Are Correctional Facility Workers in Illinois Receiving Excessive Compensation

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THESIS

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LIST OF ABBREVIATIONS

AWW	Average Weekly Wage
BLS	Bureau of Labor Statistics
CDC	Centers for Disease Control and Prevention
CFW	Correctional Facility Workers
DAFW	Days Away From Work
OSHA	Occupational Safety and Health Administration
FERS	Federal Employees Retirement System
IWCC	Illinois Workers' Compensation Commission
MMI	Maximum Medical Improvement
NIOSH	National Institute for Occupational Safety and Health
Non-CFW	Non Correctional Facility Workers
NORA	National Occupational Research Agenda
PPD	Permanent Partial Disability
PTD	Permanent Total Disability
SOII	Survey for Occupational Injury and Illnesses
TTD	Temporary Total Disability
TWC	Total Workers' Compensation

I. INTRODUCTION

A. Background

In 2010, a story broke in the Belleville Democrat that uncovered an extremely high workers' compensation payout for carpal tunnel syndrome and cubital tunnel syndrome among correctional officers at the Menard Correctional Center, a high security prison in Southwestern Illinois (Hundsdorfer and Pawlaczyk, 2010). These correctional officers are employees of the State, and it was inferred that the purported exorbitant payment was indicative of a workers' compensation system out of control, contributing to the State's significant budget deficit. Though a careful, evidence based analysis was never presented to the public, there was a flurry of legislation changing workers' compensation laws and arbitrators at the Illinois Workers' Compensation Commission were fired. To date, there is no published report on numbers, rates, or trends of cumulative trauma disorders among correctional officers, nor has the payment for these cases been compared to permanent partial disability payments for workers' compensation claims among the general Illinois workforce.

B. Objectives

The overall goal of this study is to evaluate workers' compensation claims among correctional officers in Illinois for the period 2002 to 2012. Specific objectives are: 1) to determine the number, rates, and trends of occupational injuries and illnesses among correctional facility workers (CFWs) compared to a reference group of non-correctional facility workers (non-CFWs) during the same period; and 2) to compare workers' compensation cost for correctional officers versus the reference group.

II. LITERATURE REVIEW

A. Occupational Health Surveillance

Occupational surveillance serves to identify areas in need of research or preventive measures. The Centers for Disease Control and Prevention (CDC) uses occupational health surveillance to track occupational injuries, illnesses, hazards, and exposures. Surveillance among workers is the ongoing, systematic collection, analysis, and interpretation of data with the purpose of improving health and safety in the workplace as well as monitoring trends and progress over time (Centers for Disease Control and Prevention, 2012).

Guidelines for minimum and comprehensive state-based public health activities in occupational safety and health have been published by the CDC. These guidelines have strategies that can help states design or enhance their occupational health programs (Department of Health and Human Services, 2008).

Surveillance programs help document progress in reducing the burden of work related diseases and injuries (Centers for Disease Control and Prevention, 2012). Surveillance serves as a tool to detect and eliminate the underlying causes of the studied outcome, making it a preventive approach (Occupational Safety and Health Administration, 2015). A successful surveillance program provides guidance for developing and implementing strategies that can contribute to the health and well-being of workers.

Surveillance includes individual based activities which are referred to as worker screening or monitoring. The purpose of this type of surveillance, also termed "screening," is to detect early disease in individuals, after which an intervention can be implemented to prevent exacerbation of symptoms (Centers for Disease Control and Prevention, 2012). There is also evaluation of occupational surveillance systems that analyze trends focused on group results (Baker et al., 1989)

Medical surveillance utilizes health information to analyze any trends occurring in the workplace that require targeted prevention. Surveillance programs use screening results from workers being evaluated to find abnormal trends in health status. Single workers can also be placed in a surveillance program to track their health status over time (Occupational Safety and Health Administration, 2015).

B. Correctional Officers and Jailers: A Job Description

Correctional Officers are the largest part of the workforce in the Federal Bureau of Prisons (Centers for Disease Control and Prevention, 2014). Based on employment projections, the Bureau of Labor Statistics (BLS) estimated that there were 469,500 jobs nationwide as correctional officers with a median pay of $38,970 per year (Bureau of Labor Statistics, 2014b). Through a process observation from facilities visits and interviews, the Illinois Department of Corrections determined there is a high rate of staff turnover (Illinois Department of Corrections, 2010). By working full time in a prison, employees qualify for "hazardous duty" law enforcement retirement provisions. With 20 years of service, employees are eligible to retire at age 50 or with 25 years of service; employees may retire at any age under the Federal Employees Retirement System (FERS) (Federal Bureau of Prisons, 2015d).

Jails are short term facilities and hold inmates sentenced to a term of less than one year. Jails are operated locally. Prisons are long term facilities and hold felons and inmates sentenced to more than one year. Federal prisons are run by the Federal Bureau of Prisons. Prisons can be operated by the state or federal government depending on the state (Bureau of Justice Statistics, 2015). Prisons are operated at five security levels based on the offender charges. Security levels determine the need for and presence of external patrols, towers, security barriers, detection of devices, type of housing, internal security features, and staff-to-inmate ratio. The different security levels are: minimum, low, medium, high, complex, and administrative (Federal Bureau of Prisons, 2015a). A number of prisons are operated by the private sector; these are called Contract Prisons. Most of the inmates held in contract prisons are sentenced criminal aliens who may be deported upon completion of their sentence (Federal Bureau of Prisons, 2015b). The supervision of persons arrested for, convicted of, or sentenced for criminal offenses is referred to as corrections (Bureau of Justice Statistics, 2015).

Based on the Federal Bureau of Prisons, job titles focused on inmate custody and programming are: a) correctional officer, enforces regulations inside facility; b) case manager, analyzes program needs for inmates; c) chaplain, provides spiritual and religious guidance for inmates; d) clinical psychologist, administers psychological assessments; e) drug treatment specialist, provides education and counseling for eligible inmates; f) recreation specialist, organizes and leads recreational activities for inmates; g) safety compliance specialist, administers application of safety and occupational health inside the facility; h) teacher, imparts knowledge to inmates; and i) training instructor, administers the vocational training program for inmates (Federal Bureau of Prisons, 2015c).

