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Injuries among security and law enforcement personnel in the private versus public sectors

William S. Witt

College of Public Health

University of Kentucky

A paper submitted in partial fulfillment of the requirements for the degree of

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Contents

Abstract

Background and Objectives: Data collected through workers' compensation may be useful for occupational injury surveillance. This study examined whether differences existed between the public and private sectors of the security and law enforcement industry in Kentucky.

Methods: Using a cross-sectional design, workers' compensation data from the Kentucky Department of Workers' Claims was analyzed to evaluate differences in demographic and injury characteristics, as well as award outcomes, stratified by industry sector. The dataset included all workers' compensation first reports of injury and claims filed by security and law enforcement personnel in Kentucky from 2005 to 2015. Statistical analyzes included chi-square and logistic regression.

Results: When adjusting for gender, age, nature of injury, cause of injury, and body part injured, the estimated odds that a first report resulted in an adjudicated award was observed to be 1.334 times larger [95% CI: (1.069, 1.666), (p=0.011)] in the private sector, compared to the public sector.

Conclusion: A statistically significant difference in the estimated, adjusted odds of a first report of injury resulting in an adjudicated award was observed between public and private sector law enforcement. Further studies are necessary to better understand contributing factors to the variation observed between the industry sectors.

Introduction

Law enforcement in the United States is a multifaceted industry, with a robust presence in both the public and private sectors. Public departments and agencies, as well as private firms and contractors, employ millions of personnel each year in the United States, across a variety of jurisdictions.

State and local police forces constitute the majority of public sector law enforcement, and are composed of sworn officers and non-sworn civilian employees.[1] Sworn officers are permitted to carry a firearm and badge, possess full arresting powers, and are paid from allocated government funds.[1] Non-sworn employees provide support to primary law enforcement functions, and include clerks, radio dispatchers, meter attendants, stenographers, jailers, correctional officers, and mechanics.[1] Several institutions collect and manage information on law enforcement in America, including the Federal Bureau of Investigation, the U.S. Census Bureau, and the Bureau of Justice Statistics.[1] According to these three sources, approximately 18,000 agencies constitute public sector law enforcement, ranging from local police departments with 10 or fewer officers, to large municipal and state forces.[1] While estimates vary, nationwide employment for public law enforcement personnel in 2012 was approximately 750,000 sworn and 325,000 non-sworn employees.[1]

Counterparts in the private sector are defined under broad terms. The largest private security association in America, ASIS International, defines private security as, "The nongovernmental, private-sector practice of protecting people, property, and information, conducting investigations, and otherwise safeguarding an organization's assets… [which]

may be performed for an organization by an internal department or by an external, hired firm.[2]" The occupations included in this industry, as defined through the federal government's Standard Occupation Classification (SOC) system, are detectives, guards, armored car services, and security systems services.[3] Furthermore, the security guard occupation is further defined by the SOC system to include facility guards, bodyguards, bouncers, armored car guards, and watch guards.[3] Compared to public sector law enforcement, there are more personnel in the private sector. According to the U.S. Bureau of Labor Statistics (BLS), as of 2015, there were approximately 1.1 million security guards, and 30 thousand private detectives and investigators employed in the United States.[4, 5]

In addition to employment data, the BLS collects and maintains data regarding occupational injuries. In 2014, the BLS data indicated that police officers and detectives experienced injury rates above the national average for all occupations within their respective industry, while security guards experienced an injury rate below the national average for all occupations in the private industry sector.[6, 7, 8] An injury rate of 97.8 per 10,000 full-time workers was reported among all occupations in the private sector, while an injury rate of 167.4 per 10,000 full-time workers was reported across all occupations in the public sector.[6, 7, 8] Among private sector occupations, the reported injury rate among private sector security guards in 2014 was 85.5 non-fatal injuries and illnesses involving days away from work per 10,000 full time workers, and 39 fatal injuries,[6] while there were 100.5 non-fatal injuries and illness per 10,000 full time workers among private detectives.[8] In the public sector, police officers had a rate of 514.6 non-fatal injuries and illness involving days away from work per 10,000 full time workers, and 98 total fatal injuries,[7] while public sector detectives and criminal investigators had injury rates of 179.5 per

10,000 full time workers, with a total of 4 fatal injuries.[8] The BLS data indicates that injuries among law enforcement personnel are common, however, there has been little published in regards to adjudicated reimbursement following these injuries, particularly in regards to differences between the public and private sector employees.

