

# The state of Occupational Health in Washington

TEN YEARS OF OCCUPATIONAL HEALTH INDICATOR DATA

March 2025



# WASHINGTON STATE OCCUPATIONAL HEALTH INDICATOR DATA: 2014-2023

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## EXECUTIVE SUMMARY

Washington State is home to over 3.83 million workers who form the foundation of the state's economy. In 2023, employers reported that 81,600 Washington workers were injured or made ill on the job. These work-related injuries and illnesses have high human and economic costs, but are preventable.

Occupational Health Indicators are a set of measurements that provide an overview and general assessment of the employment characteristics and occupational health of Washington State. This report presents Washington data for 2014-2023, or the most current data available, to assess recent trends in work-related injuries and illnesses and inform prevention efforts.

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### KEY FINDINGS

#### Employment trends

- The workforce is becoming more racially and ethnically diverse.
- The share of employment among young workers and older workers is increasing.
- Industries with an increasing share of employment included education and health services, construction, and transportation and utilities.

#### Progress made

- Work-related injuries and illnesses reported by employers
  - The rate of work-related injuries and illnesses in 2023 was the lowest reported by Washington employers in ten years.
  - After recent increases, the rate of work-related injuries and illnesses involving days away from work reported by Washington employers decreased in 2023 to pre-pandemic levels.
- Work-related hospitalizations
  - Work-related hospitalizations declined over time, largely driven by declines in hospitalizations for diseases of the musculoskeletal system and connective tissue.
- Pneumoconiosis-associated deaths
  - Deaths from or with pneumoconiosis fell by more than half over ten years
    - Declines in new cases of malignant mesothelioma were more modest: rates in 2022 were 17% lower than rates in 2013.

#### Attention needed

- Fatal work injuries

- Fatal work injuries in Washington increased in recent years, with 2022 and 2023 experiencing among the highest rates of fatal work injuries in the past ten years.
- The number of fatalities caused by exposure to harmful substances or environment increased nearly every year, becoming the leading cause of fatal work injuries in 2023.
- Work-related hospitalizations for traumatic injuries
  - In contrast to work-related hospitalizations for diseases of the musculoskeletal system and connective tissue, work-related hospitalizations for traumatic injuries changed little over ten years.
- Elevated blood lead among adults
  - The rate of new cases of adults with blood lead levels  $\geq 10 - 25 \mu\text{g/dL}$  increased between 2014 and 2023. The rate of new cases of adults with blood lead levels  $>25 \mu\text{g/dL}$  remained relatively stable.
- Vaccination rates among healthcare workers
  - In 2023, the percentage of Washington's healthcare workers vaccinated against influenza fell to its lowest rate in ten years, placing it in the bottom quartile of vaccination rates by state.

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## CONCLUSIONS

Washington made progress on several aspects of occupational safety and health, as evident in declines among rates of employer-reported injuries and illnesses, work-related hospitalizations, and pneumoconiosis-associated deaths.

Other issues warrant continued or renewed efforts to address recent trends, perhaps most notably among work injuries, as measured both by fatalities and by hospitalizations for traumatic injuries. Additionally, Washington adults continue to be exposed to lead at harmful levels, while declining rates of vaccination among hospital workers not only increases the risk of illness among workers and leaves Washington susceptible to potential healthcare staffing shortages, it also increases the risk for community transmission of influenza.

Annual publication of the occupational health indicators will help identify emerging occupational safety and health issues and prioritize prevention efforts in Washington.

## INTRODUCTION

The Washington State Department of Labor & Industries Safety & Health Assessment & Research for Prevention (SHARP) Program worked with the Council of State and Territorial Epidemiologists (CSTE) Occupational Health workgroup to develop a set of measures to track occupational injuries, illnesses and hazards. The measures, referred to as the occupational health indicators, were selected with consideration for: availability of easily obtainable statewide data, public health importance of the occupational health effect or exposure to be measured, and the potential for workplace intervention activities. While Washington has been collecting these indicators annually since their inception in 2001, this report focuses on the most recent ten years of data, to assess current trends in Washington's occupational safety and health.

Annual occupational health indicator data for years 2010-2023 is available on the [SHARP website](#).

## METHODS

The occupational health indicators are based on data from multiple sources including: Current Population Survey, Survey of Occupational Injuries and Illnesses, Census of Fatal Occupational Injuries, Washington hospital discharge data (Comprehensive Hospital Abstract Reporting System), cancer registry, death data, workers' compensation claims data, Washington Adult Blood Lead Epidemiology and Surveillance data, and National Healthcare Safety Network Healthcare Personnel Influenza Reports.

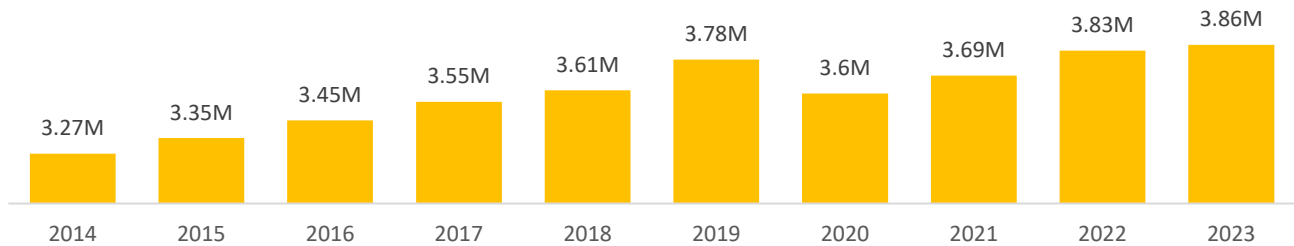
Additional information on the definitions and methodology are available in the Technical Appendix at the end of this document, and in the CSTE publication *OCCUPATIONAL HEALTH INDICATORS: A Guide for Obtaining and Tracking Occupational Health Conditions and Their Determinants*, available on the [CSTE website](#). This report differs from CSTE's set of indicators in two ways. First, the group of indicators presented here, selected for their availability and relevance to Washington, are a subset of the full set published by CSTE. Second, we included additional analyses for each indicator, to better understand observed trends.

## EMPLOYMENT PROFILE

Between 2014 and 2023, Washington's workforce grew by 18.0%, from 3.27 million in 2014 to 3.86 million in 2023, outpacing the 10.0% increase in employment experienced nationally. While employment dropped in 2020 due to the economic effects of the COVID-19 pandemic, employment rebounded in subsequent years, and in 2022, the number of employed persons in Washington totaled 3.83 million, exceeding the number employed in any previous year (Figure 1).

**Figure 1. Employment in Washington increased every year other than 2020.**

Number of Employed Persons (in millions), age 16 or over, Washington, 2014-2023.

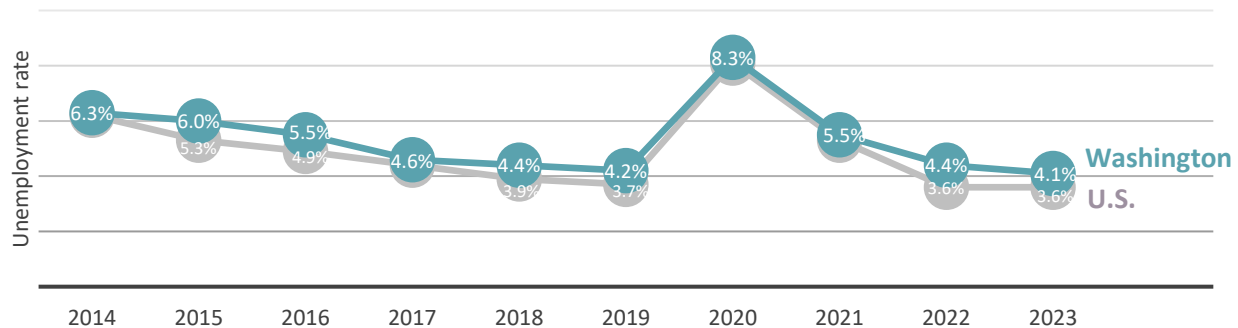


Source: Current Population Survey.

The decline in employment in 2020 was accompanied by an increase in unemployment, which reached 8.3% that year. By 2023, unemployment had fallen by half to 4.1%, the lowest unemployment in Washington in the ten-year period. The trend in the unemployment rate in Washington is similar to the trend nationally (Figure 2.) Over then ten-year span, the annual unemployment rate in Washington averaged 0.4 percentage points higher (+0.4%) than then unemployment rate nationally.

**Figure 2. The unemployment rate in Washington closely tracked the unemployment rate nationally.**

Unemployment rates for Washington and U.S., workers age 16 or over, 2014-2023.

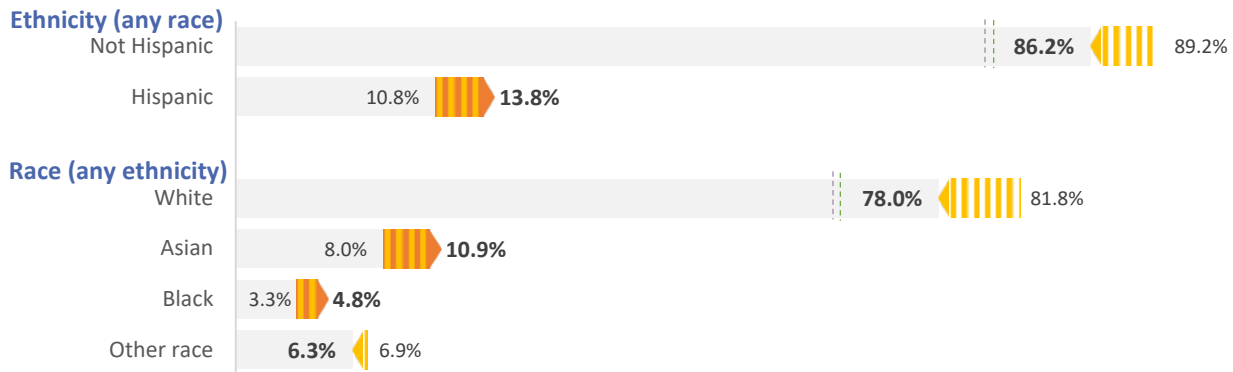


Source: Current Population Survey.

The majority of Washington’s workers identify as non-Hispanic (86.2% in 2023) or White (78.0% in 2023). However, Washington’s workforce is increasingly diverse, with the percentage of workers who identify as Hispanic, Asian, or Black, greater in 2023 compared with 2014 (Figure 3). The largest increases occurred among workers who identified as Hispanic (increased 3.0%) and Asian (increased 2.9%).

