Work-related Fatal & Non-Fatal Injury
2014 Report

Occupational Epidemiology

Release date
August 26, 2015

Prepared by
Meredith Towle, MPH
State Occupational Epidemiologist

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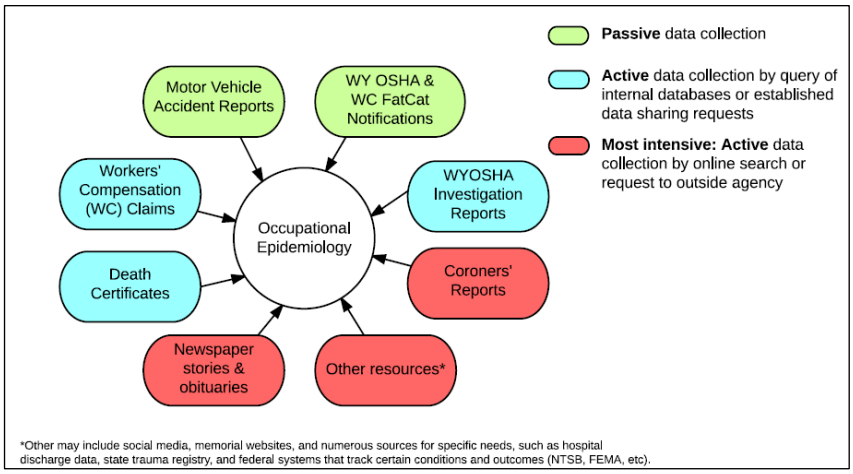
Overview

Occupational epidemiology is a branch of public health surveillance.[1] Surveillance data are obtained by passive (i.e. automated) reporting channels as well as active surveillance techniques, such as data requests to other agencies and searches for additional information. (Figure 1) Data compiled and reported from these various sources are intended to guide efforts to improve worker safety and health, and to monitor trends and progress over time.

Figure1: Passive and Active Data Collection Resources for Wyoming's Occupational Epidemiology Program



Since 2011, the Wyoming Department of Workforce Services (DWS) has supported an Occupational Epidemiology Program to monitor and describe the frequency, distribution, trends and determinants of work-related fatalities. It is a priority of this position to provide detailed and timely information on these events so contributing factors can be better understood to prevent future deaths of similar nature. This report is the third annual occupational epidemiology report published by the DWS.

Work-related Fatalities

Background

Wyoming consistently ranks as having one of the highest work-related fatality rates in the nation, typically second to North Dakota. [2] In order to prevent occupational fatality in the state, it is imperative that employers, workers, policy makers and the public have a clear understanding of the nature and causes of these fatal events.

Methods

The U.S. Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) is recognized as the official statistical record of work-related fatality counts and rates for Wyoming and the United States. However, there is a two-year lag before CFOI data are available and the CFOI reports do not contain sufficient detail to identify specific prevention initiatives and priorities. Therefore, the DWS Occupational Epidemiology Program conducts independent fatality surveillance to ensure more timely and informative reporting of workplace fatalities in Wyoming. The DWS attempts to use the same case definitions that are used for the BLS CFOI as well as many of the same sources of data.[3] However, cases are not reconciled between the two systems and there may be variation in case classification, variable coding, and access to information.

The 2014 provisional fatality results are from the DWS fatality monitoring effort. The 2008-2013 summary results are from the BLS-CFOI publically available data. Data sources are cited in table and figure notes.

Results: 2014 Provisional Occupational Fatality Report

Tables & Figures

Table 1: Provisional* Description of Occupational Fatalities by Industry Activity, Wyoming, 2014 (N=34)

Industry Activity (# fatalities)	Investigating Agency	Incident Description	Event/Exposure Type
Agriculture (4)	Local Authorities	23 year old male crushed by a skid steer while loading hay bales. WY resident.	Contact with object/equipment
	Local Authorities	75 year old male fell into an irrigation canal and drowned. WY resident.	Other event/exposure
	Local Authorities	65 year old female rancher kicked in the head by a horse while unloading horses from a trailer. WY resident.	Violence or injury by person/animal
	Local Authorities	63 year old male rancher hit in the head with a gate that had been kicked by a bull. He continued working but subsequently died later that day. WY resident.	Violence or injury by person/animal
Construction (3)	Wyoming OSHA	25 year old male construction worker fell 60 feet from a roof suffering a fatal skull fracture. WY resident.	Fall (from height)
	Wyoming Highway Patrol	31 year old male construction worker killed in two vehicle accident. Icy road conditions. Passenger. Not belted. WY resident.	Transportation (over road)
	Wyoming OSHA	23 year old male construction worker killed when a tracked excavator backed over him. WY resident.	Transportation (pedestrian/work site)
Mining (except oil and gas) (1)	State Mine Inspector	25 year old male heavy equipment operator killed in a mine-site rock crusher. SD resident.	Contact with object/equipment
Oil & gas extraction (10)	Local Authorities	46 year old male slipped, tripped or fell near an operating oil pump jack and was struck by the counterweight. At time of investigation, machinery was unguarded and surrounded by various trip hazards. WY resident.	Contact with object/equipment
	Wyoming OSHA	35 year old male killed by an explosion and fire sparked during cleaning of two oil storage tanks. Improper equipment grounding was investigated. WY resident.	Fire/explosion
	Wyoming OSHA	52 year old male welder killed by explosion while working on an oil reclamation tank. WY resident.	Fire/explosion
	Wyoming Highway Patrol	33 year old male oil field worker killed in a single vehicle accident. Pickup pulling a trailer loaded with oilfield equipment overturned on I-25. Suspected driver fatigue. Passenger. Belted. NM resident.	Transportation (over road)
	Local Authorities	21 year old male diesel mechanic killed in a two-vehicle rollover accident. Passenger. Not belted. CO resident.	Transportation (over road)
	Wyoming Highway Patrol	42 year old male oil and gas worker killed in a single vehicle roll-over. Icy road conditions. Passenger. Not belted. FL resident.	Transportation (over road)
	Wyoming Highway Patrol	60 year old male oil and gas worker killed in a single vehicle roll-over. Icy road conditions. Driver. Belted. CA resident.	Transportation (over road)
	Wyoming Highway Patrol	28 year old male oil and gas worker killed in a single vehicle roll-over. Icy road conditions. Passenger. Belted. TX resident.	Transportation (over road)