Correctional officers perform a wide range of duties and enforce rules and regulations inside the correctional institution (Centers for Disease Control and Prevention, 2014). Correctional officers search inmate cells for unsanitary conditions, contraband, weapons, signs of security breach, and drugs, and they settle disputes between inmates. Correctional officers are in charge of inspecting inmate mail for contraband. In some cases correctional officers restrain inmates in handcuffs and leg irons to escort them safely to and from cells, and to courtrooms, medical facilities and other destinations. Correctional officers schedule work assignments, rehabilitation sessions, counseling, and educational opportunities for inmates. Correctional officers are required to contribute to the health and welfare of inmates and the promotion of good public relations. Correctional officers are in continuous contact with inmates as they are in charge of supervising and maintaining security of the institution. In certain circumstances officers are authorized to carry firearms and use physical force, including deadly force, to maintain control of inmates (Bureau of Prisons, 2015). At the end of each shift, correctional officers write reports and fill out logs containing inmate behavior information that might be helpful for the next shift of workers (Bureau of Labor Statistics, 2014b). Security must be provided 24 hours a day; therefore, officers work all hours of the day and night, weekends and holidays (Bureau of Prisons, 2015).

In order to have a successful career, correctional officers must have the ability to meet and deal with people of different backgrounds and behavioral patterns; be persuasive in selling and influencing ideas; lead, supervise, and instruct others; have a sympathetic attitude towards the welfare of others; be able to come up with practical solutions to problems; act quickly, particularly under stress; be self-confident; and remain calm during emergency situations (Bureau of Prisons, 2015).

New correctional officers (cadets) in Illinois are required to complete a 240 hour training curriculum. The Pre-Service Security Training consists of Professionalism, Fire Arms, Control Tactics, Use and Application of Restraints, Report Writing, Inmate Sexual Assault Prevention and Intervention, along with practical exercises. In addition, cadets are encouraged to be physically fit upon arrival to the training facility. Upon successful completion of the training, cadets participate in a formal ceremony (Illinois Department of Corrections, 2015).

Illinois is one of 17 states that operate prisons over capacity (Wilson, 2014); in some cases gyms are turned into dorms where inmates share the same space while sleeping in bunk beds. Overcrowded prisons lead to higher rates of violence (United States Government Accountability Office, 2012). This presents a hazard for correction officers as there are not enough officers to watch and maintain control over inmates (Yeagle, 2010).

Correctional institutions have a stressful and dangerous workplace environment and officers experience high job demands (Bureau of Labor Statistics, 2014b). As a result, correctional officers experience high rates of job stress and burnout (Finney et al., 2013). One of the challenges in identifying and addressing the psychosocial aspects of work, is that there is no specific biomarker or physical condition which determines the level of stress a worker might be experiencing. It is difficult to know when a person is experiencing stress because of work or if the stress is related to his or her own lifestyle. Having psychosocial stressors in the workplace can results in adverse health outcomes for correctional officers.

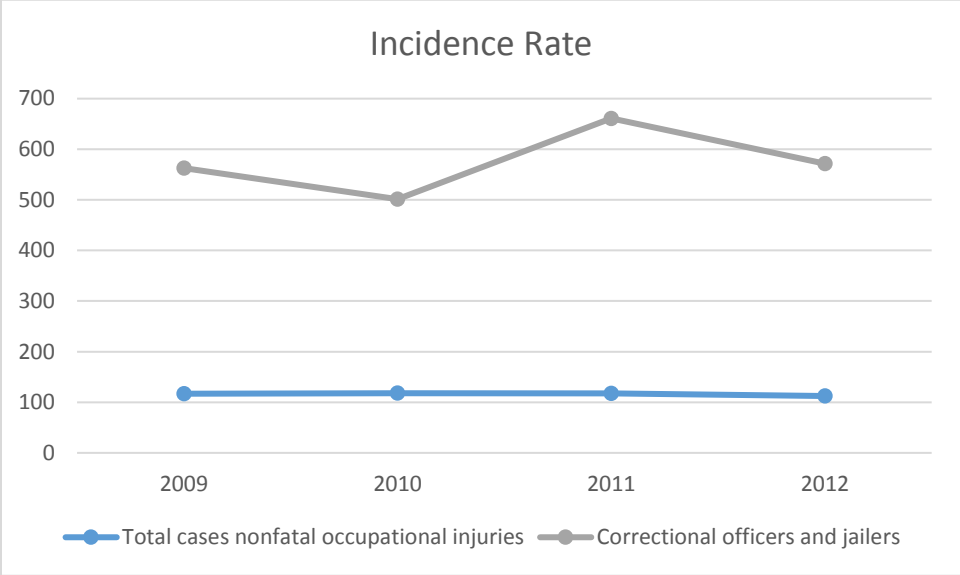
C. Correctional Officers and Jailers: Injuries and Hazards

Correctional officers have one of the highest rates of nonfatal, on-the-job injuries. According to the BLS, in 2012 correctional officers and jailers were among the seven occupations with nonfatal occupational injuries and illnesses involving days away from work (DAFW) that had incident rates greater than 375 cases per 10,000 full time workers. Correctional officers and jailers had a rate of 459.1 per 10,000 full time workers compared to the rate among all occupations of 112.4 per 10,000 full time workers, overall (Bureau of Labor Statistics, 2013).

The scope of correctional officers' work makes them face a range of risks; violence and other injuries by person, fires and explosion, slips, trips, falls, contact with objects and equipment, overexertion and bodily reaction. Bodily reaction and overexertion are the result of a single incident of free bodily motion which imposes stress or strain on some part of the body or from excessive physical effort (Centers for Disease Control and Prevention, 2010). These events/exposures result in traumatic injuries and disorders, and disorders of whole body systems (Centers for Disease Control and Prevention, 2013). Correctional facilities present a unique environment where workers are exposed to demanding and hazardous working conditions, and are subjected to physical and mental fatigue, risk of infectious diseases, and psychosocial stressors. Figure 1 shows the disproportionate rate of nonfatal occupational injuries and illness for correctional officers and jailers compared to all other occupations.

When applying for a correctional officer position with the Bureau of Prisons, it is required that the incumbent is free from defects or diseases that may constitute an employment hazard to themselves or others. This requirement is based on the duties of the position as it involves unusual mental and nervous pressure, arduous physical exertion involving

Figure 1. Incidence rates for nonfatal occupational injury and illness involving days away from work per 10,000 full time workers 2009-2012 (BLS)



prolonged walking and standing, restraining of inmates in emergencies, and participating in escape hunts (Bureau of Prisons, 2015).

1. Nature of Injury or Illness

"Nature of injury or illness" identifies the principal physical characteristic of the work related injury or illness. (Bureau of Labor Statistics, 2012a). According to the BLS, from 2009 through 2012 the highest work related nature of injury or illness rates for correctional officers and jailers were due to sprains, strains and tears (Table I). The overall rate has been steady over the four year period. The Bureau of Labor Statistic categorized the second highest rate as "all other natures" from 2009 through 2011. These are codes that do not fit in any other category. The lack of specific information on the nature of injury or illness makes it almost impossible to design interventions that could be effective in preventing workplace injuries and illnesses.