**Figure 3. The percentage of workers who identify as Hispanic and/or non-White increased in Washington between 2014 and 2023.**

Percentage of workers by race and ethnicity, Washington State, 2014 vs 2023 (**2023** percentages displayed in **bold**).

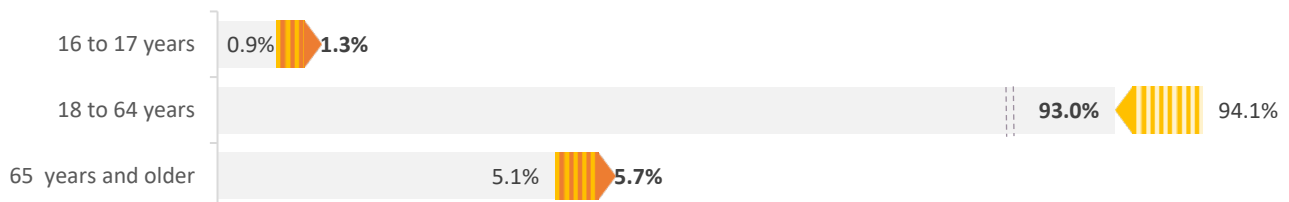


**Source:** Current Population Survey.

While the total number of workers increased across all worker age groups, workers at either end of the age range saw their share of total employment in 2023 increase over their share in 2014. The percentage of workers age 16-17 years increased from 0.9% in 2014 to 1.3% in 2023, while the percentage of workers age 65 and older increased from 5.1% in 2014 to 5.7% in 2023 (Figure 4). Workers age 18-64 years continue to comprise the vast majority of the workforce, making up 93.0% of employment in 2023.

**Figure 4. The share of employment among young workers and older workers increased.**

Percentage of workers by worker age, Washington State, 2014 vs 2023 (**2023** percentages displayed in **bold**).



**Source:** Current Population Survey data, obtained from the NIOSH Employed Labor Force query system.

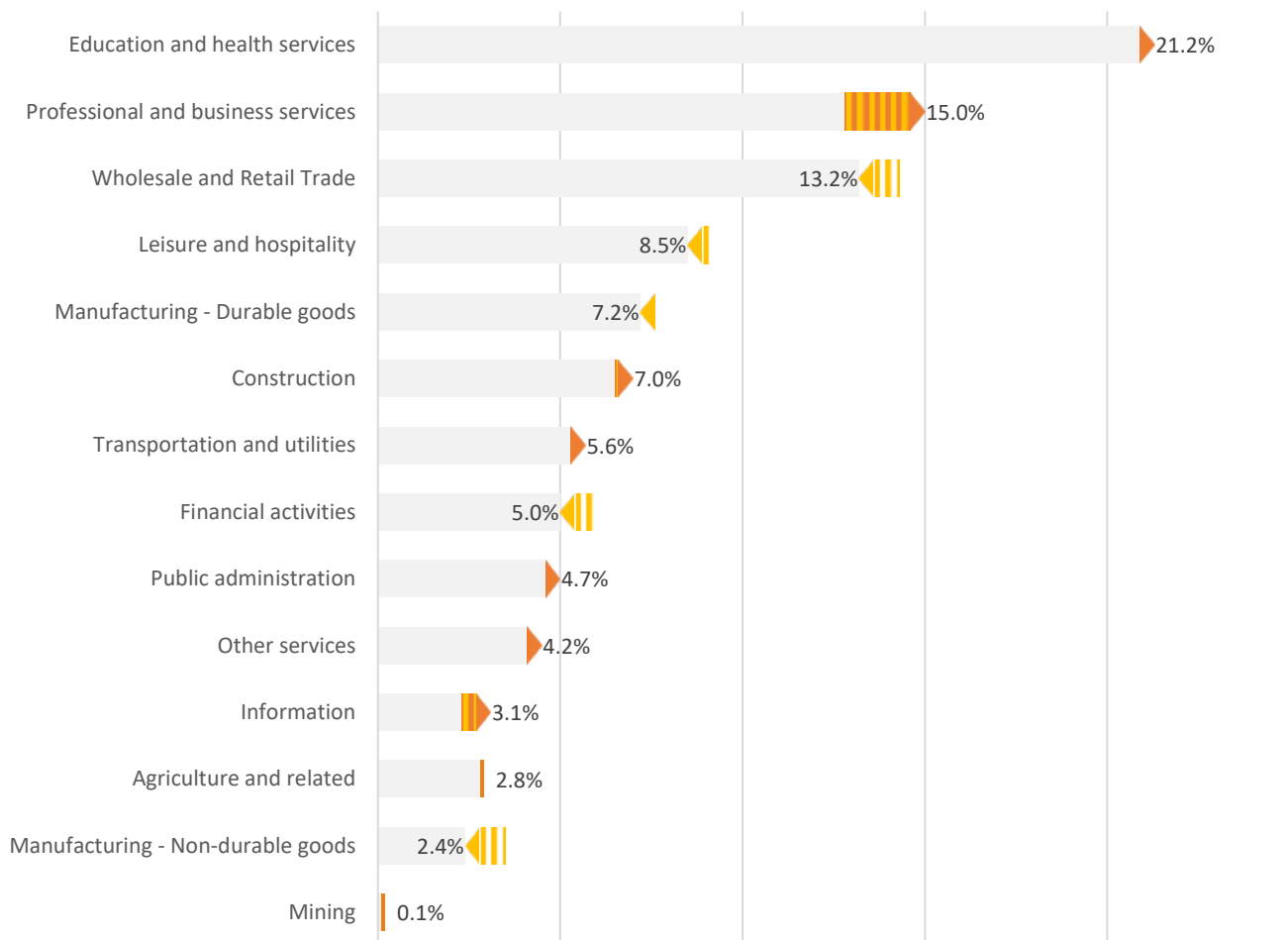


In both 2014 and 2023, the industry with the greatest share of employment in Washington was education and health services, comprising 20.9% of total employment in 2014 and increasing its share of employment slightly to 21.2% in 2023 (Figure 5). The industry with the largest increase in employment was professional and business services, which increased from 12.8% of total employment in 2014 to 15.0% of total employment in 2023.

The greatest declines occurred among wholesale and retail trade, and non-durable goods manufacturing, whose shares of employment each fell by 1.1 percentage points. While wholesale and retail trade was the second largest industry in 2014, by 2023 it was surpassed by employment in business and professional services.

**Figure 5. Education and health services had the greatest share of employment of any industry in 2023, while professional and business services had the largest increase in employment from 2014.**

Distribution of civilian employment in Washington by industry, 2014 vs. 2023. Percentages displayed are for 2023.



**Source:** Current Population Survey.

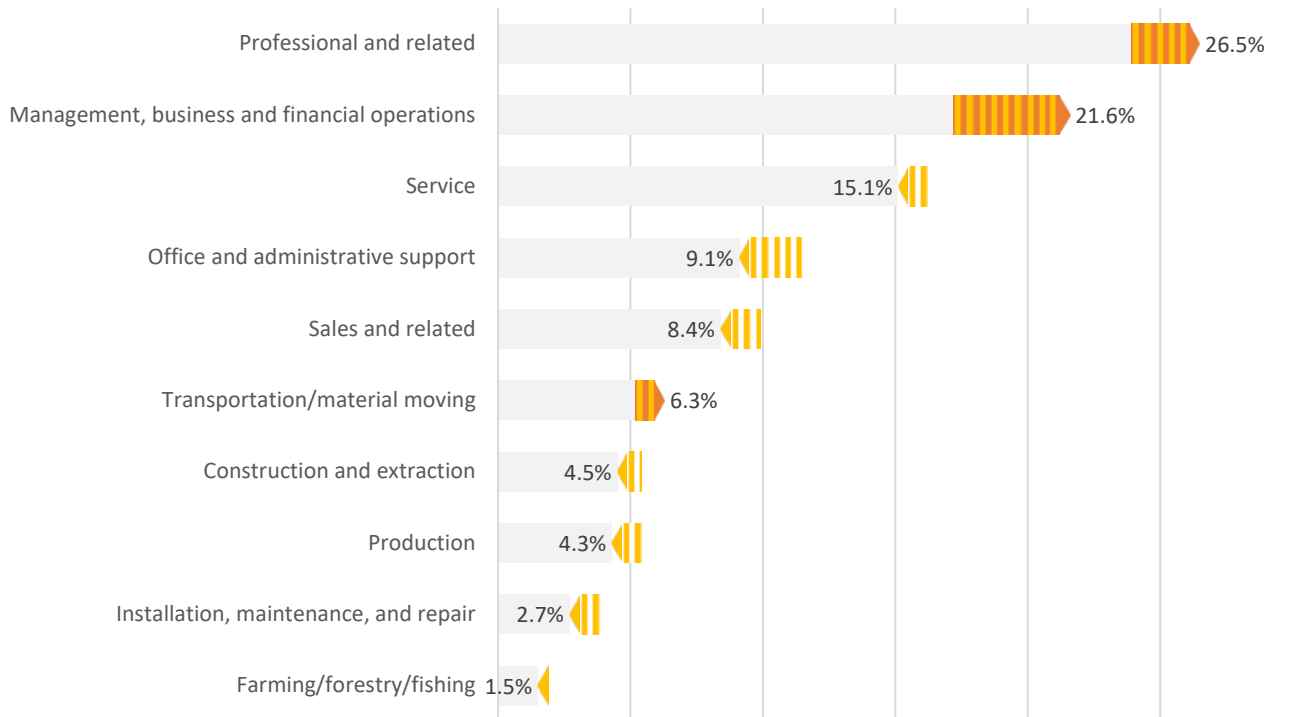
Note: Data displayed are proportions, and not numbers of workers. Declines in the percentage of employment may reflect employment that is growing in terms of the number of workers, but at a pace slower than other groups.

Professional and related occupations, the most common group of occupations among Washington residents in both 2014 and 2023 (Figure 6). It had the second largest increase in share of total employment, rising from 23.9% of total employment in 2014 to 26.5% of total employment in 2023 (+2.6%), while Management, business and financial operations occupations saw the largest increase (+4.4%). Transportation and material moving occupations also increased their share of total employment.

The share of employment declined the most among office and administrative support occupations, which declined (as a percentage of total employment) by 2.4 percentage points.

**Figure 6. Professional and related occupations had the greatest share of employment of any occupation group in 2014, and their share of employment grew in 2023. The greatest decline occurred among office and administrative support occupations.**

Distribution of civilian employment in Washington by occupation, 2014 vs. 2023. Percentages displayed are for 2023.



