limited function, the statutory formula for computing cumulative PPD was used $[A + (1 - A) * B$, where A is the percent disability for a specific injury involving a specific body part and B is the percent disability for a second specific injury involving a specific body part].[13]

Statistical Analysis

The Statistical Analysis System (SAS version 9.1; SAS Institute, Inc., Cary, NC) was used for all analyses. The five-year average annual ''claim rate'' was calculated by taking the average of the total number of workers' compensation claims over a five-year period divided by the five-year average of law enforcement employees; that number was then multiplied by 100. The annual employment data for Illinois law enforcement subsectors were gathered over the 28-year period from the U.S. Census Bureau.[14] Three of the subsectors—municipal, sheriff, and state law enforcement personnel—needed to be combined in the numerator because employment (denominator) data were only available with this aggregation; correctional officers were distinguishable in the U.S. Census Bureau's employment dataset.

Distributions of gender, age, marital status, number of dependents, average weekly wage, whether or not the employee was represented by an attorney, cause of injury, nature of injury, body part affected, mean days away from work, and compensation awarded were determined for each of the four subsectors. We then compared the subsectors in terms of TTD (in weeks), PPD (by assigned percent impairment), and Total Monetary Compensation (in US Dollars corrected for inflation). PPD percentage was near normal (skewness = 1.73; kurtosis = 4.27), but both TTD (skewness = 5.72; kurtosis = 47.3) and total workers' compensation (skewness = 31.3; kurtosis = 1750.6) were not normal. Therefore, ''ordinary least squares regression'' was used to evaluate only PPD, while the presence of economic outliers led to the use of ''robust regression'' to evaluate both TTD and Total Monetary Compensation. For the robust regression models, we used the M-estimation as implemented in SAS version 9.1 (PROC ROBUSTREG; SAS Institute, Inc.) to determine predictors of TTD and Total Monetary Compensation. We used a manual stepwise selection method to identify the best model fit for the predictors. Akaike Information Criteria (AIC), Bayesian Information Criteria (BIC), and R-square were used for model selection and to identify the best scale and weighting function in the final robust regression model. The Tukey scale and fair weighting function were used to evaluate the final robust regression models.

For all multivariable regression models, correctional officers served as the reference group because they are most clearly different in terms of their job duties and in the descriptive statistics of the three primary outcome variables (TTD, PPD, and Total Monetary Compensation). In all the multivariable equations, statistical evaluation of covariates and a priori knowledge were used to decide on inclusion of covariates in the final models. There was no evidence of multicollinearity found among any of the independent variables in the regression model. To test significance, a two-sided *P* value of less than 0.05 was used.

RESULTS

Demographics

Of the 18,892 law enforcement personnel that filed a claim between 1980 and 2008, 45% were from correctional institutions, 26% were municipal police, 22% came from the sheriff's department, and 7% came from the state police. The average claim rate for police in Illinois was 0.78 injuries per 100 state, sheriff, and municipal officers (full time equivalents [FTEs]) combined, and 1.59 injuries per 100 correctional officers (Table 1).

Demographic data by occupational subgroup are presented in Table 2. The majority of workers' compensation claims came from male law enforcement officers in Illinois, though 26% of correctional officer and 23% of sheriff's officer claims were from women. The mean age among the officers was approximately 38 years, with the largest proportion between the ages of 31 and 40 years; filings

TABLE 1. Five-Year Average Annual Workers' Compensation Claim Rate per 100 Officers in Illinois, 1980–2008

	State, Municipal, Sheriff Officers			Correctional Officers		
	5-yr Average Employment	5-yr Average Number WC Claims	WC Claim Rate per 100*	5-yr Average Employment	5-yr Average Number WC Claims	WC Claim Rate per 100*
1980–1984	43,342	247	0.57	11,763	260	2.21
1985–1989	42,359	371	0.88	15,550	324	2.08
1990–1994	43,867	436	0.99	19,922	388	1.95
1995–1999	47,738	378	0.79	23,237	309	1.33
2000–2004	49,468	420	0.85	25,190	266	1.05
2004–2008	51,900	331	0.64	23,428	189	0.81

*Work Comp Claim Rate = (5-yr claims/sum 5-yr Employees) / 5)*100.

did not vary significantly by age among the four subsectors. Over 60% of those filing a claim were married; correctional officers were slightly less likely to be married. Among those awarded TTD, the average duration of days away from work was a little more than three months.

