

# OCCUPATIONAL HEALTH INDICATORS

## ***LOUISIANA 2015-2019***

Prepared by:

Occupational Health and Injury Surveillance Program

Section of Environmental Epidemiology and Toxicology

*Office of Public Health*

Brittany Babin, MPH

Devin Metoyer, MPH

Anna Reilly, PhD, MPH

March 2023



## Table of Contents

Introduction and Background.....	3
Methods .....	3
Profile of Employment Demographics .....	4
Indicator 1: Non-Fatal Work-Related Injuries and Illnesses Reported by Employers .....	6
Indicator 2: Work-Related Hospitalizations .....	7
Indicator 3: Fatal Work-Related Injuries .....	8
Indicator 4: Work-Related Amputations with Days Away from Work Reported by Employers .....	9
Indicator 5: State Workers' Compensation Claims for Amputations with Lost Work-Time .....	10
Indicator 6: Hospitalizations for Work-Related Burns.....	11
Indicator 7: Work-Related Musculoskeletal Disorders (MSDs) with Days Away from Work Reported by Employers .....	12
Indicator 8: State Workers' Compensation Claims for Carpal Tunnel Syndrome with Lost Work-Time.....	13
Indicator 9: Hospitalizations from or with Pneumoconiosis .....	14
Indicator 10: Mortality from or with Pneumoconiosis.....	15
Indicator 11: Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers .....	16
Indicator 12: Incidence of Malignant Mesothelioma .....	17
Indicator 13: Elevated Blood Lead Levels (BLL) among Adults.....	18
Indicator 14: Workers Employed in Industries at High Risk for Occupational Morbidity .....	19
Indicator 15: Workers Employed in Occupations at High Risk for Occupational Morbidity .....	21
Indicator 16: Workers Employed in Industries and Occupations at High Risk for Occupational Morbidity .....	23
Indicator 17: Occupational Safety and Health Professionals .....	26
Indicator 18: OSHA Enforcement Activities.....	27
Indicator 19: Workers' Compensation Awards .....	29
Indicator 20: Work-Related Low Back Disorder Hospitalizations .....	30
Indicator 21: Asthma among Adults Caused or Made Worse by Work .....	31
Indicator 22: Work-Related Severe Traumatic Injury Hospitalizations .....	32
Indicator 23: Influenza Vaccination Coverage among Hospital Care Personnel .....	34
Indicator 24: Occupational Heat-Related Emergency Department (ED) Visits .....	35
Indicator 25: Hospitalizations for or with Occupational Eye Injuries.....	36
References.....	37
Appendix.....	38

## Introduction and Background

There are about two million workers in Louisiana; every year thousands of them are injured, killed, or become ill because of exposure to health and/or safety hazards at work. Not only do work-related injuries and illnesses decrease work-productivity and lead to excessive healthcare costs for both employers and employees, they are nearly always preventable. Workers' compensations claims alone in Louisiana cost more than \$982 million in 2019. The Louisiana Department of Health (LDH), Office of Public Health (OPH), Section of Environmental Epidemiology and Toxicology's (SEET) Occupational Health and Injury Surveillance Program has been conducting surveillance of injuries, illnesses, deaths, and hazards among Louisiana workers since 2006 through a cooperative agreement funded by the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH). The program generates this suite of occupational health indicators, developed by representatives from state occupational health programs, the Council of State and Territorial Epidemiologists (CSTE), and NIOSH, as part of our primary annual surveillance activities. Each occupational health indicator is a specific measure of a work-related disease or injury, or a factor associated with occupational health, such as a workplace exposure, hazard, or intervention, in a specified population. These indicators allow us to compare the health or risk status of Louisiana workers to that of workers in other states, to evaluate within state trends over time, and to guide priorities for prevention and intervention efforts. Generating this report of occupational injuries and illnesses is the first step to successful identification and intervention of current and future health hazards.

This document summarizes the occupational health status of Louisiana workers, including influential factors such as demographics and workforce distribution by industry and occupation, for the years 2015-2019.

## Methods

The CSTE document entitled "OCCUPATIONAL HEALTH INDICATORS: A Guide for Tracking Occupational Health Conditions and their Determinants" (<https://www.cste.org/page/ohi-home>) served as the guide for data collection. This document provides detailed methods on how to collect data and calculate frequency measurements for each indicator that are consistent at a national level. The majority of the data were collected from publicly available, national datasets; however, some data were acquired through sources that are specific to Louisiana, such as emergency department discharge, hospital inpatient discharge, and Vital Records mortality databases.

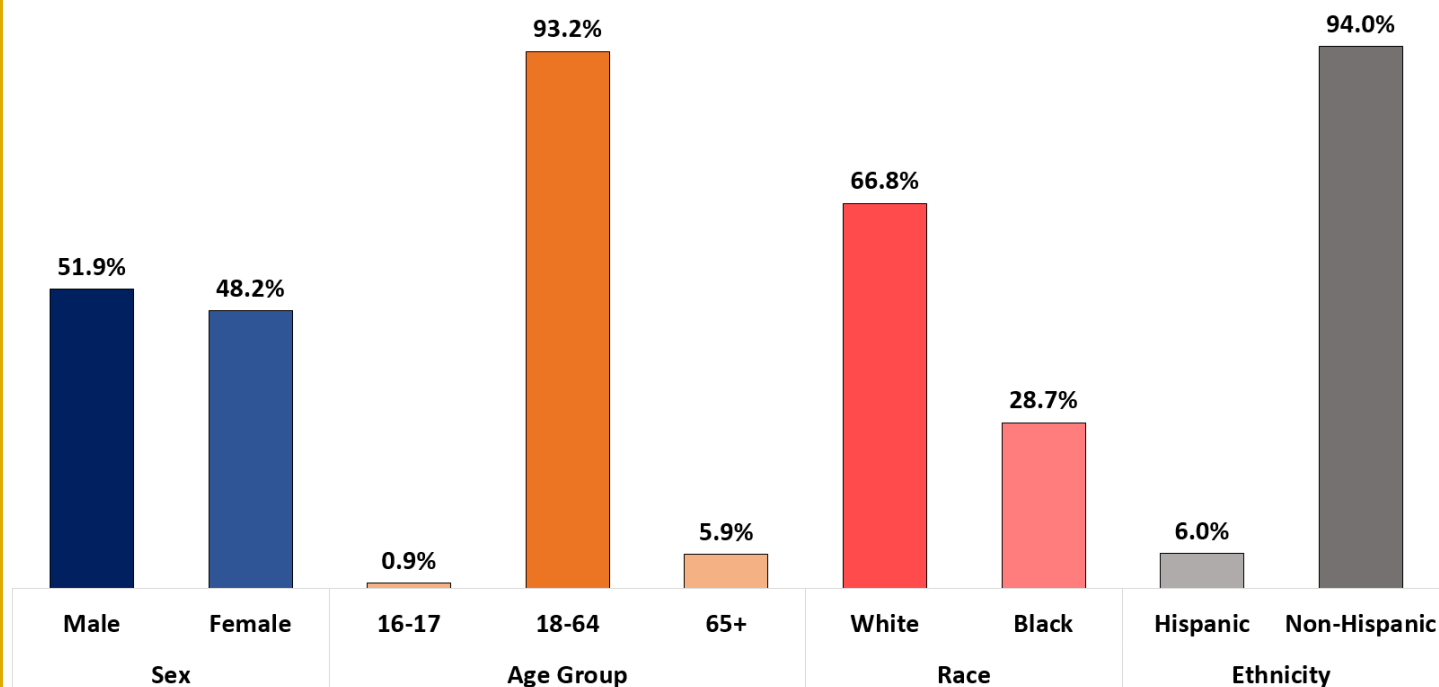
This report describes the significance, methods, results, and limitations for each occupational health indicator (OHI). When appropriate, state-to-national comparisons are presented to give an idea of Louisiana's national standing for that indicator. Several Indicators should NOT be used to make state-to-state or state-to-national comparisons. This is noted in the limitations section for each of those indicators.

An explanation discussing why data from certain indicators are not included can be found in the limitation section for each. All data sources, websites, and additional data for the OHIs can be found in the Appendix at the end of this report.

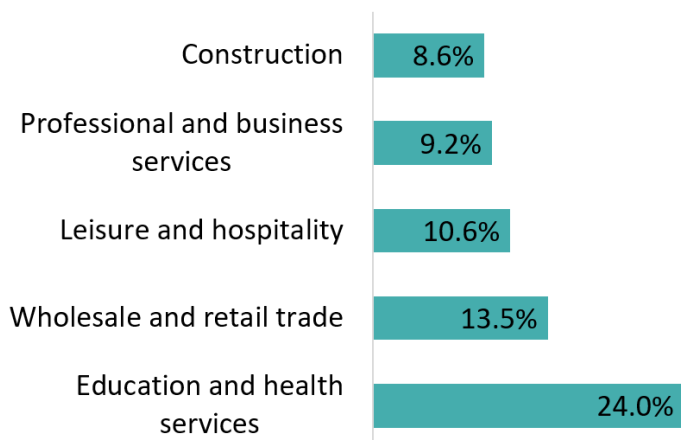
## Profile of Employment Demographics (2015-2019)

The average number of employed persons, 16 years and older, from 2015 to 2019 was 2,005,000 (56.1%). The percentages of male and female workers were almost equal with males being slightly higher (51.9% vs. 48.2%). Most employees worked 40 hours per week (data not shown), were non-Hispanic (94.0%), white (66.8%), and aged 18-64 (93.2%). From 2015-2019, the percentage of Hispanic workers remained relatively constant; the annual average was 6.0%. The top 5 industries and occupations remained the same from the last report, which covered 2013 to 2017. The complete profile of employment demographics can be found in Appendix Table AP.

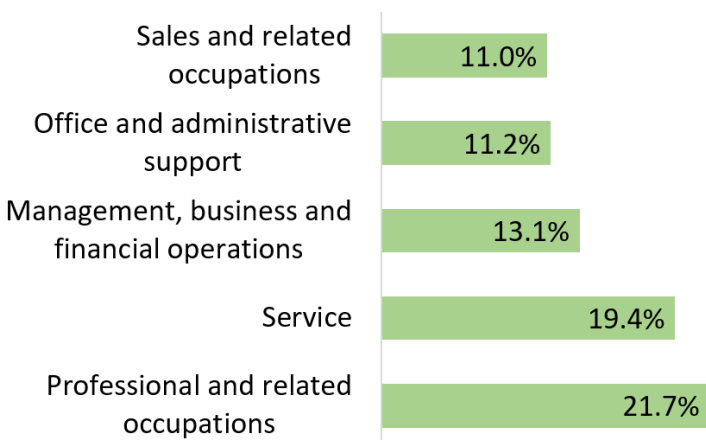
### Employed persons demographics by sex, age group, race, and ethnicity.



### Top 5 Industries



### Top 5 Occupations



## Significance

Research has shown relationships between demographic characteristics of workers and the risk of occupational injury or illness. Understanding the characteristics of the state's workforce helps with the assessment of occupational health risks and guide development and implementation of preventive strategies and target research efforts.

## Methods

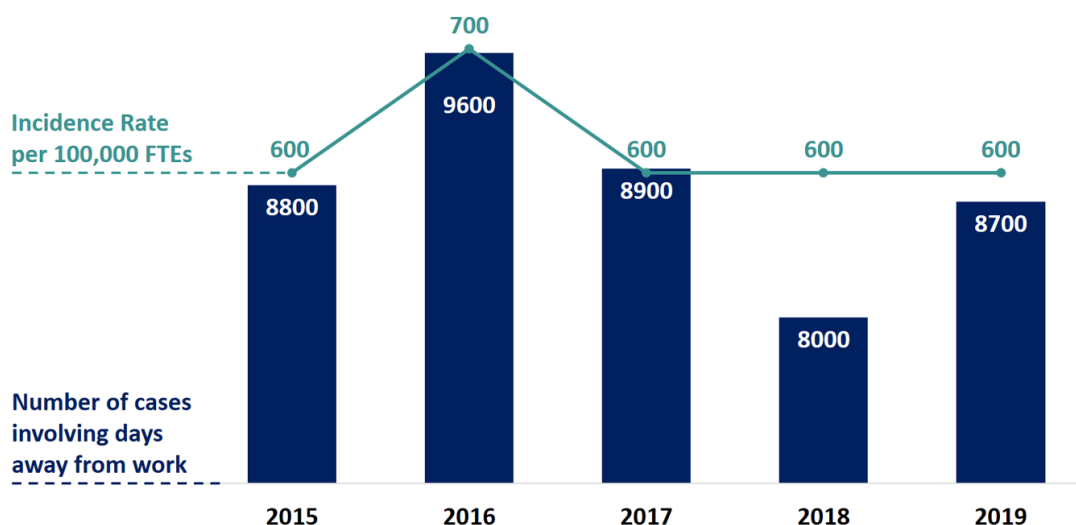
Age, sex, race/ethnicity, and employment characteristics are described for the years 2015-2019 for Louisiana. The Bureau of Labor Statistics' (BLS) Geographic Profiles of Employment and Unemployment estimates, which are derived from the Current Population Survey (CPS), provided demographic (except for age group) and employment data. Because Occupational Health employment data by detailed age category are not available in the Geographic Profiles, the CDC's Employed Labor Force (ELF) query system was used to obtain the percent of civilian employment by age group. Data include all persons aged 16+ years employed in the civilian non-institutional population. State demographic and employment stratifications percentages may not add up to 100 due to rounding.

## Limitations

The Geographic Profiles estimates are derived primarily from the CPS, which is a monthly probability sample of households across the United States. These estimates are subject to a sampling error, meaning there is potential for over- or under-counts of the number of workers in each of the demographic categories. Geographic Profiles exclude workers less than 16 years of age, active-duty members of the military, and people living in institutions (i.e., prisoners, living institutions for the elderly). Data may underestimate the percentage of certain racial or ethnic worker populations that do not have permanent residences, or are migratory in nature. The ELF query system uses a subset of CPS data that uses slightly different methods to apply population controls from those used by BLS. As a result, demographic estimates obtained through ELF will differ slightly from estimated provided by BLS.

## Indicator 1: Non-Fatal Work-Related Injuries and Illnesses Reported by Employers

From 2015 to 2019, the average total number of work-related injuries and illnesses was 25,380 and the average rate was 1,840 per 100,000 FTEs. Over the five-year period, 35% of total cases involved one or more days away from work; 51% of all cases involving days away from work required more than 10 days away from work. The rate for cases involving days away from work remained relatively stable, from 600-700 per 100,000 FTEs, with an average of 620. The number of cases fluctuated from 8,000-9,600, with an average of 8,800. Data for all cases and rates, as well as cases involving more than 10 days away from work can be found in Appendix Table A1.



### Significance

Estimating the burden and tracking these injuries can help target prevention programs and activities. Information on reported cases can be used to further identify contributory factors and to develop improved or new prevention strategies or regulations to protect workers.

### Methods

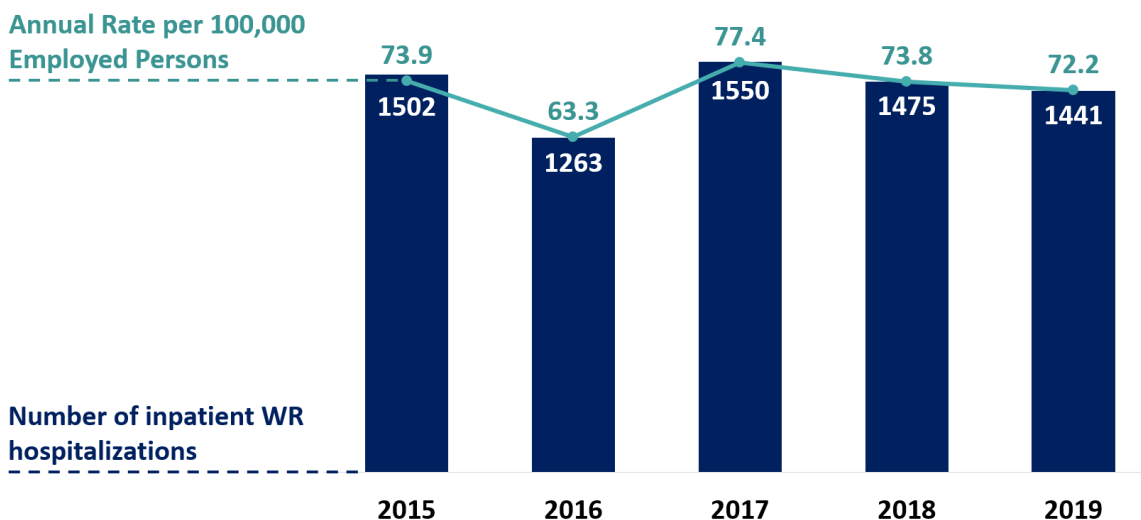
Numbers and incidence rates of nonfatal work-related injuries and illnesses were obtained from the BLS Survey of Occupational Injuries and Illnesses (SOII). Employers are required to record events that resulted in death, loss of consciousness, days away from work, restricted work activity or job transfer, medical treatment beyond first aid, or a significant injury or illness diagnosed by a physician or other licensed health care professional. The incidence rate describes the number of new injuries and illnesses per 100,000 Full-Time Equivalents (FTE) in each listed year. A FTE is a unit of measurement used to figure out the number of full-time hours worked by all employees in a business.

