

Prevention at Work

Injury Hospitalizations Paid By Workers' Compensation, Oklahoma, 2008

Nearly 50,000 Oklahoma workers suffered non-fatal occupational injuries or illnesses in 2008, and approximately 100 workers were fatally injured in the state. The rates of work-related injury and death in Oklahoma are consistently higher than those of the United States. Work-related injuries and illnesses often have significant consequences for the injured or ill worker, their family, and employer, resulting from time away from work, lost wages, possible disability of the worker, and workers' compensation, health care, and Social Security disability costs.

In 2008, total workers' compensation cash benefits were \$58.1 billion for the United States and approximately \$772 million for the state of Oklahoma. Oklahoma's workers' compensation system covers 1.5 million workers in the state, resulting in \$522 of workers' compensation benefits paid for each covered worker. More than 4,000 Oklahoma worker hospitalizations were paid by workers' compensation in 2008.

Surveillance

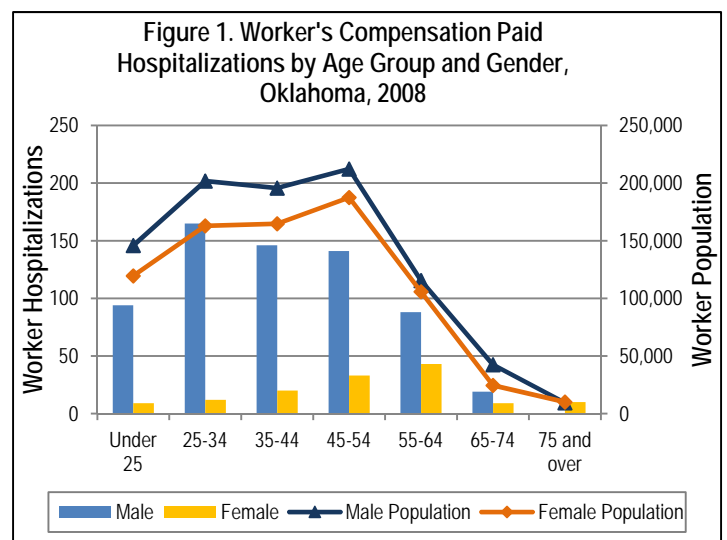
The Oklahoma State Department of Health (OSDH) Injury Prevention Service (IPS) collected data on injury-related inpatient hospitalizations paid by workers' compensation in 2008 through medical record abstraction. Cases were identified using the Oklahoma Hospital Inpatient Discharge Database from the Health Care Information Division of the OSDH. Included cases had a primary payer of workers' compensation and an injury principal diagnosis (*International Classification of Diseases, Version 9, Clinical Modification* codes 800-999). The Oklahoma Hospital Inpatient Discharge Database includes all inpatient hospitalizations at participating state licensed, non-federal, acute care hospitals in Oklahoma. A total of 857 records at 71 Oklahoma hospitals were identified, requested, and reviewed.

After medical record reviews, 789 cases were included in the study. These cases represented 3% of all injury hospitalizations in Oklahoma in 2008. Some patients had multiple records that were reviewed and consolidated to count as one injury (e.g., transfers, follow-up visits). Some

