



Washington State Department of
Labor & Industries

Work-Related Immediate Inpatient Hospitalizations in Washington State

2022 Annual Report to the Legislature

August 2022

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Executive Summary

In 2019, the Washington State Legislature first provided funding to the Safety and Health Assessment and Research for Prevention (SHARP) program at the Department of Labor & Industries (L&I) to develop a tracking system for work-related immediate inpatient hospitalizations and their likely causes. This is the third annual report updating the governor and legislature on the program's progress.

The work-related immediate inpatient hospitalization surveillance system identifies workplace injuries and illnesses that result in inpatient hospital admission within one day of the incident by linking hospital discharge data from the Comprehensive Hospital Abstract Reporting System (CHARS) from the Washington State Department of Health with workers' compensation claim information from L&I.

Analysis of surveillance system data found that 601 Washington workers suffered work-related immediate inpatient hospitalizations in 2021.¹ Preliminary data show that:

- Construction industry workers continue to suffer the highest number and rate of work-related immediate inpatient hospitalizations.
- Falls from elevation remain the leading cause of worker hospitalizations.
- Smaller employers continue to experience higher rates of work-related immediate inpatient hospitalization than larger employers.

SHARP uses surveillance system data to inform prevention efforts. Prevention activities in the previous year included publication of safety training material addressing:

- Roofing falls in construction.
- Falls from elevation while tarping loads in trucking.
- ATV rollovers in agriculture.
- Injuries from conveyor belts in food manufacturing.

In addition, a technical report was published that provides more detail about work-related immediate inpatient hospitalizations in years 2019 and 2020.²

L&I's priorities for the coming year will be to publish technical reports detailing work-related immediate inpatient hospitalizations for 2021, and an in-depth analysis of specific hospitalized injuries in the manufacturing industry. L&I continues to improve and evaluate the tracking system as this data informs other efforts to further identify hazards and prioritize prevention activities.

¹ Based on date of hospital discharge.

² Work-Related Immediate Inpatient Hospitalizations-Washington State, 2019 and 2020: https://lni.wa.gov/safety-health/safety-research/files/2022/96_08_2022_WorkRelatedImmediateInpatientHospitalizations_2019and2020.pdf

Introduction

A work-related immediate inpatient hospitalization is defined as a workplace injury or illness that results in inpatient hospital admission within one day of the incident. Work-related injuries that require immediate hospitalization are severe, costly, and can cause permanent disability. These injuries are preventable.

The work-related immediate inpatient hospitalization surveillance system links hospital discharge data from the Comprehensive Hospital Abstract Reporting System (CHARS) to Washington workers' compensation State Fund and Self-Insured³ claim information to identify work-related injuries resulting in immediate hospital admission. These records provide valuable insight into a range of helpful data, from worker demographics, to industry, occupation, and injury/illness classification codes.

Preliminary work-related immediate inpatient hospitalizations for 2021 are included in this report. Also included is an overview of hospitalized injuries caused by equipment used in the manufacturing industry. More detailed analyses will be published in technical reports in the coming year.

Prevention activities for 2021–2022 focused on hospitalization hazards identified through the work-related immediate inpatient hospitalization surveillance system, including injuries caused by falls from elevation in the construction and transportation industries, all-terrain vehicle rollovers in agriculture, and conveyor belts in food manufacturing.