### Limitations

Due to differences in industry concentration and sample size, caution should be taken when making direct state-to-state and state-to-national comparisons of these data. The SOII is based on a probability sample of employer establishments, not a census of all employers. As such, SOII estimates are subject to sampling error, meaning that the estimates may differ from the true population values they represent. SOII estimates are also subject to non-sampling error, such as mistakes in recording or coding data that are not measured. The SOII relies on employer reporting of injuries and illnesses and is therefore subject to both willful and unintentional underreporting of cases. Employers may place affected workers on restricted work activity, thereby avoiding the reporting of cases as lost workday cases. Employers may not be aware of work-related conditions for which employees obtained medical care from their personal health care providers, or for conditions that have long latencies and are diagnosed after an employee leaves their employment. The SOII only collects data for the incident year, and does not capture lost work-time that may carry over to a new calendar year. This indicator is limited to the private sector workforce only.

## Indicator 2: Work-Related Hospitalizations

From 2015 to 2019, the average number of inpatient work-related hospitalizations was 1,446 and the average annual rate was 72.1 per 100,000 employed persons. The rate of inpatient work-related hospitalizations decreased by 14% from 2015 to 2016 followed by a 22% increase from 2016 to 2017. The decrease may be partially explained by the switch from ICD-9 to ICD-10 that occurred in the fourth quarter of 2015. The rate decreased by 7% from 2017 to 2019. The trends for the rate were also reflected in the number of work-related hospitalizations over the five years.



### Significance

Individuals hospitalized with work-related injuries and illnesses have some of the most serious and costly work-related adverse health outcomes. Documenting the burden of occupational injuries and illnesses that require hospitalization over time offers the opportunity to identify workers that continue to be at high risk and to target and evaluate the impact of prevention efforts over time.

### Methods

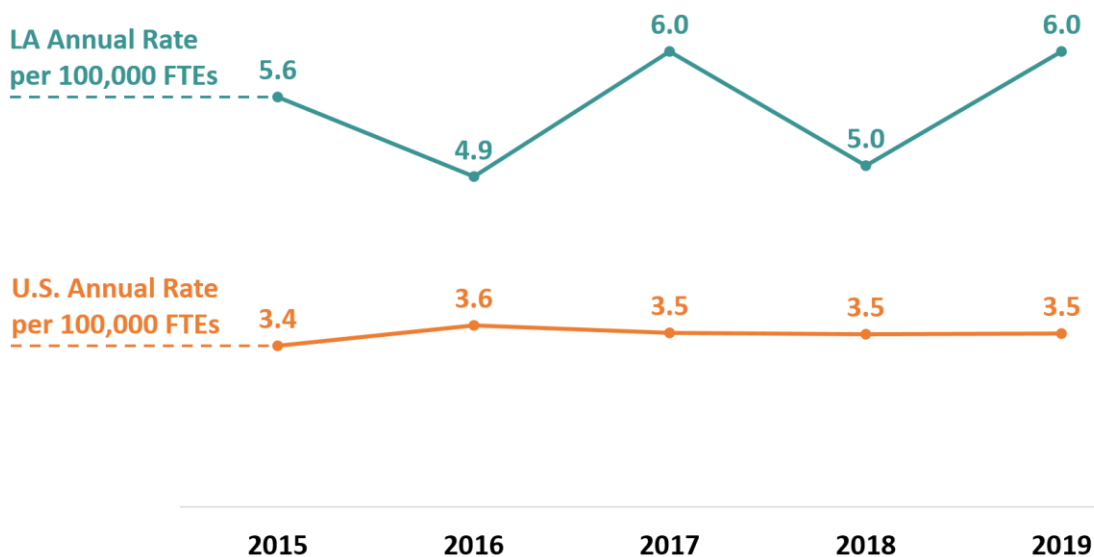
The number of work-related hospitalizations were obtained from the Louisiana Hospital Inpatient Discharge Database (LAHIDD). Cases were Louisiana residents, aged 16 years or older who had workers' compensation listed as the primary payer. Crude rates of hospitalizations per 100,000 employed persons were calculated for each year from 2015 to 2019 using BLS CPS civilian employment estimates as the denominator.

### Limitations

Inpatient hospital discharge records are only available for non-federal, acute care hospitals. Individuals hospitalized for work-related injuries and illnesses represent less than 10% of all workers who receive workers' compensation. The majority of individuals with work-related illnesses and many others with injuries do not file for workers' compensation. Self-employed individuals, federal employees, and railroad or longshore and maritime workers are not covered by workers' compensation systems. Attribution of payer in hospital discharge may not be accurate. Due to the differences in states' workers' compensation programs caution should be taken when making state-to-state and state-to-national comparisons of these data. Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients, to correctly diagnose work-related conditions, and/or to list the condition as a discharge diagnosis. State residents may be hospitalized in another state and not reflected in LAHIDD data. All admissions are counted, including multiple admissions for a single individual.

### Indicator 3: Fatal Work-Related Injuries

Louisiana's annual rate for fatal work-related injuries was higher than the national rate from 2015 to 2019. Louisiana had an average annual rate of 5.5 compared to the U.S. average annual rate of 3.5. Generally, the Louisiana rate had a pattern of decrease then increase over the five-year period. For example, from 2015 to 2016 the rate decreased by 13% followed by a 22% increase from 2016 to 2017. In contrast, the national rate has remained nearly constant over the five years. Louisiana and U.S. fatal work-related injury counts are included in the Appendix Table A3.



### Significance

Multiple factors and risks contribute to work-related fatalities, including worker characteristics, industry, occupation, and activity at time of incident. Surveillance of work-related fatalities can identify emerging hazards and lead to the development of new interventions and new or revised regulations to protect workers.

### Methods

Cases were obtained from the BLS Census of Fatal Occupational Injuries (CFOI). The average annual number of FTEs aged 16 years or older, the denominator for rate calculations, was obtained using NIOSH's ELF query system, which is based on the CPS.

### Limitations

Fatalities of people younger than 16 years of age may be included in the numerator (CFOI data) but not in the denominator (ELF CPS estimates), since employment statistics are only available for those 16+ years of age. CFOI reports data on work-related fatalities by the state in which they occurred, which is not necessarily the state of death or the state of residence. CPS estimates are based on state of residence, thus rates may overestimate risk if fatal incidents involved victims who were out of state residents. Likewise, rates may be underestimated if fatal incidents occurred in other states. Deaths among military personnel and volunteers are included in the numerator but not the denominator. The BLS uses a different methodology to calculate fatal work-related rates from what is presented here; therefore, these rates may differ from rates published by BLS.

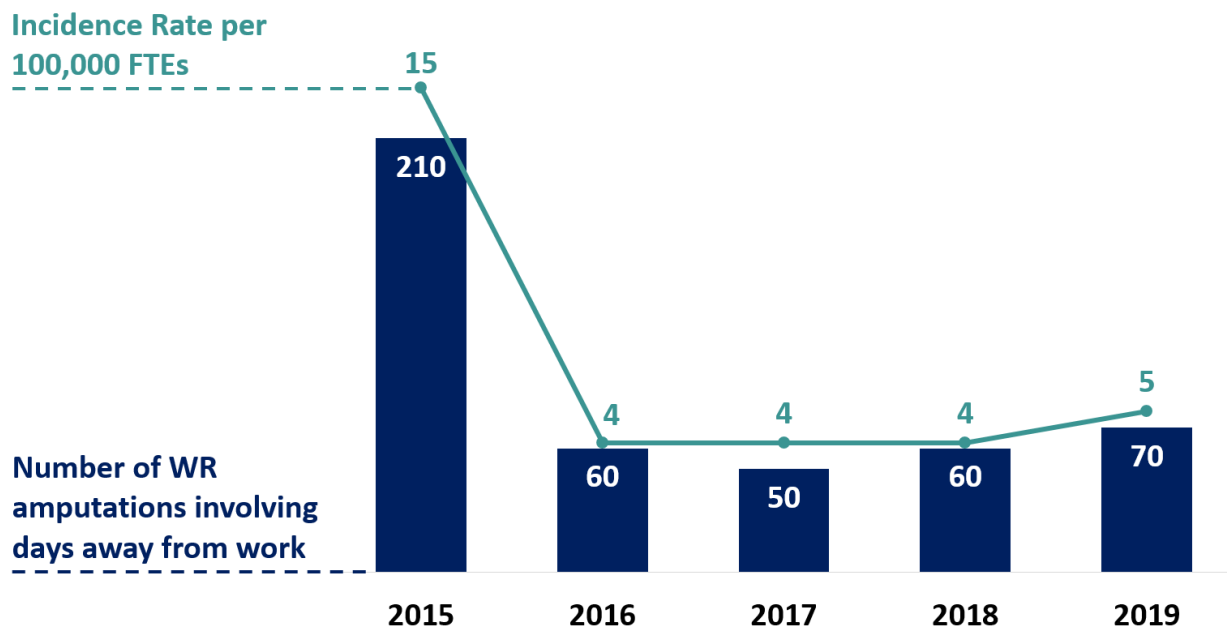
### For More Information

[Tracking Work-Related Fatal Injuries in Louisiana, 2015-2016](#)



#### Indicator 4: Work-Related Amputations with Days Away from Work Reported by Employers

Over the five years, the average number of work-related amputations involving days away from work was 90 and the average incidence rate was 6.4 per 100,000 FTEs. On January 1, 2015 OSHA began enforcement of its updated Recordkeeping Rule regarding severe injury reporting to require employers to report every work-related inpatient hospitalization, amputation, or loss of an eye within 24 hours of occurrence. This may explain the high number of cases and rate in 2015. For unknown reasons, the rate decreased 71% from 2015 to 2016, and the number of cases dropped from 210 to 60. From 2016 to 2019 the rate and number of cases remained stable.



#### Significance

Work-related amputations are serious injuries. With appropriate occupational hazard controls, many, if not most, amputations could be prevented. Estimating the burden and tracking these injuries can help target prevention efforts. Data on amputations can be used to identify contributing factors and to improve or develop new prevention strategies or regulations to protect workers.

#### Methods

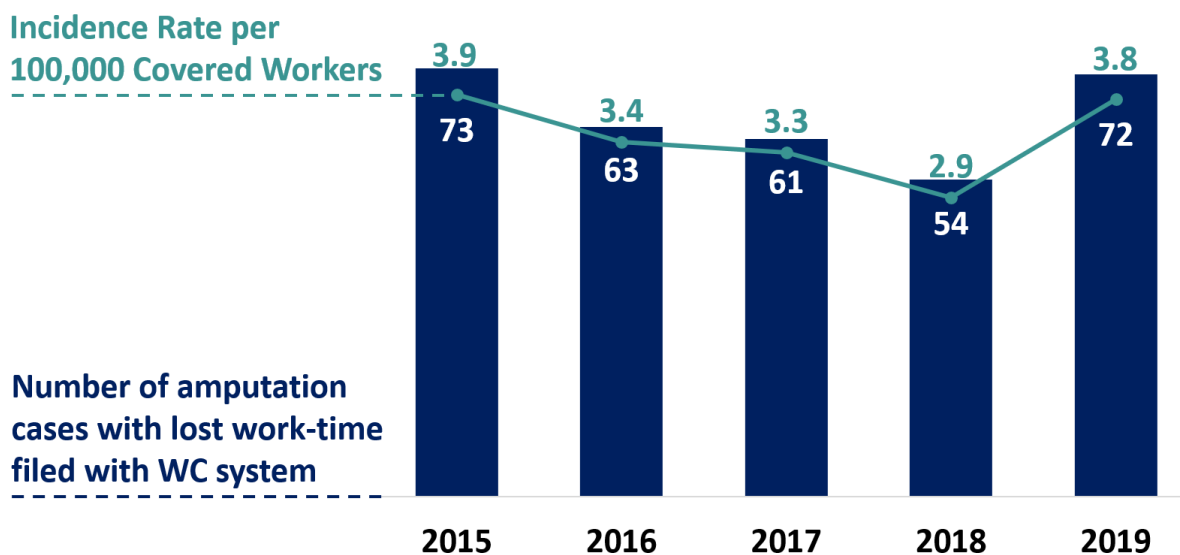
Data was obtained from the annual BLS SOII which provides annual estimates on the number and incidence rates of work-related amputations involving at least one day away from work.

#### Limitations

Due to differences in industry concentration and sample size, caution should be taken when making direct state-to-state and state-to-national comparisons of these data. The SOII is based on a probability sample of employer establishments, not a census of all employers. As such, SOII estimates are subject to sampling error, meaning that the estimates may differ from the true population values they represent. SOII estimates are also subject to non-sampling error, such as mistakes in recording or coding data that are not measured. The SOII relies on employer reporting of injuries and illnesses and is therefore subject to both willful and unintentional underreporting of cases. Employers may place affected workers on restricted work activity, thereby avoiding the reporting of cases as lost workday cases. Employers may not be aware of work-related conditions for which employees obtained medical care from their personal health care providers, or for conditions that have long latencies and are diagnosed after an employee leaves their employment. The SOII only collects data for the incident year, and does not capture lost work-time that may carry over to a new calendar year. This indicator is limited to the private sector workforce only.

## Indicator 5: State Workers' Compensation Claims for Amputations with Lost Work-Time

From 2015 to 2019, the average number of state workers' compensation claims for amputations with lost work-time was 65 and the average rate was 3.4 per 100,000 covered workers. The number of cases and the rate were the highest in 2015 at 73 and 3.9, respectively. In 2018, the number of cases and the rate were the lowest at 54 and 2.9, respectively. There was little fluctuation in the rate and number of amputation cases over the five-year period.



### Significance

Work-related amputations are serious injuries. With appropriate occupational hazard controls, many, if not most, amputations could be effectively prevented. Estimating the burden and tracking these injuries can help target prevention efforts. Data on amputations can be used to identify contributing factors and to improve or develop new prevention strategies or regulations to protect workers.

### Methods

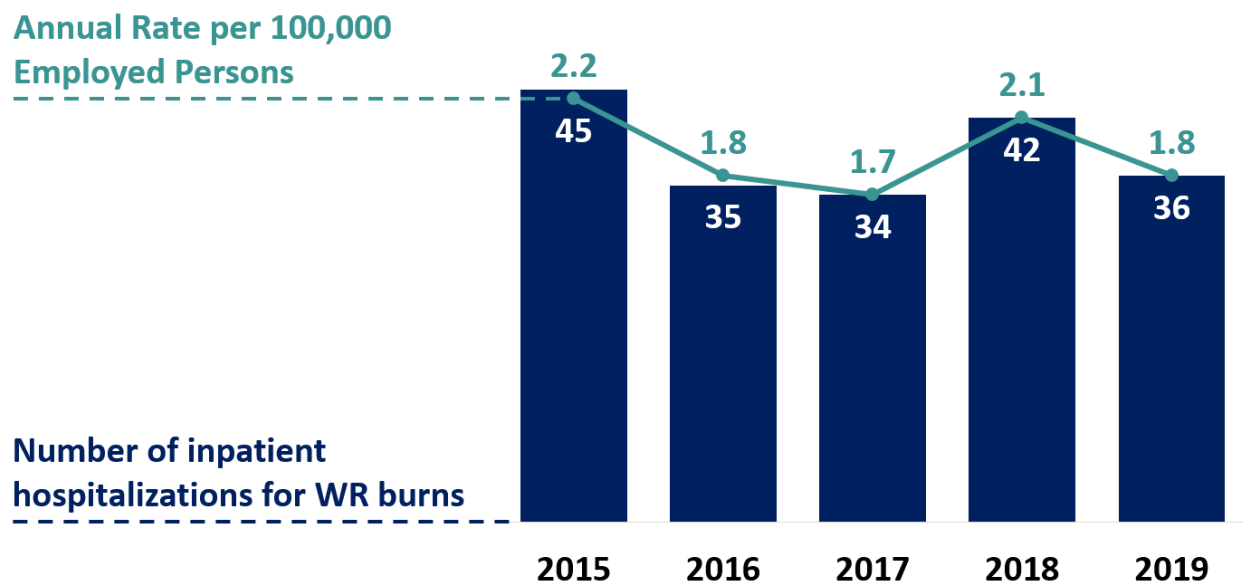
The annual number of amputation cases with lost work-time workers' compensation claims filed was obtained from the Louisiana Workforce Commission. Population data for rate calculations was obtained from the National Academy of Social Insurance (NASI), which tracks the overall number of workers covered by workers' compensation across the United States.