In the United States, workers' compensation is a form of occupational injury insurance that reimburses workers for expenses such as lost wages or medical treatment, in the event of an injury acquired on the job. Data collected through workers' compensation can be a useful tool for occupational surveillance.[9, 10] In 2016, a large study utilized Illinois workers' compensation data from 1980 - 2008 to investigate and describe injuries and outcomes among several different occupational subgroups within public law enforcement, and found a disproportionately high number of claims among correctional officers, relative to their proportion of the state's law enforcement employment.[9] In 2011, researchers at the Kentucky Injury Prevention and Research Center published a study that utilized state workers' compensation data to describe occupational injuries and workers' compensation awards between public and private sector solid waste collectors.[10] In their study, they observed that private sector solid waste collectors had greater odds of a compensated first report of injury.[10] In Kentucky, reimbursement for medical expenses related to the injury is not recorded through workers' compensation; therefore, an award outcome refers to adjudicated disability awards.

The objectives of this study were to (1) describe injuries among security and law enforcement personnel in the public and private sectors; (2) identify differences in the awarded benefits associated with workers' compensation first reports of injury between

the public and private sectors; and (3) identify differences regarding demographic and injury characteristics between public and private sector security and law enforcement.

Materials and Methods

Study Population

Cases for this study were obtained through the Kentucky Department of Workers' Claims, and consist of Kentucky workers' compensation first reports of injury and workers compensation claims for the years 2005-2015. To protect worker confidentiality, cases in the dataset were de-identified. According to Kentucky workers' compensation, the following are characteristics of first reports of injury and claims:[11]

1. All worker injuries that require at least one day off from work or result in a disability that extends beyond 60 days are required to be reported.[11]
2. When a worker has lost at least 7 days of work due to an injury or has a permanent partial disability with no missed work days due to an injury, the worker is eligible for indemnity and/or lump sum payments. Indemnity payments associated with a first report of injury or claim were defined as paid income benefits to compensate for lost wages, functional impairment, or death.[11]
3. When a worker has lost at least 2 weeks of work due to an injury, the worker is eligible for lost wage compensation retroactive to the first day of work lost.[11]

Inclusion criteria for workers' compensation first report of injury and claims were: all accepted cases, open or closed, of first reports of injury and claims; claimants of all ages and those with unknown ages; out-of-state residents who were injured in Kentucky, as well

as Kentucky residents who were injured out-of-state; and 'Lost-time' first report of injury and claims. This project received approval from the University of Kentucky Institutional Review Board.

Study Design

This study incorporated a cross-sectional design. Selection of law enforcement personnel workers' compensation first report of injury and claims were based on North American Industry Classification System (NAICS) codes, and SOC system codes. In cases where SOC codes were missing or improperly coded, the occupation text field was reviewed to verify occupation. A key word narrative text search for 'police' within the occupation field was incorporated, and similar occupations were grouped together. Security guards (SOC code: 33-9032) and private detectives and investigators (SOC code: 33-9021) were represented by "guards and police, except public service;" police & sheriff's patrol officers (SOC code: 33-3051) and detectives and criminal investigators (SOC code: 33-3020) were represented by "police and detectives, public service;" First-line supervisors of law enforcement workers (SOC code: 33-1010) were represented by "supervisors of police and detectives;" and all remaining occupations were represented by "all other." The final dataset contained 4,377 records, with 3,478 in the public sector and 899 in the private sector. Industry sector (public vs. private) was determined using NAICS codes.

Statistical Analyses

Pearson's chi-square test was utilized to evaluate the significance of differences within factors between industry sectors, and to identify potential covariates to include in the final model. Statistical significance was determined with a threshold P-value of 0.05.