**Source:** Current Population Survey

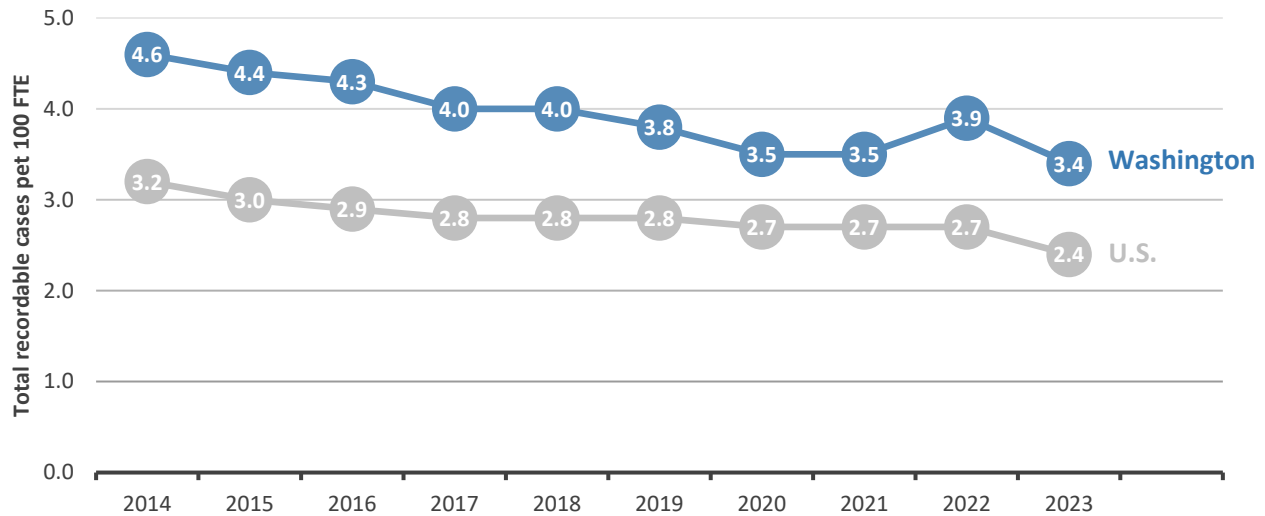
Note: Data displayed are proportions, and not numbers of workers. Declines in the percentage of employment may reflect employment that is growing in terms of the number of workers, but at a pace slower than other groups.

## NONFATAL WORK INJURIES & ILLNESSES REPORTED BY EMPLOYERS

In Washington, rates of nonfatal work-related injuries and illnesses reported by employers declined between 2013 and 2020, falling from 4.8 injuries and illnesses per 100 FTE to 3.5 per 100 FTE (Figure 7). Nationally, rates fell during the same time period, but where Washington experienced an increase in 2022, the rate nationally remained stable. In 2022, Washington's rate of employer-reported occupational injuries and illnesses was higher than in the previous three years.

**Figure 7. After increasing in 2022, the rate of injuries and illness reported by employers in Washington continued to decline in 2023, reaching a ten-year low.**

Rate of nonfatal work-related injuries and illnesses (total recordable cases) reported by private industry employers per 100 FTE, 2014-2023.

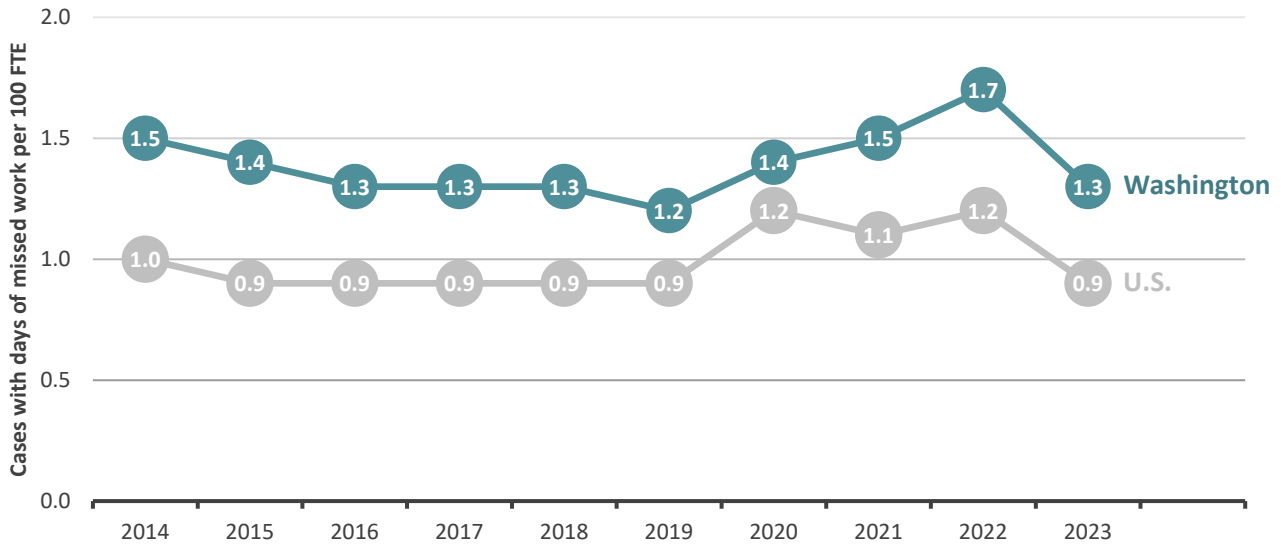


**Source:** Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses.

Between 2014 and 2019, the rate of injuries and illnesses involving days of missed work reported by employers in Washington declined from 1.5 to 1.2 injuries and illnesses per 100 FTE (Figure 8). Beginning in 2020, rates increased each year through 2022, to an estimated 1.7 injuries and illnesses per 100 FTE, the highest observed for Washington in the ten-year period. In 2023, rates of injuries and illnesses involving days of missed work reported by employers in Washington declined to pre-pandemic levels. Similarly, the national rate of injuries and illnesses involving days of missed work were elevated in 2020 – 2022 compared to earlier years, and returned to pre-pandemic levels by 2023.

**Figure 8. After three years of increases beginning in 2020, the rate of injuries and illnesses involving days away from work reported by employers in Washington decreased in 2023 to pre-pandemic levels.**

Rate of nonfatal work-related injuries and illnesses involving days away from work reported by private industry employers per 100 FTE, 2014-2023.



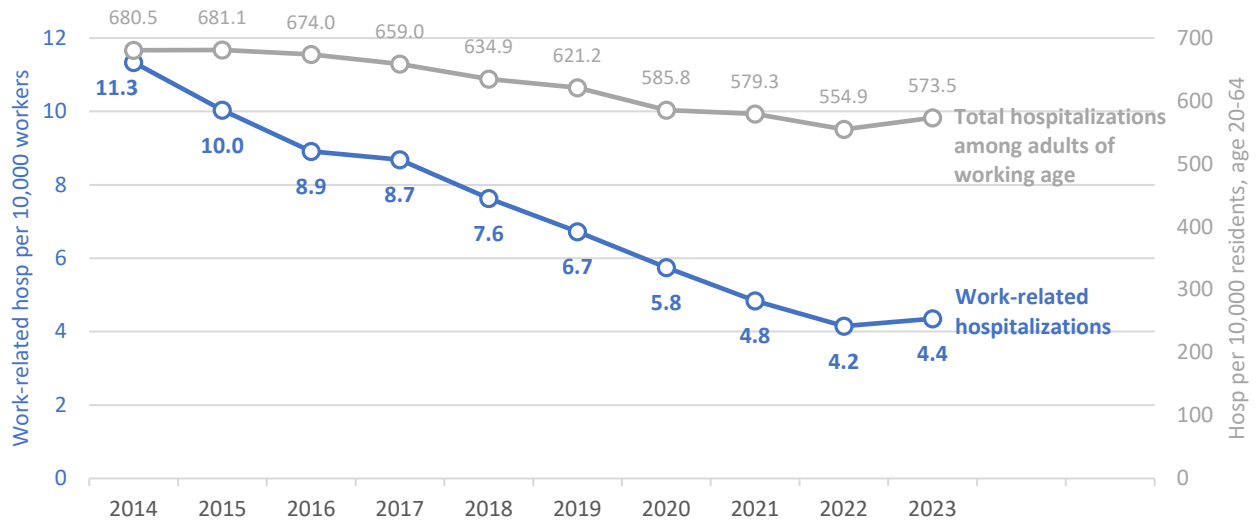
**Source:** Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses.

## WORK-RELATED HOSPITALIZATIONS

The rate of work-related hospitalizations fell by 62% in ten years, from 11.3 work-related hospitalizations per 10,000 workers in 2014 to 4.4 work-related hospitalizations per 10,000 workers in 2023 (Figure 9). The decline in work-related hospitalizations outpaced the moderate decline in total (all-cause) hospitalizations among Washington residents of working age (16% decline over the same years).

**Figure 9. Work-related hospitalizations declined steadily between 2014 and 2022, and declined more rapidly than the rate of total hospitalizations.**

Annual rate of work-related hospitalizations per 100,000 employed persons age 16 or over, Washington, 2014-2023.

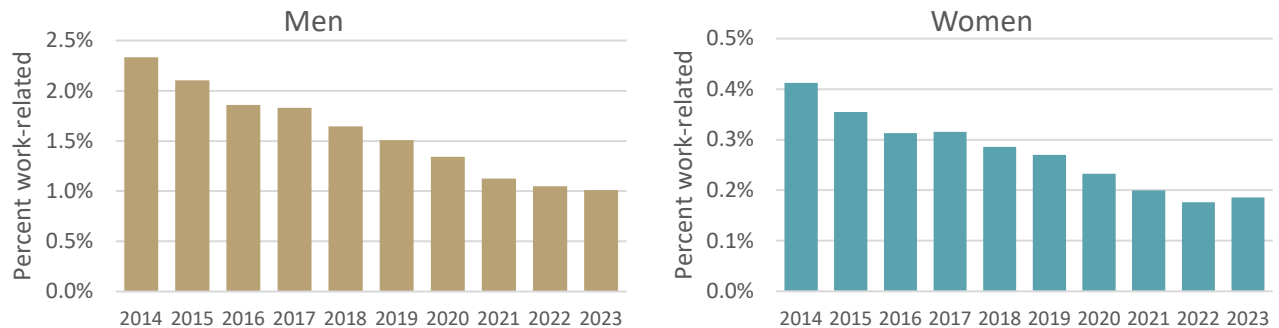


**Source:** Author’s calculations of Washington Hospital Discharge Data, Current Population Survey, and American Community Survey.