	Local Authorities	80 year old male oil and gas worker killed in a single vehicle roll-over. Driver. Not belted. WY resident.	Transportation (over road)
	Wyoming OSHA	26 year old male swamper/truck driver killed on a drilling site when a welding truck backed over him. WY resident.	Transportation (pedestrian/work site)
Transportation (7)	Wyoming OSHA	68 year old male truck driver fell and struck head after loading his trailer. The decedent fell between the top of the truck and the loading platform. WY resident.	Fall (from height)
	Local Authorities	69 year old male bus driver fell on ice and subsequently died from injury complications weeks later. WY resident.	Fall (same level)
	Wyoming Highway Patrol	63 year old male killed in a single vehicle accident while transporting a travel trailer. Road conditions icy with strong winds. Driver. Belted. MA resident.	Transportation (over road)
	Wyoming Highway Patrol	48 year old male truck driver killed in a two semi collision. Driver. Not belted. WY resident.	Transportation (over road)
	Wyoming Highway Patrol	29 year old female delivery driver killed in a single vehicle rollover (cargo van). Suspected driver fatigue. Driver. Belted. CO resident.	Transportation (over road)
	Wyoming OSHA	25 year old male truck driver crushed between two belly dump trucks during a road-side assistance operation. WY resident.	Transportation (pedestrian/work site)
	Wyoming Highway Patrol	31 year old male killed in a two semi collision. Driver. Belted. WY resident.	Transportation (over road)
Other – Communications (1)	Wyoming OSHA	42 year old male communications worker fell off a ladder and subsequently died from injury complications weeks later. WY resident.	Fall (from height)
Other - Food Services (2)	Wyoming Highway Patrol	26 year old male restaurant employee killed in a motor vehicle crash. Driver. Belted. WY resident.	Transportation (over road)
	Wyoming Highway Patrol	30 year old male restaurant employee killed in a motor vehicle crash. Passenger. Belted. ND resident.	Transportation (over road)
Other - Forestry (1)	Wyoming OSHA	31 year old male field worker killed in a bear attack in a national forest. TN resident.	Violence or injury by person/animal
Other - Manufacturing (1)	Wyoming OSHA	28 year old female fell through an access hole in a sugar beet processing facility. WY resident.	Contact with object/equipment
Other - Retail (1)	Local Authorities	86 year old male small business owner fell and struck his head. WY resident.	Fall (same level)
Other - Not Published** (3)	Not published**	Male WY resident.	Suicide at work
	Not published**	Male WY resident.	Suicide at work
	Not published**	Male WY resident.	Suicide at work

Source: Wyoming Department of Workforce Services, Occupational Epidemiology Program

* Final 2014 fatality data will be available from the BLS-CFOI in spring of 2016.

**Information suppressed for confidentiality.

Table 1 Observations & Discussion: The DWS Occupational Epidemiology Program identified 34 occupational fatalities in 2014. This is an increase from the 26 fatalities reported by the BLS-CFOI in 2013 (See Figure 2 Below). Out of the 34 fatalities identified, 10 (29.4%) decedents were out-of-state residents. Including these fatalities in Wyoming reports is consistent with the BLS-CFOI federal program methods, which counts fatalities in the state where injury death occurred. Details about residency are not published in the state-level BLS-CFOI reports. The DWS provisional fatality report in 2013 identified two of 21 decedents (14.3%) as out-of-state residents, and the 2012 report identified 17 of 31 (54.8%).[6] Thus, it can be concluded that the proportion of out-of-state residents killed in occupational events in Wyoming is highly variable from year to year.