The statistical significance of possible effect modifiers was evaluated by including their two-way interactions with the industry sector in the multiple logistic regression model. Cause of injury was considered as a potential confounder, and was included in the final regression model after grouping cases into the following categories: absorption, ingestion or inhalation; cut, puncture, or scrape; fall/slip; motor vehicle-related; person in act of crime; strain; struck by animal or object; struck by fellow worker, patient or other person; and all other causes. A reverse selection method was used to build the logistic regression model, and version 23 of IBM's SPSS® software was used for all statistical analysis.

A logistic regression model was used to estimate the probability that a workers' compensation first report of injury would result in an awarded benefit. A workers' compensation first report of injury with an awarded benefit was defined as one with an adjudicated award. Multiple factors were considered as potentially related to the outcome, and included industry sector, gender, age, length of time on the job, season of injury, the worker's residence region (Appalachia vs. non-Appalachia), the worker's geographic location of injury (Appalachia vs. non-Appalachia), and injury characteristics, such as the nature of the injury, the cause of the injury, and the body part injured. Cases with missing values for gender or age were excluded from statistical analysis (n = 10), while the variables for length of time on the job, and length of time off after injury were excluded from the final model due to a high proportion of missing values (14.3% and 61.9%, respectively).

Results

Demographic Characteristics

The majority of cases in both the public and private sectors were male (Table 1). Males represented 77.4% of the private sector cases and 88.1% of public sector cases. Between the two sectors, there were a greater proportion of younger cases in public sector law enforcement, compared to private sector law enforcement. The mean age of private sector cases was 43.42 years (S.E. = 0.495) while the mean age of the public sector cases was 37.16 years (S.E. = 0.158). The greatest proportion of injuries in the private sector occurred among employees that were 55 years or older, at 24.6%, and in very young employees (24 years of age and younger). In comparison, the distribution of injuries among the different age categories in the public sector was less homogenous. 37.8% of injuries in the public sector were among 25-34 year olds, while 36.7% were among 35-44 year olds, together, accounting for 74.5% of the injuries in the public sector. Regarding years of experience prior to injury, 36.4% of cases in the private sector were found to have less than 1 year of experience, compared to only 11.9% in the public sector. The date that each employee was hired was often not recorded, resulting in 17.5% of cases in the private sector and 13.5% of cases in the public sector having missing values for length of time on the job, prior to injury. 89.9% of private sector cases were observed to be security guards and private police, while 95.5% of public sector cases were observed to be police officers and detectives. When classified by industry type, 83.6% of private sector cases were employed in the services industry, with the remaining employment distributed across a diverse range of industries, while 100% of the public sector cases were employed in the public administration industry.

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Injury Characteristics

A higher percentage of sprains occurred in the public sector compared to the private sector (47% vs. 37%, respectively) (Table 2). Significant differences were observed in the cause of injury between the two sectors. Falls and slips accounted for 36.2% of the injuries reported to workers' compensation by private sector personnel, compared to 19.1% in the public sector. Motor vehicle-related injuries, strains, and injuries sustained as a result of a person in the act of a crime were observed in greater proportions among public sector law enforcement. There was little difference observed between the two sectors in regards to the location of the injuries on the body. The greatest differences observed were 8% more injuries to the upper extremity in the public sector, and 4.1% more back injuries in the private sector. More injuries in the private sector were compensated for 2 or more weeks, or 30 or more days off from work, following the injury, compared to the public sector. 29.7% of public sector injuries received less than 14 days off, compared to 23.0% in the private sector. 3.6% of private sector cases received between 2 weeks and 29 days off, compared to 2.4% in the public sector, and 5.8% of injuries in the private sector, compared to 4.4% in the public sector, received 30 days or longer in time off. There was a large proportion of missing cases for length of time off, with 65% missing in the private sector, and 61.1% missing in the public sector.

Disposition Status

The large majority of cases in each sector received no adjudicated award (80.3% among private sector, 84.0% among public sector (Table 3). Awards were issued as either a lump sum or an agreement, and were determined on first report or via an administrative law

judge. It was observed that a higher proportion of first reports of injuries and claims were compensated via all methods in the private sector (18.4%) compared to the public sector (14.3%). Cases with a disposition categorized as, "other," were cases awaiting a final decision for various reasons.