In order to code the case characteristics of injuries, illness, and fatal injuries, BLS uses the Occupational Injury and Illness Classification System (OIICS) Manual. This manual provides rules, code titles and code descriptions for Nature of Injury and Illness, Part of Body Affected, Source of Injury or Illness, Event or Exposure, and Secondary Source of Injury or Illness (Bureau of Labor Statistics, 2014a).

Table I. INCIDENT RATES FOR NONFATAL OCCUPATIONAL INJURY AND ILLNESS INVOLVING DAYS AWAY FROM WORK PER 10,000 FULL TIME WORKERS. NATURE OF INJURY OR ILLNESS 2009-2012

Correctional Officers and Jailers	2009	2010	2011	2012
Sprains, Strains, tears	183.4	148.4	197.6	172.9
Soreness, pain, back pain and pain, except back	56	56.1	100.8	86.3
Bruises, contusions	67.6	47.6	54.9	54.7
Multiple traumatic injuries and disorders	25.3	21.9	29.6	26
Cuts, lacerations, punctures	10.1	9.1	14.8	24.2
Fractures	15.6	11.1	19	17.3
Carpal tunnel syndrome	1.1	0.7	1.5	1.3
Chemical burns	0.9	0.9	0.8	0.5
Heat burns	5.8	2		0.4
Tendonitis	0.7		0.4	
Amputations	0.4	0.9		
All other natures	78.7	84.6	124.2	75.2

2. Event or Exposure of an Injury or Illness

The event or exposure of an injury or illness describes the manner in which it was produced or inflicted (Bureau of Labor Statistics, 2012c). BLS data show that the highest rate of event or exposure leading to injury or illness for correctional officers and jailers is violence and

other injuries by persons or animal, assaults and violent acts (Table II). Researching how these incidents are occurring would be important to creating an intervention to protect correctional facility workers from being assaulted.

In 2010 the BLS reported a rate of 42 per 10,000 full time workers for correctional officers and jailers in the category of overexertion (Bureau of Labor Statistics, 2011). There was a significant increase in 2011 where the rate was 119.6 per 10,000 full time workers (Bureau of Labor Statistics, 2012b). This is more than double from the previous year and it was steady for 2012 with a rate of 110.1 (Bureau of Labor Statistics, 2013). The increase might be attributable to a change in the coding of injuries and illnesses, since version 2.0 of the Occupational Injury and Illness Classification Manual was completed in September 2010 and added, deleted, or modified numerous categories (Bureau of Labor Statistics, 2012c)

Table II. INCIDENT RATES FOR NONFATAL OCCUPATIONAL INJURY AND ILLNESS INVOLVING DAYS AWAY FROM WORK PER 10,000 FULL TIME WORKERS. EVENTS OR EXPOSURE LEADING TO INJURY OR ILLNESS 2009-2012

Correctional Officers and Jailers	2009	2010	2011	2012
Violence and other injuries by persons or animal, assaults and violent acts	113.5	94	253.8	168.5
Overexertion and bodily reaction	44.9	42	119.6	110.1
Contact with objects	67.5	55.5	49.7	57.1
Fall on same level	76.9	55.4	62	54.4
Slips or trips without fall	30.2	15	19.9	22.4
Fall to lower level	26.8	22.3	13.8	17.8
Exposure to harmful substances or environments	19.0	22.1	13	17.1
Transportation incidents	4.4	8.2	4.1	5.9
Fires and explosions	0.6	0.7		0.7
All other events	58.5	65.2	5.4	3.5

D. Interventions

In 2009 the annual Survey of Occupational Injuries and Illnesses (SOII) data indicated that there was an elevated risk for injuries due to assaults and violent acts for correction employees (Centers for Disease Control and Prevention, 2013). The National Occupational Research Agenda (NORA) for occupational safety and health in the United States has identified the need for an intervention in this sector. A number of goals have been set to achieve a better understanding of the workplace and apply this knowledge to reduce the number of injuries sustained by employees of correctional facilities.

E. Workers' Compensation in Illinois

Under the Illinois Workers' Compensation Act, every injury or illness that happens in whole or in part in the workplace is eligible for workers' compensation benefits regardless of fault and employers are responsible for Workers' Compensation insurance (Illinois Workers Compensation Commission, 2013b). According to the IWCC, over 200,000 work related incidents occur every year, and most of the cases do not require days away from work. Workers' compensation claims are filed for about one quarter of the work related injuries (Illinois Workers Compensation Commission, 2013a).

Employers are required to report incidents that go beyond first aid attention. Employees must notify the employer no later than 45 days after an incident occurs to avoid delays in payment of benefits. For occupational diseases, employees must notify the employer as soon as they become aware of the condition. As a separate submission, employees can file a claim if they are either not receiving payment benefits or if they want to ensure that they continue receiving benefits to which they are entitled. The claim must be filed within three years after an injury,

death, or disablement from an occupational disease has occurred. Some cases involving specific diseases or deaths have different statutes of limitation (Illinois Workers Compensation Commission, 2013b).

The Workers' Compensation Commission offers different benefits depending on the type and severity of the injury or illness. Temporary Total Disability (TTD) Benefits are received in two instances: when the worker is unable to return to the workplace per doctor recommendation; or when the worker is able to perform light duty job but the employer is unable to accommodate the restrictions. This benefit consists of 66% of the workers average weekly wage (AWW) and is subject to minimum and maximum limits. (Illinois Workers Compensation Commission, 2013b). The AWW is based on the pre-tax wage during the 52 weeks before the date of injury or illness. A series of factors including, employee had more than one job at time of injury, employee worked less than 52 weeks, or the person was employed on a casual basis, can affect the calculation of the AWW to receive benefits (Illinois Workers Compensation Commission, 2013b).

Temporary Total Disability (TTD) benefits are received for the period of time that the worker returns to light duty or part-time due to the occupational injury or illness. The worker receives 66% of the difference between the average amount of the salary earned before the injury or illness and the gross (if injury or illness occurred before June 28, 2011 the net amount is used to calculate benefits) amount earned during working on light-duty or part time (Illinois Workers Compensation Commission, 2013b).

Workers are able to receive permanent partial disability (PPD) benefits when there is a complete or partial loss of a part of the body; there is a complete or partial loss of use of a part of the body; or partial loss of use of the body as a whole. This benefit can only be awarded after the

worker reaches maximum medical improvement (MMI). PPD can only be received when a permanent physical loss occurs due to injury or illness in the workplace (Illinois Workers Compensation Commission, 2013b).