Cause and Nature of Injury

Cause and mechanism/nature of injury are summarized in Table 3. Correctional officers have a much higher proportion of falls (25% vs 11% to 18%) and assaults (18% vs 5% to 12%) than the other subgroups; State Police have the highest proportion of motor vehicle crashes (23%) compared with municipal police (12%), those in the sheriff's office (10%) and correctional officers (2%).

In terms of body site of injury, all groups of law enforcement personal claimed upper extremity injuries as a higher proportion, followed by lower extremity and torso injuries. Multiple sites and "whole body" were collapsed into one group, and showed some 46% to 52% of all body sites. This corresponds with the lack of specificity regarding the cause or nature of injury, as summarized in Table 3.

The median Total Monetary Compensation varied by the body part affected among the four subgroups, with median costs ranging from $2500 to $4000 for officers suffering head injuries, $7800 to $12,000 for injuries to the lower extremities, $4000 to $5000 for neck injuries, $5800 to $7500 for torso injuries, and $5400 to $8200 for upper extremity injuries.

Workers' Compensation Claims and Measure of Injury Severity

Among law enforcement officers filing workers' compensation claims in Illinois between 1980 and 2008, 74% were decided or settled within the court system while the remainder were dismissed or withdrawn. The number of cases decided or settled did not differ substantially between the occupational subgroups: correctional officers, $n = 6203$ (73%); municipal police, $n = 3648$ (75%); sheriff's department, $n = 3120$ (75%); and state police, $n = 1097$ (76%). Of the total claims filed, 62.6% had decisions on PPD and 36.1% had decisions involving TTD. On the basis of the stratified analysis summarized in Table 4, the mean "time lost" or duration of TTD was lower for correctional officers than the other three groups, though the median was the same as for state police. In terms of percent PPD, a measure of assumed severity along with sociodemographic features that figure into that calculation, correctional officers lost less time, on average (mean and median), than the other three groups. The Total Monetary Compensation, based on wages, time lost, and severity, was also lower for correctional officers.

Multivariable Regression Models

Table 5 presents the crude and adjusted parameter estimates by law enforcement subgroups. The Total Monetary Compensation model was adjusted for both TTD and PPD, marital status, weekly wage, injury to the extremities, the number of dependents, self-representation, and gender, for which the correlation coefficient (R^2)

TABLE 2. Demographic Characteristics of Injured Illinois Law Enforcement Officers in Workers' Compensation Study, 1980–2008

	Correctional Officers		Municipal Police		Sheriff's Officers		State Police	
	N	(%)	*N*	(%)	*N*	(%)	*N*	(%)
Total disputed claims	8440	45	4875	26	4137	22	1440	8
Male	6208	74	4134	85	3180	77	1161	81
Age (yrs)								
21–30	2363	29	1249	26	846	21	287	20
31–40	2968	36	1966	41	1484	37	537	38
41–50	1926	23	1139	24	1044	25	455	32
51+	983	12	418	9	666	16	149	10
Married	5205	62	3235	67	2624	64	1032	72
No Attorney used	414	5	176	4	315	8	363	25
Mean age (±SD)	37.5 (±10.0)		37.2 (±8.9)		39.7 (±10.3)		38.9 (±8.9)	
Mean no. of dependents (±SD)	1.3 (±1.3)		1.3 (±1.3)		1.2 (±1.3)		1.2 (±1.3)	
Average weekly wage (±SD)*	690 (±185)		826 (±251)		708 (±237)		944 (±276)	

*US$CPI U-2000.

TABLE 3. Causes and Body Sites of Injury by Law Enforcement Subsector, Illinois Workers' Compensation Claims, 1980–2008