### Limitations

Workers' compensation data have numerous inherent limitations. There are differences among states in the availability of data (i.e., for lost time cases only versus medical benefits cases), and eligibility criteria vary among states. Caution should be taken when making state-to-state and state-to-national comparisons of these data. Workers' compensation data are not complete, as the majority of individuals with work-related illnesses and many with work-related injuries do not file for workers' compensation. Workers' compensation claims may be denied. Self-employed individuals, federal employees, railroad, and longshore or maritime workers may not be covered by state workers' compensation systems.

## Indicator 6: Hospitalizations for Work-Related Burns

From 2015 to 2019 there was an average of 38 inpatient hospitalizations for work-related burns. The average annual rate over the five-years was 1.9 per 100,000 employed persons. The highest rate was 2.2 with 45 cases in 2015, while the lowest rate was 1.7 with 34 cases in 2017.



### Significance

Work-related burns are some of the most devastating injuries affecting workers. Burns, are in fact, the most common cause of work-related hospitalization for young workers. Although hospitalized burns are unusual events, they are painful, disabling, and expensive to treat.

### Methods

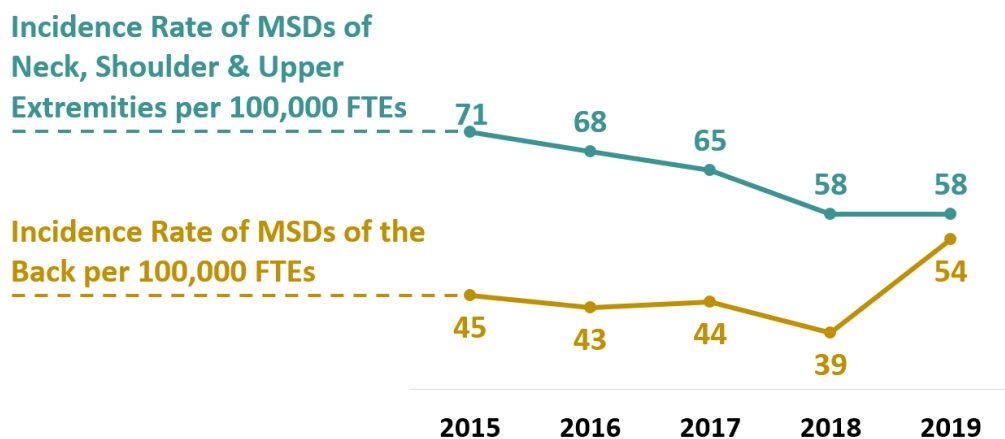
The number of hospitalizations due to work-related burns was obtained from the Louisiana Hospital Inpatient Discharge Database (LAHIDD). Criteria for inclusion were Louisiana residents aged 16+ years with a principle ICD-9-CM diagnosis code (for Q1-Q3 2015) or principle ICD-10-CM diagnosis code (Q4 2015-2019) indicative of a burn injury and workers' compensation was the primary payer. The data does not include cases of unknown age, out-of-state residents, unknown residence, and out-of-state hospitalizations. Rates per 100,000 employed persons were calculated using BLS CPS data from the Geographic Profiles of Employment and Unemployment for the denominator.

### Limitations

Inpatient hospital discharge records are only available for non-federal, acute care hospitals. Individuals hospitalized for work-related injuries and illnesses represent less than 10% of all workers who receive workers' compensation. The majority of individuals with work-related illnesses and many others with injuries do not file for workers' compensation. Self-employed individuals, federal employees, and railroad or longshore and maritime workers are not covered by workers' compensation systems. Attribution of payer in hospital discharge may not be accurate. Due to the differences in states' workers' compensation programs caution should be taken when making state-to-state and state-to-national comparisons of these data. Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients, to correctly diagnose work-related conditions, and/or to list the condition as a discharge diagnosis. State residents may be hospitalized in another state and not reflected in LAHIDD data. All admissions are counted, including multiple admissions for a single individual.

## Indicator 7: Work-Related Musculoskeletal Disorders (MSDs) with Days Away from Work Reported by Employers

The average number and incidence rate for all MSDs involving days away from work from 2015 to 2019 was 11,050 and 160 per 100,000 FTEs, respectively. The incidence rate of MSDs of the neck, shoulder and upper extremities declined by 18% over the five years, from 71 per 100,000 FTEs in 2015 to 58 per 100,000 FTEs in 2019. In contrast, the incidence rate of MSDs of the back increased by 17%, from 45 per 100,000 FTEs in 2015 to 54 per 100,000 FTEs in 2019. Complete data for indicator 7, including carpal tunnel data, can be found in the Appendix Table A7.



### Significance

Work-related musculoskeletal disorders (MSD) are preventable. Control of occupational hazards is the most effective means of prevention. Estimating the burden and tracking these injuries helps target prevention programs and activities. Information on reported cases can be used to identify contributory factors and develop improved or new prevention strategies or regulations to protect workers.

### Methods

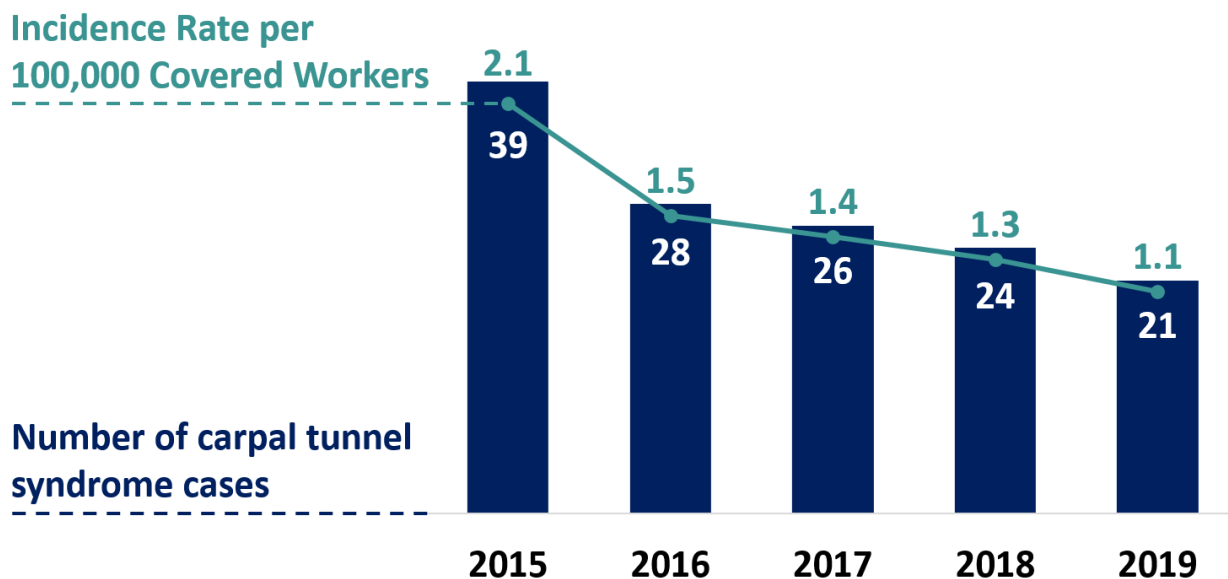
The BLS Annual Survey of Occupational Injury and Illness (SOII) provided data for musculoskeletal disorders in Louisiana. The BLS definition of musculoskeletal disorders involving days away from work includes persons with one or more nature code in combination with an event code. Occupational injury and illness codes include: musculoskeletal system and connective tissue diseases and disorders, carpal tunnel syndrome, tarsal tunnel syndrome, hernia, pinched nerve, herniated disk, meniscus tear, and Raynaud's syndrome as well as other symptoms such as numbness, swelling, and sprains. If these occurred from overexertion, repetitive motion, or via constant vibration, then it is counted as a musculoskeletal disorder.

### Limitations

Due to differences in industry concentration and sample size, caution should be taken when making direct state-to-state and state-to-national comparisons of these data. The SOII is based on a probability sample of employer establishments, not a census of all employers. As such, SOII estimates are subject to sampling error, meaning that the estimates may differ from the true population values they represent. SOII estimates are also subject to non-sampling error, such as mistakes in recording or coding data that are not measured. The SOII relies on employer reporting of injuries and illnesses and is therefore subject to both willful and unintentional underreporting of cases. Employers may place affected workers on restricted work activity, thereby avoiding the reporting of cases as lost workday cases. Employers may not be aware of work-related conditions for which employees obtained medical care from their personal health care providers, or for conditions that have long latencies and are diagnosed after an employee leaves their employment. The SOII only collects data for the incident year, and does not capture lost work-time that may carry over to a new calendar year. This indicator is limited to the private sector workforce only.

## Indicator 8: State Workers' Compensation Claims for Carpal Tunnel Syndrome with Lost Work-Time

From 2015 to 2019, both the number of cases and the rate decreased by 46% over the five-year period. The number of cases was the highest in 2015 at 39 and the lowest in 2019 at 21. The rate was the highest in 2015 at 2.1 per 100,000 covered workers and the lowest in 2019 at 1.1 per 100,000 covered workers.



### Significance

Carpal tunnel syndrome is generally preventable. Control of occupational hazards is the most effective means of prevention. Estimating the burden and tracking carpal tunnel syndrome can help target prevention programs and activities. Information on reported cases can be used to identify contributory factors and to develop improved or new prevention strategies or regulations to protect workers.

### Methods

The annual number of carpal tunnel syndrome cases with lost work-time workers' compensation claims filed was obtained from the Louisiana Workforce Commission. Population data for rate calculations was obtained from the National Academy of Social Insurance (NASI) tracks the overall number of workers covered by workers' compensation across the United States.

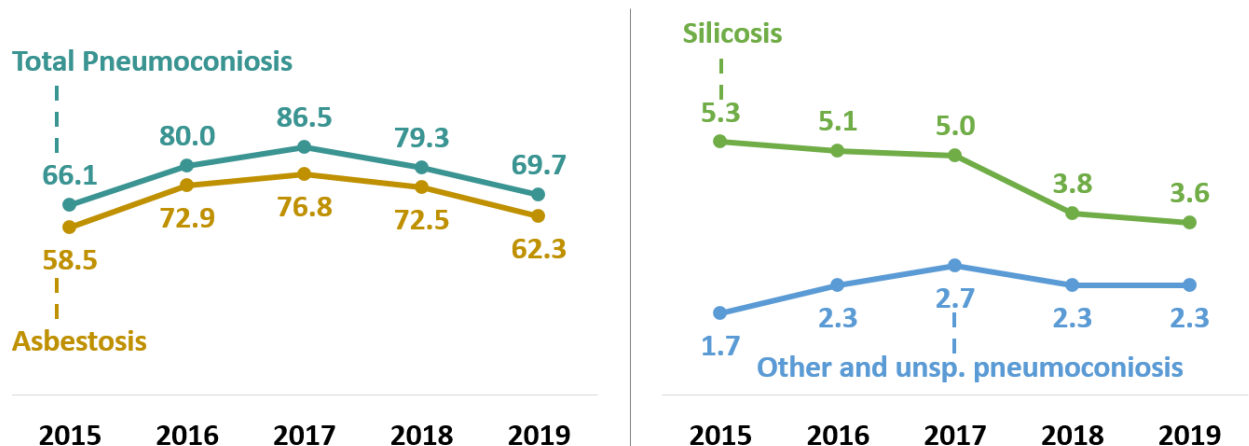
### Limitations

Workers' compensation data have numerous inherent limitations. There are differences among states in the availability of data (i.e., for lost time cases only versus medical benefits cases), and eligibility criteria vary among states. Caution should be taken when making state-to-state and state-to-national comparisons of these data. Workers' compensation data are not complete, as the majority of individuals with work-related illnesses and many with work-related injuries do not file for workers' compensation. Workers' compensation claims may be denied. Self-employed individuals, federal employees, railroad, and longshore or maritime workers may not be covered by state workers' compensation systems.

## Indicator 9: Hospitalizations from or with Pneumoconiosis

Total pneumoconiosis includes coal workers' pneumoconiosis, asbestosis, silicosis and other and unspecified pneumoconiosis. The age-adjusted rate for total pneumoconiosis rose by 31% from 2015 to 2017 and decreased by 19% from 2017 to 2019. Asbestosis rates followed the same pattern as total cases because asbestosis cases account for the majority of pneumoconiosis cases in Louisiana. Silicosis rates decreased by 32% from 2015 to 2019; in contrast, other and unspecified pneumoconiosis rates increased from 2015-2017, then decreased. The number of cases, annual rates, and age-adjusted rates for all pneumoconioses – including data for coal workers – can be found in Appendix Table A9.

### Age-adjusted rate of hospitalizations from or with pneumoconiosis per 1,000,000 residents.



## Significance

Pneumoconiosis is a term for lung diseases caused by the inhalation of mineral dusts. Nearly all pneumoconioses are attributable to occupational exposures, and millions of workers in the U.S. are at risk. Pneumoconiosis usually develops after many years of continuous exposure; therefore, hospitalizations usually involve individuals at least 45 years of age. Frequency of pneumoconiosis varies geographically. Control of occupational dust exposure is the single most effective means of preventing pneumoconiosis. Tracking of pneumoconiosis is essential for measuring progress towards elimination of the disease, as well as for targeting prevention and disease management programs.

## Methods

The number of hospitalizations for total pneumoconiosis, asbestosis, and silicosis was obtained from the Louisiana Hospital Inpatient Discharge Database. Hospital records were limited to Louisiana residents aged 15+ years. ICD-9-CM diagnostic codes were used for Q1-Q3 2015 and ICD-10-CM diagnostic codes were used for Q4 2015-2019 records. Data exclude patients with unknown age, out-of-state or unknown state residents, and out-of-state hospitalizations. State population estimates for rate calculations were obtained from the U.S. Census Bureau. The 2000 U.S. standard population was used to age-adjust rates.

## Limitations

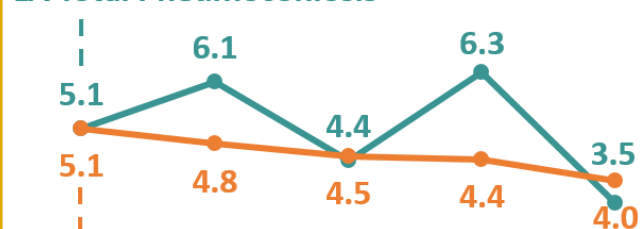
Work-relatedness for pneumoconiosis is not identified based on workers' compensation being the expected payer, it is assumed; therefore it does not have workers' compensation associated limitations. One important limitation is that recent exposures may not be accurately reflected because pneumoconioses are typically diseases of long latency, it may be many years before exposures lead to a hospitalization. Likewise, it may be years before changes in occupational exposures affect the number of hospitalizations. Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients, to diagnose pneumoconiosis, and/or to list pneumoconiosis as a discharge diagnosis. Residents of one state may be hospitalized in another state and not be reflected in Louisiana's inpatient hospitalization data. All admissions are counted, including multiple admissions for a single individual. Hospital discharge records are only available for nonfederal, acute care hospitals. Veterans Affairs and institutionalized (e.g., prison) population records are not included in these data.

## Indicator 10: Mortality from or with Pneumoconiosis

The age-adjusted death rates (per 1,000,000 residents) for total pneumoconiosis and asbestosis steadily decreased in the United States from 2015 to 2019. In contrast, Louisiana's rates fluctuated with increases followed by decreases from year to year. For example, Louisiana's total pneumoconiosis rate in 2015 was 5.1, increased to 6.1 in 2016 and decreased to 4.4 in 2017. The same pattern is observed for the Louisiana asbestosis rates, showing an increase in the rate from 4.9 to 5.5 from 2015 to 2016 and a decrease to 4.4 in 2017. The U.S. rate decreased over the five years for both total pneumoconiosis and asbestosis. The counts for the U.S. and Louisiana can be found in Appendix Table A10.