Permanent Total Disability (PTD) Benefits are awarded after the injury or illness results in permanent and complete loss of two parts of the body or the worker is not able to perform any kind of work. The worker receives 66% of the average weekly wage before the injury or illness. The workers' compensation law establishes minimum and maximum wage limits.

F. Menard Correctional Facility and Workers' Compensation Claims

The Illinois Department of Corrections operates 25 adult correctional centers (Illinois Department of Corrections, 2012). Starting in 2008 and during a three year period, an unprecedented amount of workers' compensation claims were filed for carpal tunnel syndrome and cubital tunnel syndrome at the Menard Correctional Center. The majority of the files were claimed by correctional officers (Hedman et al., 2012). The cause of injury was attributed to the use of heavy cell locking mechanisms (Pawlaczyk and Hundsdorfer, 2011). By 2011 more than 500 claims had been filed with the Illinois Workers' Compensation Commission and the Menard Correctional Facility underwent investigation by the Illinois Department of Insurance (Pawlaczyk and Hundsdorfer, 2011). Repetitive trauma claims were reviewed for accuracy since nearly $10 million in workers' compensation awards was paid to 389 employees (Hundsdorfer and Pawlaczyk, 2011).

In 2011 the Legislature made changes to the Illinois Workers' Compensation Act by limiting compensation for carpal tunnel syndrome and requiring that the workers be evaluated by specific doctors mandated by the employer for assessment of injuries or illnesses suffered in the

workplace. If the carpal tunnel syndrome was deemed to be due to repetitive or cumulative trauma after June 28, 2011 the Workers' Compensation Act required that PPD should not exceed 15% loss of use of the hand. There is an exception of this regulation where PPD will be 30% when there is clear and convincing evidence of the injury (Illinois General Assembly, 2014).

G. Carpal Tunnel Syndrome and Cubital Tunnel Syndrome

Inflammation of tendon sheaths can restrict movement and irritate the median nerve which innervates the palm of the hand and the thumb, forefinger, middle finger, and radial side of the ring finger. Chronic pain, numbness and tingling are associated with this condition and diagnosed as carpal tunnel syndrome (Martini et al., 2008). Several occupational factors including forceful and repetitive motions, awkward postures, mechanical stress at the base of the palm, and vibration have been associated with carpal tunnel syndrome (Silverstein et al., 1987). Carpal tunnel syndrome is one of the most costly upper extremity disorders in the working population (Evanoff et al., 2012).

Workers who suffered from carpal tunnel syndrome took a median of 30 or more days to recuperate before returning to work (Bureau of Labor Statistics, 2013). A study performed by Dale et al. concluded that physical examination tests were poor predictors of carpal tunnel syndrome in a general working population (Dale et al., 2011). Nerve conduction studies and electromyography was considered the gold standard for diagnosis in the past. However, more recent studies have called this into question. Carpal tunnel syndrome is recognized as a multi-factorial disease which leads to great gaps in knowledge. As a consequence, there is limited knowledge on treatment and prevention (Evanoff et al., 2012).

Compression of the ulnar nerve as it crosses through a groove in the elbow and down into the ring and pinky fingers of the hand is described as cubital tunnel syndrome (Hedman et al., 2012). Trehan et al. suggests that a detailed history and physical examination are required for the diagnosis of cubital tunnel syndrome. Symptoms include intermittent paresthesia, numbness and tingling in the small finger and ulnar half of the ring finger (Trehan et al., 2012).

An assessment was conducted by faculty of the University of Illinois at Chicago at the Menard Correctional Center after the high number of carpal and cubital tunnel claims were filed from 2008 through 2010. The purpose of the assessment was to review a sample of the workers' compensation claims filed within that period as well as to conduct an ergonomic evaluation for the correctional officer job tasks. The job tasks related to upper extremity injury or illness performed by correctional officers were: percussing a steel bar over the cell bars (done one or two times a day); opening and closing individual cells; cranking open multiple cells; installing and removing steel metal slide boxes; hand cuffing and escorting inmates (Hedman et al., 2012). These activities, that entail force and repetitive use of the upper extremities, could increase the risk for carpal or cubital tunnel syndrome. However, the walk-through investigation was not designed to provide evidence for a causal relationship in individual cases.

III. METHODS

A. Data Source

The Illinois Workers' Compensation Commission operates the administrative court system for workers' compensation cases in Illinois. Unlike monopolistic states in which there is only a single insurance carrier that is managed by the State, the IWCC court system only handles disputed claims in which the employee and employer are unable to resolve compensation issues. All disputed claims are maintained in a database. Undisputed claims, in particular the initial medical expenses that are not litigated through IWCC do not appear in the dataset. The dataset includes data regarding an employer and employee demographics (age, gender, marital status, and number of dependents), cause and type of injury or illness, level of temporary and permanent disability, and details on the compensation costs associated with the injury.

Claims filed in the Illinois Workers' Compensation Commission from 1982 through 2012 were extracted for this research. A sample of non-correctional officers was extracted to serve as a reference group. This sample had the same number of non-correctional officers as correctional officers for each year and was randomly selected in each year of data.

B. Case Identification

The database does not include industry or occupation codes, but does include the employer name. CFW cases were identified using the following keywords: jail, prison, correctional, juvenile, detention, probation, corr, and pris, detent, juv. In addition, we filtered by prison names listed on State and Federal prison websites. We also included variations of these search terms to account for misspellings or abbreviations. The final list of employer names was

manually screened to confirm that the study participant was employed by a prison/jail. Anyone who worked in a correctional facility in Illinois and filed a claim with the IWCC is part of the CFW database. This includes employees that are part of inmate custody and programs, health services, operational readiness, support and administration (Federal Bureau of Prisons, 2015c). The cases used for the final model were the ones that had reached a final decision regarding monetary compensation, temporary total disability or permanent partial disability.

Because there were substantial changes over time in levels of compensation, the staff within the courts, workers' compensation laws in Illinois and inflation, comparison cases were selected using a frequency matching design to randomly select an equal number of non-CFW cases to CFW cases within each filing year using a random sampling procedure in SAS (PROC SURVEYSELECT).

C. Outcome Variables

Most of the claims filed with the IWCC are resolved through a settlement. It takes about two years for a settlement to be approved after it has been filed. When a case is settled, a worker's rights for future medical benefits or monetary compensation are terminated (Illinois Workers Compensation Commission, 2013b). Total workers' compensation (TWC) is the amount of money a worker receives after a settlement has been reached between a worker and employer.