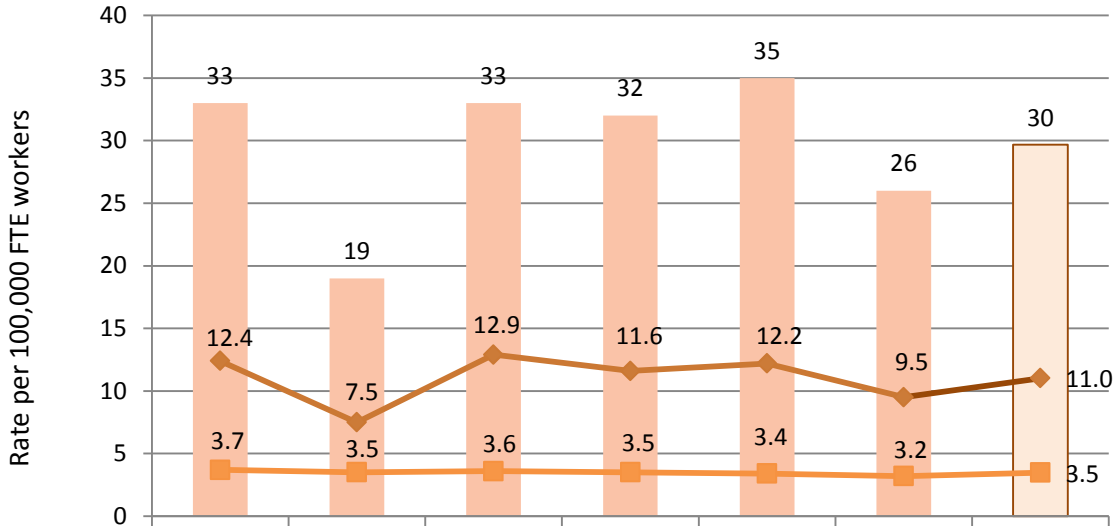
About half of 2014 occupational fatalities occurred during transportation and oil & gas extraction industry activity, combined. Consistent with prior years, nearly half (16 of 34) of the 2014 occupational fatalities identified were due to transportation events. Among the 13 over-the-road fatal motor vehicle deaths, five (38.5%) decedents were not using a seat belt at the time of the accident. Seven (53.8%) motor vehicle crash decedents were drivers and six (46.1%) were passengers. Among the seven drivers killed, three were out-of-state residents.

Ten of the 34 occupational fatalities (nearly 30%) in 2014 were under WY-OSHA jurisdiction for enforcement and regulatory inspection. The remaining cases were investigated by highway patrol and/or local authorities.

Results: 2008-2013 Census of Fatal Occupational Injuries

Tables & Figures

Figure 2: Number and Crude rate of fatal occupational injuries per 100,000 full-time equivalent (FTE) workers, Wyoming and the United States, 2008-2013 & Average



	2008	2009	2010	2011	2012	2013	Average
Wyoming number	33	19	33	32	35	26	30
Wyoming rate	12.4	7.5	12.9	11.6	12.2	9.5	11.0
United States rate	3.7	3.5	3.6	3.5	3.4	3.2	3.5

Sources:
Wyoming counts & FTE rates 2008-12: BLS Census of Fatal Occupational Injuries (CFOI) http://www.bls.gov/iif/oshstate.htm
Wyoming denominator for preliminary 2013 rate calculation: http://dataferrett.census.gov/
United States annual BLS CFOI reports: http://www.bls.gov/iif/oshcfoi1.htm/#2012
NOTE: Occupational fatalities are counted in the state where the fatal incident occurred, regardless of worker residency.
The denominator used for the rate calculation (FTE workers) is derived from the BLS Current Population Survey, which counts workers by their state of residence. See source websites for more information about this and other limitations.

Figure 2 Observations & Discussion: On average, from 2008-2013, Wyoming experienced nearly 30 worker deaths per year, which is the equivalent of one workplace death approximately every 12 days (365 days/30 worker deaths). Wyoming's average fatality rate during 2008-2013 was 11.0 workers per 100,000 full-time equivalent (FTE) workers. This was over three times higher than the national average for the same period, which was 3.5 workers per 100,000 full-time equivalent (FTE) workers.

Overall, in recent years, Wyoming consistently has the second highest work-related fatality rate in the United States.[4] This trend is at least partly influenced by the high proportion of Wyoming's workforce engaged in high-risk employment. High-risk industries and occupations are those which demonstrate injury, illness and fatality rates at least twice the national average.[5] For example, industries such as crop and animal production, metal and non-metal mining, oil and gas extraction, and truck transportation are identified as high-risk. High-risk

occupations include agricultural managers, fire fighters, construction laborers, and mining machine operators, to name a few. In 2010, compared to a sample of 27 states and the nation, Wyoming had the highest state percentage of workers employed in industries (36.7%) and occupations (30.7%) deemed high-risk for mortality.[6]

Research previously conducted by the DWS Research & Planning Division suggests that nearly three-fourths of the difference in state fatal occupational injury rates can be explained by the proportion of employment in each state that is found in production agriculture and mining.[7] In recent years, compared to other states, Wyoming consistently had the highest proportion of workers in the combined mining and logging industry (11.5%), and Wyoming's average percentage of the workforce in agriculture industries is three times higher than the national average (5.0% versus 1.6% respectively).[8] Table 2 (below) compares Wyoming's annual fatality rates to other states that are similar with regard to both population size and percentage of the workforce in mining and agriculture.

Table 2: Comparison of Wyoming Occupational Fatality Rates to States with Similar Population Sizes and Employment Profiles, 2008-2013 & Averages

	National population ranking (2010)	Percent of employment in mining & agriculture (2012)	Occupational injury fatality rate per 100,000 full-time equivalent (FTE) workers						
			2008	2009	2010	2011	2012	2013	Avg.
WY ranking among all 50 states	**50th**	**1st**	**1st**	**3rd**	**2nd**	**2nd**	**2nd**	**2nd**	**n/a**
Wyoming	50	11.6	12.4	7.5	12.9	11.6	12.2	9.5	**11.0**
North Dakota	48	10.8	8.3	7.9	8.5	12.4	17.7	14.9	**11.6**
Oklahoma	28	9.1	6.4	5.3	6.3	5.5	6.1	5.8	**5.9**
Montana	44	6.6	8.2	12.1	8.2	11.2	7.3	5.8	**8.8**
South Dakota	46	6.2	6.9	5.9	8.8	6.7	6.7	4.7	**6.6**
New Mexico	36	5.5	3.5	5.2	4.6	6.6	4.8	6.7	**5.2**
Alaska	47	4.4	10.6	5.6	11.5	11.1	8.9	7.9	**9.3**
Average among selected states	**n/a**	**7.7**	**8.0**	**7.1**	**8.7**	**9.3**	**9.1**	**7.9**	**8.4**
United States	n/a	2.2	3.7	3.5	3.6	3.5	3.4	3.3	3.5