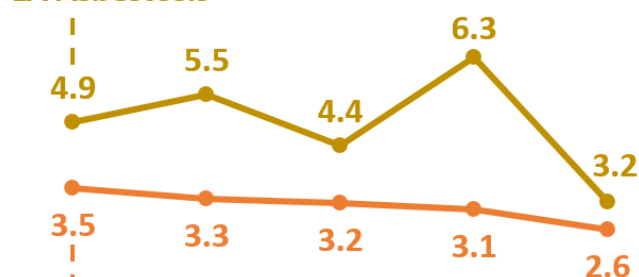
### Age-adjusted death rate from or with pneumoconiosis per 1,000,000 residents.

#### LA Total Pneumoconiosis



#### U.S. Total Pneumoconiosis

#### LA Asbestosis



#### U.S. Asbestosis

## Significance

Pneumoconiosis is more commonly listed as a contributing cause of death than as the underlying cause of death; therefore, this indicator monitors all listed causes of death on the death certificate. Because pneumoconiosis mortality statistics are largely determined by local industrial activities and migration of affected individuals, frequency of pneumoconiosis varies geographically. Control of occupational dust exposure is the single most effective means of preventing pneumoconiosis. Tracking of pneumoconiosis is essential for measuring progress toward elimination of the disease, as well as for targeting prevention and disease management programs.

## Methods

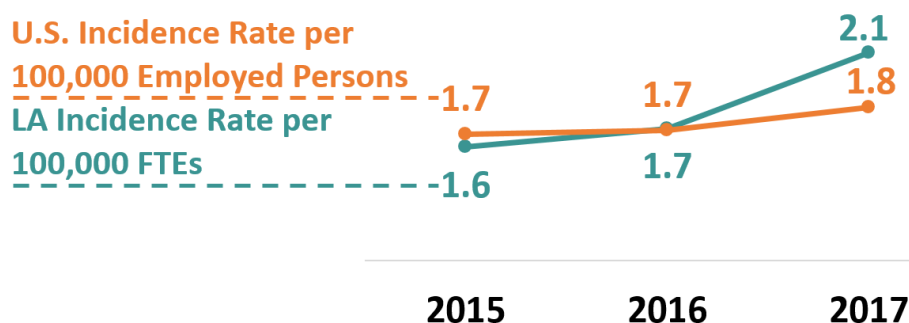
Pneumoconiosis mortality cases were obtained from death records, which are maintained by LDH's Office of Vital Records. Total pneumoconiosis and asbestosis mortality cases were selected based on the presence of an appropriate ICD-10 code as any cause of death. Additional inclusion criteria were that decedents were aged 15+ years and were Louisiana residents. Records were excluded if the decedent's age was unknown, they were an out-of-state resident, or their residence was undetermined. State population estimates for rate calculations were obtained from the U.S. Census Bureau, and the 2000 U.S. standard population was used for age-adjustment of rates. The U.S. data came from the CDC WONDER online database.

## Limitations

Because pneumoconioses are typically chronic diseases with a long latency, current incidence is not necessarily indicative of current exposures, and it may be several years before reduction in exposures affect mortality. Causes of death listed on the death certificate and coding of those causes may be inaccurate. The number of contributing causes of death listed on the death certificate may vary by person completing the death certificate and geographic region. Death certificates identify only a small percentage of the individuals who develop pneumoconiosis. The state of residence of the decedent may not have been the state of exposure.

## Indicator 11: Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers

From 2015 to 2017, the average Louisiana incidence rate was 1.8 per 100,000 employed persons. The average U.S. rate was 1.7 per 100,000 FTEs. Louisiana and U.S. data are not available for 2018 and 2019. The Louisiana and U.S. incidence rates for acute work-related pesticide-associated illness and injury from 2015 to 2017 followed similar patterns. The rate stayed the same from 2015 to 2016 and increased from 2016 to 2017. Over the five years, the Louisiana rate increased by 0.5 in contrast to a 0.1 increase for the U.S.



### Significance

Pesticides are among the few chemicals that are specifically designed to kill and cause harm. In the U.S., about one billion pounds of pesticide, contained in more than 160,000 products, are used annually. Workers who handle pesticides are at increased risk for exposure. The Environmental Protection Agency estimates 20,000 to 40,000 work-related pesticide poisonings each year. Poison Control Centers (PCCs) are important sources of reports of acute poisonings and chemical exposures. These data can be useful to target prevention. The type of data collected is comparable across states due to the uniformity in case handling by PCC.

### Methods

The American Association of Poison Control Centers collects information on reported cases of work-related pesticide poisoning resulting in acute illness. Pesticide poisonings include exposures to disinfectants, fungicides, fumigants, herbicides, insecticides, repellents and rodenticides. The incidence of reported work-related pesticide poisonings per 100,000 employed persons age 16 years and older was calculated for Louisiana for the years 2015 to 2019 using the BLS Current Population Survey data for the denominator.

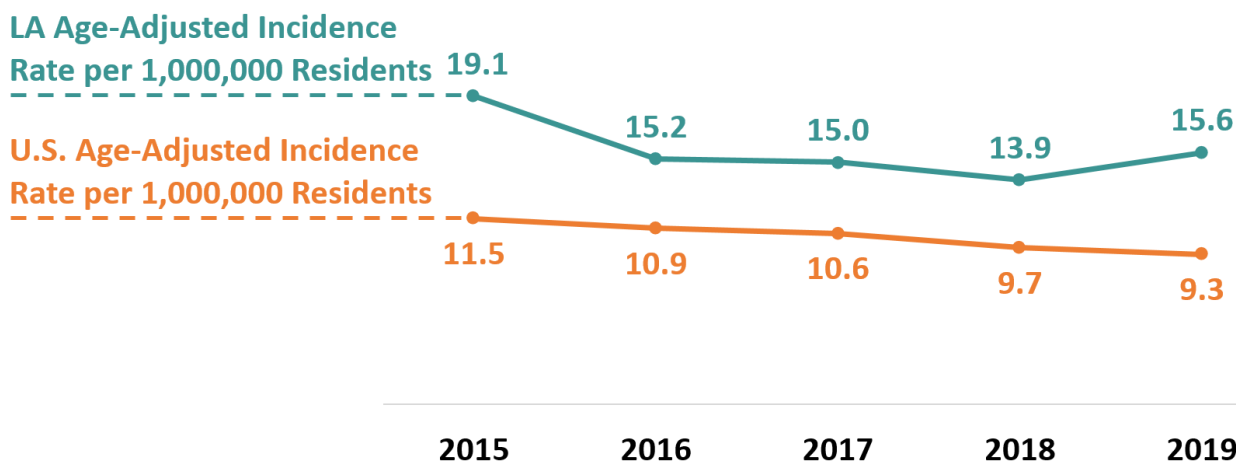
### Limitations

PCCs capture only a small proportion of acute occupational pesticide-related illness cases, an estimated 10%. PCCs do not systematically collect information on industry and occupation; however, cases associated with occupational exposures can be identified. Not all states have PCCs. State health agencies may have to enter into an agreement with their state-based PCC to obtain local data, or may obtain less timely PCC data from the Toxic Exposure Surveillance System, which is administered by the American Association of Poison Control Centers.



## Indicator 12: Incidence of Malignant Mesothelioma

Louisiana's age-adjusted incidence rate of malignant mesothelioma for each of the five years from 2015 to 2019 was higher than the rates for the United States. Louisiana had an average rate of 15.8 compared to the U.S. rate of 10.4. The Louisiana rate decreased from 19.1 to 13.9 from 2015-2018 until increasing to 15.6 in 2019. In comparison, the U.S. rate gradually decreased each year over this period and decreased from 9.7 to 9.3 from 2018 to 2019. The number of cases can be found in Appendix Table A12.



### Significance

Malignant mesothelioma, while relatively rare, is a fatal cancer that occurs in the thin membranes surrounding the chest or abdominal cavity. The only well-established risk factor for malignant mesothelioma is exposure to asbestos and related fibers. It has been estimated that as much as 90% of cases are caused by exposure to asbestos. Most asbestos exposures occur in the workplace. Mesothelioma is a disease of long latency, typically with 20-60 years between exposure and onset of disease. Tracking malignant mesothelioma is critical in documenting the burden of occupational disease. Understanding the burden of this disease offers opportunities to design, target, and evaluate the impact of prevention efforts over time, and to identify previously unrecognized settings in which workers may continue to be at risk of asbestos exposure.

### Methods

Incident mesothelioma case data for 2015-2019 was obtained from the Louisiana Tumor Registry (LTR), which is a population-based Surveillance, Epidemiology, and End Results (SEER) cancer registry operated and maintained by the Louisiana State University Health Sciences Center in New Orleans. By law, every health care provider is required to report newly diagnosed cancers to the Tumor Registry. Cases were limited to Louisiana residents aged 15+ years, and were excluded if the patients' age or state of residence was unknown, or if the patient resided out of state. State population estimates for rate calculations were obtained from the U.S. Census Bureau and the 2000 U.S. standard population was used for age-adjustment of rates. The U.S. data came from the CDC WONDER online database.

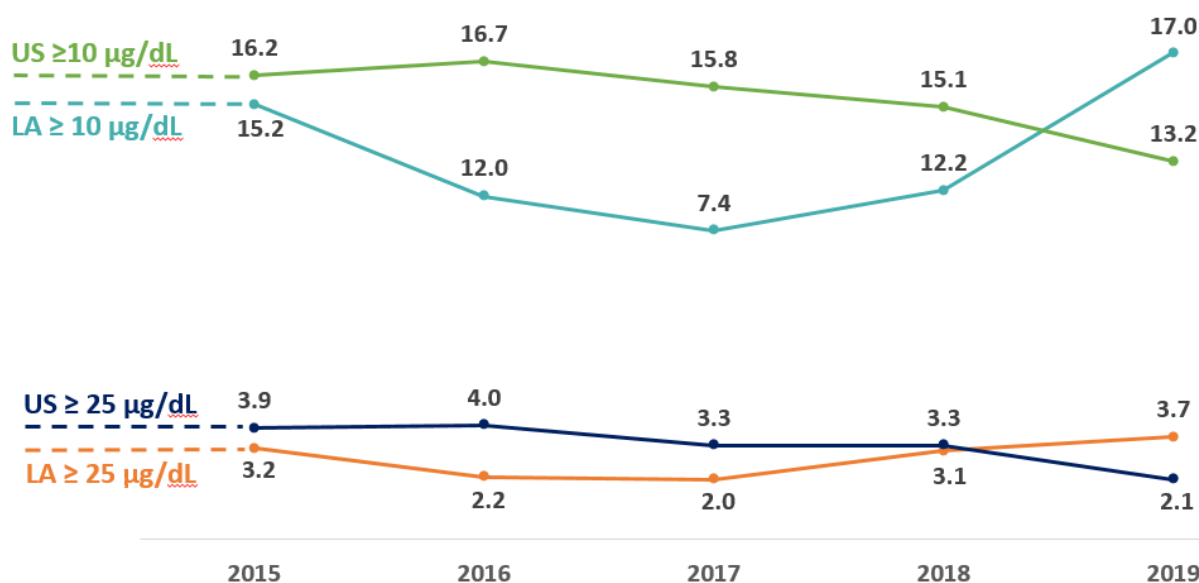
### Limitations

Not all cases of malignant mesothelioma are caused by occupational exposures. Because cancer is a disease of long latency, current incidence is not indicative of current exposures and it may be many years before reductions in occupational exposures affect incidence. State of residence of the decedent may not have been the state of exposure. Data from some existing statewide central cancer registries do not yet meet standards for data completeness and quality; therefore, nationwide estimates may be incomplete. CSTE may use a different methodology for calculating state specific incidence rates than the LTR; therefore, rates published here may differ from those published by the LTR.

## Indicator 13: Elevated Blood Lead Levels (BLL) among Adults

Louisiana law requires healthcare providers and laboratories to report the results of all blood lead tests, regardless of level, to the LDH. In Louisiana, prevalent cases and rates decreased from 2015-2017, but have been rising steadily since in both the  $\geq 10$  and  $\geq 25$   $\mu\text{g}/\text{dL}$  BLL groups. From 2018-2019, prevalent cases and rates for the  $\geq 40$   $\mu\text{g}/\text{dL}$  BLL in Louisiana decrease by 67% (data in Appendix Table A13). The majority of work-related elevated BLLs occur among those employed in the construction industry. Louisiana prevalence rates at the  $\geq 25$   $\mu\text{g}/\text{dL}$  BLL concentration were relatively similar to U.S. rates from 2015-2019. Complete data for all BLL concentrations ( $\geq 5$   $\mu\text{g}/\text{dL}$ - $\geq 40$   $\mu\text{g}/\text{dL}$ ) available in Appendix Table A13.

Prevalence rate of elevated blood lead levels per 100,000 employed persons aged 16+ years



### Significance

Lead adversely affects multiple organ systems and can cause permanent damage. Among adults, lead poisoning is a persistent, mainly occupational, health issue that continues to be an important public health problem. The most reliable test for exposure is the blood lead level (BLL). The average BLL for the general US population is  $< 1$   $\mu\text{g}/\text{dL}$  of venous whole blood. As of November 2015, the case definition used by CSTE, NIOSH, and CDC for an elevated BLL that should be reported is  $\geq 5$   $\mu\text{g}/\text{dL}$ .

### Methods

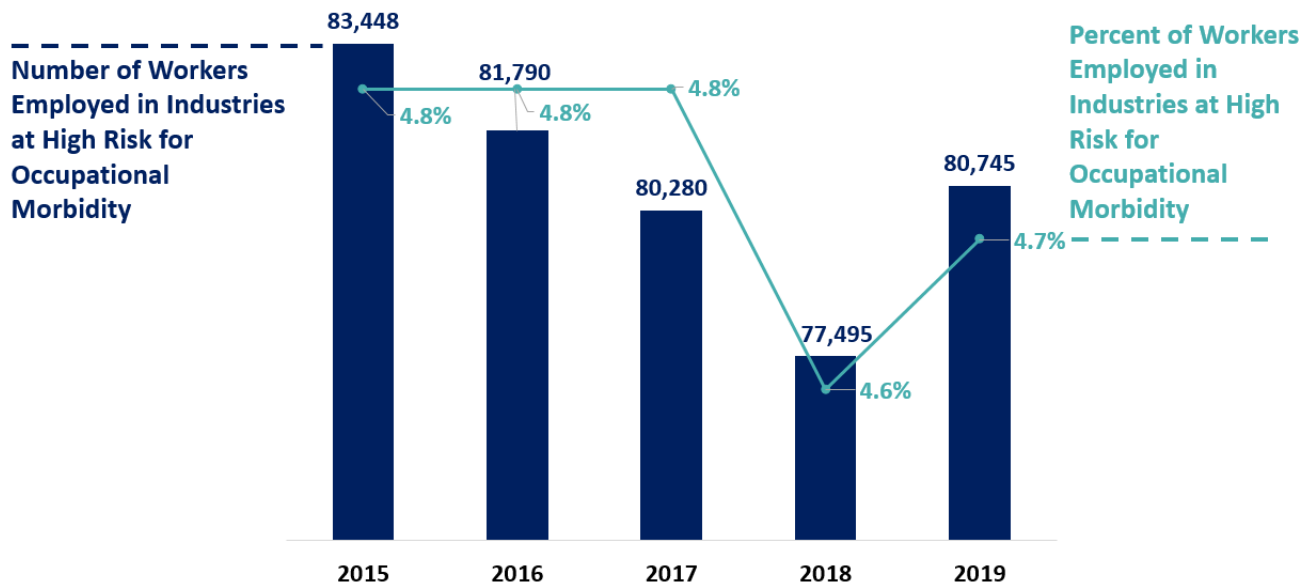
The Occupational Health and Injury Surveillance Program participates in CDC's ABLES program, and maintains a database of all blood lead laboratory test results for adult (aged 16+ years) Louisiana residents. Cases were retrieved from this database. Annual prevalence (existing case) and incidence (new case) rates were calculated using BLS CPS estimates with numbers of employed persons aged 16 years and older serving as the denominator.