Permanent Partial Disability (PPD) compensation is received by workers who experience a permanent impairment. It is calculated based on the AWW, number of weeks worker was not able to return to work, and percentage of loss based on IWCC schedule

Temporary Total Disability (TTD) is the compensation received during the number of weeks away from the job a worker is awarded while recovering. This benefit is based on the

AWW of the worker and it is subject to minimum and maximum limits (Illinois Workers Compensation Commission, 2013b).

D. Statistical Analysis

Numbers, rates, and trends of injury among CFWs and the reference group were described and compared using descriptive statistics. Average weekly wage and total workers' compensation values were adjusted for 2012 inflation values using the BLS CPIU. IWCC claims include all CFW workers, including administrative and maintenance staff.

Median regression analysis was used to compare injuries, total monetary workers' compensation (TWC), permanent partial disability (PPD) percent, and number of weeks away from work for temporary total disability (TTD) between the two groups. The total workers' monetary compensation and wages were adjusted for inflation (2012). Covariates used to adjust the models were age at time of filing, gender (male), marital status (married), number of dependents, average weekly wage adjusted to 2012 inflation, use of attorney on the part of the worker, temporary total disability, permanent partial disability and upper extremities injuries. The inclusion of upper extremities in the model was determined by the fact that this was the most common body part injured.

IV. RESULTS

A. Demographics

Of the total of 2,802 correctional facility workers (CFW) who filed a claim with the Illinois Workers' Compensation Commission (IWCC), the majority were men (n=1,939; 70%) with a mean age of 42 $\pm$ 9 years. Table III describes the demographic characteristics of CFWs and non-CFWs. The CFW median weekly wage was significantly different from the non-CFW group ($703 vs $618; $p<0.05$). A small proportion of CFWs filed a claim after age 55 years (n=253, 9%), this low number might be associated with the fact that by working full time in a prison, workers qualify for "hazardous duty" law enforcement retirement provisions, and the ability to retire after 20 years of service. More than half of CFWs were married (n=1818, 65%). Almost half of CFWs had zero dependents (n=1219; 44%), or between one and two dependents (n=1237, 44%).

Almost all the claims in both groups resulted in workers' compensation (n=2005; 81% vs. n=1996; 84%). Median days from accident to filing was less in CFWs (96 vs. 148). Median days from accident to decision was almost the same in both groups (621 vs. 630). Median days from filing to final decision was very similar (442 vs. 405). Even though CFWs file the claims sooner than non-CFWs, the Commission takes the same amount of time to reach a decision.

B. Injured Body Parts

Distribution of injuries by body part is shown in Table IV. It is nearly identical in both CFW and non-CFW groups. Half of the CFW claims were associated with either upper extremity injuries (n=930; 33%) or lower extremity injuries (n=596; 21%).

Table III. DEMOGRAPHIC CHARACTERISTICS AND CLAIM INFORMATION OF CFW AND NON-CFW. CLAIMS FILED WITH THE IWCC, 2002-2012

	CFW (N=2,997)	non-CFW [a] (N=2,950)
Gender		
Male	2018 (72%)	1828 (66%)
Female	783 (28%)	929 (34%)
Unspecified	1 (0%)	3 (0%)
Mean Age (SD)	42 (SD 9)	44 (SD 12)
Under 18 years	10 (0%)	17 (0%)
18-24 years	30 (1%)	149 (5%)
25-34 years	555 (20%)	489 (18%)
35-44 years	1079 (39%)	735 (27%)
45-54 years	860 (31%)	863 (31%)
55-64 years	253 (9%)	432 (16%)
65 years and over	15 (0%)	75 (3%)
Marital Status		
Married	1818 (65%)	1533 (56%)
Single	963 (34%)	1188 (43%)
Unspecified	21 (1%)	34 (1%)
Divorced/Widowed	0 (0%)	5 (0%)
Number of Dependents		
0	1219 (44%)	1595 (58%)
1	620 (22%)	445 (16%)
2	617 (22%)	393 (14%)
3	230 (8%)	191 (7%)
4 and up	116 (4%)	136 (5%)

[a] Non-CFW – stratified random sample from all industries by filing year for claims.

The highest median payout for Total Workers' Compensation (TWC) was awarded to workers who had an upper extremity injury ($ 21,858). The affected body part and the outcome of the injury are associated with the final payout depending on how the worker is able to perform his/her normal tasks after returning to work, and if they are able to return to work. Median Temporary Total Disability (TTD) for upper extremity injuries was 2.3 weeks of lost time from

work and the median Permanent Partial Disability (PPD) was 24% impairment of the person as a whole, which is used to calculate the payout at the time of settlement of the claim. TTD is higher for all injured body parts in the CFW group, except in the Multiple Body Parts/Unspecified and Systemic categories.

C. Number of Claims and Payouts

Figure 2 shows an increase from 2006 to 2007 in the number of claims filed by CFWs. It also shows that the rate of claims per 100 employees tripled from 2006 to 2007. Both trends start to decline from 2010 to 2011. The number of workers was consistent across the 11 years. The Menard Correctional Center had the same trend. Figure 3 shows the increase in number of claims filed in 2007 and a decline in 2010.

After stratifying by year of filing, upper extremity and body parts, there is an increasing trend from 2006 to 2008 with a peak in 2010 of the files claimed by CFWs, overall. The lower extremity claims follow the same trend with a peak in 2007. Of the 930 upper extremity claims filed from 2002 to 2012, 182 (20%) were attributed to hand injuries. Menard Correctional Center filed 160 (17%) claims for upper extremity injuries in the same period of time. This represents the higher number of claims filed for upper extremity injuries.

As shown in Table V, there is a significant difference in median TWC for CFW and non-CFW groups ($15,343 vs $11,844; $p<0.05$). CFWs received higher maximum payouts. No significant difference was found in median TTD between the two groups (2.8 vs 2.5; $p>0.05$) although the CFW group has a slightly higher TTD. No significant difference was found in median PPD among the two groups (17% vs 15%; $p>0.05$).