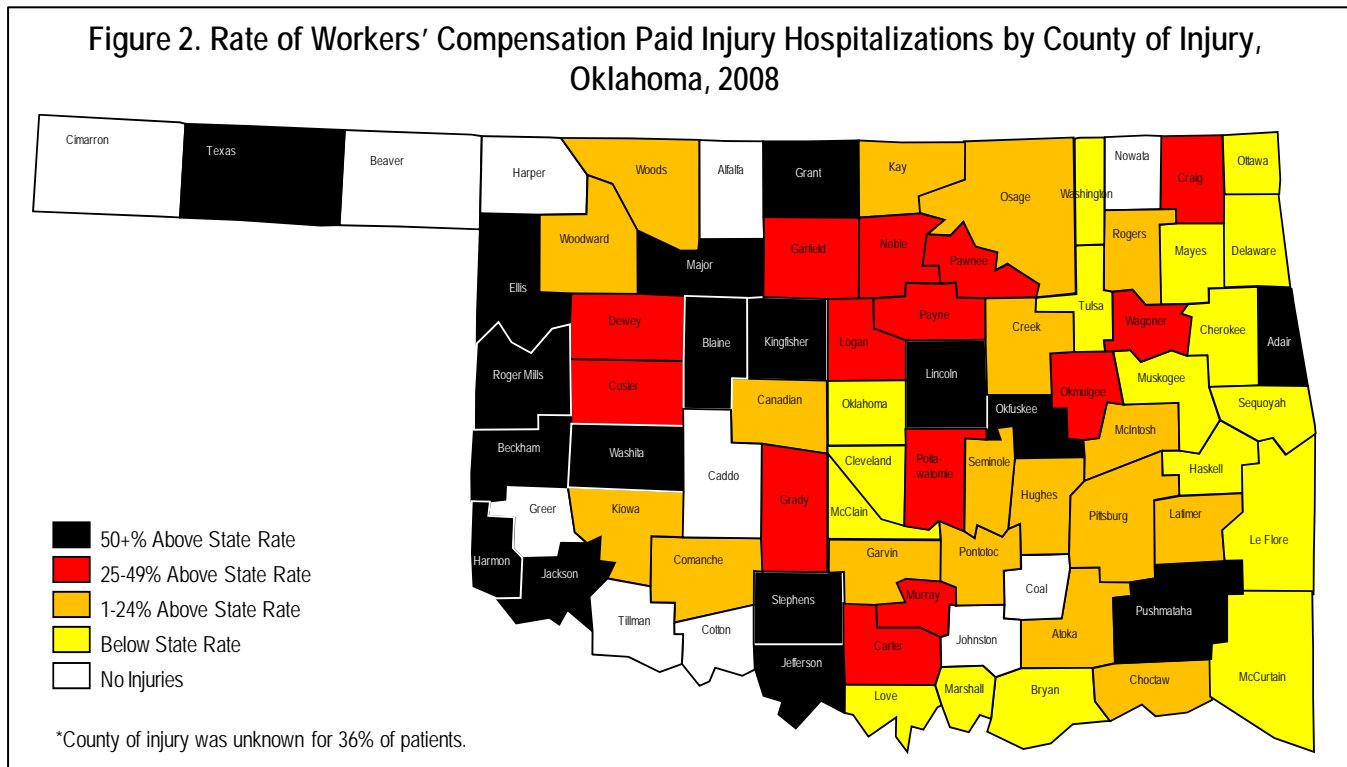
cases were excluded because the injuries described in the medical record were not work related. Epidemiologists with the IPS reviewed all medical records and abstracted information regarding diagnoses, discharge disposition, industry and occupation, location of injury, personal protective equipment use, and patient demographics.

Results

Male workers were nearly five times more likely than female workers to have a workers' compensation paid injury hospitalization. Workers ranged from 13 to 82 years of age, but ages 25-54 had the largest number of hospitalizations paid by workers' compensation. All injured workers aged 75 and older were female (Figure 1). Eighty-three percent of workers were white, and 13% of workers were of Hispanic ethnicity. In 2008, 79% of the Oklahoma employed adult population was white, and 6% was of Hispanic ethnicity. Four percent of workers were not Oklahoma residents (n=30), and 16 workers (2%) were injured out of state and transported to an Oklahoma hospital for care. The most common counties of injury were Oklahoma and Tulsa (13% and 9% of workers, respectively), followed by Payne, Cleveland, Beckham, and Carter Counties (approximately 2%, respectively) (Figure 2). The county of injury was not documented in the medical record for more than one-third of workers (36%).