### Limitations

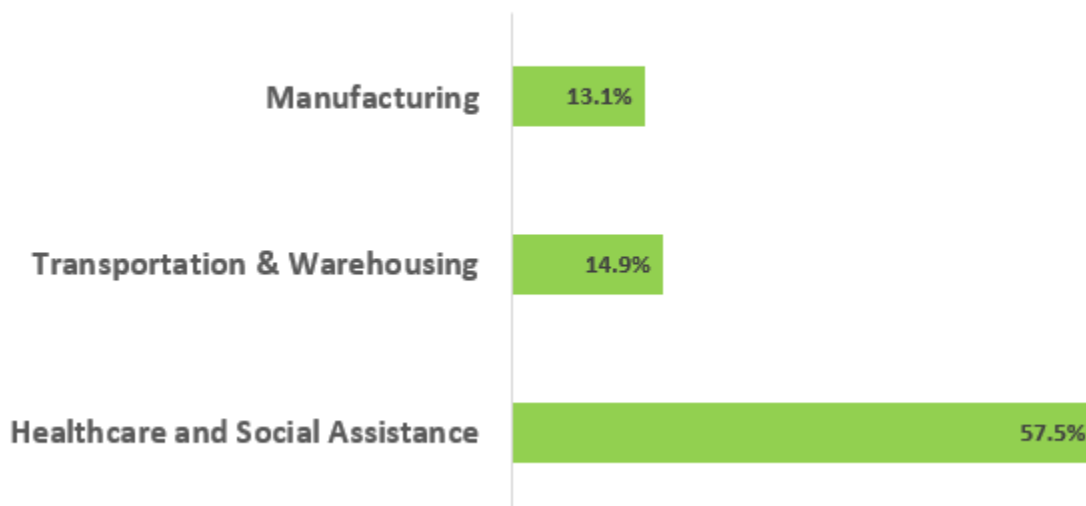
BLLs reflect the contributions of acute external exposure to lead as well as the release of internal bone lead stores into the blood. For persons without significant lead body burden, a BLL is a good indicator of recent (preceding 3-5 weeks) external lead exposure. This indicator likely underestimates the true burden of lead exposure in Louisiana for several reasons. Reports from laboratories are frequently incomplete. Not all employers offer testing, even if employees are exposed to lead. Some workers may not be tested using appropriate methods. Although most elevated BLLs are presumed to be occupationally-related, approximately 10-15% come from non-occupational exposures. It may not be possible to distinguish occupational exposures from non-occupational exposures.

## Indicator 14: Workers Employed in Industries at High Risk for Occupational Morbidity

The number and percentage of Louisiana workers employed in industries at high-risk for occupational morbidity remained relatively constant from 2015-2019. On average, 4.7% of Louisiana workers were employed in a high risk industry. In 2019, 57% of all workers employed in industries at high-risk for injury or illness worked in the Health Care and Social Assistance sector. Industries in this sector include hospitals, nursing homes, and youth and family service centers. The Transportation and Warehousing sector contained the second highest number at 14%. Industries in this sector include air, rail, water, and truck transportation as well as distribution centers.



### Most High-Risk Industries for Occupational Morbidity



## Significance

Control of occupational hazards is the most effective means of preventing work related injuries and illnesses. Concentrating on high-risk industries for non-fatal injuries and illnesses helps prioritize limited resources

## Methods

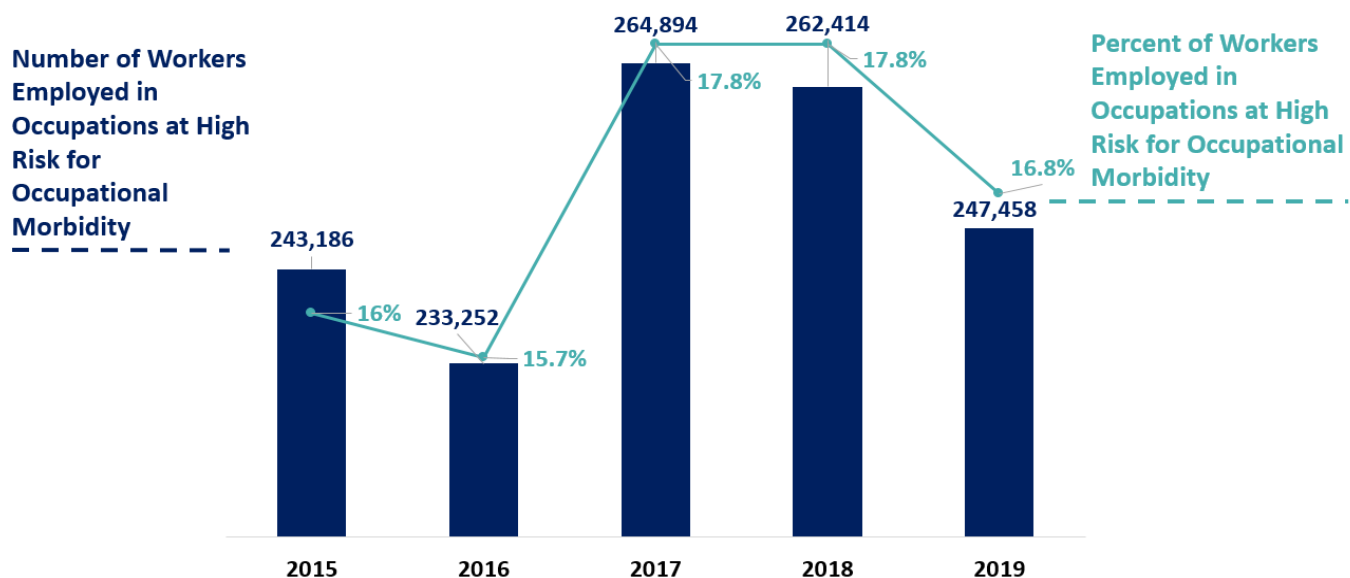
Data was obtained from the U.S. Census Bureau’s County Business Patterns (CBP). High morbidity risk industries were identified based on BLS “total reportable cases incidence rates” for private sector workers. These industries had rates that were more than double the national rate. The percentage of workers in Louisiana employed in industries with high risk for occupational morbidity is described for the years 2013-2017.

## Limitations

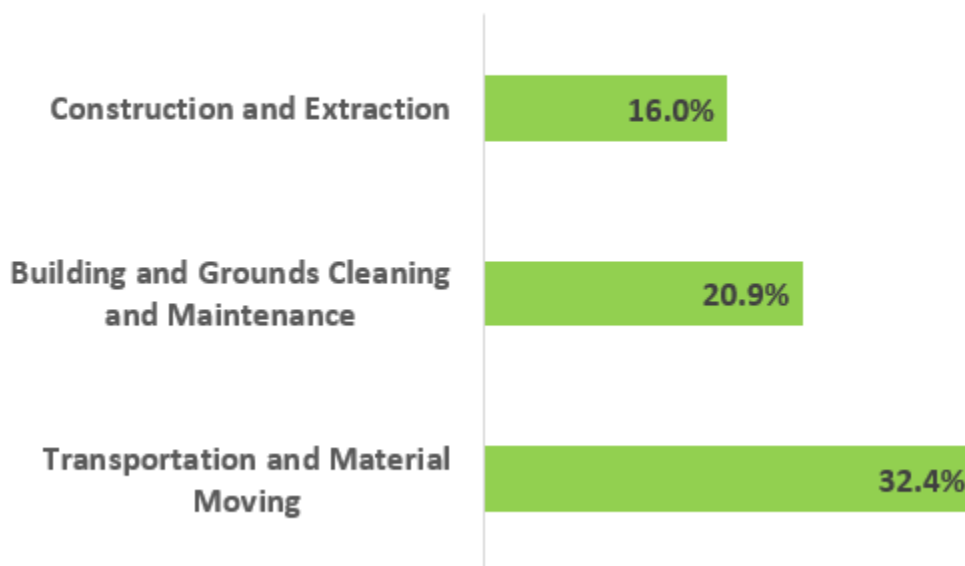
It is possible that some new employers are not counted in the CBP mid-March survey. Differences in regional industrial practices could mean that industries considered “high-risk” according to national BLS estimates may be more or less risky in an individual state. The list of high-risk industries was constructed using an across-the-board threshold for “high-risk” based on national data; therefore, this indicator is not a direct estimate of how much risk workers in a particular state experience at work. It only provides an aggregate estimate of how many workers are employed in industries, which, at the national level, have been deemed high-risk.

## Indicator 15: Workers Employed in Occupations at High Risk for Occupational Morbidity

On average 16.8% of employed people in Louisiana worked in occupations at high risk for occupational morbidity from 2015-2019, with 2017-2018 having the highest percentage of all five years. In 2019, transportation and material moving jobs were the most common high risk occupations that employed Louisiana workers. More specifically, people employed as Driver/Sales Worker and Truck Drivers were most at risk. Other common occupations are displayed in the horizontal bar chart below.



### Most High-Risk Occupations for Occupational Morbidity



## Significance

Control of occupational hazards is the most effective means of preventing work-related injuries and illnesses. Concentrating on high-risk occupations for non-fatal injuries and illnesses helps prioritize limited resources.

## Methods

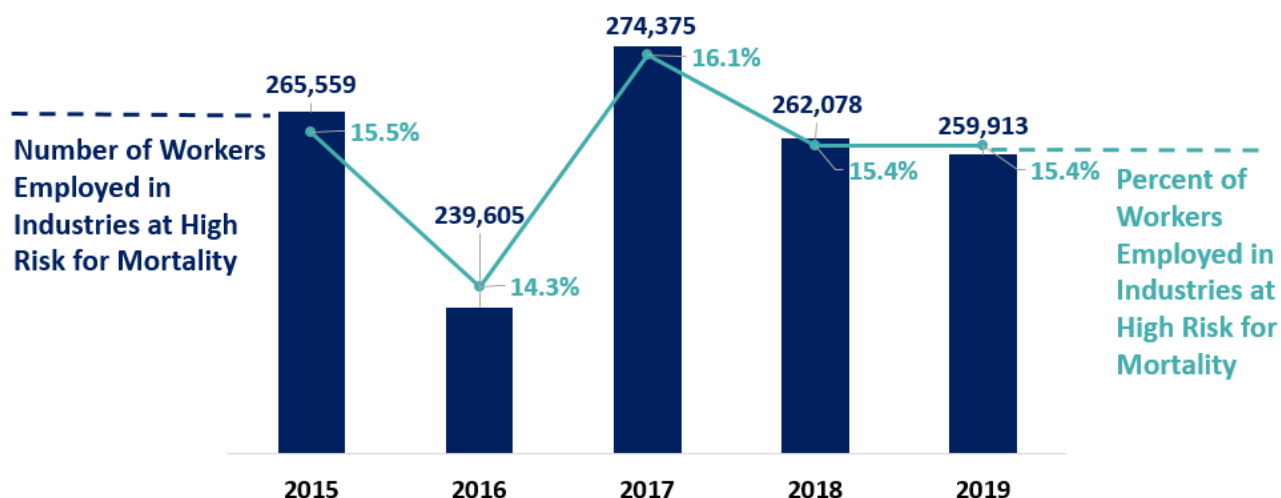
Data were obtained from the BLS CPS using the NIOSH ELF query system. High-risk morbidity occupations are based on the BLS “days away from work” cases and employment estimates for private sector workers. These occupations had rates that were more than double the rate for all workers nationwide. The percentage of workers employed in high-risk occupations is reported for 2013-2017 based on 2010 Bureau of Census Occupation Codes for employed persons aged 16 years and older in Louisiana.

## Limitations

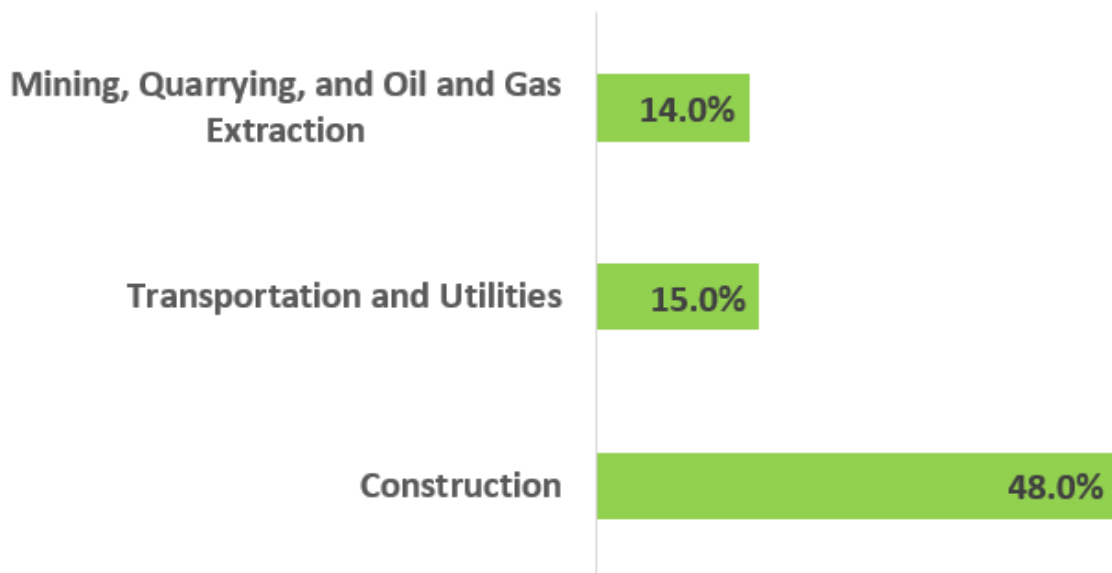
Differences in regional industrial practices could mean that occupations considered “high-risk” according to national BLS estimates may be more or less risky in individual states. The list of high-risk occupations was constructed using an across-the-board threshold for “high-risk” based on national data. It is possible that certain occupations are more or less risky in an individual state; therefore, this indicator is not a direct estimate of how much risk workers in a particular state experience at work. It only provides an aggregate estimate of how many workers are employed in occupations, which, at the national level, have been deemed high-risk.

## Indicator 16: Workers Employed in Industries and Occupations at High Risk for Occupational Mortality

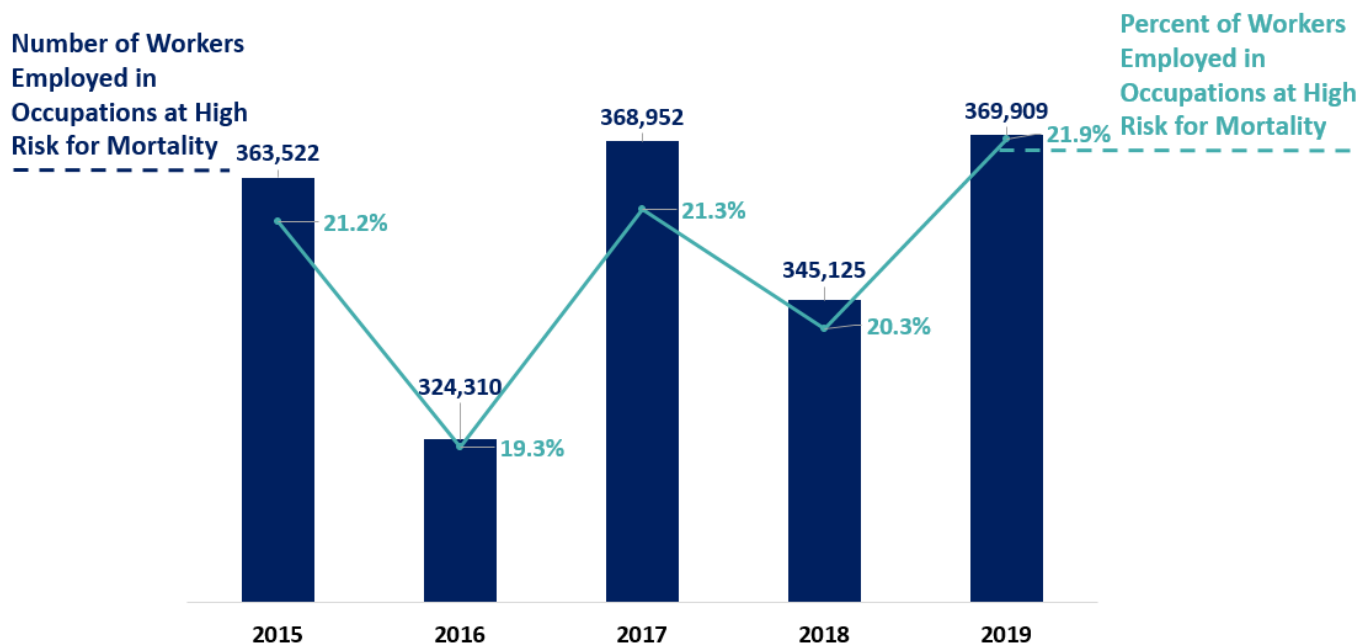
On average, from 2015-2019, 15.3% of workers in Louisiana were employed in industries at high-risk for occupational mortality. Overall, there was little fluctuation over the five years (range 14.3%-16.1%). In 2019, nearly half of these workers were employed in the Construction sector, and approximately 15% were employed in the Transportation and Utilities sector. On average, 20.8% of Louisiana workers were employed in high mortality risk occupations from 2015-2019. Again, there was little fluctuation over the five year period (range 19.3%-21.96%). In 2019, 49% worked in the Natural Resources, Construction, and Maintenance occupational group. The majority of workers in the sector worked as construction laborers and supervisors of construction trades and extraction workers.