Univariate Logistic Regression

A logistic regression model was constructed to predict the probability that a Kentucky law enforcement workers' compensation first report of injury or claim would result in awarded benefits. Univariate logistic regression was utilized in table 4 to evaluate several different factors for their relationship with the award outcome status. Award outcome for each first report of injury and claim was simplified to a dichotomous result of either no awarded benefits (n = 3642), or awarded benefits (n = 669). Other cases awaiting final decision were excluded from the analysis (n = 66), and represented 1.5% of the entire study population. Statistical significance was observed within industry sector, age, nature of injury, cause of injury, and body part injured. The estimated, unadjusted odds of a first report of injury and claim resulting in an adjudicated award was found to be 1.345 times greater for the private sector law enforcement, in comparison to the public sector (P = 0.002). A positive trend was observed in the unadjusted odds ratio for age, in which the odds of a first report of injury and claim resulting in award increased successively with age. Length of time on the job, season of injury, residence region, and region of injury were not found to have any significant associations with award status.

Multivariate Logistic Regression

Using a reverse selection method, factors were included into the final multivariate logistic regression model, based on their observed associations with the award outcome, and their statistical significance. As shown in table 5, industry sector, gender, age, nature of injury, cause of injury, and body part injured were all selected as covariates in the final model. While not statistically significant (P = 0.110), gender was included in the final model for descriptive purposes, as the odds ratio for the industry sector was not strongly affected by its exclusion (+0.014 when gender was excluded). The estimated, adjusted odds that a workers' compensation first report of injury or claim would result in awarded benefits was higher, with an odds ratio of 1.334 (CI: (1.069, 1.666), p=0.011) if the security or law enforcement worker was employed in the private sector, compared to workers in the public sector, when adjusting for gender, age, nature of injury, cause of injury, and body part injured. 45-54 year old employees had the largest estimated, adjusted odds (OR = 3.244, CI: (1.957, 5.376), p = <0.001) of financial compensation, when compared to other age groups, after adjusting for industry sector, gender, nature of injury, cause of injury, and body part injured. Gunshots (OR = 3.754, CI: (1.332, 10.577), p = 0.012) and fractures/dislocations (OR = 1.711, CI: (1.219, 2.400), p = 0.002) were at increased adjusted odds of resulting in an award, while contusions (OR = 0.524, CI: (0.367, 0.748), p = <0.001) and lacerations/punctures (OR = 0.955, CI: (0.731, 1.248), p = <0.001) were at a decreased adjusted odds of resulting in an award, in comparison to all other injuries. Injuries that were motor vehicle-related were observed to have the largest estimated, adjusted odds of resulting in an award of all causes of injury (OR = 5.436, CI: (3.198, 8.936),

p = <0.001). Falls and slips, strains, and person in act of crime were other causes of injury observed to be at significantly increased odds of resulting in an award.

Discussion

This study identified that the estimated adjusted odds of an awarded benefit was 1.334 times greater for first reports of injuries and claims in private sector security. The reason behind this observation cannot be explained from the results of this study; however, there were observations that could help future investigations. Injury characteristics (Table 2) among cases in the private sector of this study were observed to consist of a greater proportion of fractures and dislocations, of falls and slips, of injuries to the head, neck and face, and of back injuries. Among public sector cases, there were greater proportions of sprains and strains. These observations indicate that the severity of the injury could be investigated in the future as a potential contributor to the difference observed in the odds of an awarded benefit.