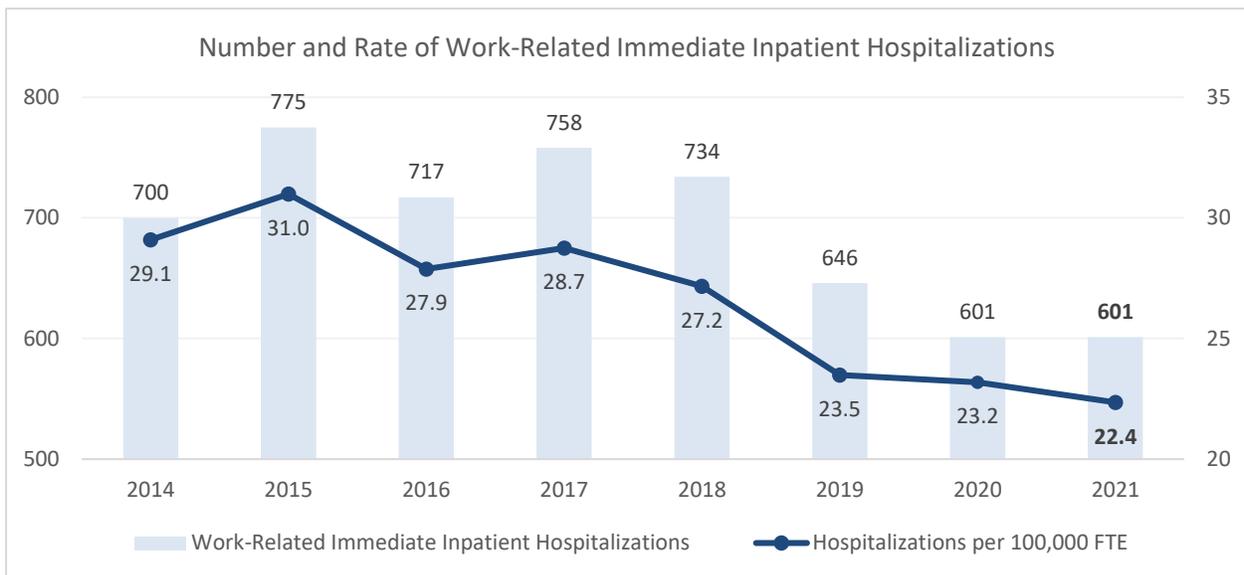
³ Washington employers are required to obtain workers' compensation insurance through L&I's State Fund, unless they meet requirements to self-insure or are covered by an alternative system. Approximately seventy percent of Washington workers are covered through the State Fund. L&I administrative data collected for Self Insured claims is limited, including hospital admission and discharge information.

2022 Progress

WORK-RELATED IMMEDIATE INPATIENT HOSPITALIZATIONS, 2021

In 2021, 601 Washington workers suffered work-related injuries or illnesses that required immediate hospitalization, a rate of 22.4 per 100,000 FTE⁴ (Figure 1). While the number of work-related immediate inpatient hospitalizations remained the same as the previous year, the rate of hospitalizations per 100,000 continued to trend downward.

Figure 1. Number and Rate of Work-Related Immediate Inpatient Hospitalizations, Washington State, 2014–2021.



Workers

In 2021, three-quarters of work-related immediate inpatient hospitalizations were among men (n=450, 74.9%). There were 151 work-related immediate inpatient hospitalizations among women.

Among men, workers age 25 to 34 experienced the highest number of immediate hospitalizations. For women, the highest number of hospitalized injuries was found in the 55–64 age group (Figure 2).

⁴ Hospitalization rates are calculated using payroll hours reported to L&I by employers and converted to FTE. One FTE = 2000 hours worked in a year.

Figure 2. Work-Related Immediate Inpatient Hospitalizations by Age Group and Gender, 2021.

Age Group	All Workers: Hospitalizations (%)	Men: Hospitalizations (%)	Women: Hospitalizations (%)
18 and under	2 (0.3%)	2 (0.4%)	0 (0.0%)
19-24	49 (8.2%)	41 (9.2%)	8 (5.2%)
25-34	118 (19.6%)	100 (22.3%)	18 (11.8%)
35-44	106 (17.6%)	90 (20.1%)	16 (10.5%)
45-54	119 (19.8%)	91 (20.3%)	28 (18.3%)
55-64	141 (23.5%)	89 (19.9%)	52 (34.0%)
65 and above	66 (11.0%)	35 (7.8%)	31 (20.3%)

Industry

In 2021, Washington’s Construction Industry Sector (NAICS Sector 23) again experienced the highest number and rate of work-related immediate inpatient hospitalizations. Construction workers accounted for over one quarter of hospitalizations (n=166, 27.6%), with a rate of 89.3 hospitalizations per 100,000 FTE (Figure 3).

Washington’s Manufacturing industry (NAICS Sectors 31-33) saw the second highest number of hospitalizations (n=57).

The Agriculture, Forestry, Fishing, and Hunting industry sector (NAICS Sector 11) experienced the second highest rate of immediate inpatient hospitalizations, with 50.6 worker hospitalizations per 100,000 FTE.

Figure 3. Work-Related Immediate Inpatient Hospitalizations by NAICS Industry Sector, 2021.