Fatality Rate: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI)

Percent employment: DWS Research & Planning (http://doe.state.wy.us/LMI/trends/0714/a3-tables.htm#table2)

State population rank: U.S. Census Bureau (https://www.census.gov/compendia/statab/2012/tables/12s0014.pdf)

"Mining" includes fatal injuries at all establishments categorized as Mining (Sector 21) in the North American Industry Classification System, including Oil & Gas Extraction, and Support Activities for Mining.

Table 2 Observations & Discussion: Wyoming ranks 50th in the nation for population size, yet first for the percentage of the workforce in mining and agriculture. Wyoming's total occupational injury fatality rate is consistently 1.3 times higher than the average fatality rate among these selected states that are similar in population size and the percentage of employment in mining and agriculture (11.0 versus 8.4 workers per 100,000 FTE workers, respectively). In this comparison, North Dakota is arguably the most similar to Wyoming and both states had an average fatality rate of approximately 11 workers per 100,000 FTE workers. Alaska is

similarly known for its small population size and high proportions of workers in high-risk occupations, such as commercial fishing and logging, yet its average fatality rate was less than Wyoming (11.0 versus 9.3 workers per 100,000 FTE workers, respectfully).

Table 3: Total Percent of Occupational Fatalities by Worker Demographics, Wyoming and the United States, 2008-2013

	Wyoming	United States
% Male	91.6	92.4
% Female	5.1	7.6
% Not reported*	3.4	0.0
% Under age 16	*	0.3
% Age 16-19	*	1.6
% Age 20-24	*	6.1
% Age 25-34	16.3	16.1
% Age 35-44	19.1	19.2
% Age 45-54	22.5	25.2
% Age 55-64	19.7	19.5
% Age 65+	11.2	12.1
% Not reported*	9.6	0.1
% Caucasian	89.9	70.0
% African American	*	9.6
% Other/Multiple Races	*	3.7
% Hispanic or Latino	*	16.0
% Not reported*	8.4	0.6

Source: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI)
Wyoming data: http://www.bls.gov/iif/oshstate.htm
United States data: http://www.bls.gov/iif/oshcfoi1.htm/#2012

* The BLS CFOI suppresses any number less than three in publically available annual reports. Wyoming often has fewer than three cases in any given annual sub-set table, thus this aggregate summary shows a significantly higher proportion of cases classified as "not reported" for Wyoming compared to the U.S.

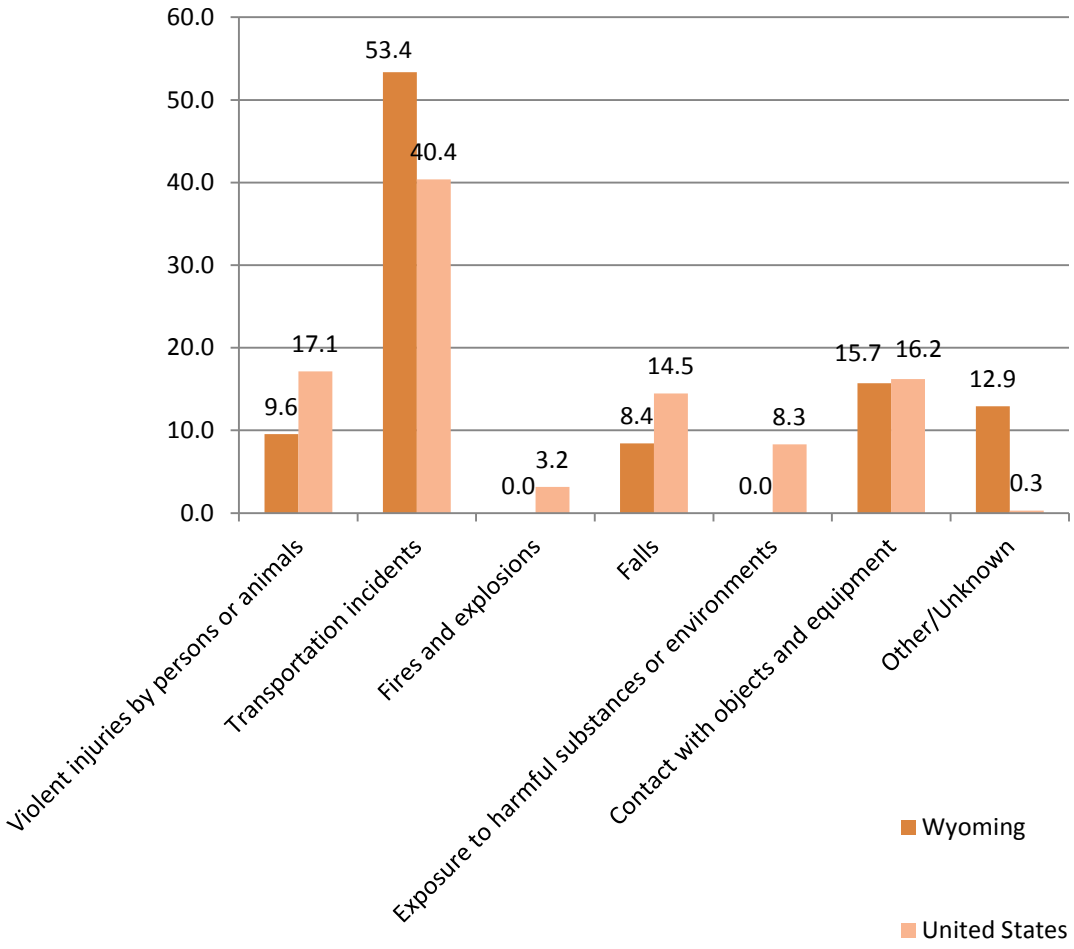
Table 3 Observations & Discussion: There is a high proportion of Wyoming cases classified as “not reported” in these data dues to suppression of small numbers in publically available data. Thus, it should be assumed that the percentage of deaths in any single demographic category is under-reported in this table. However, a couple conclusions can be made from this table.