Table IV. MEDIAN TOTAL WORKERS' COMPENSATION, TEMPORARY TOTAL DISABILITY AND PERMANENT PARTIAL DISABILITY BY AFFECTED BODY PART AND INDUSTRY. CLAIMS FILED WITH IWCC, 2002-2012

Body Part Injured	N[b]	%	Median Total Workers' Compensation (USD)[a]	Median Temporary Total Disability (Weeks)	Median Permanent Partial Disability (Percent)
CFW					
Head, Neck, and Face	219	8%	$ 9,435.00	2.00	7%
Back and Spine	413	15%	$ 10,331.00	4.80	5%
Torso	44	2%	$ 8,002.00	1.70	3%
Upper Extremities	930	33%	$ 21,858.00	2.30	24%
Lower Extremities	596	21%	$ 15,643.00	3.70	20%
Systemic	278	10%	$ 8,005.00	1.90	5%
Multiple Body Parts / Unspecified[c]	589	21%	$ 16,644.00	2.70	18%
non-CFW					
Head, Neck, and Face	204	7%	$ 7,677.00	1.50	7%
Back and Spine	482	17%	$ 11,486.00	4.50	7%
Torso	50	2%	$ 7,081.00	1.00	3%
Upper Extremities	995	36%	$ 13,074.00	2.00	20%
Lower Extremities	564	20%	$ 12,566.00	2.40	18%
Systemic	218	8%	$ 10,545.00	2.60	8%
Multiple Body Parts / Unspecified[c]	480	17%	$ 13,368.00	4.50	12%

[a] Adjusted inflation (2012).

[b] Excludes dismissed claims and ongoing claims without a decision.

[c] Workers' compensation codes for affected body part includes a category for "multiple body parts" which are categorized as "unspecified" in this analysis. In contrast, there are codes that specifically identify the body parts affected if a worker suffered an injury affecting more than one region. For this reason, the total number will exceed 2,997 and 2,950 respectively.

Table V. MEASURES OF COMPENSATION AMONG CFW FILING WORKERS' COMPENSATION CLAIMS COMPARED TO NON-CFW

	CFW (N=2,802)	Non-CFW (N=2,760)	P-value
Total Workers' Compensation (USD)			
Median	$ 15,343	$ 11,844	<0.05
Temporary Total Disability (Weeks)			
Median	2.8	2.5	>0.05
Percent Permanent Partial Disability			
Median	17.0%	15.0%	>0.05

D. Multivariable Analysis

The independent variables of interest for this analysis were age at time of filing, gender (male), marital status (married), number of dependents, average weekly wage, and use of an attorney to assist in the claims process. Variables were added one by one to identify confounders in the models.

1. Total Workers' Compensation

The crude parameter estimate for TWC was 3493.18 (CI 95%; 1754.98, 4719.10). After controlling for age at time of filing, average weekly wage, use of attorney, TTD, PPD and upper extremities (Table VI), there was no significant difference between the amount of monetary compensation received by CFW and non-CFW group (CI 95%; -1275.61, 135.36). In disputed claims, most workers and employers hire attorneys to handle the cases (Illinois Workers Compensation Commission, 2013b). This is consistent with the finding that the use of attorney increased the final payout by $2452.55.

2. Temporary Total Disability

The crude parameter estimate for TTD was 0.38 (CI95%; -0.32, 1.03). After controlling for average weekly wage, use of attorney, gender (male), PPD and upper extremities (Table VI), there was a significant difference between the CFW and non-CFW group. CFWs received 0.49 more weeks off work while recovering from an injury or illness compared to the non-CFW group (CI 95%; 0.05, 0.90).

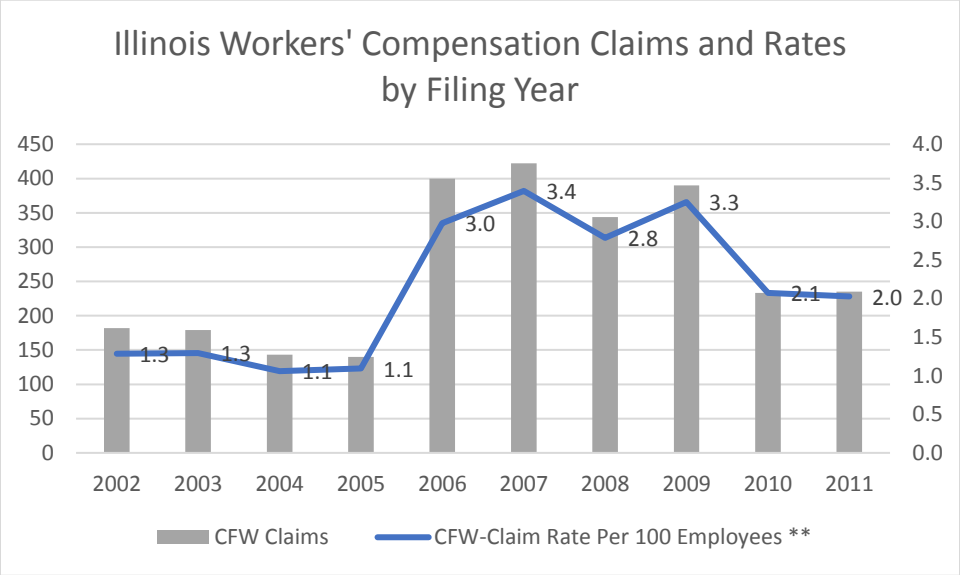
3. Permanent Partial Disability

The crude parameter estimate for PPD was 2.37 (CI95%; -4.85, 4.89). After controlling for age at time of filing, marital status (married), average weekly wage, TTD and upper extremities (Table VI), there was no significant difference on the compensation received for an injury or illness that resulted in permanent physical loss between CFW and non-CFW group (CI95%; -1.46, 1.38).

Table VI. MULTIVARIATE ANALYSIS AMONG CFW FILING WORKERS' COMPENSATION CLAIMS COMPARED TO NON-CFW

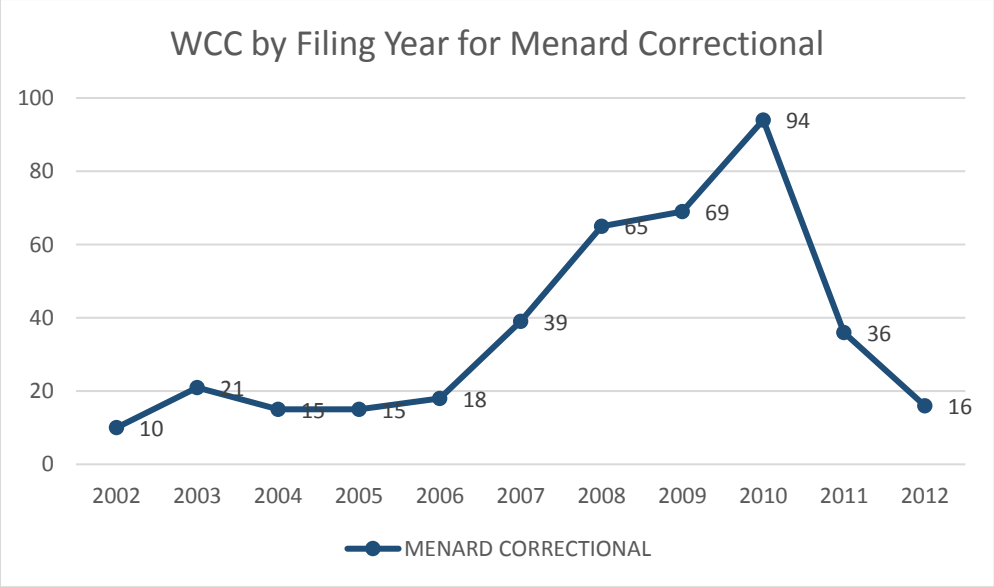
	Crude		Adjusted	
	Parameter Estimate	**95% Confidence Limits**	**Parameter Estimate**	**95% Confidence Limits**
Total Workers' Compensation	3493.18	1754.99, 4719.11	-563.14	-1275.61, 135.36
Temporary Total Disability (weeks)	0.38	-0.32, 1.03	0.49	0.05, 0.90
Permanent Partial Disability	2.37	-4.85, 4.89	-0.31	-1.46, 1.38