**Note:** Work-related hospitalizations were defined as hospital discharge records with workers’ compensation listed as the expected payer

**Figure 10. Hospitalizations for work-related conditions declined among men and women of working age.**

Work-related hospitalizations as a percentage of total hospitalizations by sex, among patients age 20-64 years.



**Source:** Author’s calculations of Washington Hospital Discharge Data.

Men and women experienced similar declines in the percentage of total hospitalizations attributed to work (Figure 10). Among men age 20-64, the percentage of hospitalizations that were work-related fell from 2.3% in 2014 to 1.0% in 2023. Among women age 20-64, the percentage of hospitalizations that were work-related fell from 0.4% in 2014 to 0.2% in 2023.

The distribution of conditions resulting in work-related hospitalizations shifted over time, with injuries comprising a greater portion of work-related hospitalizations in recent years, and the portion involving musculoskeletal disorders decreasing. In 2016, the most common primary diagnosis among work-related hospitalizations was for musculoskeletal and connective tissues disorders (“MSD”), accounting for 38.7% of work-related hospitalizations. By 2023, hospitalizations for injury, poisoning and other external causes (“injuries”) accounted for nearly half of all work-related hospitalizations, while MSD accounted for one in five work-related hospitalizations (Figure 11).

Between 2016 and 2023, the rate of work-related hospitalizations for MSD declined more rapidly than other conditions (Figure 12). From 2016 to 2023, the rate of work-related hospitalizations for MSD fell 74%, while rates of work-related hospitalizations for injuries fell 34%, and work-related hospitalizations for other conditions fell 40%.

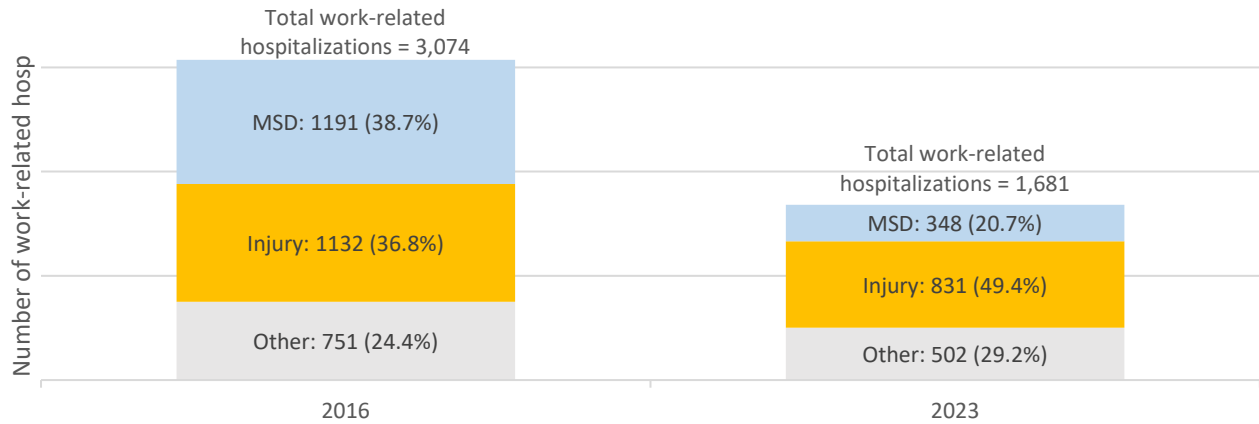
Among injuries, the rate of work-related hospitalizations for severe traumatic injuries changed little, declining 12%, from 5.6 hospitalizations per 100,000 workers in 2016 to 4.9 in 2023. “Injuries other than severe traumatic” experienced a greater decline, falling 39% from 27.3 hospitalizations per 100,000 worker in 2016 to 16.6 in 2023 (Figure 13).

Among MSD, rates of work-related hospitalizations for low back disorders ended 38% lower in 2023 compared with 2016, while the decline in rates of work-related hospitalizations for “all other MSD” was more substantial, falling 83% (Figure 14).

Declining hospitalization rates may be due to a reduction in workplace injuries and illnesses, as well as a shift from hospital-based care to outpatient care.

**Figure 11. MSD, the leading cause of work-related hospitalizations in 2016, declined to account for 20% of work-related hospitalizations in 2023.**

Number and percent of work-related hospitalizations by injury type, Washington 2016 vs. 2023.

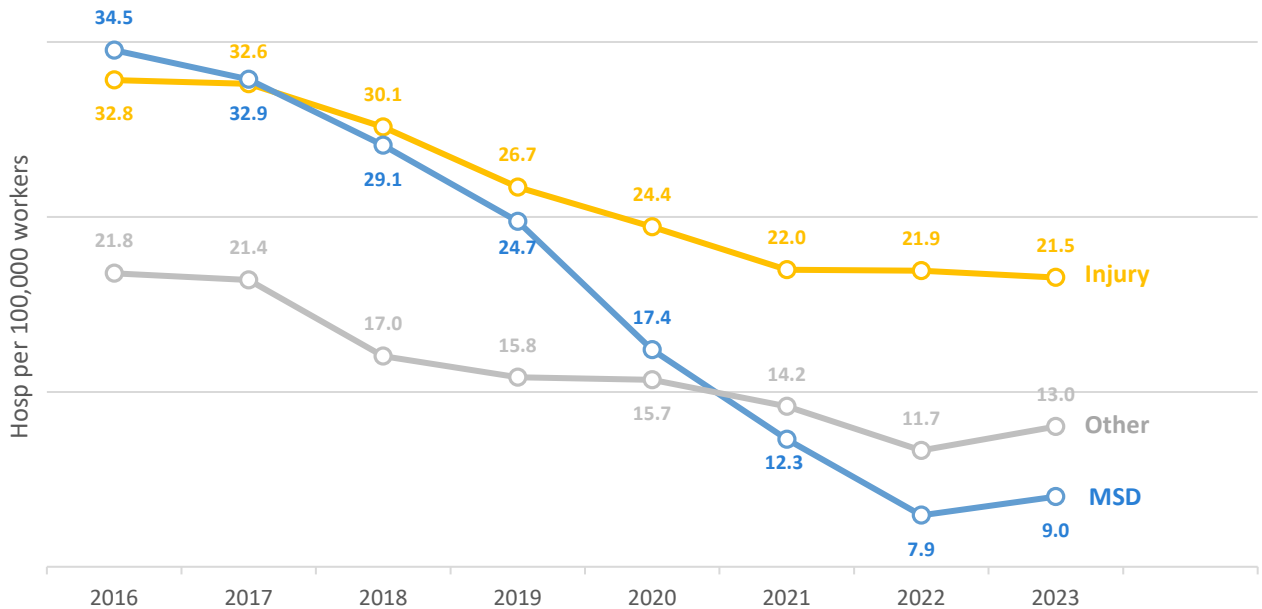


**Source:** Author’s calculations of Washington Hospital Discharge Data.

**Note:** ICD-10-CM codes listed as the primary diagnosis were used to classify hospitalizations by condition, which were grouped by ICD-10-CM chapter. ‘MSD’ = Diseases of musculoskeletal system and connective tissue; ‘Injury’ = Injury, poisoning, and other consequences of external causes; ‘Other’ = all other diagnosis codes. Characterization of hospitalizations by condition are limited to years for which the ICD-10-CM classification system was used to code diagnoses (i.e., 2016 on).

**Figure 12. The rate of work-related hospitalizations for MSD declined more than other conditions.**

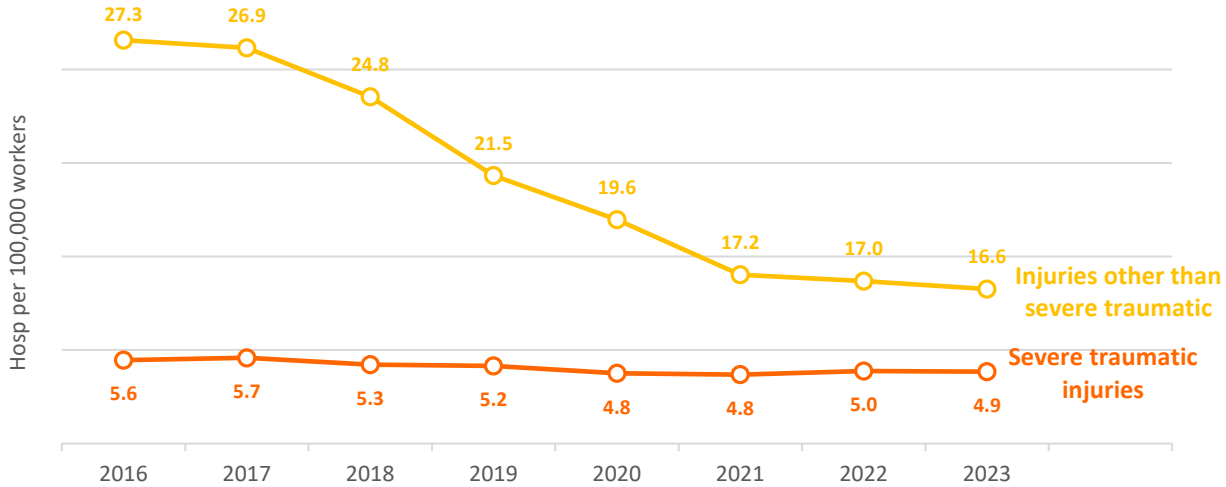
Work-related hospitalizations per 100,000 workers, by condition, Washington, 2016-2023.



**Source:** Author’s calculations of Washington Hospital Discharge Data and Current Population Survey.

**Note:** ICD-10-CM codes listed as the primary diagnosis were used to classify hospitalizations by condition, which were grouped by ICD-10-CM chapter. ‘MSD’ = Diseases of musculoskeletal system and connective tissue; ‘Injury’ = Injury, poisoning, and other consequences of external causes; ‘Other’ = all other diagnosis codes. Characterization of hospitalizations by condition are limited to years for which the ICD-10-CM classification system was used to code diagnoses (i.e., 2016 on).

