



The 2023 Liberty Mutual Workplace Safety Index ranks the top causes of serious workplace injuries by their direct cost to U.S. businesses.

“Our clients rely on data to make business decisions, and Liberty Mutual’s Workplace Safety Index helps determine which injuries are impacting U.S. workers,” notes Dorothy Doyle, SVP and General Manager, Risk Control, Liberty Mutual. “The Workplace Safety Index gives risk managers an at-a-glance injury ranking to start thinking through what could be impacting their businesses. For a deeper dive, our award-winning predictive analytics helps our clients understand the link between their operations, their people, and their business results. Together, we identify and solve the challenges of today so we can succeed tomorrow.”



Dorothy Doyle
SVP and General
Manager, Risk Control,
Liberty Mutual

Workplace safety indices: insights and methodology

Together. We can create safer workplaces

For over 20 years Liberty Mutual has published the Workplace Safety Index (WSI). Liberty Mutual’s WSI estimates the top ten causes of the most serious workplace injuries – those causing an employee to miss more than five days of work – and ranks them by their direct costs of medical and lost-wage payments.

The 2023 WSI also includes indices by industry and body part. To capture accurate injury cost data, each Index is based on data three years prior. Thus, the 2023 Index reflects 2020 data, representing the first year of COVID-19.

COVID-19: rapid changes, lasting effects

Due to business closures, furloughs, and job loss, the number of jobs covered by worker’s compensation reduced in 2020 relative to 2019, with a slower rate of wage increases ([National Academy of Social Insurance; NASI](#)). Compared to 2019, 2020 experienced:

- 7.5% fewer serious, non-fatal, non-COVID-19 injuries ([U.S. Bureau of Labor Statistics; BLS](#)),
- A slight increase in overall severity of these non-COVID-19 injuries ([National Council on Compensation Insurance; NCCI](#))
- COVID-19 illnesses, representing over 43% of serious, non-fatal workplace injuries and illnesses.

It is important to note, however, that a large portion of recorded COVID-19 illnesses did not generate worker’s compensation claims. According to a multi-bureau report from the [NCCI](#), COVID-19 represented 11% of lost-time claims. This unusual disparity between the proportions of BLS-reported occupational injuries and illnesses versus worker’s compensation claims may be because the Families First Coronavirus Response Act provided access to paid sick leave as an alternative to filing indemnity-only worker’s compensation claims ([NASI](#)). Therefore, the 2023 WSI uses this lower proportion of 11% for COVID-19 illnesses rather than the 43% of injuries and illnesses suggested by the increased BLS-reported count in the category of injuries and illnesses that includes COVID-19.

For more detail on the methods to derive this year’s WSI, please see the Study Methodology section near the end of this document.

The WSI Top Ten: results across all industries

In 2020 (2023 WSI), U.S. industry spent \$58.61 billion on the direct costs of worker injuries, and 82.2 percent of that cost (\$48.15B) was for the top 10 causes of disabling injuries and illnesses. The 10 most costly causes of workplace injuries and illnesses are presented in the table on the right:

The top 10 most costly causes of injury and their direct costs to U.S. businesses

Cause	Cost (Billions)	Percentage
Overexertion involving outside sources	\$12.84	21.9%
Falls on same level	\$8.98	15.3%
Falls to lower level	\$6.09	10.4%
Struck by object or equipment	\$5.14	8.8%
Other exertions or bodily reactions	\$3.67	6.3%
Exposure to other harmful substances (Includes COVID-19)	\$3.35	5.7%
Roadway incidents involving motorized land vehicles	\$2.58	4.4%
Caught in or compressed by equipment or objects	\$1.98	3.4%
Slip or trip without fall	\$1.92	3.3%
Pedestrian vehicular incidents	\$1.61	2.7%

Analysis: WSI rankings over time

When comparing the 2023 WSI to the 2022 WSI, due to COVID-19, exposure to other harmful substances rose to the sixth-ranked cause of loss. Without COVID-19 illnesses, using the previous year's counts for the 550 BLS code used to classify COVID-19 illnesses, exposure to other harmful substances would have ranked twentieth, costing an estimated \$0.28 billion (0.49%).

Beyond the addition of COVID-19 illnesses, when comparing this year's WSI to last year's, falls to lower level rose one spot to the third-ranked cause of loss and represented one of two non-COVID-19 top-10 causes of loss to increase in injury count.

Notable additions to the 2023 WSI

One notable change is the presence of pedestrian vehicular incidents for the first time in the Index's top 10. In addition to being a high-severity cause of loss, the BLS reported the highest number of these injuries in the previous 10 years, coupled with lower injury counts for most other causes of loss. These incidents likely reflect the challenges COVID-19 placed on supply chain, industrial hygiene, security, and novel delivery or parking-lot operations, as these incidents were evident in occupations such as material movers, sales and truck drivers, distribution managers, retail salespersons, building cleaning and maintenance, protective service, and food service.