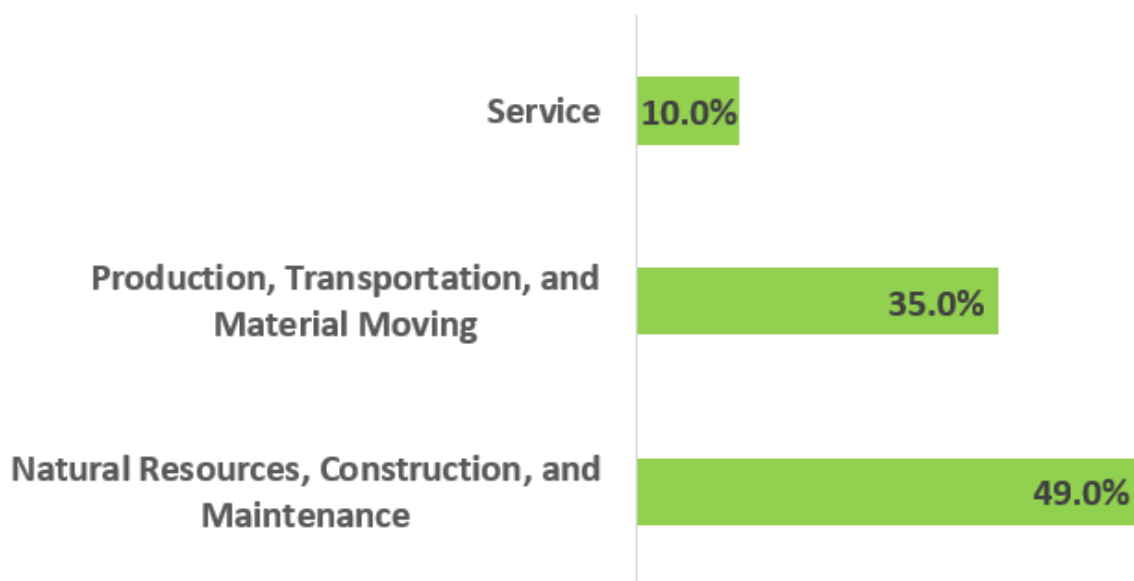
### Most High-Risk Industries for Occupational Mortality



**Indicator 16: Workers Employed in Industries and Occupations at High Risk for Occupational Mortality (cont.)**



**Most High-Risk Occupations for Occupational Mortality**





## Significance

Multiple factors and risks contribute to work-related fatalities, including workplace and process design, work organization, worker characteristics, economics, and other social factors. Surveillance of work-related fatalities can be an initial step in identifying high risk industries and occupations and can lead to the development of new interventions and development of new or revised regulations to protect workers. Concentrating on high-risk occupations and industries for fatalities helps prioritize limited resources.

## Methods

All data were obtained from the BLS CPS using the NIOSH ELF query system. High-risk mortality industries and occupations are based on the BLS CFOI for private sector workers aged 16+ years. These industries and occupations had rates at least twice as high as the national rate. The percent of workers in Louisiana employed in industries and occupations with high risk for occupational mortality is reported for the years 2015-2019.

## Limitations

Differences in regional industrial practices may cause the ranking of high-risk industries and occupations within a specific state to differ from national data. The list of high-risk industries and occupations were constructed using across-the-board thresholds for “high-risk” based on national data. It is possible that certain industries and occupations on this list are more or less risky in an individual state; therefore, this indicator is not a direct estimate of how much risk the workers in a particular state experience at work. It only provides an aggregate estimate of how many workers are employed in industries and occupations, which, at the national level, have been deemed high-risk.

## Indicator 17: Occupational Safety and Health Professionals

Occupational safety and health professionals share the common goal of identifying workplace hazards and preventing or reducing workers' risks to these hazardous conditions or processes. Due to the difficulty obtaining consistent, reliable data, the CSTE Occupational Health Subcommittee voted to discontinue this indicator following the 2015 data collection year in 2018.

### Significance

Work-related injuries and illnesses are preventable. It is important to determine if there are sufficient trained personnel to implement occupational health preventative services.

### Methods

NIOSH routinely collected and distributes the number of occupational safety and health professionals in each category for the current Occupational Health Indicator development year to state surveillance grantees. Due to the difficulty obtaining consistent, reliable data, the CSTE Occupational Health Subcommittee voted to discontinue this indicator following the 2015 data collection year in 2018.

### Limitations

Other important occupational health specialties such as fire prevention, health physicists, and ergonomists are not included. The numerator data include retired individuals and individuals who may devote the majority of their time to research and limited or no time to provision of actual preventive services. An individual may practice part-time or even full-time in the field of occupational health and not be board certified or a member of the organization representing occupational health professionals. The completeness and frequency of updating addresses varies by each organization. Members are often listed in a database by a preferred address, which may not be the address there they practice. Due to privacy concerns, individuals may opt out of being listed in membership rolls.

## Indicator 18: OSHA Enforcement Activities

OSHA is federal regulatory agency that sets and enforces standards to protect workers' safety and health. OSHA's federal and state plan jurisdictions (Louisiana is a federal OSHA state) includes private sector employers and excludes the mining industry, the self-employed, the agricultural industry, and government workers, with some exceptions. The State OSHA Office in Baton Rouge conducts OSHA worksite inspections throughout Louisiana. From 2015-2017, the number of establishments OSHA inspected in Louisiana decreased by about 21% and by 7% in the US. From 2017-2019, the number of establishments increased by 37% in Louisiana and by 1 % in the US. In terms of the amount of employees whose work areas were inspected by OSHA in Louisiana there was a dramatic 269% increase from 2017-2018 followed by a 53% decrease from 2018-2019. In the US there was a steady increase in the amount of employees whose work areas were inspected by OSHA from 2017-2019.

Year	Establishments Inspected by OSHA*		Employees whose Work Areas were Inspected by OSHA**	
	Louisiana Count (%)	United States Count (%)	Louisiana Count (%)	United States Count (%)
2019	563 (0.4)	74,437(0.7)	14,861 (0.9)	4,475,945(3.5)
2018	490 (0.4)	71,834(0.7)	31,794 (2.0)	3,494,587(2.7)
2017	410 (0.3)	73,614(0.8)	8,596 (0.5)	3,260,760(2.6)
2016	470 (0.4)	74,350 (0.8)	30,605 (1.9)	3,409,034 (2.9)
2015	521 (0.4)	79,281 (0.9)	20,832 (1.3)	3,262,194 (2.8)
* Reports the number and percentage of establishments inspected out of all establishments under OSHA jurisdiction and eligible for inspection. **Reports the number and percentage of OSHA-covered employees eligible for inspection whose work areas were inspected by OSHA. DNR = Data Not Ready				

## Significance

Under OSHA law, employers are responsible for providing a safe and healthful workplace for their workers. To this end, OSHA targets workplace inspections by identifying high-hazard industries and employers that have the highest injury and illness rates. Inspections can also be triggered by a fatality, a hospitalization of at least one worker, a work-related amputation, a work-related injury resulting in the loss of an eye, or a worker complaint or referral. OSHA enforcement activities may correlate with workplace health and safety benefits, such as a reduction in the number of workplace injuries or illnesses. In some respects, OSHA enforcement activities may serve as a leading indicator of workplace safety, since the potential for a workplace to be inspected by OSHA may provide an incentive for employers to give more attention to workplace health and safety issues.

## Methods

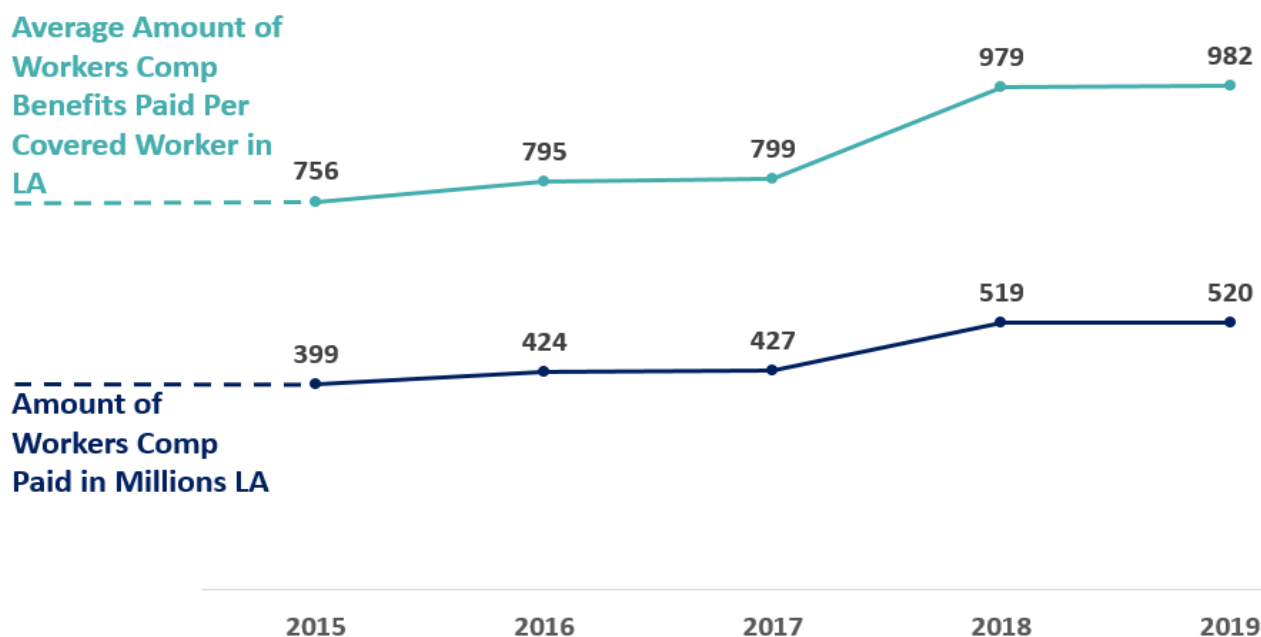
Enforcement activities conducted on establishments under OSHA jurisdiction (excluding mines and farms) are reported for Louisiana for 2015-2019. Data sources included OSHA annual reports on inspections and the number of workers covered by these inspections. The BLS' Quarterly Census of Employment and Wages data (ES-202/QCEW) was used to estimate the number of workers employed and establishments in the public and private sectors.

## Limitations

This indicator measures only enforcement activity, not other measures of OSHA activity such as education and compliance assistance. Because OSHA may conduct multiple inspections of the same establishment during the calendar year, the percentage of establishments inspected may be slightly overestimated. In addition, if OSHA conducts multiple inspections of the same worksite during the year, the number of workers covered by OSHA inspections may be over-counted. In federal OSHA states and some OSHA stat plan states, OSHA does not inspect farms with 10 or fewer employees. Agricultural establishments are excluded from the denominator; therefore, the percentage of establishments and employees covered may be overestimated. Employers participating in an OSHA Voluntary Protection Program (VPP) or the Safety and Health Achievement and Recognition Program (SHARP) are exempted from routine inspections. Excluding workers from these programs will reduce the numerator, resulting in an underestimate of the protective function. In QCEW data, individuals holding more than one job are counted multiple times.

## Indicator 19: Workers' Compensation Awards

Workers' compensation, introduced in the U.S. in 1911, is a state-based social insurance program that guarantees financial compensation for workers who become injured or ill on job and limits employers' liability. The amount of benefits paid is directly related to the financial costs of work-related injuries and illnesses, yet it does not reflect the true burden. The average annual amount of workers' compensation claims paid in Louisiana from 2015-2019 was \$861 million per year. On average, about \$457 of workers' compensation benefits were paid per covered worker per year during this time. From 2015-2019, the amount of workers' compensation claims paid in Louisiana and the amount of benefits paid per covered worker steadily increased by 30% over that time period.



### Significance

Workers' compensation claims are reviewed to establish whether the reported medical condition is work-related. Accepted claims represent known work-related injuries and illnesses, and often more severe cases. The total and average amounts of benefits paid provide an estimate of the burden of these events, which can help justify prevention programs and activities.

### Methods

The National Academy of Social Insurance (NASI) collects and reports estimated annual benefits, coverage and costs associated with workers' compensation programs. The total amount of workers' compensation benefits paid and the average benefit paid per covered worker in Louisiana are reported for 2015-2019.

### Limitations

This is a gross indicator of the burden of occupational injury and illness. It does not include human, noneconomic costs, or economic costs associated with occupational injuries and illnesses. These data are more appropriate for evaluating trends within a state rather than comparisons between states because of differences in wages and medical costs, the compensation determination, industry types and risks, and policies on permanent disability payments. Even within a state, changes in policies, wages, and medical care expenses must be considered.

## Indicator 20: Work-Related Low Back Disorder Hospitalizations

ICD-10-CM codes for this indicator have not yet been finalized by NIOSH and CSTE; therefore, data for Q4 2015-2019 are not currently available. When this OHI's guidance has been updated with ICD-10-CM codes, data for 2015 forward will be compiled and reported in this report and on the Louisiana Health Data Explorer.

### Significance

Each year 15-20% of Americans report back pain, resulting in over 100 million lost workdays and more than 10 million physician visits. The National Health Interview Survey data estimates that two-thirds of all low back pain cases are attributable to occupational activities. Hospitalizations for work-related back disorders have serious and costly effects including high direct medical costs, significant functional impairment and disability, high absenteeism, reduced work performance, and lost productivity. Well-recognized prevention efforts can be implemented for high risk job activities and reduce the burden of work-related low back disorders.

### Methods

All lower back disorder hospitalizations and lower back disorder hospitalizations that required surgery were obtained from the Louisiana Hospital Inpatient Discharge Database (LAHIDD). All cases were Louisiana residents aged 16+ years with a primary payer code indicating workers' compensation. Lower back disorder hospitalizations were identified with a relevant diagnostic code (ICD-9-CM diagnostic code categories: herniated disc, probable degenerative changes, spinal stenosis, possible instability, and miscellaneous). Surgical low back disorder hospitalizations were identified with the same ICD-9-CM diagnostic codes in combination with a relevant surgical procedure code (procedural code categories: laminectomy, discectomy, fusion, other). Excluded data included patient age unknown, out-of-state residents, unknown state of residence and out-of-state hospitalizations. Effective October 1, 2015 (Q4 2015) healthcare organizations and providers were required to start using ICD-10-CM coding system. At this time, the CSTE Occupational Health Subcommittee is still working to finalize ICD-10-CM codes for this indicator; therefore, only data through Q3 of 2015 is presented in this report. This report will be updated when ICD-10-CM codes for this indicator become available.

### Limitations

Inpatient hospital discharge records are only available for non-federal, acute care hospitals. The majority of individuals with work-related illnesses and many others with injuries do not file for workers' compensation. Self-employed individuals, federal employees, and railroad or longshore and maritime workers are not covered by workers' compensation systems. Attribution of payer in hospital discharge may not be accurate. Due to the differences in states' workers' compensation programs caution should be taken when making state-to-state and state-to-national comparisons of these data. Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients, to correctly diagnose work-related conditions, and/or to list the condition as a discharge diagnosis. State residents may be hospitalized in another state and not reflected in LAHIDD data. All admissions are counted, including multiple admissions for a single individual.

## Indicator 21: Asthma among Adults Caused or Made Worse by Work

The data source for this indicator is the Behavioral Risk Factor Surveillance System Asthma Callback Survey. Louisiana ended participation in the Asthma Callback Survey in 2014. Indicator data is available for 2009-2014 on the Louisiana Health Data Explorer. Measures included are number of ever-employed adults with asthma who report their asthma was caused or made worse by work and percent of ever-employed adults who report their asthma was caused or made worse by work.