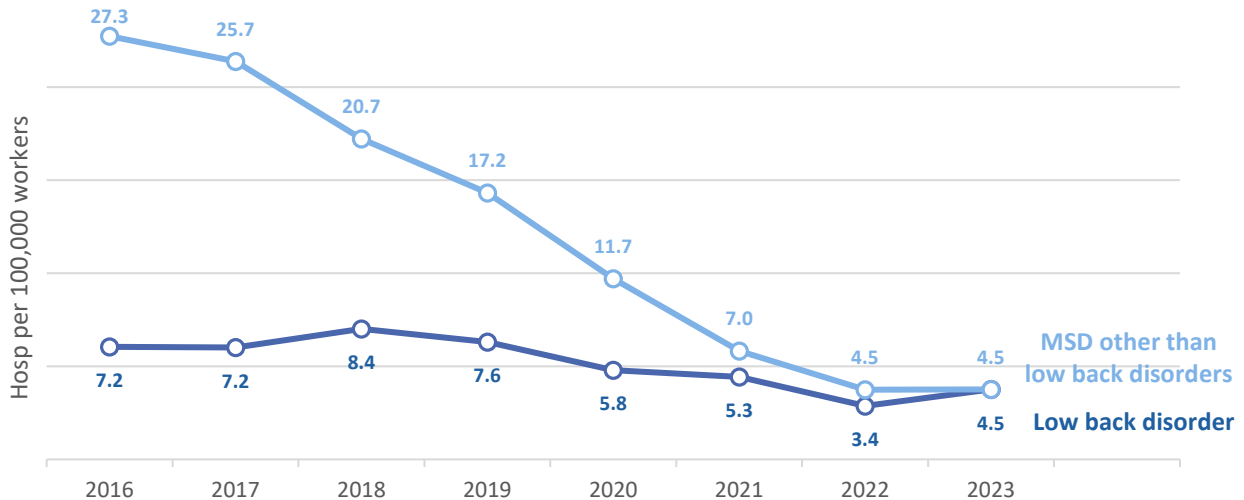
**Figure 13. The rate of work-related hospitalizations for severe traumatic injuries changed little, while hospitalizations for “injuries other than severe traumatic” declined 39% between 2016 and 2023.**  
 Work-related hospitalizations per 100,000 workers, by injury type, Washington, 2016-2023.



**Source:** Author’s calculations of Washington Hospital Discharge Data and Current Population Survey.

**Note:** Hospitalizations for severe traumatic injuries were defined as records with an ICD-10-CM primary diagnosis estimated to have an Abbreviated Injury Scale severity of 3 or above. “Injuries other than severe traumatic” were all other records with a primary diagnosis in the ICD-10-CM chapter “Injury, Poisoning, and Certain Other Consequences of External Causes”.

**Figure 14. The rates of work-related hospitalizations for low back disorders ended 38% lower in 2023 compared with 2016, while rates of work-related hospitalizations for “all other MSD” fell by 83%.**  
 Work-related hospitalizations per 100,000 workers, by MSD type, Washington, 2016-2023.



**Source:** Author’s calculations of Washington Hospital Discharge Data and Current Population Survey.

**Note:** Hospitalizations for low back disorder were defined by a primary diagnosis indicating a disease of the musculoskeletal and connective tissue involving the low back. “MSD other than low back disorders” were all other records with a primary diagnosis in the ICD-10-CM chapter “Diseases of the Musculoskeletal System and Connective Tissue”.



FOR MORE INFORMATION ON WORK-RELATED HOSPITALIZATIONS:

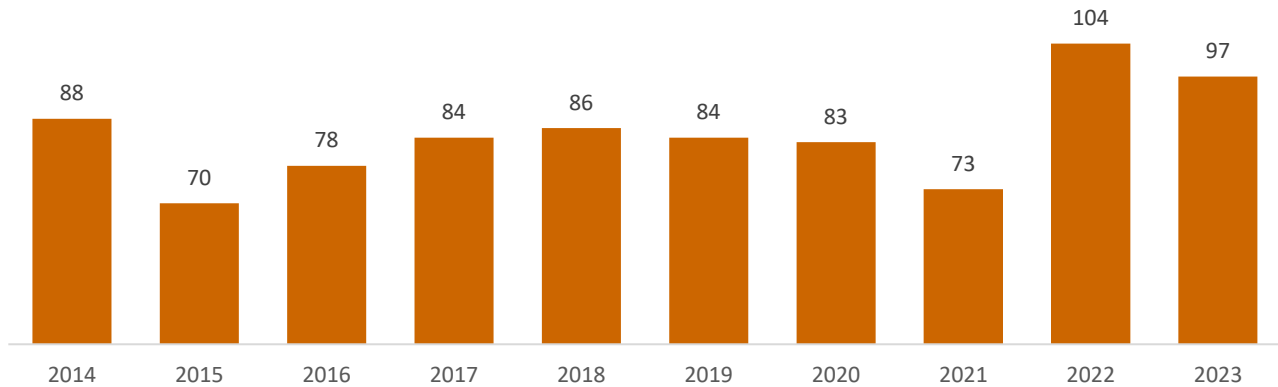
Washington's SHARP program monitors severe acute hospitalized injuries and illnesses, focusing on those that require hospitalization within one day of work injury or illness. More information can be found on the [website](#).

## FATAL WORK INJURIES

Between 2014 and 2023, an average of 85 Washington workers died from work-related injuries each year. Fatal work injuries in 2022 were notably higher than the annual average, when 104 workers died (Figure 15). The following year saw only slightly fewer deaths, with 97 fatal work injuries. Washington's rate of fatal work injuries is lower than the national rate (Figure 16). Between 2014 and 2023, the rate of fatal work injuries in Washington was on average 30% lower than the rate nationally.

**Figure 15. In Washington, the highest number of fatal work injuries occurred in 2022 and 2023.**

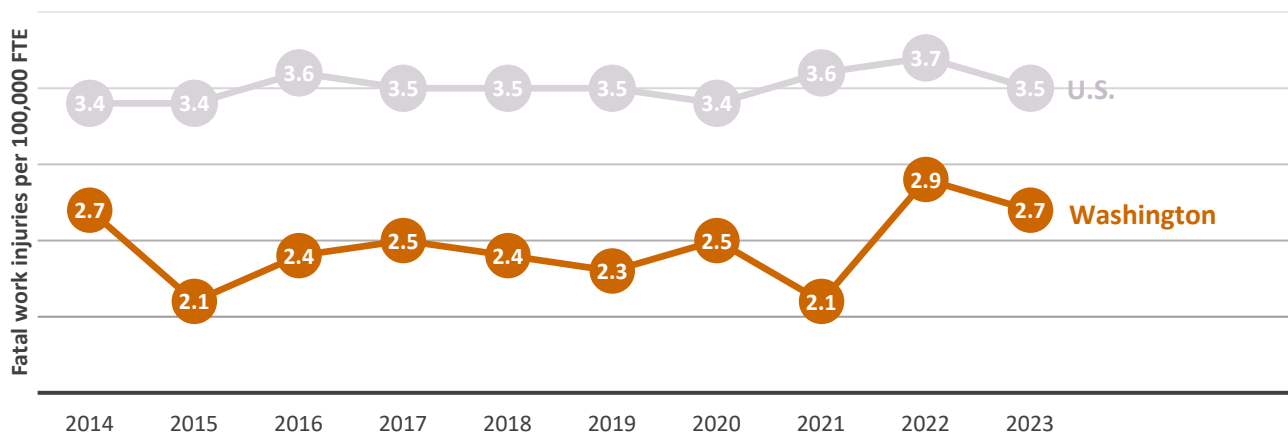
Number of fatal work injuries, Washington, 2014-2023.



Source: U.S. Bureau of Labor Statistics Census of Fatal Occupational Injuries.

**Figure 16. The rate of fatal work injuries in Washington continues to be lower than the rate nationally.**

The rate of fatal work injuries in Washington and U.S., 2014-2023.

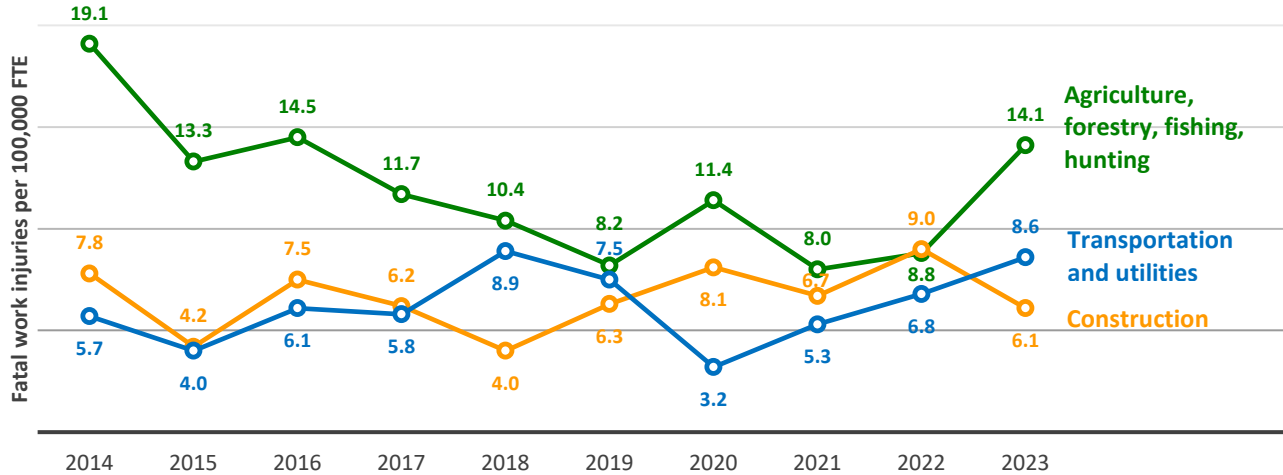


Source: U.S. Bureau of Labor Statistics, Current Population Survey, Census of Fatal Occupational Injuries.

The three industries with the highest rates of fatal work injuries in Washington were agriculture, forestry, fishing and hunting; construction; and transportation and utilities. In almost every year, agriculture, forestry, fishing and hunting had the highest work injury fatality rate of any industry (Figure 17). The exception was 2022, when the fatality rate among construction surpassed the rate among all other industries. Among transportation and utilities, the fatality rate has increased each year over the past three years.

**Figure 17. Fatal work injuries remain a serious risk among the industries with the highest rates.**

Industries with the highest rates of fatal work injuries, Washington, 2014-2023.