While there are a number of publications regarding injuries among law enforcement, few have focused on injuries sustained under all circumstances using workers' compensation data, and none, to the knowledge of the author, have investigated differences between the public and private sectors. An Illinois study of occupational injury surveillance among law enforcement officers using workers' compensation data is the most recent publication utilizing injury data on law enforcement personnel from workers' compensation.[9] Their study included correctional officers, municipal police, sheriff's officers, and state police in their law enforcement population, and stratified by occupation, rather than industry sector. The Illinois study included 18,892 cases, and reported that the mean age of law

enforcement personnel was ~38 years, with the largest proportion between 31 and 40 years of age. They also reported a high proportion of males (> 75% of cases in all occupational strata), and that motor vehicle-related injuries, falls, and overexertion were the most common causes of injury, in addition to assaults.[9] Information regarding their study population is consistent with the findings of this study. In this study, the mean age of public law enforcement was 37 years, with the large majority of this study's public law enforcement population between the ages of 25-44. 88.1% of the public law enforcement cases were male, and the most common causes of injury were observed to be strains (27%), falls/slips (19%), and motor vehicle-related (15%). These similarities help to contribute to the generalizability of this study to larger populations of law enforcement injuries. Generalizability of this study is further assisted by Kentucky's workers' compensation system, which requires insurance carriers and self-insured employers to report to the Department of Workers Claims any injury that causes an employee to miss only more than one day of work.[11] This allows Kentucky cases to potentially be more representative of all reportable law enforcement injuries, compared with workers' compensation datasets in other states that have more stringent reporting standards.

In this study, it was observed that a greater proportion of cases in the private sector had worked for less than one year at their job, prior to their injury (36.4% compared to 11.9%). Explanations for this observation could include differences in the amount of training received prior to employment, or a greater proportion of short-term employment among security occupations in the private sector, compared to public sector law enforcement occupations. While the explanation behind this observation is beyond the scope of this study, these results do identify a potentially valuable time period to target in

future interventions. Greater proportions of motor vehicle-related injuries, and injuries related to persons in the act of a crime were observed in the public sector. This is not surprising, as this is more consistent with the type of activities performed by public sector law enforcement. A larger percentage of falls and slips in the private sector may be related to the type of activities conducted by security personnel.

Our findings in this study were similar to findings in solid waste collectors; that younger law enforcement personnel had a lower estimated adjusted odds of having a workers' compensation first report of injury or claim result in an award, relative to older law enforcement personnel that were 35 years and older. Potential explanations could be related to employment rates, or could be related to younger employees having differing job responsibilities than older employees. Another possibility could be that younger employees might be less likely to report a work-related injury.

A limitation to this study was a change in the occupation data field in March of 2011. Prior to 2011, first reports of injury and claims utilized standardized occupation codes to report worker occupation. When upgrading to the 3.0 release of claims standards set forth by the International Association of Industrial Accident Boards and Commissions (IAIABC), the occupation data field transitioned from a standard text code to a free form text field. This upgrade in the reporting system could have resulted in undercounting the law enforcement occupation. Underreporting also could have potentially occurred among private sector law enforcement, as a result of hiring practices. Security guards can be hired as independent contractors or temporary workers, which is not covered by workers' compensation, and would exclude them from this dataset.

It is important to note that the differences in the odds ratio that was observed between the age strata in the logistic regression models could mean no real difference. The confidence interval of the odds for each age strata were observed to all overlap, indicating that with 95% confidence, the odds for each age category, beyond those 24 years and under, could potentially be no true difference.

In addition, there are several limitations to occupational injury data obtained through workers' compensation, regarding its accuracy in identifying cause and severity of injury. First reports of injury and claim do not include a diagnosis from a medical professional, utilizes a text field for the location of the injury, and does not include detailed information regarding the severity of the injury. Causes of injury are general, and less reliable in accurately conveying the mechanism of injury (i.e. 'person in act of crime'). Finally, factors affecting whether or not a worker chooses to report an injury can affect the accuracy and validity of utilizing workers' compensation data, and can vary between occupations. Access to medical resources, such as first aid kits or professional services, work place practices, safety precautions taken, and social norms in the workplace could all affect whether or not an employee chooses to report an injury to workers' compensation.

Conclusion

Observations in this study suggest that private sector law enforcement personnel are more likely to have a workers' compensation first report of injury or claim resulting in awarded benefits when compared to those in the public sector. However, additional data regarding the cause and mechanism of injury, the work environment (e.g. amount of training, social norms, etc.), differential reporting, and other contributing factors are necessary to better

understand the variation observed in award outcomes between public and private law enforcement sectors. Understanding these differences could provide insight into better targeting of injury prevention interventions within law enforcement occupations.