Figure 2. Trend for Number of CFW Filing Claims for Injuries and Illnesses by Filing Year. Claims Filed with the IWCC, 2002-2012



[a] Number of employees was extracted from Bureau of Labor Statistics (BLS) for each corresponding year by correctional officers and jailers

Figure 3. Trend for Number of CFW Filing Claims for Injuries and Illnesses by Filing Year for Menard Correctional Facility



V. DISCUSSION

A. Summary of Key Findings

Results of this study show that the final settlement amount received by CFWs after filing a claim with the IWCC did not significantly differ from the amount received by non-CFWs. However, CFWs received 0.49 more weeks for TTD after controlling for average weekly wage, use of attorney, gender (male), PPD and upper extremities. In 2010, a quarter of the total claims filed with the IWCC by CFWs originated at Menard Correctional Center. From 2002 to 2012, 14% of the total CFW claims were filed by Menard Correctional Center workers; and 23% of the total carpal tunnel syndrome claims with the IWCC were filed by Menard Correctional Center workers (Table VIII). Menard Correctional Center, Pickneyville Correctional Center and Dixon Correctional Center house the highest number of inmates (Illinois Department of Corrections, 2016) which would result in having more employees than other facilities. Claims filled by Menard Correctional Center were more than double that of Pickneyville Correctional Center and Dixon Correctional Center; Pickneyville Correctional Center accounted for 6% of the total CFW claims, and Dixon Correctional Center accounted for 4%.

B. Discussion

Upper body injuries were the most common sites of injury among CFWs. The fact that the vast majority of the workforce at the Federal Bureau of Prisons are correctional officers (Federal Bureau of Prisons, 2014) can explain this finding. The type of work performed by correctional officers puts them at greater risk of assaults and violent crimes (Centers for Disease Control and Prevention, 2013). The leading events for nonfatal work related injuries among

CFWs are assaults and violent acts (Konda et al., 2013). Upper extremities are the most important body site for resisting assaults.

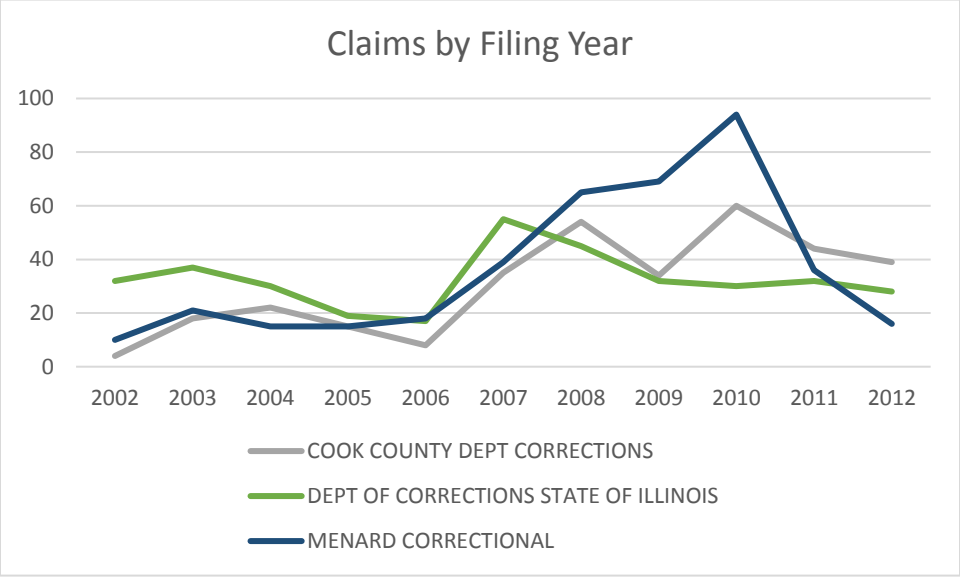
The risk for strained muscles, sprains and other musculoskeletal injuries is higher for CFWs. They are exposed to awkward body postures and use of excessive physical effort when performing activities such as restraining inmates, breaking fights, and moving heavy equipment during searches (Konda et al., 2013). Reduction in physical conditioning, influenced in part, by aging, may put them at greater risk for injury because they are less able to deflect blows or defend themselves in case of assault.

One of the qualifications when applying for a correctional officer position in the Federal Bureau of Prisons is that the incumbent must not be more than 36 years of age. The rule can be deferred if the applicant has previously served in a Federal civilian law enforcement position (Federal Bureau of Prisons, 2014). This is consistent with the finding that 70% of the CFW claims were filed by workers between the ages of 35 and 54. CFWs are eligible for retirement with a pension after 20 years of service. This may account for the fact that only 9% were filed after age 55.

Menard Correctional Center's decline in claims and payouts after 2010 is consistent with the statewide decline in number of claims. This is likely due to the fact that some 60+% of the workforce had already filed, though this might be influenced by the press coverage Menard Correctional Center received after the unprecedented number of claims and payouts was reported in the news. It is important to note that Menard Correctional Center has approximately 800 employees (Hedman et al., 2012) and had one of the top three highest numbers of claims filed with the IWCC (Figure IV).

The facilities Menard Correctional Center, Department of Corrections State of Illinois, and Cook County Department of Corrections accounted for 40% of the total claims filed by CFWs from 2002 to 2012. The increase trend in upper extremity injuries from 2007 to 2010 was also driven by Menard Correctional Center, followed by Department of Corrections State of Illinois and Cook County Department of Corrections. It is not feasible to determine the exact location of injuries reported as Department of Corrections State of Illinois and Cook County Department of Corrections. It is possible that some of the claims categorized as Department of Corrections State of Illinois or Cook County Department of Corrections originated at Menard Correctional Center.