First, 11.2% of occupational fatalities in Wyoming occurred among workers age 65 and over. This is lower than the national average (12.1%), but much higher than the proportion of the total workforce in that age group, which is 5.7%.[9] This indicates that older workers are over-represented in incidence of work-related death in Wyoming, a trend that is also observed nationally.

Second, the percentage of occupational deaths in Wyoming among Caucasian workers is significantly higher than the national average (89.9% versus 70.0%, respectively). Wyoming’s workforce overall is 95.2% Caucasian,

1.1% African American, 3.7% other races, and 6.9% Hispanic or Latino.[10] More complete data is needed to accurately describe the burden of occupational fatality among minority populations.

Figure 3: Percent of fatal injuries by event or exposure, Wyoming and the United States, 2008-2013



Source: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI)
Wyoming data: http://www.bls.gov/iif/oshstate.htm
United States data: http://www.bls.gov/iif/oshcfoi1.htm/#2012

* The BLS CFOI suppresses any number less than three in publically available annual reports. Wyoming often has fewer than three cases in any given annual sub-set table, thus this aggregate summary shows a significantly higher proportion of cases classified as "Other/Unknown" for Wyoming compared to the U.S.

Figure 3 Observations & Discussion: Compared the United States during 2008-2013, Wyoming experienced a higher proportion of workplace fatalities due to transportation incidents, but a lower proportion of fatalities due to falls and violent injuries. However, because of the high proportion of Wyoming cases classified as "other/unknown" in these data, it should be assumed that the percentage of deaths in any single event or exposure category is under-reported in this figure. More complete data is needed to accurately describe the distribution of occupational fatality by event or exposure.

Non-fatal Injury

Background

This report expands on this existing information by describing indicators of injury severity by industry, such as claims cost, hospitalization, and amputation. Similar information for prior years has been previously published in reports for 2012 and 2013. [11] **However, this 2014 data cannot be definitively compared to prior studies due to possible discrepancies in analysis and summary methods.** More routine and systematic methods are being developed to accurately describe workers' compensation claims trends over-time.

Methods

Only accepted claims from the Wyoming Workers Compensation Division with an injury date 01/01/2014 – 12/31/2014 were included for analysis. All ages and industry classifications were included. These 2014 data were extracted in early March 2015. However, when analyzing workers' compensation claims data, it is customary to wait 12-18 months beyond the dates of injury studied to allow claims to be reported and mature for the most accurate information. **As these data were extracted prior to maturity, they are provisional and are subject to change with future analyses.** Including only accepted claims in this summary provides the most conservative estimates.

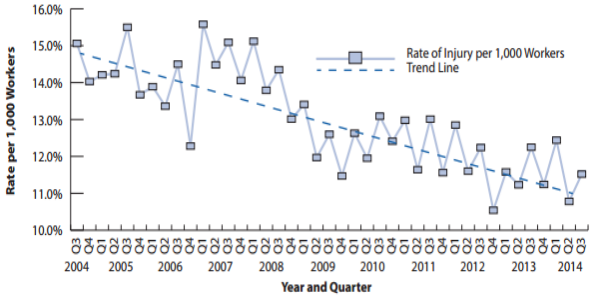
Tables & Figures

Table 4: Provisional Summary of Claims by Status, Wyoming Workers Compensation Division, 2014 (N=12,971)

Claim Status	Count
Accepted	11344
Denied	1526
Pending	30
Expired	71
Total	**12971**

Table 4 Observations & Discussion: In 2014 in Wyoming, nearly 13,000 claims were received for non-fatal work-related injury or illness. Roughly 87% or all claims received were accepted.

Figure 4: Workers Compensation Claims Data from *Wyoming Workforce Annual Report, 2015*



NAICS Group	Average Rate of Injury per 1,000 Workers	Average Employment
Manufacturing	20.3	10,187
Construction	17.3	23,431
Natural Res. & Mining	14.6	28,551
Other Services	12.0	8,267
Trade, Transp., & Utilities	11.7	52,373
Leisure & Hospitality	11.6	34,532
Education & Health Svcs.	11.2	58,074
Public Administration	6.6	24,775
Information	6.3	4,623
Prof. & Business Svcs.	6.0	17,672
Financial Activities	4.7	11,009
Total	**13.0**	273,494

Figure 4 Observations & Discussion: Annual state-wide trends in workers compensation claims by industry are published by the DWS Research and Planning Division.[12] The industries in Wyoming with the highest injury rates during this time were **Manufacturing, Construction, and Natural Resources and Mining**, which includes Agriculture and Oil and Gas Extraction. This figure also shows a steady downward trend in injury claims rates since 2004. This mirrors occupational injury trends observed in other states and in national surveys. However, recent research suggests that severe work-related injury rates are not decreasing, which reinforces widely documented concerns about injury under-reporting.[13] More research is needed to better understand the declining trends in Wyoming.