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Biographical Sketch

William S. Witt earned a Bachelor of Science degree in Human Nutrition from the University of Kentucky in May of 2014. During his undergraduate education, Mr. Witt conducted academic research in the fields of paleobiology, under Dr. Andrew Deane, and immunology & microbiology, under Dr. Beth Garvy. From August 2014 to the present, Mr. Witt pursued a Master of Public Health degree at the University of Kentucky College of Public Health, with a concentration in epidemiology, for which he is currently a candidate. In August of 2016, Mr. Witt will matriculate at the University of Kentucky College of Medicine, in pursuit of a Doctor of Medicine degree.

Table 1. Demographic characteristics of injuries in the Kentucky security and law enforcement sectors, 2005-2015

Demographic Characteristics	Private Sector Number (%)	Public Sector Number (%)	Chi Square p-value
Gender	n = 899	n = 3478	< 0.001
Male	696 (77.4%)	3066 (88.1%)	
Female	202 (22.5%)	406 (11.7%)	
Missing*	1 (0.1%)	7 (0.2%)	
Age (Years)	n = 899	n = 3478	< 0.001
Mean	43.42 (S.E. = 0.495)	37.16 (S.E.= 0.158)	
≤ 24	98 (10.9%)	184 (5.3%)	
25-34	194 (21.6%)	1315 (37.8%)	
35-44	179 (19.9%)	1277 (36.7%)	
45-54	206 (22.9%)	522 (15.0%)	
55+	221 (24.6%)	179 (5.1%)	
Missing*	1 (0.1%)	1 (0.1%)	
Length of Time on Job	n = 899	n = 3478	< 0.001
< 1 year	327 (36.4%)	413 (11.9%)	
≥ 1 year	415 (46.2%)	2596 (74.6%)	
Missing*	157 (17.5%)	469 (13.5%)	
Occupation Code	n = 899	n = 3478	< 0.001
Guards & Police Except Public Service	808 (89.9%)	34 (1.0%)	
Police & Detectives Public Service	73 (8.1%)	3320 (95.5%)	
Supervisors of Police & Detectives	3 (0.3%)	80 (2.3%)	
All Others	2 (0.2%)	23 (0.6%)	
Missing*	13 (1.4%)	21 (0.6%)	
Industry Description	n = 899	n = 3478	
Agriculture, Forestry, and Fishing	28 (3.1%)	0 (0.0%)	
Mining & Construction	8 (0.9%)	0 (0.0%)	
Manufacturing	28 (3.1%)	0 (0.0%)	
Transportation, Communications, Electric, Gas, and Sanitary Services	26 (2.9%)	0 (0.0%)	
Wholesale Trade	41 (4.6%)	0 (0.0%)	
Finance, Insurance, and Real Estate	16 (1.8%)	0 (0.0%)	
Services	752 (83.6%)	0 (0.0%)	
Public Administration	0 (0.0%)	3478 (100.0%)	

*Excluded from statistical analysis

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Table 2. Injury characteristics in the Kentucky security and law enforcement sectors, 2005-2015