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More than one-third of injuries (38%) were fall related, and 25% of injuries were due to being struck, crushed, pinned, or caught by heavy machinery or a flying/falling object (Table 1). Other common sources of injury included motor vehicle crashes (10%); fires, burns, or explosions (9%); and cut/pierce injuries (6%). Female workers were more likely than men to suffer a fall or assault while working, but male workers were more likely to suffer a cut/pierce injury, fire/burn/explosion injury, or struck, pinned, crushed, or caught in or by heavy machinery or a flying/falling object. Two-thirds of older adult workers (aged 65 and older) were hospitalized for a fall-related injury. Workers under age 25 most commonly were hospitalized after being struck, pinned, crushed, or caught in or by heavy machinery or a flying/falling object. Of workers for which location of injury was known, more than half (54%) were injured at an industrial place or premises, 16% at a public building, and 15% on a street or highway. The vast majority of injuries were unintentional, only 1% were due to either assault or intentional self injury.

More than half (53%) of the injury principal diagnoses were fractures, and nearly three-fourths (70%) of these fractures were to lower or upper extremities. Lower and upper extremity injuries accounted for 60% of all workers' compensation paid injury hospitalizations principal

diagnoses, including 94 injuries to the hand, wrist, or fingers and 122 injuries to the lower leg or ankle. Other common injuries included internal organ injuries, burns, and open wounds. Traumatic brain injury was the principal diagnosis for nearly one in ten (9%) injured workers. Five percent of workers were hospitalized for a sprain or strain (Table 2).

Table 1. Workers' Compensation Paid Injury Hospitalizations by Type of Injury, Oklahoma, 2008

Injury	Number	Percent
Assault	4	0.5
Cut/Pierce	47	6.0
Toxic exposure	31	3.9
Fall/Near-fall/Jump	300	38.1
Fire/Burn/Explosion	68	8.6
Gunshot	4	0.5
Nontraffic crash	14	1.8
Other	29	3.7
Pedestrian	17	2.2
Struck/Pinned/Crushed/Caught in	199	25.3
Traffic crash	75	9.5
Total*	788	100.0

*One worker with unknown type of injury

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Table 2. Workers' Compensation Paid Injury Hospitalizations by Body Region and Nature of Injury

Body Region	Fracture	Internal Organ	Sprains/ Strains	Open Wounds	Amputation	Crushing	Burns	Other
Lower extremity	213	*	8	18	*	10	10	11
Upper extremity	78	*	23	27	24	15	26	11
Torso	31	34	*	*	*	*	11	7
Vertebral column	47	*	*	*	*	*	*	11
Traumatic brain injury	28	44	*	*	*	*	*	*
System-wide and late effects	*	*	*	*	*	*		37
Other	17	*	*	5	*	*	21	6

*Not reported due to small number of cases

Nearly 80% of workers were discharged home following their hospital stay; 1% of workers' compensation hospitalizations were fatal injuries. Ten percent of workers were discharged to an inpatient rehabilitation facility and 8% to home health/home hospice. Length of stay ranged from one day to more than 60 days, with a median length of stay of three days. Eighty percent of workers had a hospitalization of six days or less. Hospital stays were longest for workers injured in an assault or fire/burn/explosion, and pedestrians struck by motor vehicles or machinery (median length of stay: 8, 7.5, and 6 days, respectively). Total hospital charges per patient ranged from \$1,100 to \$588,700, with a median total charge of \$19,737. Seventy-five percent of patients had total charges of \$36,500 or less. Injuries with the highest median charges were traffic crashes, fire/burn/explosion, and pedestrians struck by motor vehicles or machinery (Table 3).

The most common industries for workers at the time of injury were construction (18%), oil and gas (16%), and manufacturing (7%). Other common industries included: retail/hospitality, transportation, public administration, health care, and education. Only 2% of workers were employed in the agricultural industry at the time of injury, but agriculture accounts for approximately 16% of work-related deaths in Oklahoma. Nearly 3% of Oklahoma workers are employed in the agricultural industry. Most agricultural/horticultural workers and small, family businesses are exempt from workers' compensation in Oklahoma, resulting in a disparity between the large number of work-related agricultural deaths and small number of workers' compensation paid injury hospitalizations.