NAICS Industry Sector Code and Description*	Hospitalizations‡ (%)	Rate per 100,000 FTE
23: Construction	166 (27.6%)	89.3
31-33: Manufacturing	57 (9.5%)	25.7
56: Administrative and Support and Waste Management and Remediation Services	54 (9.0%)	26.3
92: Public Administration	53 (8.8%)	37.0
11: Agriculture, Forestry, Fishing and Hunting	47 (7.8%)	50.6
62: Health Care and Social Assistance	43 (7.2%)	11.3
44-45: Retail Trade	40 (6.7%)	14.5
48-49: Transportation and Warehousing	33 (5.5%)	38.8
42: Wholesale Trade	19 (3.2%)	15.0
53: Real Estate and Rental and Leasing	18 (3.0%)	28.8
72: Accommodation and Food Services	18 (3.0%)	11.6
81: Other Services (except Public Administration)	15 (2.5%)	17.0
61: Educational Services	13 (2.2%)	8.3

* Only Industry Sectors with more than 10 hospitalizations are listed.

‡ Excludes six claims that were not assigned to an employer account.

Injury Event

As in previous years, falls from elevation were the leading cause of work-related immediate inpatient hospitalizations in 2021, accounting for over a quarter of all injuries. Over a third of hospitalized falls were from ladders.

The two next most frequent injury events leading to worker hospitalization were being struck by objects or equipment and falls on the same level.

Together, these three injury event types were the cause of over half of all work-related immediate inpatient hospitalizations in 2021.

Employers

In 2021, 497 (82.7%) of work-related immediate inpatient hospitalizations were among workers whose employers were state fund employers for purposes of workers' compensation, and 104 (17.3%) had self-insured employers.

Those working for smaller companies continued to have higher rates of work-related immediate inpatient hospitalizations compared to larger employers. In fact, employers with ten or fewer FTE had the highest rate, with 40.9 worker hospitalizations per 100,000 FTE, more than three times the rate of the largest employers (Figure 4).

Figure 4. Work-Related Immediate Inpatient Hospitalizations by Employer Size, 2021.

Employer Size	Hospitalizations	Percent	Rate per 100,000 FTE
Less than or equal to 10 FTE	149	24.8%	40.9
11–49 FTE	128	21.3%	28.6
50–249 FTE	135	22.5%	25.6
250–999 FTE	79	13.1%	19.2
1000 or more FTE	110	18.3%	11.7

PREVENTION PUBLICATIONS

Data from the work-related immediate inpatient hospitalization surveillance system can identify high-hazard industries, equipment, and tasks that frequently lead to worker hospitalization. From this information, SHARP creates industry-focused injury prevention alerts—Worker Hazard Alerts and Hospitalization Hazards.

Alerts are developed by a Certified Safety Professional,⁵ and made available for free on the L&I website.⁶ They are also distributed to a growing list of email subscribers. These alerts tell stories of real-life, on-the-job injuries that required immediate hospitalization, offer safety requirements, recommendations for injury prevention, and list further resources for workers and employers to explore.

English is not the preferred language of many Washington State workers in high-hazard industries. In 2021, 16.6% of immediately hospitalized workers indicated that they preferred to receive workers' compensation claim information in a language other than English, and the majority of those workers preferred Spanish language correspondence. For this reason, prevention material is also published in Spanish.

In addition, SHARP queries industry and other safety and health stakeholders to determine if translation of specific alerts would increase accessibility to at-risk workers, and publish prevention material in other languages based on this information.

The following industry alerts were developed in the past year:

Roofing

Falls from elevation led to over half of all worker hospitalizations in the construction industry. Falling from a roof was second only to falling from a ladder as the most frequent cause of injury.

SHARP developed a Worker Hospitalization Alert that tells the story of a roofing company foreman who suffered multiple serious injuries and was unable to return to work for months after falling from a steep, slick roof.⁷ In this case, contributing factors that combined to create the hazardous situation included not using fall protection while moving material, a lack of a fall protection work plan, and wet roof conditions.

This alert was designed to be used interactively in safety trainings or tool box talks, inviting readers to think about what went wrong before turning the page and reading about prevention recommendations and requirements.