Cause	Corrections ($n = 8440$)	Municipal Police ($n = 4875$)	Sheriff ($n = 4137$)	State Police ($n = 1440$)
Fall	2086 (25%)	713 (15%)	753 (18%)	155 (11%)
Assault (Altercation, Horseplay)	1536 (18%)	606 (12%)	516 (12%)	78 (5%)
Overexertion	562 (7%)	138 (3%)	176 (4%)	83 (6%)
Struck by/against	572 (7%)	237 (5%)	204 (5%)	81 (6%)
Caught in under or between	252 (3%)	46 (1%)	77 (2%)	12 (1%)
Burn	200 (2%)	39 (1%)	55 (1%)	22 (2%)
Motor vehicle	173 (2%)	575 (12%)	421 (10%)	327 (23%)
Bite	22 (0%)	39 (1%)	27 (1%)	6 (0%)
Heart attack	20 (0%)	11 (0%)	7 (0%)	2 (0%)
Cut	9 (0%)	5 (0%)	3 (0%)	1 (0%)
Shot	8 (0%)	24 (0%)	23 (1%)	13 (1%)
Foreign object or matter in eye	9 (0%)	3 (0%)	0 (0%)	1 (0%)
Noise exposure	1 (0%)	9 (0%)	3 (0%)	1 (0%)
Injury (unspecified)	2990 (36%)	2418 (50%)	1874 (45%)	651 (45%)
Body part affected				
Upper extremity	2206 (26%)	1487 (31%)	1179 (28%)	382 (27%)
Lower extremity	2030 (24%)	1330 (27%)	1077 (26%)	300 (21%)
Torso	1723 (20%)	895 (18%)	783 (19%)	325 (23%)
Head	599 (7%)	194 (4%)	201 (5%)	68 (5%)
Neck	440 (5%)	296 (6%)	270 (7%)	161 (11%)
Multiple parts	4215 (50%)	2262 (46%)	2156 (52%)	803 (46%)

Totals in each column may exceed column totals because individual workers experiencing more than one injury.

was 0.45. The crude model indicated that correctional officers received significantly lower Total Monetary Compensation than the other three law enforcements subgroups. However, when controlling for covariates, there were not significant differences between the groups.

The TTD model was adjusted for self-representation, age, weekly wage, days from accident to decision, and back/spine injury. The available variables did not explain much of the overall variance ($R^2 = 0.04$). In light of the low predictability of the global model, municipal police and employees of the sheriff's department were awarded 1.9 and 2.7 weeks more, respectively, of TTD than correctional officers.

The PPD model was adjusted for self-representation, weekly wage, age, days from accident to decision, number of dependents, and any injury to the extremities ($R^2 = 0.09$). In the adjusted model for PPD, all three law enforcement occupational subgroups significantly differed from correctional officers in the percent of PPD, but the differences were very small ($\leq 2\%$).

DISCUSSION

This study describes contested claims filed through the State of Illinois workers' compensation administrative court system. Unlike many other studies related to health outcomes of law enforcement officers, this study provides details on injuries and illnesses suffered by law enforcement personnel caused by all circumstances (not only violence-related) and stratifies law enforcement officers by specific occupational subgroups. Differences in job duties and populations served by the four law enforcement subgroups correspond with some of the observed differences in cause and nature/mechanism of injury and illness. For example, state police disproportionately patrol the interstate roads and are at a higher risk of being hit by passing vehicles than other law enforcement departments. Despite the poor description of cause and nature of injury within the workers' compensation dataset, we continued to see a substantial proportional difference in state police officers suffering injuries from motor vehicle crashes when compared with the other three law enforcement subsectors.

Although correctional officers represent roughly one-third of the Illinois law enforcement workforce, the number of disputed claims during the period of observation were more than double those filed by the other law enforcement groups. Bureau of Labor Statistics data show that correctional officers have higher injury/illness rates than police officers, as well.[12] This finding is difficult to

TABLE 4. Measures of Injury Severity by Compensation Awards Among Illinois Law Enforcement Officers Filing Workers' Compensation Claims by Subsector, 1980–2008

	Corrections Officers ($n = 6203$)	Municipal Police ($n = 3648$)	Sheriff's Officers ($n = 3120$)	State Police ($n = 1097$)
Temporary Total Disability, in wks				
Median	6.3	8.0	9.4	6.3
Mean	14.3	18.3	19.9	17.0
Percent Permanent Partial Disability, %				
Median	9%	14%	12%	13%
Mean	14%	17%	16%	16%
Total Monetary Compensation, US$*				
Median	$7165.89	$9669.77	$8724.23	$8940.69
Mean	$14,435.48	$19,363.82	$16,208.71	$18,564.33

*Adjusted for Urban Consumer Price Index, 2000.