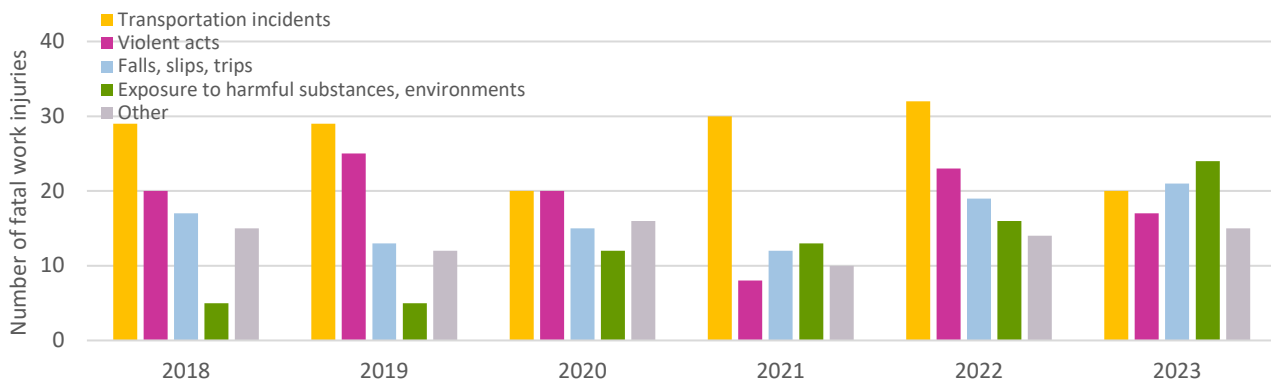


Source: U.S. Bureau of Labor Statistics, Current Population Survey, Census of Fatal Occupational Injuries.

In nearly every year from 2018 through 2022, transportation incidents were the leading cause of fatal work injuries, while violent acts generally followed as the second most common incident (Figure 18). The pattern differed in 2023, when the leading cause of fatal work injuries was exposure to harmful substances and environments, followed by falls, slips and trips.

**Figure 18. Transportation incidents were the leading cause of fatal work injuries in nearly every year.**

Number of fatal work injuries by incident, Washington, 2018-2023.



Source: U.S. Bureau of Labor Statistics Census of Fatal Occupational Injuries.

FOR MORE INFORMATION ON FATAL WORK INJURIES:

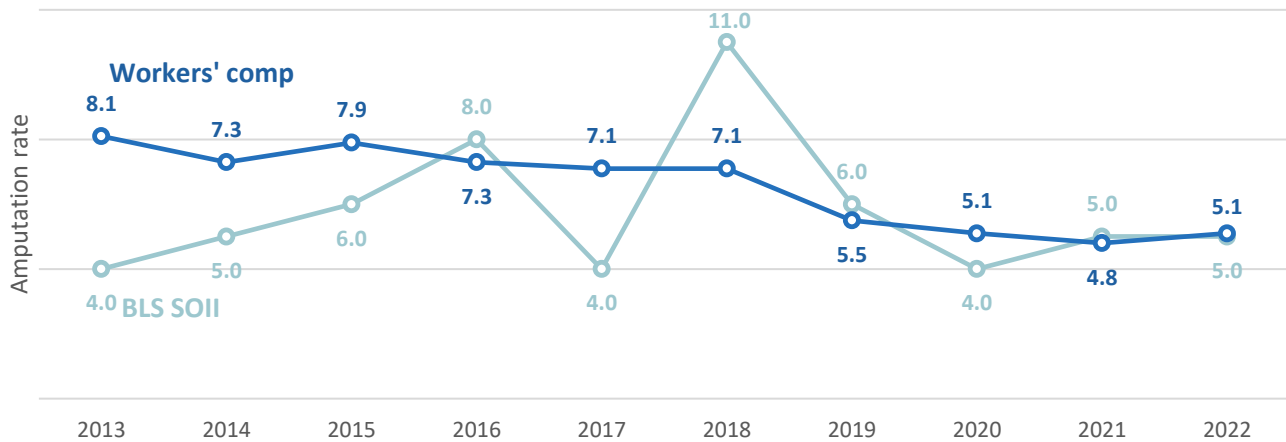
Washington's Fatality Assessment, Control and Evaluation (FACE) Program tracks fatal work injuries and publishes educational materials with the goal of preventing workplace fatalities. More information can be found on the [website](#).

## WORK-RELATED AMPUTATIONS

Based on workers' compensation claims involving wage replacement for missed work or disability, the rate of amputations declined between 2013 and 2022 (most recent data available) by a total 37%. Estimated rates of work-related amputations in private industry, based on BLS data reported by a representative sample of employers, were more variable. They ranged from 4.0 to 11.0 amputations per 100,000 FTE, and averaged 5.8 amputations per 100,000 FTE per year (Figure 19).

**Figure 19. Rates of workers' compensation claims for amputations declined between 2013 and 2022, while rates of employer-reported amputations fluctuated, and alternated above and below the claim rate.**

Workers' compensation claims for amputations per 100,000 workers, and employer-reported amputations per 100,000 FTE among private industry ('BLS SOII'), Washington State, 2013-2022.



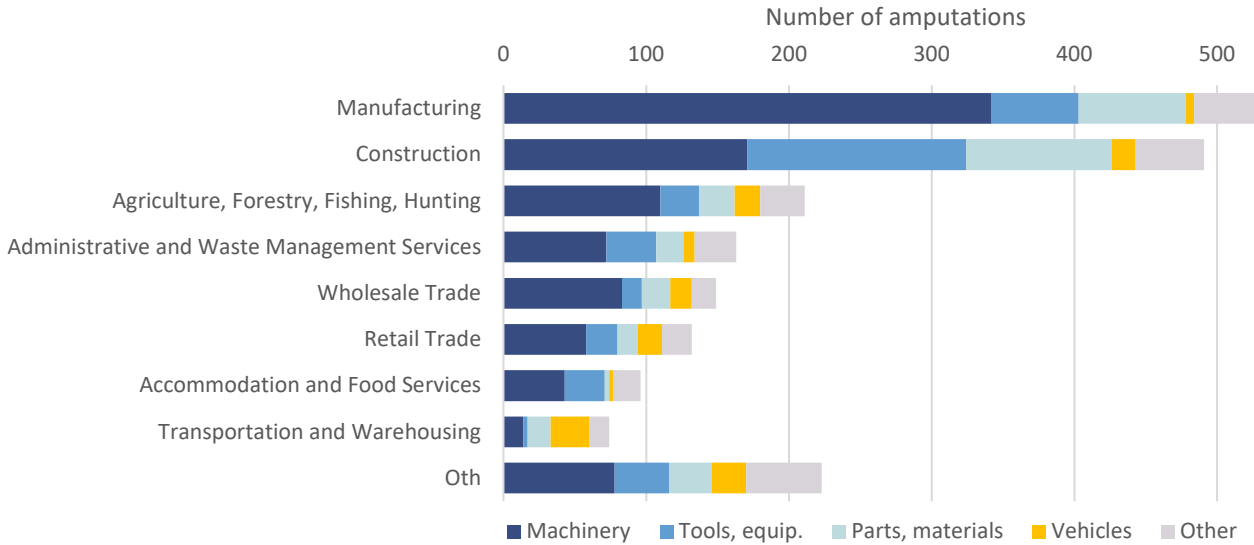
**Source:** Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses and author's calculations of Washington workers' compensation claims data and National Academy of Social Insurance workers' compensation data.

**Note:** Differences in inclusion criteria prevent direct comparison of estimates; however, large overlap in cases intended to be included in both data sources suggest that estimates may be similar.

Nearly half of all work-related amputations occurred in the manufacturing and construction sectors. Machinery was the leading cause of amputations in all industries except transportation and warehousing, where vehicles caused more amputations than any other source (Figure 20).

**Figure 20. Machinery was the leading cause of amputations in all industries, except transportation and warehousing.**

Source of amputation injury by industry, Washington workers' compensation data, 2013-2022.



**Source:** Author's calculations of Washington workers' compensation claims data.

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FOR MORE INFORMATION ON WORK-RELATED AMPUTATIONS:

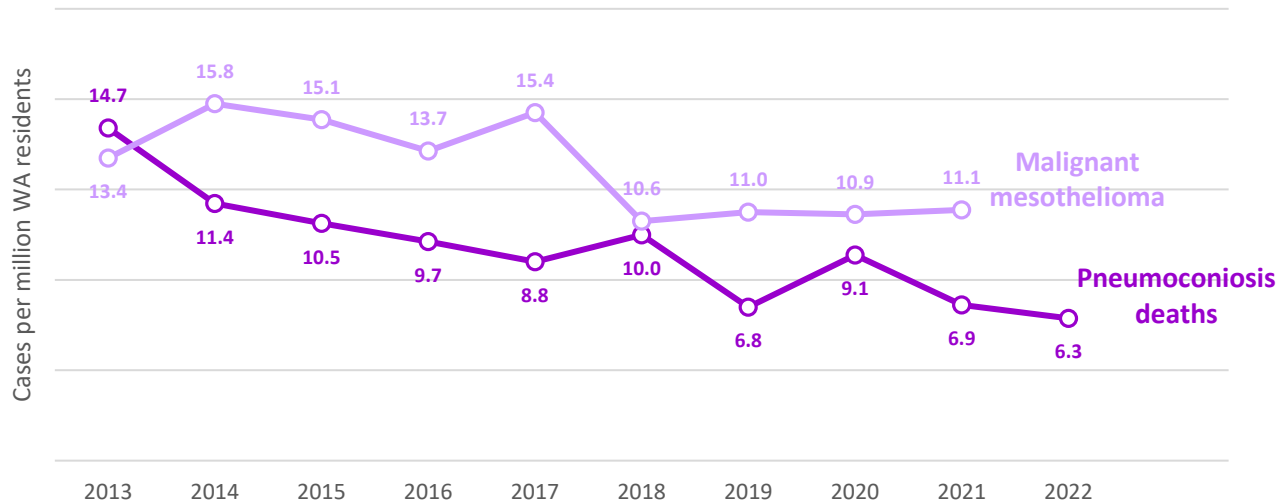
Washington's SHARP Program implemented an enhanced amputation surveillance system to increase identification of amputation injury incidents. More information can be found on the [website](#).

## PNEUMOCONIOSIS AND MESOTHELIOMA

Between 2013 and 2022 (the most current data available), deaths with pneumoconiosis as an underlying or contributing cause declined by 57.2%, from 14.7 deaths to 6.3 deaths per million WA residents (Figure 21). Incident cases of malignant mesothelioma also declined, although rates have remained steady over the last four years.

**Figure 21. In ten years, deaths from or with pneumoconiosis fell by more than half, while declines in new cases of malignant mesothelioma were more modest.**

Rates of deaths with pneumoconiosis as underlying or contributing cause, and incident mesothelioma cases (rates expressed as cases per million residents, age standardized), Washington 2013-2022.