Table 5: Provisional Summary of Accepted Claims by Industry, Wyoming Workers Compensation Division, 2014 (N=11,344)

(NAICS code) Industry Title	# Claims	% of Total	Median medical cost per claim	# Hospitalization claims	# Burn claims	# Amputation claims	# Long-term disability claims
(11) Agriculture, Forestry, Fishing, and Hunting	226	2.0	**$1,289**	**17**	3	1	10
(21) Mining, Quarrying, and Oil and Gas Extraction	**968**	**8.5**	**$1,118**	**43**	23	**31**	**97**
(22) Utilities	107	0.9	$839	2	1	0	8
(23) Construction	**1174**	**10.3**	**$1,116**	**38**	23	**16**	**146**
(31-33) Manufacturing	595	5.2	$658	**14**	**36**	**13**	46
(42) Wholesale Trade	361	3.2	$850	5	11	2	23
(44-45) Retail Trade	851	7.5	$610	9	**36**	1	48
(48-49) Transportation and Warehousing	503	4.4	**$1,263**	9	6	1	**77**
(51) Information	101	0.9	$545	1	2	0	7
(52) Finance and Insurance	74	0.7	$219	0	1	0	1
(53) Real Estate and Rental and Leasing	123	1.1	**$1,163**	5	2	1	11
(54) Professional, Scientific, and Technical Services & (55) Management of Companies and Enterprises	104	0.9	$939	2	1	0	5
(56) Administration and Support and Waste Management and Remediation Services	293	2.6	$722	5	8	**4**	28
(61) Educational Services*	741	6.5	$348	1	24	1	30
(62) Health Care and Social Assistance	**1621**	**14.3**	$437	13	**35**	0	**75**
(71) Arts, Entertainment, and Recreation	104	0.9	$676	2	1	0	5
(72) Accommodation and Food Services	**1191**	**10.5**	$596	**19**	**71**	**7**	56
(81) Other Services	269	2.4	$839	7	8	1	23
(92) Public Administration**	**1426**	**12.6**	$499	11	**33**	1	**65**
Other/Unknown***	512	4.5	$540	7	5	2	31
TOTAL	**11,344**	**100**		**210**	**330**	**82**	**792**

Top 5 highest in each column are bolded and highlighted. *Table includes all accepted claims, open or closed. All ages. Excludes fatality claims*

**Includes DWS-specific codes for University of Wyoming employees*

***Includes state, local and county government employees, and fire protection workers not otherwise classified*

**** Includes DWS-specific codes for temporary workers, self-employed, and other misc. codes, as well as unknowns*

Table 6: Estimated Top 10 Natures of Injury, All industries, Accepted Claims, Wyoming Workers Compensation Division, 2014 (N=11,344)

Nature of Injury	Count	Percent of Total
Strain	2687	23.7
Contusion	2054	18.1
Lacerations	1074	9.5
Sprain	526	4.6
Puncture	464	4.1
Fracture	356	3.1
Foreign Body	324	2.9
Burn(s)	254	2.2
Crushing	140	1.2
Concussion	108	1.0

Note: Table excludes counts for non-specific categories of "All other" and "Unknown"

Table 7: Estimated Leading Causes of Injury, All industries, Accepted Claims, Wyoming Workers Compensation Division, 2014 (N=11,344)

Cause of Loss	Count	Percent of Total
Fall, Slip or Trip Injury	2088	18.4
Strain or Injury By	2005	17.7
Struck or Injured By	1290	11.4
Cut, Puncture, Scrape Injured By	1040	9.2
Caught In, Under or Between	496	4.4
Burn or Scald-Heat or Cold Exposure-Contact With-Exposure	286	2.5
Striking Against or Stepping On	275	2.4
Motor Vehicle	209	1.8
Rubbed or Abraded By	52	0.5

Note: Table excludes counts for non-specific categories of "Miscellaneous causes" and "Unknown"

Tables 5-7 Observations & Discussion: There are numerous ways to assess workers' compensation claims data, and methods often depend on the question to be answered or the problem to be solved. In these data, various industries stand out as priorities for various reasons.

- The **Healthcare and Social Assistance industry** had the highest estimated proportion of total claims recorded for 2014. This is similar to trends reported in prior reports[5], thus represents an opportunity to reduce the frequency of work-related injury in Wyoming by addressing hazards in this industry. **(Table 5)**
- The highest median medical costs per claim in 2014 were observed among the **Agriculture Forestry Fishing and Hunting, Mining Quarrying and Oil and Gas Extraction, Construction, Transportation and Warehousing, and Real Estate and Rental and Leasing** industries**.** Medical costs can serve as an indicator of injury severity[14]. Some of these industries also have the highest frequency of work-related hospitalizations in Wyoming in this and prior reports.[5] Thus, targeted prevention for these industries is an opportunity to prevent severe injuries on the job. **(Table 5)**
- Non-fatal injury claims in the **Mining, Quarrying, and Oil and Gas Extraction, and Construction** industries rank highest in most measurements presented for 2014, thus remain priority focus industries for the state. **(Table 5)**
- The leading types of non-fatal injury are strains, contusions and lacerations **(Table 6)**, resulting largely from fall, slip, trip, strain by, and struck by causes across all industries **(Table 7)**. Further analysis is planned to identify and describe any variance in these observations by industry sector.