Injury Characteristic	Private sector number (%)	Public sector number (%)	Chi Square *p*-value
Nature of Injury	n = 899	n = 3478	< 0.001
Concussion	9 (1.0%)	36 (1.0%)	
Contusion	134 (14.9%)	429 (12.3%)	
Fracture/dislocation	105 (11.7%)	314 (9.0%)	
Gunshot	1 (0.1%)	23 (0.7%)	
Laceration/puncture	64 (7.1%)	276 (7.9%)	
Sprain/strain	334 (37.2%)	1634 (47.0%)	
All Other	252 (28.0%)	766 (22.0%)	
Cause of Injury	n = 899	n = 3478	< 0.001
Absorption, ingestion or inhalation	19 (2.1%)	119 (3.4%)	
Cut, puncture, or scrape	12 (1.3%)	86 (2.5%)	
Fall/slip	325 (36.2%)	664 (19.1%)	
Motor vehicle-related	96 (10.7%)	550 (15.8%)	
Person in act of crime	38 (4.2%)	274 (7.9%)	
Strain	188 (20.9%)	944 (27.1%)	
Struck by animal or object	89 (9.9%)	426 (12.2%)	
Struck by fellow worker, patient or other person	48 (5.3%)	120 (3.5%)	
All other	84 (9.3%)	295 (8.5%)	
Body Part Injured	n = 899	n = 3478	< 0.001
Head and neck	52 (5.8%)	158 (4.5%)	
Face, eyes, mouth, and ears	47 (5.2%)	133 (3.8%)	
Upper extremity	186 (20.8%)	1002 (28.8%)	
Back	105 (11.7%)	265 (7.6%)	
Chest and abdomen, including groin	72 (8.0%)	280 (8.0%)	
Pelvis and upper leg	23 (2.6%)	91 (2.6%)	
Ankle and foot	81 (9.0%)	291 (8.4%)	
Knee and lower leg	169 (18.8%)	663 (19.1%)	
Multiple parts, whole body, or body systems	151 (16.8%)	543 (15.6%)	
No physical injury	7 (0.8%)	40 (1.2%)	
Insufficient information	6 (0.7%)	12 (0.3%)	
Length of Time Off After Injury	n = 899	n = 3478	0.001
No lost time	23 (2.6%)	85 (2.4%)	
< 14 days	207 (23.0%)	1033 (29.7%)	
≥ 14 days and < 30 days	32 (3.6%)	82 (2.4%)	
≥ 30 days	52 (5.8%)	153 (4.4%)	
Missing values	585 (65.0%)	2125 (61.1%)	

Table 3. Disposition status of injuries in the Kentucky security and law enforcement sectors, 2005-2015

First report of injury and claim disposition and awards	Private sector number (%)	Public sector number (%)	Chi Square *p*-value
Disposition	n = 899	n = 3478	< 0.001
None	722 (80.3%)	2920 (84.0%)	
Lump sum agreement on first report	80 (8.9%)	270 (7.8%)	
Agreement approved by administrative law judge	67 (7.5%)	146 (4.2%)	
Agreement approved on first report	4 (0.4%)	58 (1.7%)	
Award (by administrative law judge)	14 (1.6%)	21 (0.6%)	
Other	12 (1.3%)	63 (1.8%)	

Table 4. Univariate logistic regression predicting the probability that a Kentucky law enforcement workers' compensation first report of injury will result in awarded benefits

Variable	Odds Ratio	Confidence Interval	Significance
Sector			
Public	Reference		
Private	1.356	(1.118, 1.645)	0.002
Gender			
Male	Reference		
Female	1.205	(0.959, 1.514)	0.110
Age			
≤ 24	Reference		
25-34	1.837	(1.137, 2.970)	0.013
35-44	2.610	(1.622, 4.199)	< 0.001
45-54	3.349	(2.052, 5.464)	< 0.001
55+	3.412	(2.034, 5.722)	< 0.001
Time on job			
< 1 year	Reference		
≥ 1 year	1.171	(0.922, 1.488)	0.195
Missing	2.042	(1.533, 2.719)	< 0.001
Season			
Fall	Reference		
Summer	0.885	(0.700, 1.119)	0.307
Spring	0.879	(0.700, 1.105)	0.270
Winter	0.990	(0.785, 1.250)	0.935
Worker Residence			
Appalachia	Reference		
Non-appalachia	0.861	(0.716, 1.036)	0.113
Out of state	0.774	(0.508, 1.180)	0.234
Worker Injury Region			
Appalachia	Reference		
Non-appalachia	0.905	(0.735, 1.114)	0.348
Out of state	1.632	(0.781, 3.410)	0.192
Unknown	1.124	(0.240, 5.263)	0.882
Nature of injury			
All Other	Reference		
Concussion	1.717	(0.807, 3.654)	0.161
Contusion	0.764	(0.549, 1.063)	0.111
Fracture/dislocation	2.190	(1.639, 2.926)	< 0.001
Gunshot	2.357	(0.912, 6.086)	0.077
Laceration/puncture	0.225	(0.120, 0.422)	< 0.001
Sprain/strain	1.489	(1.198, 1.851)	< 0.001