TABLE 5. Final Regression Models for Illinois Law Enforcement Officers Filing Workers' Compensation Claims, 1980–2008

	Crude Model Estimate	Std. Error	*P*	Multivariable Model Estimate	Std. Error	*P*
Model outcome: Total Monetary Compensation (USD$)* R^2 -0.45						
Municipal Police	2688.18	283.72	<0.0001	−113.58	238.72	0.63
Sheriff	1391.18	298.51	<0.0001	−388.81	232.23	0.09
State Police	2127.55	445.84	<0.0001	−546.18	508.54	0.09
Model outcome: Temporary Total Disability (wks)†						
Municipal Police	2.32	0.360	<0.0001	1.89	0.380	<0.0001
Sheriff	3.71	0.364	<0.0001	2.69	0.379	<0.0001
State Police	0.60	0.759	0.43	−1.04	0.784	0.18
+Model outcome: Permanent Partial Disability (%)‡						
Municipal Police	0.03	0.003	<0.0001	0.02	0.003	<0.0001
Sheriff	0.02	0.003	<0.0001	0.01	0.004	0.02
State Police	0.02	0.005	<0.0001	0.01	0.006	0.04

*Total monetary compensation adjusted for total temporary total disability, total permanent partial disability, marital status, weekly wage, all injured extremities, number of dependents, self-representation, and gender. Based on Urban Consumer Price Index, 2000.

†Temporary Total Disability adjusted for self-representation, weekly wage, age, days from accident to decision, and back/spine injury.

‡Permanent Partial Disability adjusted for self-representation, weekly wage, age, days from accident to decision, number of dependents, and any injury to the extremities. +This model was ran as a linear regression because PPD has a near-normal distribution.

interpret: it could indicate that correctional officers are at an increased risk of injury and illness relative to other law enforcement groups, but it could also reflect a reporting bias—that correctional officers are more likely to file workers' compensation claims than other officers. Many factors influence filing, including awareness of the workers' compensation system, the presence or absence of advocates that promote and assist with filing, the availability of general health care coverage, disability insurance for the various groups, the ability to accommodate light duty, and others. Workplace culture—machismo, labor-management relations, organizational culture, safety climate/culture, ease of reporting—and the way work-related injury and illness are treated in the workplace are also likely to play a role. Finally, personal characteristics of the different categories of law enforcement officers may be important. Extracting data from a greater variety of available sources and conducting qualitative research would be required to fully understand these influences.

In this study, only 5% to 18% of injuries reported by police were caused by assaults. This finding is much lower than the Bureau of Labor Statistics reports, whereby approximately one quarter of all documented injuries and illnesses among law enforcement personnel are caused by violence-related incidents.[12]

The distribution of the causes described in the Illinois workers' compensation claims database (Table 3) corresponds to the BLS data, in that falls, overexertion, and motor vehicle crashes are the most common causes of injury, in addition to assaults.[12] Again, differences in reported rates are based on differences in mechanisms of case capture, and workers' compensation data provide an important lens for examining numbers, rates, trends, sentinel occupational health events,[15] subsequent disability, and financial costs of occupational illnesses and injuries in the U.S.

Other data sources, such as FBI and Bureau of Justice Statistics, capture crime-related injuries (ie, assaults and fatalities), but not general injuries among law enforcement officers. Unlike most other published research describing hazards and health effects of work in law enforcement,[2–12] workers' compensation claims used in this study provide details on injuries and illnesses caused by all hazardous conditions and allow for stratification by specific law enforcement subsectors.

Consideration of differences in work settings, job duties, and populations served by the four law enforcement subsectors explains some of the observed differences in cause and nature of injury and illness. For example, correctional officers work at a fixed location, making them less susceptible to motor vehicle injuries than the state, municipal, and sheriff's officers, who patrol streets in their vehicles. State police, who more commonly patrol highways, have a higher proportion of injuries from motor vehicle crashes than municipal and sheriff's police, who are more likely to use local roads with lower speed limits. Falls are common among both correctional and patrolling officers, though the exact causes and mechanisms of these injuries could be different and cannot be explained using this data source.

The most common body sites of officers' injuries were the upper and lower extremities. This would be expected when considering job tasks of police officers, who may spend a lot of time walking and using their upper extremities for their required job tasks. Upper extremities are the most common site of injury across industrial sectors in BLS SOII data, as well.[12] After adjusting for important confounders, it appears that state police officers received the lowest total monetary compensation, though there was not a statistically significant difference from the other officer subsectors. State police had a substantially higher proportion of officers who represented themselves in arbitration hearings (25%), which may have translated into lower monetary decisions. Interestingly, among the state police, use of an attorney was directly related to average weekly wage—the lowest wage earners were more likely to represent themselves, while all those in the highest earning category used attorneys. This could be due to concern about sharing the award with an attorney, lack of interest in taking a case with low financial return on the part of the attorney, or a difference in understanding or opinion of the importance of professional legal services. There have been several studies that have shown that use of attorneys increases workers compensation costs,[16] but other studies do not demonstrate this relationship.[13] Overall, the total monetary compensation did not substantially differ between the groups, even with the lower use of legal representation by state police.