### Significance

Work-related asthma is preventable but often undiagnosed. Work-related asthma can have adverse effects on the worker, including increased morbidity, adverse socioeconomic impacts and difficulty getting and sustaining work. Estimating the burden of asthma caused or made worse by work can help target prevention activities.

### Methods

Data on asthma was collected from the Behavioral Risk Factor Surveillance System (BRFSS) Asthma Call-back Survey (ACBS). The ACBS gathers data that are more detailed from BRFSS respondents who originally indicated that they had ever been diagnosed with asthma, including asking participants whether their asthma was caused or made worse by exposures at work for current asthma status. The ACBS results reflect the number and percentage of adults who responded that their current asthma status was caused or made worse by exposures at work.

### Limitations

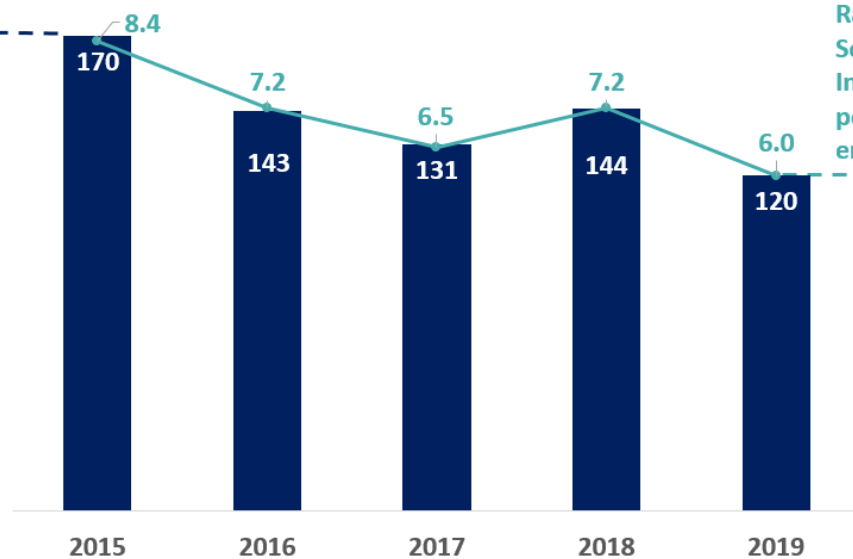
Louisiana's ACBS data was collected for landline use only from 2011-2014. The data represent a population-based estimate of asthma caused or made worse by work and are subject to measurement, nonresponse, and sampling errors. The indicator does not distinguish between new-onset and work-aggravated asthma. The ACBS began new weighting methods in 2011 and the wording and order of questions changed in 2013; therefore, any trend analysis should be restricted to 2013 forward. States using landline only vs. landline and cellphone methodology do not have comparable estimates. Not all states participate in the ACBS, and the number of states that participate varies by year. Because it is a telephone health survey, individuals must have a telephone to participate. The ACBS is only conducted in select languages that can vary by state; therefore, it does not include individuals who speak all languages. The data is subject to the bias of self-reported data.

## Indicator 22: Work-Related Severe Traumatic Injury Hospitalizations

From 2015-2019 the average annual number of cases of work-related severe traumatic injury hospitalizations was 142 and the average annual rate was 7.1 per 100,000 employed persons. The rate of work-related severe traumatic injury hospitalizations decreased steadily from 2015 to 2017. While the rate increased from 2017-2018, it declined again after 2018.

Number of Work Related  
Severe Traumatic Injury  
Hospitalizations

Rate of Work-Related  
Severe Traumatic  
Injury Hospitalizations  
per 100,000  
employed persons



### Significance

Acute work-related trauma is a leading cause of death and disability among U.S. workers. Changes in hospitalization practices and workers' compensation coverage/reporting may increasingly reduce capture of minor injuries but have little effect on severe injuries. Use of a severity threshold can decrease the impact of changing utilization and service delivery patterns on observed injury trends. When hospitalization data are used to calculate occupational injury trends in the absence of severity restriction, observed trends are biased downward. Accurate characterization of injury trends is critical to understanding how we are doing as a nation with regard to occupational injury prevention.

### Methods

Severe work-related hospitalization records were obtained from the Louisiana Hospital Inpatient Discharge Database (LAHIDD). Cases are Louisiana residents, aged 16+ years, workers' compensation as primary payer, and the primary diagnosis of a severe traumatic injury and an estimated Abbreviated Injury Scale (AIS) severity score of 3 or above or that have high probability of hospital admission. The list excludes late effects of injury, superficial injuries, foreign bodies, burns, and traumatic complications. BLS CPS data was used to estimate the worker population for rate calculations. Effective October 1, 2015 (Q4 2015) healthcare organizations and providers were required to switch from the ICD-9-CM coding system to the ICD-10-CM coding system.

### Limitations

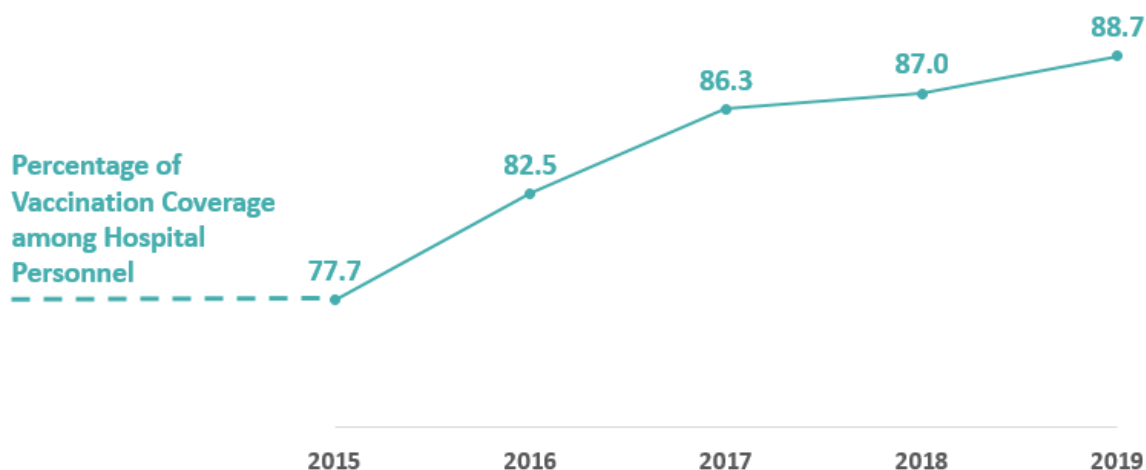
Inpatient hospital discharge records are only available for non-federal, acute care hospitals. Individuals hospitalized for work-related injuries and illnesses represent less than 10% of all workers who receive workers' compensation. Many individuals with work-related illnesses and injuries do not file for workers' compensation. Self-employed individuals, federal employees, and railroad or longshore and maritime workers are not covered by workers' compensation systems. Attribution of payer in hospital discharge may not be accurate. Due to the differences in states' workers' compensation programs caution should be taken when making state-to-state and state-to-national comparisons of these data. Practice patterns and payment mechanisms may affect decisions by health care



providers to hospitalize patients, to correctly diagnose work-related conditions, and/or to list the condition as a discharge diagnosis. State residents may be hospitalized in another state and not reflected in LAHIDD data. All admissions are counted, including multiple admissions for a single individual. Severe traumatic injury hospitalizations are based only on first-listed ICD-9-CM diagnoses that have been estimated to have an AIS severity of 3 or above. As a result, some severe traumatic injuries will not be counted.

### Indicator 23: Influenza Vaccination Coverage among Hospital Care Personnel

Each year influenza vaccination coverage among hospital care personnel has increased, with an overall 14% increase from 2015-2019.



### Significance

Influenza, especially among vulnerable populations, is a significant cause of morbidity and mortality. Healthcare personnel (HCP) can serve as vectors for influenza transmission because they can acquire it from patients and transmit it to other patients and workers. Furthermore, HCP often come to work ill. Nosocomial influenza outbreaks result in longer stays and greater mortality for patients, and missed work for HCP. However, overall poor influenza vaccination coverage among HCP has been demonstrated for years. Higher influenza vaccination coverage among HCP is associated with reductions in nosocomial influenza among hospitalized patients and nursing home residents.

### Methods

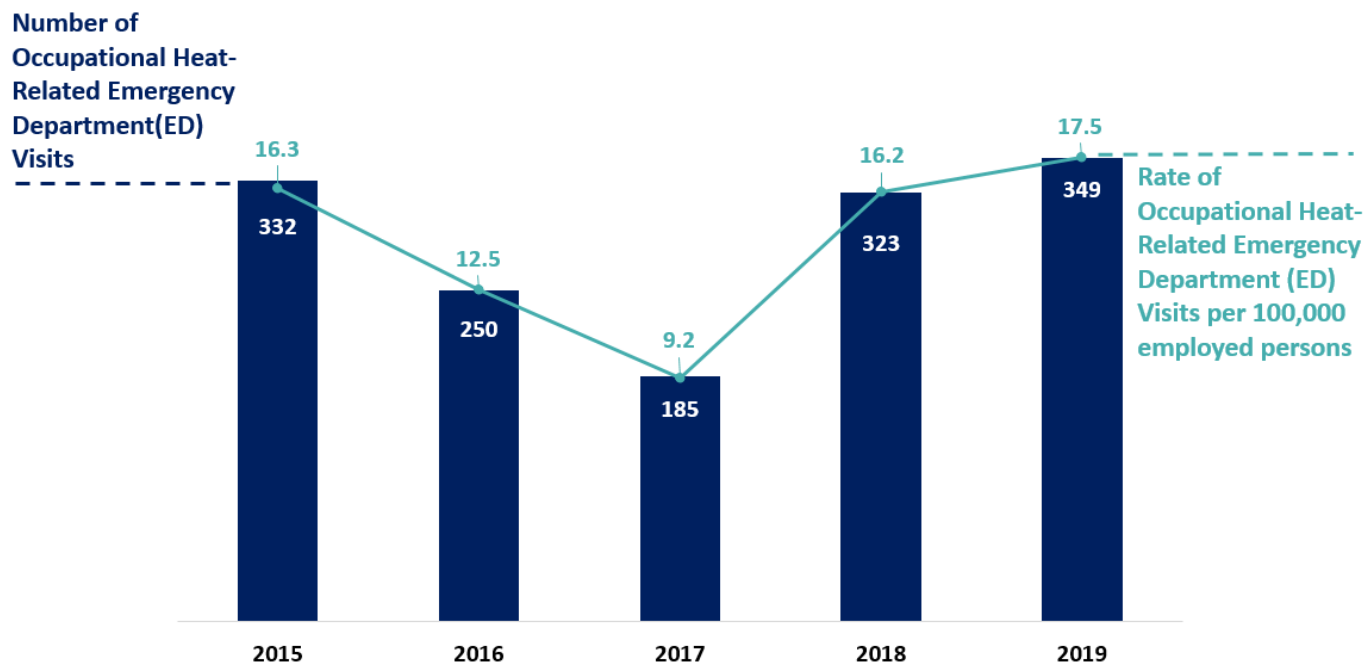
Data was obtained from the Healthcare Safety Network (NHSN) web page.

### Limitations

The overall proportion of vaccinated HCP in a state does not provide information on disparities in vaccination coverage among different types of facilities, or among different subgroups of HCP.

## Indicator 24: Occupational Heat-Related Emergency Department (ED) Visits

From 2015-2019, on average, there were 287 occupational heat-related emergency department visits annually. The average annual rate was 14.3 cases per 100,000 employed persons. The rate decreased approximately 43% from 2015-2017 then increased by about 90% from 2017-2019.



## Significance

Exposure to environmental heat is a clear recognized hazard for many occupations where individuals are not able to maintain thermal equilibrium due to their work environment (e.g., hot and humid), required clothing type, and usage of protective equipment. Minimal epidemiological information about occupational heat-related morbidity is available. Tracking occupational heat-related illness using ED data establishes a baseline to understand the magnitude of the disease burden in the population and support implementation and evaluation of prevention measures.

## Methods

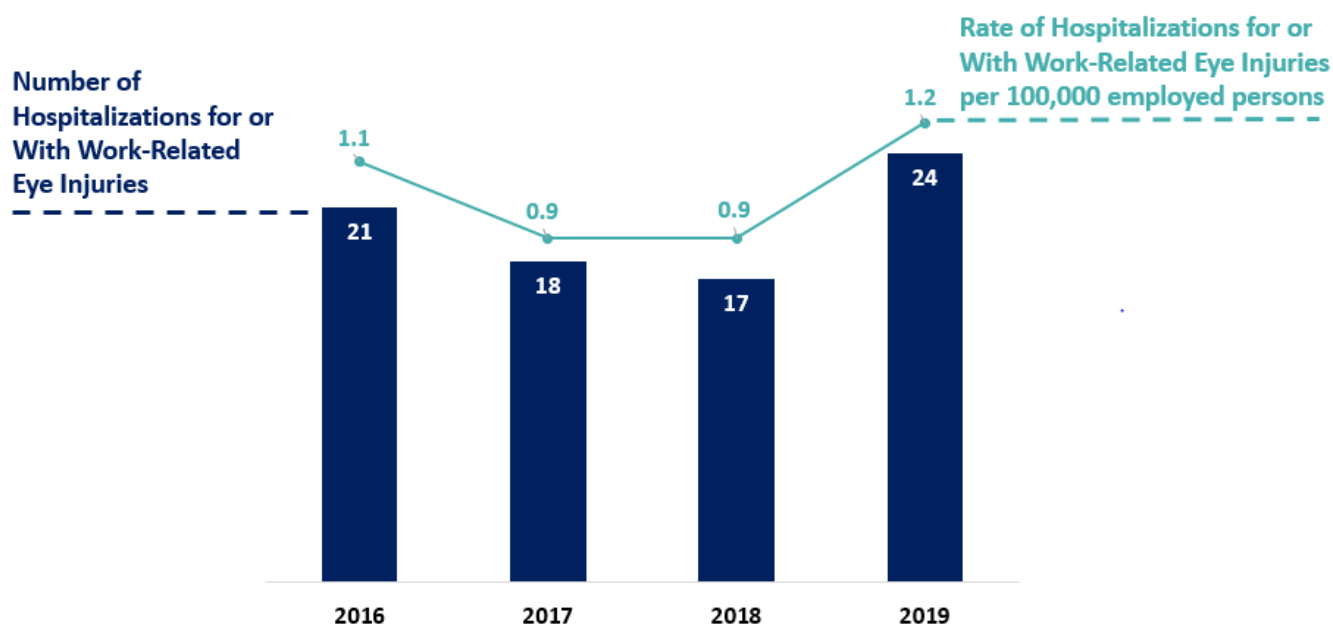
Data was obtained from the State ED records database. Cases were defined as work-related (ED) visit records for Louisiana residents aged 16+ years containing an ICD-9-CM (2015 Q1-3)/ICD-10-CM (2015 Q4-2019) diagnostic code or external cause of injury (e-code) indicating heat-related illness. A record was defined as work-related if workers' compensation was the primary payer or it contained a work-related e-code. Annual rates per 100,000 workers were calculated using BLS CPS population estimates as the denominator.

## Limitations

This indicator likely underestimates the burden of work-related heat illness for several reasons. First, residents of outside states, or cases with unknown residence are not counted, even if their heat illness occurred while working in the state where care was sought. Patients of unknown age are not counted. Additionally, attribution of payer in ED discharge records may not be accurate. Work-related encounters may not be recognized as such if workers' compensation is not listed as the intended payer at the time of the visit. The majority of individuals with work-related illnesses and injuries do not file for workers' compensation, and many types of workers are not eligible for workers' compensation. This indicator uses ICD-10 CM external cause of injury codes as a supplement to workers' compensation, to identify additional work-related cases. However, the effectiveness of external cause codes for identifying work-relatedness is not well established and will vary by code usage within each medical facility.

## Indicator 25: Hospitalizations for or with Occupational Eye Injuries

Data collection for this indicator began in 2016. The average annual number of cases of occupational eye injuries requiring hospitalizations was 20 and the average annual rate per 100,000 employed persons was 1.0.



### Significance

Occupational eye injuries are common yet preventable. In severe cases, ocular trauma can lead to lifetime disability. Although protective eyewear can reduce the risk of eye injury, identifying additional risk factors for eye injuries is integral to preventing them [Blackburn, 2012]. Estimating the burden of occupational eye injuries and associated risk factors can help target prevention activities.