Trucking

Falls from elevation are a leading cause of immediate inpatient hospitalization in Washington's transportation industry. One common task that can expose truck drivers to fall hazards is tarping their loads.

⁵ <https://www.bcsp.org/CSP>

⁶ <https://lni.wa.gov/safety-health/safety-research/ongoing-projects/immediate-inpatient-hospitalizations#prevention-resources>

⁷ Foreman Falls 15 Feet From Roof: https://lni.wa.gov/safety-health/safety-research/files/2022/100_13_2022_ResidentialRoofingFalls.pdf

SHARP published a Hospitalization Hazard Alert to address falls from elevation while tarping.⁸ It describes the cases of two truck drivers who required hospitalization after falling while tarping a load, one from a fixed ladder and one from the top of a tall load on a flatbed trailer. Both workers suffered multiple fractures that required surgery.

The alert details how employers can better plan for safety and protect truck drivers from falls through proper tarp training, ensuring safe ladder use, and making sure equipment is maintained in safe working condition. In addition, this alert was published in Spanish, Russian, Amharic, and Punjabi.

Agriculture

All-terrain vehicles (ATVs) are used extensively in Washington's agriculture industry, yet their use poses a risk for worker injury and hospitalization.

SHARP published a Hospitalization Hazard Alert focused on preventing injuries from ATV rollovers in agriculture.⁹ The alert described two separate incidents in which workers performing irrigation duties were severely injured when the ATVs they were operating rolled over after encountering holes in the ground. Neither worker was wearing a helmet. The alert provides recommendations regarding training, planning for safety, and safe ATV operation that employers can use to keep their workers safe. The alert is also available in Spanish.

Food Manufacturing

Conveyor systems are common in food manufacturing workplaces, and serious injuries can occur if workers become caught in rollers, belts, or sprockets.

SHARP published a Hospitalization Hazard Alert that tells the stories of two workers who suffered arm fractures severe enough to require surgery after becoming entangled in conveyor rollers, and describes how employers can protect workers by ensuring that conveyors are properly guarded and employees are trained about safe work procedures and how to recognize hazards.¹⁰ This alert was also published in Spanish and Russian.

HOSPITALIZED INJURIES IN MANUFACTURING

SHARP also uses information from the work-related immediate inpatient hospitalization surveillance system to examine trends over time in specific industries. The data show that from 2014 through

⁸ Falls from Elevation While Tarping: https://lni.wa.gov/safety-health/safety-research/files/2022/100_11_2022_TrailerFallsWhileTarping.pdf

⁹ ATV Rollover in Agriculture: https://lni.wa.gov/safety-health/safety-research/files/2022/100_12_2022_ATVRollovers.pdf

¹⁰ Food Manufacturing Conveyors: https://lni.wa.gov/safety-health/safety-research/files/2021/100_10_2021_ConveyorCaughtIn.pdf

2021, nearly one in five (19.5%) worker hospitalizations in Washington's manufacturing industry occurred when workers were caught in or compressed by equipment or objects.¹¹

Of these 108 hospitalizations, about 70% occurred among workers in four industry subsectors: food manufacturing, wood product manufacturing, fabricated metal product manufacturing, and paper manufacturing.

Machinery was cited as the source of nearly 81% of injuries. Two specific machinery classifications frequently listed were metal, woodworking, and special material machinery; and material handling machinery (conveyors). Over three-quarters of these injuries involved upper extremities.

SHARP's analysis of these manufacturing equipment injuries is ongoing, with a technical report expected to be published in late 2022 or early 2023.

Ongoing Priorities

In the coming years, L&I will continue to use data from the work-related immediate inpatient hospitalization surveillance system to identify hazards that put workers at risk for severe injuries. The goal remains to influence a downward trend in both the number and rate of work-related immediate inpatient hospitalizations by using information to empower workers and employers.