Only one-third of all law enforcement officers filing workers' compensation claims received TTD, meaning that two-third of the injured officers did not miss work or they did not dispute their workers' compensation coverage for lost-time. Among those who did receive decisions awarding TTD, the decisions reflected a long period of days away from work—a median of six or more weeks. Work we have done with state workers' compensation and other insurance data sources (unpublished) suggests that "medical-only" cases (with no "time-lost") are much less likely to come for

adjudication. Number of lost work days (weeks) could be considered a surrogate for injury severity.

Police and sheriff's officers had significantly longer weeks of TTD than correctional officers, which can be influenced by many factors, including severity of injury or illness, the nature of job duties, as well as stress and job satisfaction.[17,18] In addition, labor agreements require that police and sheriff's officers be able to work full duty in order to return at all, whereas, in most cases, correctional facilities are able to accommodate light duty to some extent. As an indicator of injury severity, TTD is actually used to calculate the total monetary award and is therefore directly related to Total Monetary Compensation.

Limitations of Workers' Compensation DATA

Workers' compensation data are being explored to enhance occupational surveillance in the US. Limitations observed in this study should serve to inform consideration of whether and how this state-based data source might best be used. Although informative in qualitative and economic factors that describe the types and severity of workplace injuries for law enforcement officers, workers' compensation claims are limited in their the ability to elucidate actual numbers, rates, and trends of occupational injuries and illnesses. Also, very few variables are available to describe these injuries and data are often missing in the database; lack of specified body sites, diagnoses, and mechanisms of injury limit the ability to describe these injuries. Furthermore, accuracy and validity are impossible to determine and are likely compromised by the fact that diagnoses are listed by nonmedical personnel and the contentious legal process provides incentives for keeping the diagnosis general rather than designating the exact body part or condition.

Another limitation of the data is the poor detail of cause and nature of injury. Workers' compensation datasets have the potential to be used to inform, promote, and implement preventive measures that will reduce workplace injury and illness, and could save employers the costs associated with insurance adjustments based on experience ratings. However, there has been a growing realization at the national level of the need to standardize coding across workers' compensation data systems. Standardization would help to improve within-state and between-state analyses by a developing a common platform for key variables that are meaningful across industries, subsectors, states, and years. Definitions and coding systems have already been developed at the national and international levels.

Another limitation of this data source is that the total compensation amount does not clearly and uniformly differentiate between medical and indemnity costs. Better capture of medical and indemnity costs can provide more insight regarding the severity of injury and impairment between and within law enforcement personnel.

Although all of the officers in this study were public sector employees, correctional officers and state police are employed by state government, while sheriff's and municipal officers work for many different and smaller jurisdictions. The ways in which occupational injuries are handled in these settings could differ. In addition, the presence of onsite medical services, return to work policies, work practices in terms of safety protections, and prevailing culture (eg, peer advocacy, machismo, litigious propensity) could play a role in what gets ''claimed'' in the workers' compensation system. It would be necessary to examine all injuries—claimed and unclaimed—in order to understand these potential differences.

CONCLUSION

Workers' compensation claims provide surveillance information for law enforcement officers that can highlight types and causes of occupational injuries and help target preventive action. More detailed data are needed to understand preventable factors leading to a high proportion of claimed assaults and falls among correctional officers and the conditions under which motor vehicle crashes occur for state and other patrolling police forces. As state and local governments seek to lower costs, a more detailed analysis of the factors that drive TTD, PPD, and, consequently Total Monetary Compensation, would be of interest.

Among law enforcement subsectors, correctional officers represented the highest proportion (45%) of all disputed claims filed over the 28-year period, with claim rates more than twice as high than the other law enforcement personnel. It is not entirely clear what factors contribute to the higher observed rate among correctional officers, but other reports have also identified this disparity. In addition, this study found that occupational injuries among law enforcement officers in Illinois were caused by an array of circumstances, including assaults, falls, motor vehicle accidents, and overexertion. This study and others indicate that injuries to law enforcement personnel are primarily caused by nonviolent means,[12] despite the fact that most research on law enforcement personnel emphasizes injuries caused during arrests or violent acts. Finally, although there were similarities between the four subgroups, we did observe differences in demographic characteristics, cause of injury, body parts affected, and claim outcomes, providing evidence that these subgroups should be treated as distinct entities. Hygiene and safety recommendations should be customized to each subgroup in order to take into account the varied occupational hazards between law enforcement personnel, in particular to identify the hazards faced by correctional officers.

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