Opportunities for Prevention

Workplace safety and health issues impact every member of our community. Disease and injury prevention state-wide requires sustained efforts across various disciplines, including engineering, equipment design, policy development, education, training, research and evaluation. Approaches can be integrated across a hierarchy of

controls, which is commonly used as a means to determine strategies for feasible and effective injury prevention solutions at all levels of intervention.[15] This section summarizes select, best practice strategies that may help improve worker safety in Wyoming.

Transportation

As half of occupational fatalities are consistently due to motor vehicle accidents and Wyoming has a higher proportion of transportation related fatalities compared to national averages, fostering motor vehicle accident prevention in all industry sectors should be a main priority in Wyoming. In this report, factors identified in work-associated transportation fatalities include driving too fast for road conditions, driver fatigue and failure to spot a person behind a backing vehicle. (Table 1)

In the event of an over-the-road motor vehicle accident, use of a seatbelt is recognized as the single most effective intervention to prevent injury or death. Yet, compared to national averages, fewer Wyoming drivers and front seat passengers overall wear a seatbelt, 86% and 77% respectively.[16] Additionally, in 2013, 54.2% all Wyoming motor vehicle crash decedents were not using safety belts or equipment at the time of the crash.[17]

Strategies

- All employers and workers should follow established best-practices for transportation safety in the workplace, including mandatory seatbelt use and adequate driver training. Free example policies and guidelines are available from NIOSH [18] and OSHA[19].
- Employers, the self-employed, and equipment and fleet owners should consider implementing the latest in-vehicle safety features, such as lane departure warning systems and rear visibility technology. Some of this technology has been proven so effective that it will be required in all new light-duty vehicles by 2018.[20]
- The Wyoming Transportation Safety Coalition should continue to meet regularly and function collaboratively to become a leading authority and voice for roadway safety efforts around the state. Priority topics should include:
  - Devising state-wide policies and campaigns aimed at preventing motor vehicle accidents and injuries.
  - Encouraging employers around the state to implement safe driving workplace policies that increase seatbelt use, decrease driver fatigue, and allow for travel delays during inclement weather.
  - Devising and supporting roadway improvements to increase safety in hazardous conditions or situations (e.g. warning signage, run-away truck ramps, safe passing lanes, guard rails and barriers, improved snow and ice removal).
- The Wyoming motor vehicle crash report could be amended to include a specific indication of an “at work” accident. This would allow more complete and accurate tracking of both fatal and non-fatal occupational motor vehicle accidents, thus lead to better understanding of whether work-associated crashes have different risk factors compared to all other crashes. A possible model for this data element exists in the nationally standardized death certificate, which collects an “injury at work” data element for vital records.[21]

Health & Safety Partnerships

Engaging stakeholders and convening multi-disciplinary workgroups are widely recognized as valuable strategies for identifying, sharing and implementing best practices to achieve improvements in public and community health.[22] In the forum of occupational health and safety, the workplace is our community and industry partners are a key stakeholder. Wyoming’s industry alliance groups are an essential forum for communicating timely hazard alerts, prevention resources, and other information to participants.

Strategies

- Wyoming should continue to foster and participate in multi-disciplinary health and safety alliances and coalitions. Several industry-led organizations are already established and are at different levels of maturity. These groups should continue to meet regularly, develop and implement strategic plans, participate in state-wide policy development, and conduct outreach to increase membership:
  - Wyoming Oil & Gas Industry Safety Alliance (WOGISA) (wyomingsafety.org) - Established 2010
  - Wyoming Refinery Safety Alliance (WRSA) - Established 2012
  - Wyoming Transportation Safety Coalition (WTSC) - Established 2013
  - Wyoming Construction Safety Alliance (WCSA) - Established 2014
- Wyoming should also foster and participate in the creation of alliances and workgroups to address other identified issues. For example, an agricultural health and safety alliance could provide a state-wide communication forum to increase hazard awareness among farmers and ranchers.
- The Wyoming DWS should remain active within the national occupational health and safety community to bring the latest techniques and information back to Wyoming alliances and stakeholders.

Safety Assistance for Workers & Employers

Workers and employers concerned about health and safety issues in the workplace, or just needing to address questions about potential hazards, have access to several resources and programs that can provide solutions. Wyoming's workforce and businesses are encouraged to review and consider utilizing the following services

Strategies - State Assistance Programs

- Most worker compensation insurance providers offer free assistance to help employers develop and evaluate health and safety programs. Many also offer reduced insurance premium costs for implementing new safety measures. Clients of Wyoming Workers Compensation can learn more online: wyomingworkforce.org/businesses/workerscomp/risk/, or contact your provider for more information.
- Employers registered with Wyoming Workers Compensation can take advantage of the Safety Improvement Fund, which provides up to $10,000 grants for worker training or safety equipment or engineering improvements. Learn more online: wyomingworkforce.org/businesses/workerscomp/risk/
- Wyoming OSHA Consultation Services are available to private and public sector employers to provide confidential technical assistance at no charge. Using this free service, employers can find out about potential hazards in their businesses and qualify for a one-year exemption from OSHA compliance inspections. Learn more online: wyomingworkforce.org/businesses/osha/consultation/
- Wyoming OSHA also provides numerous free training resources and example safety programs to help employers and employees establish health and safety plans. All are available online: wyomingworkforce.org/businesses/osha/resources/