With the addition of exposure to other harmful substances and pedestrian vehicular incidents, traditional WSI top-10 causes of loss, such as struck against object or equipment and repetitive motions involving microtasks, fell out of the top-10 ranking.

The Workplace Safety Index: injury rankings by type, 2018 to 2023

Cause	2018	2019	2020	2021	2022	2023
Overexertion involving outside sources	1	1	1	1	1	1
Falls on same level	2	2	2	2	2	2
Falls to lower level	3	4	4	3	4	3
Struck by object or equipment	4	3	3	4	3	4
Other exertions or bodily reactions	5	5	5	5	5	5
Roadway incidents involving motorized land vehicle	6	6	6	6	6	7
Slip or trip without fall	7	7	7	7	7	9
Caught in or compressed by equipment or objects	8	8	10	9	8	8
Struck against object or equipment	9	10	9	8	9	
Repetitive motions involving microtasks	10	9	8	10		
Non-roadway incidents involving motorized land vehicle					10	
Exposure to other harmful substances						6
Pedestrian vehicular incidents						10

Event types: learn more

The BLS refers to injury causes as "event" types. For additional detail on the kinds of injuries included in each event (cause), refer to the Occupational Injury and Illness Classification Manual.

Data deep dive: risk exposures by industry

Eight industries account for 87.3% of all workers compensation (WC) losses in the U.S. Within these eight industries, the top five causes account for 62.1% of WC losses in the U.S. Due to COVID-19, exposure to other harmful substances rose to a top-5 cause of loss for only one industry: Healthcare & Social Assistance.

Analysis by sector

Compared to last year's WSI, total estimated industry cost reduced the most for Leisure & Hospitality (-16.8%; consistent with the economic contraction caused by COVID-19 in this sector), whereas Professional & Business Services and Healthcare & Social Assistance experienced an increase in total cost of 6.2% and 4.3%, respectively.

Regarding non-COVID-19 injuries, falls to lower level ranked higher this year compared to last year for 5 industries: Manufacturing, Professional & Business Services, Retail, Transportation & Warehousing, and Wholesale. Injury counts for falls to lower level increased in each of these industries except Retail, suggesting this change in rank was not only due to contraction of other loss areas and, instead, represents an increased burden due to this cause of loss.

Other changes from last year's WSI include a reduced rank and injury count due to roadway incidents involving motorized land vehicle for both Transportation & Warehousing and Professional & Business Services.

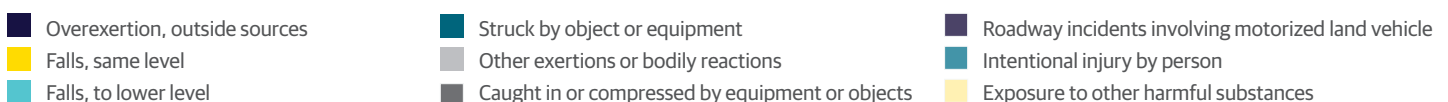
Top loss causes remain consistent

Despite the disruption from COVID-19, many of the industries' top five loss causes remained similar and consistent with the overall top loss causes of the WSI.

- Overexertion ranked first for five of the eight industries and was second in the three remaining industries.
- Same-level falls was a top-5 cause of loss for all eight industries, ranking first for Leisure & Hospitality and Professional & Business Services, and ranking second for four other industries.
- Struck-by injuries ranked in the top five for six of the eight industries.
- Other exertions or bodily reactions also ranked in the top five for six of the eight industries.

Top 5 loss causes by industry

Industry	Loss cause ranking					Total cost (\$B)	Top 5 cost (\$B)	Top 5 % of industry
	1 st	2 nd	3 rd	4 th	5 th			
	(Cost – \$B; %)							
All industries	\$12.84; 21.9%	\$8.98; 15.3%	\$6.09; 10.4%	\$5.14; 8.8%	\$3.67; 6.3%	\$58.61	\$36.72	62.7%
Construction	\$3.22; 28.2%	\$2.09; 18.4%	\$1.52; 13.3%	\$1.00; 8.8%	\$0.86; 7.6%	\$11.40	\$8.69	76.3%
Manufacturing	\$1.80; 21.6%	\$1.20; 14.4%	\$0.97; 11.7%	\$0.82; 9.9%	\$0.71; 8.5%	\$8.32	\$5.50	66.2%
Professional & business services	\$1.73; 21.5%	\$1.56; 19.3%	\$1.07; 13.3%	\$0.60; 7.5%	\$0.47; 5.9%	\$8.08	\$5.44	67.3%
Retail	\$1.64; 30.4%	\$1.08; 20.1%	\$0.55; 10.3%	\$0.41; 7.7%	\$0.36; 6.6%	\$5.39	\$4.04	75.0%
Healthcare & social assistance	\$1.54; 28.7%	\$1.35; 25.1%	\$0.50; 9.4%	\$0.37; 6.8%	\$0.29; 5.4%	\$5.56	\$3.99	71.7%
Transport & warehousing	\$1.37; 28.5%	\$0.63; 13.2%	\$0.46; 9.6%	\$0.44; 9.1%	\$0.40; 8.3%	\$4.79	\$3.29	68.7%
Wholesale	\$1.32; 31.5%	\$0.53; 12.7%	\$0.52; 12.4%	\$0.34; 8.1%	\$0.27; 6.4%	\$4.19	\$2.98	71.1%
Leisure & hospitality	\$1.22; 36.3%	\$0.43; 12.9%	\$0.28; 8.3%	\$0.25; 7.4%	\$0.24; 7.1%	\$3.35	\$2.41	71.9%