Fifteen percent of workers were known to be wearing personal protective equipment (PPE) at the time of injury. PPE use was unknown for more than three-fourths (77%) of workers. Of workers injured in a motor vehicle crash, 50% were known to be wearing a seat belt at the time of the crash, and airbags deployed in less than 10% of crashes.

Limitations

Workers' compensation data are incomplete. Many employees never file for workers' compensation benefits for a work-related injury, and many companies are exempted. In Oklahoma, federal workers, small, family businesses, sole proprietors, and agricultural workers are not eligible for the workers' compensation system. Therefore, data presented in this report are not fully representative of injured workers in Oklahoma.

Table 3. Workers' Compensation Paid Injury Hospitalizations by Type of Injury, Length of Stay, and Hospital Charges

Injury	Median length of stay (days)	Median charges (\$)
Assault	8	\$17,387
Cut/Pierce	3	\$14,033
Toxic exposure	2	\$8,156
Fall/Near-fall/Jump	4	\$21,535
Fire/Burn/Explosion	7.5	\$30,958
Gunshot	2.5	\$27,311
Nontraffic crash	3	\$21,089
Other	3	\$18,910
Pedestrian	6	\$30,487
Struck/Pinned/Crushed/Caught in	3	\$17,960
Traffic crash	4	\$31,099

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Case Briefs

- An adult male truck driver was driving a fully loaded cement truck for a construction company. He was traveling approximately 70 miles per hour when his vehicle rolled for an unknown reason, pinning him under the steering wheel and dash. The worker was not wearing a seat belt and the vehicle's airbag did not deploy. He was taken to the hospital after a nearly hour-long extrication with multiple fractures and contusions. He was hospitalized for four days before being discharged home.
- A young adult male was working as a photographer outside for many hours. He began to feel weak and dissociative after developing a 107 degree fever. He was hospitalized for four days due to heat exposure before being discharged home.
- An older adult male worker's foot was crushed when a 2,000-pound piece of railroad equipment fell on him. He was wearing steel-toed boots, which likely prevented a traumatic amputation of his foot. He was hospitalized for three days with multiple foot fractures before being discharged home.
- An adult male worker was standing in the bucket of a skid steer loader when it became unstable. The teeth of the bucket struck the worker in the back, causing him to fall. He sustained multiple fractures and was hospitalized for four days before being discharged home.
- An older adult female nurse's aide was walking through the kitchen of the nursing home where she worked when she tripped and fell over a chair leg. She sustained a hip fracture and was hospitalized for six days before being transferred to an inpatient rehabilitation facility.
- An adult female saw operator had been cutting PVC piping with a rotary saw. She was trying to clean the blade of the saw while it was still spinning and cut her arm. She was hospitalized for one day before being discharged home.
- An adult male home remodeler was driving a motorcycle from a home improvement store. He drove through an intersection and another vehicle made an illegal left turn in front of him. He laid his motorcycle down in an effort to avoid a crash and sustained multiple leg injuries, resulting in a below the knee leg amputation. He was hospitalized for two weeks before being discharged home with home health care.
- A young adult male construction worker was cutting the end off a chemical tanker when the back end of the truck exploded. The explosion blasted a piece of pipe into the left side of the worker's head, resulting in a loss of consciousness, amnesia, and a skull fracture. The worker was hospitalized for 32 days before being discharged home.
- An adult male roofer was carrying a package of shingles onto the roof of a home without any fall protection equipment. He fell 6-10 feet, hitting a dumpster and a concrete sculpture. The roofer was hospitalized for three days with multiple contusions before being discharged home.
- A young adult male electrical worker was working on an electrical box when his wrench contacted a 480-volt wire. He sustained an arc-flash burn to his right hand and forearm and was hospitalized for nine days before being discharged home.
- An adult male worker was walking on 3-foot tall scaffolding when he lost his footing and fell, hitting his head on the scaffolding. He was not wearing any PPE. He was hospitalized for three days with an arm fracture and several wounds before being discharged home.
- A young adult male lake attendant was driving an all-terrain vehicle up an incline when it flipped and landed on him. The attendant was hospitalized for a week with multiple fractures before being discharged home.

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