Strategies - Federal Assistance Programs

- Federal OSHA provides a clear summary of worker rights and employer responsibilities, which are implemented under the Wyoming OSHA program: www.osha.gov/workers/
- Employees, employee representatives, or employers can also ask the National Institute for Occupational Safety and Health (NIOSH) Health Hazard Evaluation (HHE) Program to help learn whether health hazards are present at their place of work. This is a free and confidential service that has no affiliation to OSHA. www.cdc.gov/niosh/hhe/

Fostering a Safety Culture

An internet search for "foster a safety culture" will return over six million articles, studies, books, success stories, opinion pieces, and more. A good safety culture is difficult to measure, but themes demonstrated in successful cultures include management support for safety as a company value, open and honest communication in all directions, continued training and learning, and pro-active efforts at all levels to identify and mitigate hazards. While injury and illness prevention programs are essential in the workplace, a strong safety culture is just as essential to weave program components together and elevate health and safety to the top priority.

Assuming strong workplace safety cultures can also positively influence safety choices at home and during recreation, all citizens of Wyoming stand to gain from investments to improve workplace safety culture. According to national vital statistics annual reporting, Wyoming consistently ranks with one of the highest (top ten) all-cause injury death rates in the nation. In 2013, 325 Wyoming residents died from injury-related events (age adjusted rated 55.2 per 100,000 population); ninety-one (28%) of those injury deaths were motor vehicle accidents.[23] A strong safety culture can help promote the philosophy that injury events are predictable, and therefore preventable.[24]

Strategies

- Enhancing the capacity of Workforce Services to provide safety culture expertise is one mechanism that might assist workers and employers in identifying and eliminating any safety culture barriers. This could be accomplished by training staff to provide assessment and recommendations, or by developing and disseminating safety culture tools and resources.
- Coordinated state-wide media campaigns may also help spread safety culture awareness through the workforce and public. Efforts can be topic specific, such as the Center for Construction Research & Training (CPWR) Campaign to Prevent Falls in Construction (stopconstructionfalls.com). Campaigns can also have more general safety messages, such as the WorkSafeMT campaign in Montana (www.worksafemt.com).

Occupational Epidemiology Program

On-going systematic surveillance, research and reporting helps to maintain state-wide awareness and understanding of the issues faced by Wyoming's workers and employers. This report and its prior companion reports showcase several opportunities for more in-depth research and investigation. To that end, the DWS Occupational Epidemiology Program is working to enhance and expand the information that is available for employers, workers, the public, policy makers and researchers.

Next Steps

- Continue case-based surveillance for workplace fatalities. This effort requires collection of data from multiple data sources from various state and federal agencies and systems.
- Expand program capacity by hosting internships and apply for a 3-yr NIOSH grant to develop Wyoming's use of workers compensation claims data for surveillance and research. These efforts will increase our ability to conduct more in-depth, topic- and industry-specific analyses and more detailed and systematic reporting of workers compensation data.
- Explore opportunities to describe worker health and safety outcomes with other data sources, such as hospital discharge data, the Behavioral Risk Factor Surveillance Survey (BRFSS), and the trauma registry.
- Remain an active partner and collaborator with alliances and other injury prevention groups around Wyoming to support data requests and generate reports tailored for high-risk industries and issues. Example efforts include:

- **Describing specific injury and fatality data for Wyoming safety alliances.** Planned reports tailored to describe the specific injuries and issues within alliance sectors will aid these groups in establishing priorities and devising state-wide education and intervention strategies.
- **Tracking the impact of speed limit increases.** The Wyoming Department of Transportation releases annual reports on speed related fatal crash data across the state. Additional analyses over the next several years are essential to identify any emerging trends in speed-related crashes.
- **Supporting efforts of the Wyoming Department of Health to launch a state-wide injury prevention program.** Public health colleagues and programs are essential partners to address worker health and safety issues that may intersect with the health and safety of the public and our communities.

Conclusions

This report is the third annual report aiming to describe trends in occupational fatal and non-fatal injuries across Wyoming. Wyoming is unique with a high proportion of dangerous jobs, long distances traveled for work, and the potential for non-resident workforces traveling across or working in our state. However, Wyoming is not the only state in the nation to be faced with these challenges and there remains the opportunity to become a national leader in efforts to prevent worker injury, illness and fatality. Several awareness and prevention efforts in Wyoming have been initiated in the last several years and remain active. Wyoming leaders, employers and workers are to be commended for their on-going commitment to workplace health and safety and should remain engaged in action to promote safety and respond to issues and hazards as identified.

Acknowledgements

This report would not be possible without the support and collaboration of several local partners, including:

- Wyoming Department of Transportation
- Wyoming Department of Health, Vital Statistics Services
- Wyoming Highway Patrol
- Wyoming County Coroners

Support and review within the Wyoming Department of Workforce Services was provided by:

- Delbert McOmie – Interim Director
- John Ysebaert – Administrator, Workers Compensation Division
- Dan Bulkey – Administrator, WY-OSHA
- Tom Gallagher – Manager, Office of Research and Planning
- Hayley McKee – Public Information Officer

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