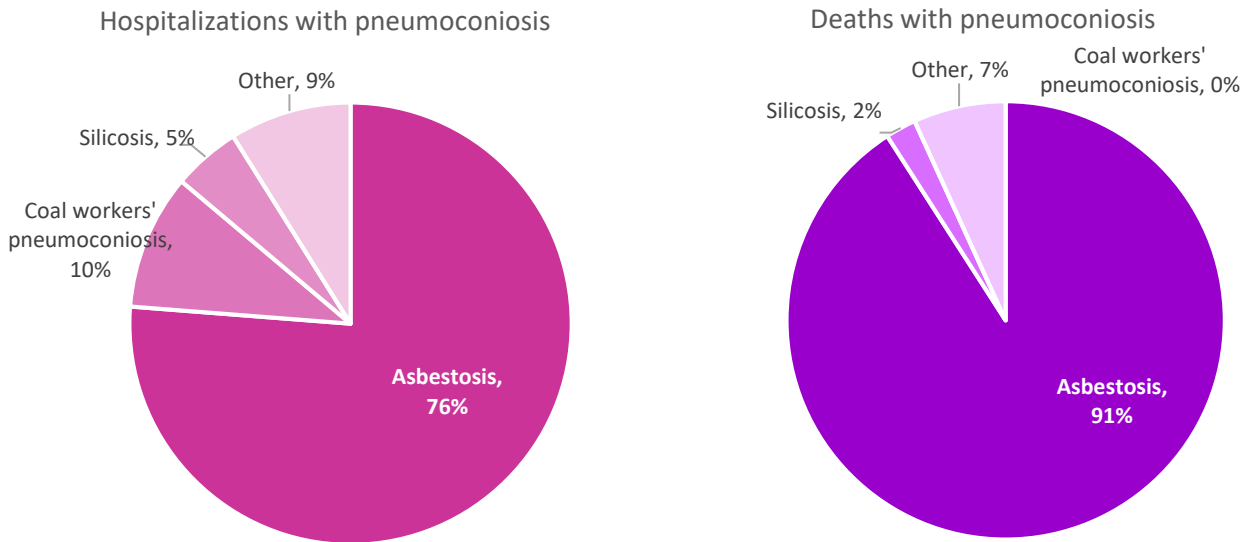


**Source:** Author's calculations of Washington Cancer Registry, Death Data, and the America Community Survey.

The majority of pneumoconiosis-associated hospitalizations and deaths were attributed to asbestosis (Figure 22). In Washington in 2022, asbestosis accounted for 76% of hospitalizations with a primary or contributing diagnosis of pneumoconiosis, and 91% of deaths with a primary or contributing diagnosis of total pneumoconiosis.

**Figure 22. In 2022, asbestosis accounted for 76% of hospitalizations from or with pneumoconiosis and 91% of deaths from or with pneumoconiosis.**

Type of pneumoconiosis, among pneumoconiosis-associated hospitalizations and deaths, Washington 2022.



**Source:** Author's calculations of Washington Hospital Discharge Data, Death Data, and the America Community Survey.

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FOR MORE INFORMATION ON OCCUPATIONAL RESPIRATORY DISEASE:

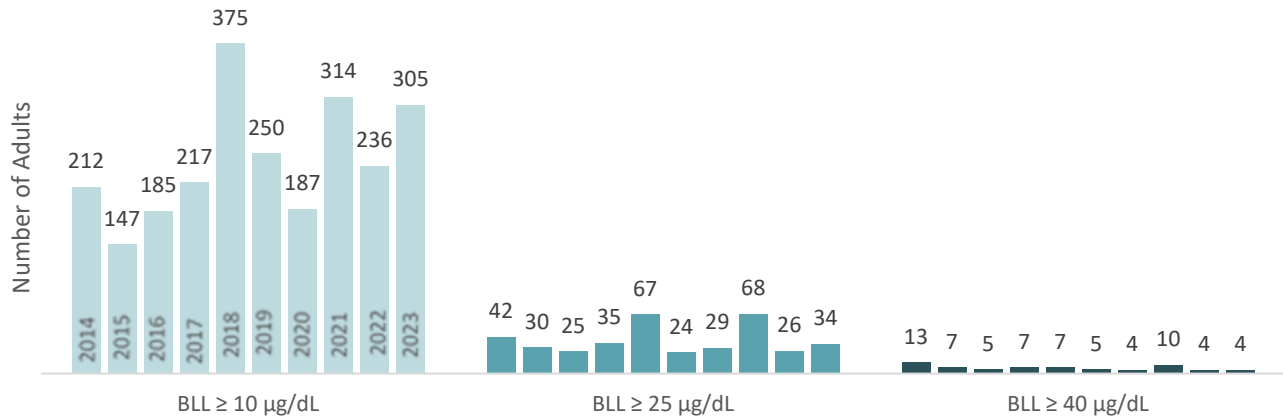
Washington's occupational respiratory disease surveillance program tracks the conditions of work-related asthma, asbestos-related disease, chronic obstructive pulmonary disease (COPD), silicosis, and Valley fever. More information can be found on the [website](#).



## ELEVATED BLOOD LEAD LEVELS AMONG ADULTS

Between 2014 and 2023, the annual number of Washington adults with blood lead levels  $\geq 10\mu\text{g}/\text{dL}$  varied widely, more than doubling in four years from 147 cases in 2015, to 375 cases in 2018 (Figure 23). Case counts in recent years remain high; in two of the last three years, the number of adults with blood lead levels  $\geq 10\mu\text{g}/\text{dL}$  exceeded 300. Cases of very high blood lead levels ( $\geq 40\mu\text{g}/\text{dL}$ ) are rare, totaling fewer than eight in most years.

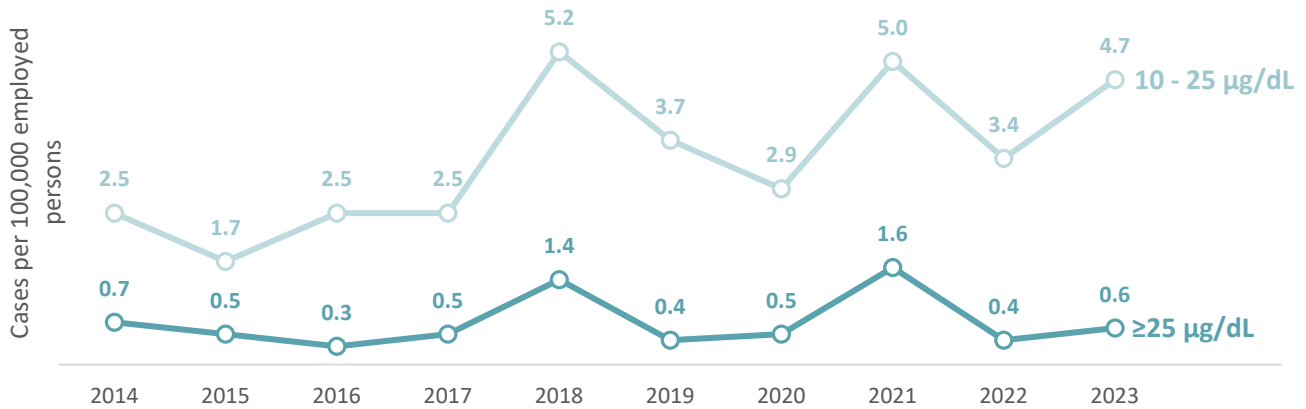
**Figure 23. Recent years have seen among the largest numbers of adults with blood lead levels (BLL)  $\geq 10\mu\text{g}/\text{dL}$  over the past ten years, while the number of adults with highest BLL ( $\geq 40\mu\text{g}/\text{dL}$ ) remains small.** Annual number of adults with elevated blood lead levels (BLL), Washington 2014-2023.



**Source:** Washington Adult Blood Lead Epidemiology and Surveillance (ABLES) data.

The rate of new cases of adults with blood lead levels  $10\text{-}25\mu\text{g}/\text{dL}$  increased between 2014 and 2023, ending 88% higher in 2023 than the rate in 2014 (Figure 24). In contrast, the same increase was not observed among higher blood lead levels; the rate of new cases with blood lead levels  $\geq 25\mu\text{g}/\text{dL}$  in 2014 was similar to rate in 2023.

**Figure 24. The rate of new cases of adults with blood lead levels  $\geq 10 - 25 \mu\text{g/dL}$  increased between 2014 and 2023, while the rate of new cases of adults with blood lead levels  $>25 \mu\text{g/dL}$  remained relatively stable. Incident case rate by blood lead level, Washington 2014-2023.**



**Source:** Author's calculations from Washington Adult Blood Lead Epidemiology and Surveillance (ABLES) data and Current Population Survey.

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FOR MORE INFORMATION ON LEAD EXPOSURES AMONG ADULTS:

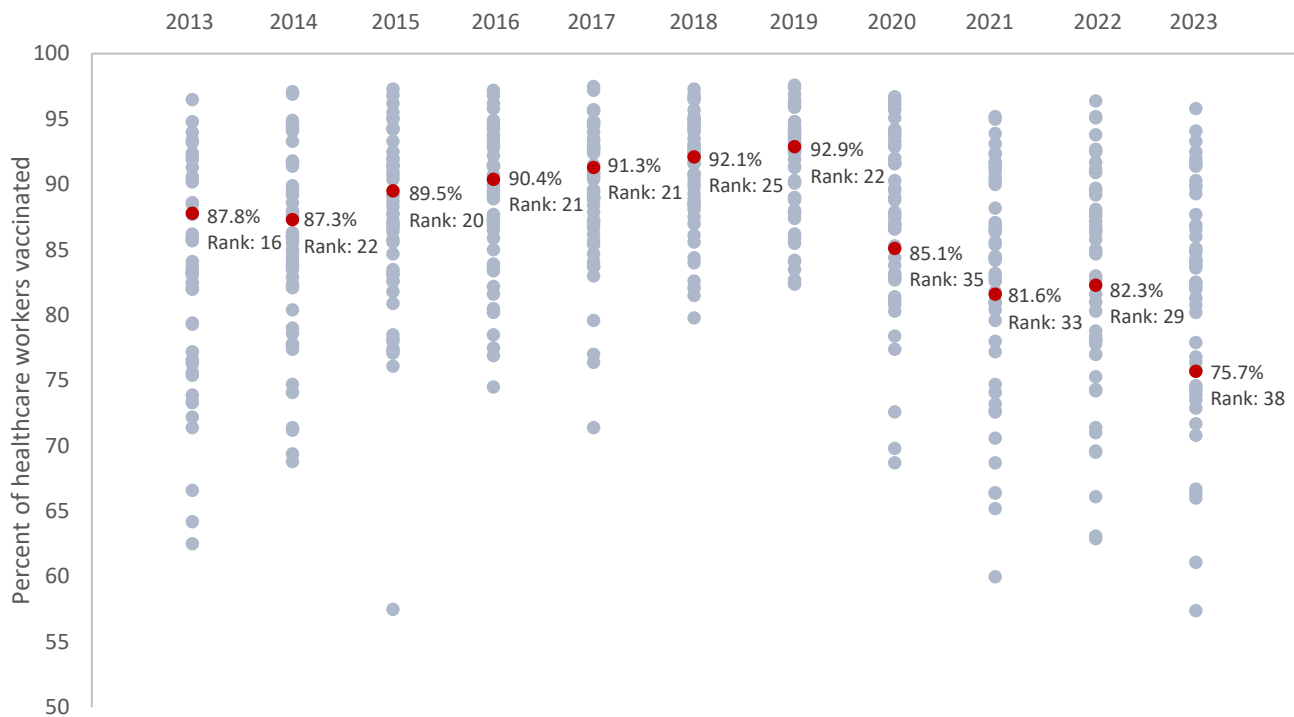
The Washington State Adults Blood Lead Epidemiology and Surveillance (ABLES) program aims to prevent elevated blood lead in adults and their families. More information can be found on the [website](#).