Ongoing priorities for the work-related immediate inpatient hospitalization surveillance system are:

- **Evaluation and improvement of case capture.** Initial evaluations suggest that a small portion of Washington workers' compensation State Fund claims for immediate inpatient hospitalizations are those hospitalized out-of-state and therefore ineligible for reporting in Washington State CHARS. SHARP will explore how best to modify the data collection system to incorporate these claims into the surveillance system.
- **Investigating racial and ethnic disparities in worker hospitalizations.** Understanding racial and ethnic disparities in occupational health is integral to delivering targeted prevention guidance. Using SHARP's validated Bayesian Improved Surname Geocoding method to identify race and ethnicity with worker's compensation claim data, the program will determine if there is a difference in work-related immediate inpatient hospitalization rates by race and ethnicity.
- **Analyzing specific industry hazards.**

¹¹ Coded in Washington workers' compensation claim data using the Occupational Injury and Illness Classification System, v1.01, U.S. Department of Labor, Bureau of Labor Statistics: <https://www.cdc.gov/Wisards/oiics/default.aspx>

- SHARP will report on hospitalized injuries in manufacturing that occur when workers are caught in or compressed by equipment or objects. The report will also specifically identify the machinery or equipment that the worker was caught in, under, or between.
- SHARP will review hospitalized falls from elevation in construction to determine common causes of falls, including identifying fall restraint system use, specifically for roofers and other exterior building construction contractors.
- **Using surveillance system data to evaluate mandatory employer reporting.** SHARP will compare employer reports to the Division of Occupational Safety and Health (DOSH) against the surveillance system to evaluate the completeness of mandatory reporting of worker hospitalizations. From this comparison, SHARP will develop recommendations for DOSH to consider to improve employer reporting of immediate inpatient hospitalizations and track enforcement actions with employers.
- **Enhancing prevention publication outreach and accessibility.** Educational materials developed as a result of this surveillance must be understandable and accessible. SHARP will seek input from experts and advocates to improve accuracy and accessibility of prevention materials on an array of topics. In addition, SHARP will extend the surveillance system information through publication of program material in select industry trade journals, through direct mailing, and at safety outreach events.

Conclusion

The work-related immediate inpatient hospitalization surveillance system is a valuable tool to identify industries, tasks, and worker populations at risk for severe occupational injuries. L&I continues to monitor and report on trends in work-related immediate hospitalizations to empower employers and workers to reduce work-related injuries. SHARP's research continues to inform injury prevention priorities to *keep Washington safe and working*.

List of Publications

Published August 2021 through July 2022

Technical Report

- **Work-Related Immediate Inpatient Hospitalizations—Washington State, 2019 and 2020:** https://lni.wa.gov/safety-health/safety-research/files/2022/96_08_2022_WorkRelatedImmediateInpatientHospitalizations_2019and2020.pdf

Resources for Prevention

- **Foreman Falls 15 Feet from Roof:** https://lni.wa.gov/safety-health/safety-research/files/2022/100_13_2022_ResidentialRoofingFalls.pdf
 - Spanish: https://lni.wa.gov/safety-health/safety-research/files/2022/100_13_2022SP_ResidentialRoofingFalls_Spanish.pdf
- **Falls From Elevation While Tarping:** https://lni.wa.gov/safety-health/safety-research/files/2022/100_11_2022_TrailerFallsWhileTarping.pdf
 - Spanish: https://lni.wa.gov/safety-health/safety-research/files/2022/100_11_2022SP_TrailerFallsWhileTarping_Spanish.pdf
 - Russian: https://lni.wa.gov/safety-health/safety-research/files/2022/100_11_2022RU_TrailerFallsWhileTarping_Russian.pdf
 - Amharic: https://lni.wa.gov/safety-health/safety-research/files/2022/100_11_2022AM_TrailerFallsWhileTarping_Amharic.pdf
 - Punjabi: https://lni.wa.gov/safety-health/safety-research/files/2022/100_11_2022PN_TrailerFallsWhileTarping_Punjabi.pdf
- **ATV Rollover in Agriculture:** https://lni.wa.gov/safety-health/safety-research/files/2022/100_12_2022_ATVRollovers.pdf
 - Spanish: https://lni.wa.gov/safety-health/safety-research/files/2022/100_12_2022SP_ATVRollovers_Spanish.pdf
- **Food Manufacturing Conveyors:** https://lni.wa.gov/safety-health/safety-research/files/2021/100_10_2021_ConveyorCaughtIn.pdf
 - Spanish: https://lni.wa.gov/safety-health/safety-research/files/2021/100_10_2021SP_ConveyorCaughtIn_Spanish.pdf
 - Russian: https://lni.wa.gov/safety-health/safety-research/files/2021/100_10_2021RU_ConveyorCaughtIn_Russian.pdf