Figure 4. Number of Claims by Filing Year



C. Limitations

The Illinois Workers' Compensation Commission's case management database is a starting point to understand what the highest risks are for CFWs. However, data fields (cause of injury/illness, nature of injury and illness and industry/occupation codes) are often empty or not specific and there is no quality check on the accuracy of the database. This can lead to an underestimation of what is really happening in this workforce. The IWCC case management is a database used for administrative purposes—to manage the claims and hearings processes at IWCC. It is not designed for analysis of health outcomes or economic factors. The data in the database are often provided by the employee's attorneys, who are not likely to use medical criteria for diagnosis and also may use a general category like, "multiple/unspecified injuries" in order to assure that all injuries are covered in the claim. In fact, multiple/unspecified injuries was the third highest category among CFWs (Table IV).

The information collected by IWCC is inconsistent and restricts the analysis of the data for this research. The fact that job titles are not available; there is data missing in a number of fields for nature of injury or illness and event or exposure; and information is misclassified limits the use of the data for purposes of prevention.

There are barriers to reporting occupational injuries in general. According to Azaroff et al. (2002), employees may not recognize their injury as occupational or may be discouraged from reporting; employers may not want their insurance rates to go up or their reputations to be harmed; physicians may not recognize injuries and illnesses as being occupational (Azaroff et al., 2002). In this case, there seems to be a high proportion of reporting from one specific workplace. The most important limitation is that this study only contains disputed claims. This is likely only

a fraction of the total injuries/claims filed for insurance reimbursement. Based on recent study using Sedgwick data "medical only" claims do not end up in the court system as well as many very small indemnity claims (less than $1000). The court system is where the larger indemnity cases are negotiated. In addition, it is impossible to know how the facility culture might have influenced the filing of claims.

Claim rates miss "medical only" injuries/illnesses and include both the correctional officers as well as administrative and support staff in prisons who likely have lower risks. Trends in claim rates are also influenced by political/economic factors which may explain the rise we see in 2007. Prison shutdowns during the economic downturn, privatization of prisons, changes in regulations regarding specific injuries, changes in relationships between unions and employers, etc can all influence the trends.

D. Final Summary

Correctional officers have a higher rate of occupational injuries, overall, compared to the general workforce (Bureau of Labor Statistics, 2012). There was no significant difference between the amount of monetary compensation received by CFW and non-CFW groups after controlling for age at time of filing, average weekly wage, use of an attorney, TTD, PPD and upper extremities. After controlling for average weekly wage, use of attorney, gender (male), PPD and upper extremities, CFWs were granted significantly more time to calculate into their settlements, though the actual difference is only ½ week. There was no significant difference on the compensation received for an injury or illness that resulted in permanent physical loss between CFW and non-CFW group.

While the compensation per claim was similar among CFWs and non-CFWs, it should be noted that almost one quarter of the claims filed from 2002 to 2012 by workers at correctional facilities originated at Menard Correctional Center. An unpublished ergonomic evaluation of Menard demonstrated ergonomic stressors that could possibly lead to carpal and cubital tunnel syndromes. However, there were no obvious workplace changes in Menard Correctional Center before or after the study period that would explain the sudden increase. The consequences of these injuries included a lot of time lost from work, which was likely to put a bigger workload on the remaining workers; over 3/5 of the workforce with one or more surgical scars and possible future sequelae related to these operations; and high costs to the State, which is self-insured. In order to truly understand the causes of increased reporting of upper extremity injuries among Menard correctional officers, a more comprehensive study of the decision to seek medical care on the part of the workers; the diagnostic criteria and decision to operate on the part of physicians; and the management of workers' compensation.

Surveillance is an important activity that can be used to better understand where, how, and why occupational illnesses and injuries are occurring and also what the determinants are of disability payments to injured workers. The best way to contain workers' compensation costs is to prevent injuries from occurring in the first place. The IWCC database should be improved and utilized to provide evidence for policy changes and for focusing preventive efforts in CFWs and in all workers in Illinois.

APPENDICES

APPENDIX A

Table VII. MULTIVARIATE ANALYSIS OF PREDICTORS OF MEDIAN TOTAL WORKERS' COMPENSATION, TEMPORARY TOTAL DISABILITY AND PERMANENT PARTIAL DISABILITY

	Parameter Estimate	95% Confidence Limits
Total Workers' Compensation		
Intercept	-9773.81	-11180.37, -8294.93
Correctional Facility Workers	-563.14	-1275.61, 135.36
Age Filing	19.42	-13.34, 49.21
Male	289.58	-334.38, 965.66
Married	154.88	-573.1, 631.7
Number of Dependents	179.20	-120.07, 433.46
Average Week Wage	13.95	12.48, 15.95
Used Attorney	2452.55	1773.05, 2918.14
Total Temporary Total Disability Weeks	145.26	38.19, 254.51
Permanent Partial Disability	894.63	842.09, 944.98
Upper extremities	-1895.49	-2515.26, -1287.25
Temporary Total Disability (weeks)		
Intercept	2.37	1.41, 3.42
Correctional Facility Workers	0.49	0.05, 0.90
Age Filing	-0.01	-0.03, 0.01
male	0.48	0.06, 0.86
Married	-0.15	-0.51, 0.25
Number of Dependents	-0.00	-0.21, 0.14
Average Week Wage	-0.00	-0.00, -0.00
Used Attorney	1.28	0.95, 1.69
Permanent Partial Disability	0.09	0.07, 0.12
Upper extremities	-0.90	-1.31, -0.56

APPENDIX A (continued)

Table VII. MULTIVARIATE ANALYSIS OF PREDICTORS OF MEDIAN TOTAL WORKERS' COMPENSATION, TEMPORARY TOTAL DISABILITY AND PERMANENT PARTIAL DISABILITY (continued)

	Parameter Estimate	95% Confidence Limits
Permanent Partial Disability		
Intercept	-3.48	-5.96, -0.3
Prison Jails	-0.31	-1.46, 1.38
Age Filing	0.17	0.1, 0.25
Male	1.20	-0.29, 2.44
Married	1.76	0.26, 3.19
Number of Dependents	-0.42	-0.84, 0.12
Average Week Wage	0.00	0, 0.01
Used Attorney	1.15	-0.68, 2.8
Total Temporary Total Disability Weeks	0.46	0.36, 0.56
Upper extremities	10.07	8.97, 11.65