## HEALTHCARE WORKERS VACCINATED AGAINST INFLUENZA

Vaccination rates of Washington healthcare workers in hospitals rose between 2013 and 2019, surpassing 92% in both 2018 and 2019, and exceeding the vaccination rates in most other states (Figure 25). Washington's rate and rate rank dropped in 2020, before falling to a ten-year low in 2023.

**Figure 25. In 2023, the percentage of Washington's healthcare workers vaccinated against influenza fell to its lowest rate in ten years, placing it in the bottom quartile of vaccination rates by state.**

Portion of healthcare workers in hospitals vaccinated against influenza, by state and influenza season. Data for Washington displayed in red.



**Source:** Author's calculations of National Healthcare Safety Network Healthcare Personnel Influenza Reports.

## CONCLUSIONS

Washington made progress on several aspects of occupational safety and health, as evident in declines among rates of employer-reported injuries and illnesses, work-related hospitalizations, and pneumoconiosis-associated deaths.

Other issues warrant continued or renewed efforts to address recent trends, perhaps most notably for work injuries, as measured both by fatalities and by hospitalizations for traumatic injuries. Additionally, Washington adults continue to be exposed to lead at harmful levels. Declining rates of vaccination among hospital workers will not only increase the risk of illness among workers but leave Washington susceptible to potential healthcare staffing shortages.

Washington leads several programs focused on specific occupational injuries and illnesses, namely FACE, Immediate Inpatient Hospitalizations, Enhanced Amputation Surveillance, Occupational Respiratory Disease, and ABLES. These programs can help address issues identified by the occupational health indicators, including fatal work injuries, hospitalizations for traumatic work injuries, and lead exposures.

Continued annual publication of the occupational health indicators will help identify emerging occupational safety and health issues and prioritize prevention efforts in Washington.

## TECHNICAL APPENDIX: METHODOLOGY

### EMPLOYMENT PROFILE

Washington estimates of employment, unemployment, and employment by race, ethnicity, industry, and occupation are from Current Population Survey data, obtained from the Bureau of Labor Statistics (BLS) Geographic Profiles of Employment and Unemployment.

Washington estimates of employment by age are from Current Population Survey data, obtained from the NIOSH Employed Labor Force query system ([https://wwwn.cdc.gov/Wisards/cps/cps\\_estimates.aspx](https://wwwn.cdc.gov/Wisards/cps/cps_estimates.aspx))

National estimates of employment and unemployment are from Current Population Survey data, obtained from the BLS webpage on Labor Force Statistics (<https://www.bls.gov/cps/tables.htm>)

For additional information on the methods used in this section, see “Profile of Employment Demographics” in the CSTE document *OCCUPATIONAL HEALTH INDICATORS: A Guide for Obtaining and Tracking Occupational Health Conditions and Their Determinants*, updated 2024.

### NONFATAL WORK INJURIES AND ILLNESSES REPORTED BY EMPLOYERS

Washington estimates of nonfatal work injuries and illnesses reported by employers are from the BLS Survey of Occupational Injuries and Illnesses (SOII), obtained from the BLS Injuries, Illnesses, and Fatalities state data webpage (<http://www.bls.gov/iif/state-data.htm>)

National estimates of nonfatal work injuries and illnesses reported by employers were obtained from the BLS Workplace Injuries & Illnesses database series ID: ISU00000000031100 (total recordable cases) and series ID: ISU00000000033100 (cases involving days away from work).

For additional information on the methods used in this section, see “INDICATOR #1 Non-fatal work-related injuries and illnesses reported by employers” in the CSTE document *OCCUPATIONAL HEALTH INDICATORS: A Guide for Obtaining and Tracking Occupational Health Conditions and Their Determinants*, updated 2024.

### WORK-RELATED HOSPITALIZATIONS

Estimates of work-related hospitalizations are based on hospital discharge data maintained by Washington’s Comprehensive Hospital Abstract Reporting System (CHARS).

Work-related hospitalizations were defined as hospital discharge records among Washington residents age 16 and older with workers’ compensation listed as the expected payer.

Hospitalizations were classified as MSD, injury, or other based on the ICD-10-CM code listed as the primary diagnosis. Records with primary diagnoses within ICD-10-CM Chapter 13 “Diseases of the Musculoskeletal System and Connective Tissue” (codes M00-M99), were classified as “MSD”. Records with primary diagnoses within ICD-10-CM Chapter 19 “Injury, Poisoning, and Certain Other Consequences of External Causes” (codes S00-T99), were classified as “Injury”. Records with all other primary diagnoses were classified as “Other”.

Hospitalizations for severe traumatic injuries were defined as records with an ICD-10-CM primary diagnosis estimated to have an Abbreviated Injury Scale severity of 3 or above. The complete list of codes is available upon request.

Hospitalizations for low back pain were defined as records with an ICD-10-CM primary diagnosis code indicating a disease of the nervous system, disease of the musculoskeletal and connective tissue, or Injury, poisoning and certain consequences of external causes involving the low back. The complete list of codes is available upon request.

For additional information on the methods used in this section, see “Indicator #2 Work-Related Hospitalizations”; “Indicator #20 Work-Related Low-Back Disorder Hospitalizations”; and “Indicator #22 Work-Related Severe Traumatic Injury Hospitalizations” in the CSTE document *OCCUPATIONAL HEALTH INDICATORS: A Guide for Obtaining and Tracking Occupational Health Conditions and Their Determinants*, updated 2024.

## FATAL WORK INJURIES

Fatal work injury counts and rates are from the BLS Census of Fatal Occupational Injuries, obtained from the BLS Injuries, Illnesses, and Fatalities state data webpage (<http://www.bls.gov/iif/state-data.htm>)

## WORK-RELATED AMPUTATIONS

Work-related amputations were assessed using two different data sources: 1) Washington workers’ compensation data, claims obtained from the Washington workers’ compensation claims database and covered employment data obtained from the National Academy of Social Insurance, and 2) BLS SOII data obtained from the BLS database Occupational Injuries and Illnesses and Fatal Injuries Profiles.

Among the workers’ compensation data, we classified as amputations workers’ compensation claims that were eligible for wage replacement or disability (i.e., compensable claims) and assigned an Occupational Injury or Illness Classification System (OIICS) v 1.01 code for nature of injury or illness = 031 (‘Amputation’). OIICS v 1.01 codes for source of injury or illness were used to classify source of amputation.

BLS estimates of work-related amputations were based on cases among private industry assigned OIICS v 2.01 code for nature of injury or illness = 1311 (‘Amputations’).

For additional information on the methods used in this section, see “Indicator #4 Work-related Amputations with Days away from Work Reported by Employers” and “Indicator #5 State Workers’ Compensation Claims for Amputations with Lost Work-time” in the CSTE document *OCCUPATIONAL HEALTH INDICATORS: A Guide for Obtaining and Tracking Occupational Health Conditions and Their Determinants*, updated 2024.

## PNEUMOCONIOSIS AND MESOTHELIOMA

Deaths from or with pneumoconiosis were obtained from Washington death data. We included cases with ICD-10 codes of J60-J66, indicating pneumoconiosis as the underlying or contributing cause of death. Age-standardized death rates were calculated using the direct method to standardize to the year 2000 US Standard population.

Cases of malignant mesothelioma were obtained from Washington’s cancer registry data. We included cases among Washington residents age 15 years and older with ICD-O histology codes of 9050-9053. Age-standardized death rates were calculated using the direct method to standardize to the year 2000 US Standard population.

Hospitalizations from or with pneumoconiosis were identified from Washington’s hospital discharge data. We included discharge records among Washington residents 15 and older with a primary or contributing diagnosis (diagnosis fields 1-9) of pneumoconiosis (ICD-10-CM = J60-J66).

For additional information on the methods used in this section, see “Indicator #9 Hospitalizations from or with Pneumoconiosis”, “Indicator #10 Mortality from or with Pneumoconiosis” and “Indicator #12 Incidence of Malignant Mesothelioma” in the CSTE document *OCCUPATIONAL HEALTH INDICATORS: A Guide for Obtaining and Tracking Occupational Health Conditions and Their Determinants*, updated 2024.

#### ELEVATED BLOOD LEAD LEVELS AMONG ADULTS

Cases were obtained from Washington’s Adult Blood Lead Surveillance and Epidemiology program, which maintains reports of elevated blood lead levels among adults submitted by laboratories. We included reports for patients age 16 and older whose residence was documented as Washington or was unknown.

Incident cases were defined as adults whose highest BLL was  $\geq 5$   $\mu\text{g}/\text{dL}$  in a given year but who did not have a BLL  $\geq 5$   $\mu\text{g}/\text{dL}$  in the preceding year.

For additional information on the methods used in this section, see “Indicator #13 Elevated Blood Lead Levels among Adults” in the CSTE document *OCCUPATIONAL HEALTH INDICATORS: A Guide for Obtaining and Tracking Occupational Health Conditions and Their Determinants*, updated 2024.

#### HEALTHCARE WORKERS VACCINATED AGAINST INFLUENZA

State aggregated percentages of Healthcare Personnel (HCP) in licensed acute care facilities who have received an influenza vaccination were obtained from the Centers for Disease Control and Prevention National Healthcare Safety Network website.

For additional information on the methods used in this section, see “Indicator #23 Influenza Vaccination Rates among Health Care Providers” in the CSTE document *OCCUPATIONAL HEALTH INDICATORS: A Guide for Obtaining and Tracking Occupational Health Conditions and Their Determinants*, updated 2024.