Cause of injury

All other	Reference		
Absorption, ingestion or inhalation	0.273	(0.063, 1.185)	0.083
Cut, puncture, or scrape	0.954	(0.349, 2.610)	0.927
Fall/slip	4.186	(2.596, 6.749)	< 0.001
Motor vehicle-related	5.296	(3.254, 8.620)	< 0.001
Person in act of crime	3.55	(2.066, 6.101)	< 0.001
Strain	4.009	(2.493, 6.448)	< 0.001
Struck by animal or object	1.698	(0.983, 2.932)	0.058
Struck or injured by fellow worker, patient or other person	1.011	(0.450, 2.270)	0.979

Body part injured

Ankle and foot	Reference		
Back	2.543	(1.654, 3.911)	< 0.001
Chest, abdomen, and groin	0.620	(0.354, 1.088)	0.096
Face, eyes, mouth and ears	0.573	(0.277, 1.186)	0.133
Head and neck	1.826	(1.097, 3.040)	0.021
Knee and lower leg	2.597	(1.765, 3.821)	< 0.001
Multiple parts or body systems	1.928	(1.290, 2.882)	0.001
Pelvis and upper leg	1.354	(0.700, 2.616)	0.368
Upper extremity	1.860	(1.270, 2.723)	0.001

*Award outcome only included cases where a decision was reached. Cases awaiting decision (n=66) were excluded. Cases with missing values for Gender or Age (n=10) were also excluded.

Table 5. Multivariate logistic regression predicting the probability that a Kentucky law enforcement workers' compensation first report of injury will result in awarded benefits

Variable	Adj. Odds Ratio	Confidence Interval	Significance
Sector			
Public	Reference		
Private	1.334	(1.069, 1.666)	0.011
Gender			
Male	Reference		
Female	1.161	(0.911, 1.479)	0.227
Age			
≤ 24	Reference		
25-34	1.902	(1.159, 3.122)	0.011
35-44	2.663	(1.627, 4.359)	< 0.001
45-54	3.244	(1.957, 5.376)	< 0.001
55+	2.942	(1.721, 5.028)	< 0.001
Nature of injury			
All Other	Reference		
Concussion	1.099	(0.468, 2.579)	0.829
Contusion	0.524	(0.367, 0.748)	< 0.001
Fracture/dislocation	1.711	(1.219, 2.400)	0.002
Gunshot	3.754	(1.332, 10.577)	0.012
Laceration/puncture	0.220	(0.109, 0.446)	< 0.001
Sprain/strain	0.955	(0.731, 1.248)	0.737
Cause of injury			
All other	Reference		
Absorption, ingestion or inhalation	0.269	(0.061, 1.177)	0.081
Cut, puncture, or scrape	2.315	(0.749, 7.156)	0.145
Fall/slip	3.022	(1.817, 5.028)	< 0.001
Motor vehicle-related	5.346	(3.198, 8.936)	< 0.001
Person in act of crime	3.074	(1.743, 5.421)	< 0.001
Strain	3.259	(1.948, 5.452)	< 0.001
Struck by animal or object	1.824	(1.031, 3.227)	0.039
Struck or injured by fellow worker, patient or other person	0.991	(0.433, 2.272)	0.983
Body part injured			
Ankle and foot	Reference		
Back	2.389	(1.525, 3.743)	< 0.001
Chest, abdomen, and groin	0.794	(0.443, 1.425)	0.440
Face, eyes, mouth and ears	1.330	(0.615, 2.878)	0.469
Head and neck	1.921	(1.073, 3.440)	0.028
Knee and lower leg	3.099	(2.076, 4.627)	< 0.001
Multiple parts or body systems	2.290	(1.462, 3.589)	< 0.001

Pelvis and upper leg	1.754	(0.884, 3.481)	0.108
Upper extremity	2.485	(1.671, 3.696)	< 0.001
Missing	0.000	---	0.997

*Award outcome only included cases where a decision was reached. Cases awaiting decision (n=66) were excluded. Cases with missing values for Gender or Age (n=4) were also excluded.