### Methods

Hospitalization records were obtained from the Louisiana Hospital Inpatient Discharge Database (LAHIDD). Cases were defined as inpatient hospitalizations of Louisiana residents aged 16+ years with an ICD-10-CM diagnosis or procedure code consistent with OEI. Workers' compensation as the primary payer was used to determine work-relatedness.

### Limitations

This indicator likely underestimates the burden of work-related eye injuries. Although the indicator likely undercounts work-related eye injuries, some of the cases it captures may be hospitalizations for head injuries (affecting the eyes) that may not have been preventable by standard precautions against eye injuries. Inpatient hospital discharge records are only available for non-federal, acute care hospitals. Individuals hospitalized for work-related injuries and illnesses represent less than 10% of all workers who receive workers' compensation. The majority of individuals with work-related illnesses and many others with injuries do not file for workers' compensation. Self-employed individuals, federal employees, and railroad or longshore and maritime workers are not covered by workers' compensation systems. Attribution of payer in hospital discharge may not be accurate. Due to the differences in states' workers' compensation programs caution should be taken when making state-to-state and state-to-national comparisons of these data. Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients, to correctly diagnose work-related conditions, and/or to list the condition as a discharge diagnosis. State residents may be hospitalized in another state and not reflected in LAHIDD data. All admissions are counted, including multiple admissions for a single individual.

## References

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## Appendix

Source	Web address
BLS Geographic Profile of Employment and Unemployment	<a href="http://www.bls.gov/opub/gp/laugp.htm">http://www.bls.gov/opub/gp/laugp.htm</a>
NIOSH Employed Labor Force	<a href="https://wwwn.cdc.gov/wisards/cps/">https://wwwn.cdc.gov/wisards/cps/</a>
BLS Survey of Occupational Injuries and Illnesses	<a href="https://www.bls.gov/iif/oshstate.htm#LA">https://www.bls.gov/iif/oshstate.htm#LA</a>
BLS Census of Fatal Occupational Injuries	<a href="https://www.bls.gov/iif/oshcfoi1.htm">https://www.bls.gov/iif/oshcfoi1.htm</a>
BLS Current Population Survey	<a href="https://www.bls.gov/cps/">https://www.bls.gov/cps/</a>
National Academy of Social Insurance	<a href="https://www.nasi.org/">https://www.nasi.org/</a>
Census American Community Survey	<a href="https://www.census.gov/programs-surveys/acs">https://www.census.gov/programs-surveys/acs</a>
Year 2000 U.S. Standard Population	<a href="https://seer.cancer.gov/stdpopulations/">https://seer.cancer.gov/stdpopulations/</a>
Poison Control Center Data	Obtained via NIOSH
Louisiana ABLES Program	<a href="https://ldh.la.gov/index.cfm/page/559">https://ldh.la.gov/index.cfm/page/559</a>
U.S. Census Bureau County Business Patterns	<a href="https://www.census.gov/programs-surveys/cbp.html">https://www.census.gov/programs-surveys/cbp.html</a>
OSHA Reports of Annual Inspections	Obtained via NIOSH
BLS Data on Covered Employers and Wages	<a href="https://www.census.gov/programs-surveys/cbp.html">https://www.census.gov/programs-surveys/cbp.html</a>
State-specific aggregate National Healthcare Safety Network data published by CDC	<a href="https://www.cdc.gov/nhsn/datastat/index.html">https://www.cdc.gov/nhsn/datastat/index.html</a>
Louisiana Hospital Inpatient Discharge Database	<a href="https://ldh.la.gov/index.cfm/page/2192">https://ldh.la.gov/index.cfm/page/2192</a>
Louisiana Tumor Registry	<a href="https://sph.lsuhs.edu/louisiana-tumor-registry/">https://sph.lsuhs.edu/louisiana-tumor-registry/</a>
Louisiana Department of Health Services, Emergency Department Visit Database	N/A
Louisiana Workers' Compensation Database	N/A
Louisiana Death Certificate Records	N/A

<b>Table AP. Profile: Employment Demographics</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015 - 2019</b>
Employed Persons, 16 Years and Older (in thousands)	2032	1995	2002	2000	1997	2005
Percentage of civilian workforce unemployed	6.2	6.2	5.1	4.9	4.8	5.4
Percentage of civilian employment self-employed	5.6	5.7	6.6	6.9	6.5	6.3
Percentage of civilian employment in part-time jobs	16.2	16.2	16.5	16.1	14.7	15.9
Percentage of civilian employment by number of hours worked						
0 to 39 hours	32.3	32.4	31.3	31.0	28.5	31.1
40 hours	44.4	45.1	45.6	46.1	47.2	45.7
41+ hours	23.2	22.5	23.2	23.0	24.3	23.2
Percentage of civilian employment by sex						
Males	51.8	51.2	52.1	52.3	51.9	51.9
Females	48.2	48.8	47.9	47.8	48.1	48.2
Percentage of civilian employment by age group						
16 to 17	0.9	0.9	1.0	0.8	0.9	0.9
18 to 64	94.1	93.5	92.7	93.2	92.7	93.2
65+	5.0	5.6	6.5	6.0	6.4	5.9
Percentage of civilian employment by race						
White	67.3	66.6	67.0	66.3	66.8	66.8
Black	28.1	28.8	28.5	29.3	28.8	28.7
Other	4.6	4.6	4.5	4.5	4.4	4.5
Percentage of civilian employment by Hispanic Origin	5.3	4.9	6.1	6.8	6.8	6.0
Percentage of civilian employment by industry						
Mining and logging	3.6	2.6	2.8	2.4	2.7	2.8
Construction	8.3	8.0	9.2	8.3	9.2	8.6
Manufacturing: Durable Goods	3.8	3.5	3.3	3.2	3.4	3.4
Manufacturing: Nondurable Goods	4.2	3.9	3.7	4.5	4.5	4.2
Wholesale and retail trade	12.6	14.3	13.9	13.7	12.9	13.5
Transportation and utilities	5.1	5.0	5.8	5.2	5.7	5.4
Information	1.9	1.5	1.0	1.3	1.4	1.4
Financial activities	5.0	5.4	5.1	5.3	4.8	5.1
Professional and business services	8.9	8.8	9.0	10.1	9.1	9.2
Education and health services	24.8	24.8	23.6	23.0	23.6	24.0
Leisure and hospitality	10.8	10.1	10.5	10.6	11.0	10.6
Other services	4.8	5.3	5.5	5.0	5.3	5.2

<b>Table AP. Profile: Employment Demographics</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015 - 2019</b>
Public administration	5.0	5.9	5.5	6.5	5.4	5.7
Agriculture and related industries	1.0	1.0	1.2	1.0	1.0	1.0
Percentage of civilian employment by occupation						
Management, business and financial operations	12.7	12.3	13.7	13.0	14.0	13.1
Professional and related occupations	21.6	22.6	21.3	21.0	22.2	21.7
Service	18.9	18.5	19.0	21.0	19.8	19.4
Sales and related occupations	10.7	11.8	11.4	10.4	10.6	11.0
Office and administrative support	11.8	11.7	10.9	11.3	10.4	11.2
Farming, fishing, and forestry	0.5	0.5	0.5	0.4	0.4	0.5
Construction and extraction	7.8	7.2	8.0	7.3	6.9	7.4
Installation, maintenance, and repair	3.4	3.6	3.7	3.6	3.4	3.5
Production	6.1	5.5	5.0	5.4	5.4	5.5
Transportation and material moving	6.5	6.2	6.5	6.7	6.9	6.6
Percentage of civilian employment by union membership						
Union members	5.8	4.2	4.4	5.0	5.3	4.7
Represented by a union	6.8	4.9	5.4	5.8	6.1	5.6

<b>Table A1. Indicator 1: Non-Fatal Work-Related Injuries and Illnesses Reported by Employers</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015 - 2019</b>
Estimated Annual Total Number of Work-Related Injuries and Illnesses	26,100	25,700	25,400	25,600	24,100	25,380
Estimated Annual Total Work-Related Injuries and Illness Incidence Rate (per 100,000 FTEs)	1,900	1,900	1,900	1,800	1,700	1,840
Estimated Annual Total Number of Cases Involving Days Away From Work	8,800	9,600	8,900	8,000	8,700	8,800
Estimated Annual Total Incidence Rate for Cases Involving Days Away From Work (per 100,000 FTEs)	600	700	600	600	600	620
Estimated Annual Total Number of Cases Involving More Than 10 Days Away From Work	4,920	4,750	4,130	4,080	4,480	4,472



<b>Table A3. Indicator 3: Fatal Work-Related Injuries</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015 - 2019</b>
LA Annual Number of Fatal Work-Related Injuries	112	95	117	98	119	108
LA Annual Fatality Rate (per 100,000 FTEs)	5.6	4.9	6.0	5.0	6.0	5.5
U.S. Annual Number of Fatal Work-Related Injuries	4,836	5,190	5,147	5,250	5,333	5,151
U.S. Annual Fatality Rate (per 100,000 FTEs)	3.4	3.6	3.5	3.5	3.5	3.5

<b>Table A7. Indicator 7: Work-Related Musculoskeletal Disorders (MSDs) with Days Away from Work Reported by Employers</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015 - 2019</b>
Estimated Annual Number of All MSDs Involving Days Away from Work	2,350	2,210	2,160	2,080	2,250	2,210
Estimated Annual Incidence Rate of All MSDs Involving Days Away from Work (per 100,000 FTEs)	167	162	157	149	163	160
Estimated Annual Number of MSDs of the Neck, Shoulder & Upper Extremities Involving Days Away from Work	620	600	600	550	750	624
Estimated Annual Incidence Rate of MSDs of Neck, Shoulder, and Upper Extremities Involving Days Away from Work (per 100,000 FTEs)	45	43	44	39	54	45
Estimated Annual Number of Carpal Tunnel Syndrome Cases Involving Days Away from Work	0	30	20	30	20	20
Estimated Annual Incidence Rate of Carpal Tunnel Syndrome Cases Involving Days Away from Work (per 100,000 FTEs)	0	2.0	2.0	2.0	1.0	1.4
Estimated Annual Number of MSDs of the Back Involving Days Away from Work	1,010	920	890	810	800	886
Estimated Annual Incidence Rate of MSDs of the Back Involving Days Away from Work (per 100,000 FTEs)	71	68	65	58	58	64

<b>Table A9. Indicator 9: Hospitalizations from or with Pneumoconiosis</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015 - 2019</b>
Annual Number of Inpatient Hospital Discharges for Total Pneumoconiosis	261	311	345	330	294	308
Annual Rate of Inpatient Hospital Discharges for Total Pneumoconiosis (per 1,000,000 residents)	69.7	82.8	91.7	88.2	78.6	82.2
Annual Age-Standardized Rate of Inpatient Hospital Discharges for Total Pneumoconiosis (per 1,000,000 residents)	66.1	80.0	86.5	79.3	69.7	76.3
Annual Number of Inpatient Hospital Discharges for Coal Workers' Pneumoconiosis	< 5	< 5	11	< 5	7	-
Annual Rate of Inpatient Hospital Discharges for Coal Workers' Pneumoconiosis (per 1,000,000 residents)	*	*	2.9	*	1.9	-
Annual Age-Standardized Rate of Inpatient Hospital Discharges for Coal Workers' Pneumoconiosis (per 1,000,000 residents)	*	*	2.5	*	1.7	-
Annual Number of Inpatient Hospital Discharges for Asbestosis	230	282	305	302	263	276
Annual Rate of Inpatient Hospital Discharges for Asbestosis (per 1,000,000 residents)	61.5	75.1	81.1	80.7	70.3	73.7
Annual Age-Standardized Rate of Inpatient Hospital Discharges for Asbestosis (per 1,000,000 residents)	58.5	72.9	76.8	72.5	62.3	68.6
Annual Number of Inpatient Hospital Discharges for Silicosis	21	20	21	16	16	19
Annual Rate of Inpatient Hospital Discharges for Silicosis (per 1,000,000 residents)	5.6	5.3	5.6	4.3	4.3	5.0
Annual Age-Standardized Rate of Inpatient Hospital Discharges for Silicosis (per 1,000,000 residents)	5.3	5.1	5.0	3.8	3.6	4.6
Annual Number of Inpatient Hospital Discharges for Other and Unspecified Pneumoconiosis	7	10	10	9	9	9

<b>Table A9. Indicator 9: Hospitalizations from or with Pneumoconiosis</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015 - 2019</b>
Annual Rate of Inpatient Hospital Discharges for Other and Unspecified Pneumoconiosis (per 1,000,000 residents)	1.9	2.7	2.7	2.4	2.4	2.4
Annual Age-Standardized Rate of Inpatient Hospital Discharges for Other and Unspecified Pneumoconiosis (per 1,000,000 residents)	1.7	2.3	2.7	2.3	2.3	2.3
< 5 indicates number of hospitalizations < 5 are suppressed; * indicates rate not calculated for fewer than 5 hospitalizations						

<b>Table A10. Indicator 10: Mortality from or with Pneumoconiosis</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015-2019</b>
Annual Number of Total Pneumoconiosis Deaths	20	24	17	24	14	20
Annual Total Pneumoconiosis Death Rate (per 1,000,000 residents)	5.3	6.4	4.5	6.4	3.7	5.3
Annual Age-Standardized Total Pneumoconiosis Death Rate (per 1,000,000 residents)	5.1	6.1	4.4	6.3	3.5	5.1
Annual Number of Coal Workers' Pneumoconiosis Deaths	< 5	< 5	0	0	0	-
Annual Coal Workers' Pneumoconiosis Death Rate (per 1,000,000 residents)	*	*	---	---	*	-
Annual Age-Standardized Coal Workers' Pneumoconiosis Death Rate (per 1,000,000 residents)	*	*	---	---	*	-
Annual Number of Asbestosis Deaths	19	21	17	24	13	19
Annual Asbestosis Death Rate (per 1,000,000 residents)	5.1	5.6	4.5	6.4	3.5	5.0
Annual Age-Standardized Asbestosis Death Rate (per 1,000,000 residents)	4.9	5.5	4.4	6.3	3.2	4.9
Annual Number of Silicosis Deaths	0	< 5	0	0	< 5	-
Annual Silicosis Death Rate (per 1,000,000 residents)	0	*	---	---	*	-
Annual Age-Standardized Silicosis Death Rate (per 1,000,000 residents)	0	*	---	---	*	-

<b>Table A10. Indicator 10: Mortality from or with Pneumoconiosis</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015-2019</b>
Annual Number of Other and Unspecified Pneumoconiosis Deaths	0	< 5	0	0	0	-
Annual Other and Unspecified Pneumoconiosis Death Rate (per 1,000,000 residents)	0	*	---	---	*	-
Annual Age-Standardized Other and Unspecified Pneumoconiosis Death Rate (per 1,000,000 residents)	0	*	---	---	*	-
< 5 indicates cases less than 5 are suppressed; * indicates rates not calculated for fewer than 5 deaths or there are no deaths						

<b>Table A12. Indicator 12: Incidence of Malignant Mesothelioma, Ages 15 and Older</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Average 2015-2019</b>
Annual Number of Incident Mesothelioma Cases	78	65	62	58	68	66
Annual Mesothelioma Incidence Rate (per 1,000,000 residents)	20.8	17.3	16.5	15.5	18.2	17.7
Annual Age-Standardized Mesothelioma Incidence Rate (per 1,000,000 residents)	19.1	15.2	15	13.9	15.6	15.8

<b>Table A13. Indicator 13. Elevated Blood Lead Levels (BLL) among Adults</b>					
	<b>Louisiana</b>			<b>United States†</b>	
<b>Year</b>	<b>≥ 10 µg/dL Count (Rate^)</b>	<b>≥ 25 µg/dL Count (Rate^)</b>	<b>≥ 40 µg/dL Count (Rate^)</b>	<b>≥ 10 µg/dL Count (Rate^)</b>	<b>≥ 25 µg/dL Count (Rate^)</b>
2019	340 (17.03)	73 (3.6)	9 (0.45)	13,120 (13.2)	2,076(2.1)
2018	244 (12.2)	62 (3.1)	28 (1.4)	18,585 (15.1)	4,281(3.3)
2017	216 (10.8)	43 (2.1)	*	19,594 (15.8)	4,297 (3.3)
2016	239 (12.0)	44 (2.2)	15 (0.8)	20,311 (16.7)	5,166 (4.0)
2015	308 (15.2)	65 (3.2)	15 (0.7)	19,316 (16.2)	4,864 (3.9)
^per 100,000 Employed Persons; *data suppressed; †Data for test results ≥40 µg/dL for the US were not available					