Loss causes unique to their industries

While many loss causes are common across the industries, some are unique, which reflect the nature of the specific industry. For example, the leading cause of Construction injury costs was falls to lower level. Manufacturing was the only industry to include caught-in or compressed-by injuries. Intentional injury by person was unique to Healthcare & Social Assistance. In addition, roadway vehicle incidents was a top five cause of loss for both Professional & Business Services and Transportation & Warehousing.

We expect to see higher variability in the top five causes within industries than when all industries are combined. Most year-to-year differences by industry are due to changes in the number of cases reported to the BLS. There is also some variability due to changes in claim costs. Liberty Mutual continues to improve claim cost analysis to reduce this variability by removing event types with insufficient data. However, changes in the injury counts from the BLS data can still result in significant shifts in the costs by loss cause within industries. In addition, some causes have total costs very close to another, so a small change can impact the rank order.

Injury counts by body part: the impact of COVID-19

Due to COVID-19, the torso rose in rank compared to last year's WSI, from 6th to 3rd. This is because the WSI by body part classifies the BLS code for body systems, the code for which COVID-19 illnesses were identified, as belonging to the torso. Injury counts for each body part were lower than last year's WSI, except for foot and forearm injuries.

Top injured parts stay consistent

Otherwise, the ranking by body part was similar to last year's WSI. It's no surprise that the back is the body part associated with the highest total cost. Back pain is responsible for more days lived with disability than any other condition, worldwide.¹ This is also consistent with overexertion being the leading cause of workers compensation costs.

The "multiple body parts" category is once again in the second spot, although accounting for a lower proportion of all costs (13.4%) than last year's WSI (17%). The 2nd-place ranking is, in part, because multiple-body-part injuries represent an aggregate of many combinations of injury with more than one body part affected, and because they are also, on average, relatively expensive.

Hand and leg injuries switched ranks, with the hand moving to the 8th spot and the leg moving down to the 9th spot. Given that both types of injury exhibited reduced injury counts, this switch is largely due to a reduced severity of leg injuries, whereas the severity of hand injuries remained relatively stable.

Together, shoulder and knee injuries account for over 20% of the costs and are often associated with overexertion and other-exertion injuries.

How we measure: defining body part categories

Body parts are grouped using the BLS body part 2-digit codes. All body parts are included in the following 14 categories, and all cases (and costs) are represented by these categories. For reference, the following tables list the cost of each body part injury and the BLS body part codes included in each body part.

Cost of injury by body part

Body part	Cost (Billions)	Percentage
Back	\$10.79	18.42%
Multiple body parts	\$7.84	13.38%
Torso	\$7.41	12.64%
Shoulder	\$7.08	12.08%
Knee	\$5.42	9.25%
Wrist	\$3.94	6.73%
Head	\$3.28	5.59%
Hand	\$3.09	5.27%
Leg	\$3.02	5.15%
Ankle	\$2.62	4.47%
Foot	\$2.11	3.60%
Neck	\$0.82	1.39%
Elbow	\$0.76	1.29%
Forearm	\$0.43	0.73%



Body parts by category

Body part	BLS body part code(s)	Description/notes
Back	32	Back, including spine, spinal cord
Multiple body parts	8	Multiple body parts
Shoulder	41	Shoulder(s), including clavicle(s), scapula(e)
Knee	512	Knee(s)
Torso	6, 30, 31, 33, 34, 38, 39	Body systems; trunk, unspecified; chest, including ribs; internal organs; abdomen; pelvic region; multiple trunk locations; trunk, n.e.c.
Wrist	40, 42, 43, 48, 49, excluding 422 and 423	Upper extremities, unspecified; arm(s); wrist(s); multiple upper extremities locations; upper extremities, n.e.c., excluding elbow(s) and forearm(s)
Head	1	Head
Leg	50, 51, 58, 59, excluding 512	Lower extremities, unspecified; leg(s); multiple lower extremities locations; lower extremities, n.e.c., excluding knee(s)
Hand	44	Hand(s)
Ankle	52	Ankle(s)
Foot	53	Foot(feet)
Neck	2	Neck, including throat
Elbow	422	Elbow(s)
Forearm	423	Forearm(s)

Study methodology

The Liberty Mutual WSI is based on information from Liberty Mutual, customized data from the U.S. Bureau of Labor Statistics Office of Safety, Health, and Working Conditions, and the National Academy of Social Insurance (NASI). BLS injury data are analyzed to determine which events caused employees to miss more than five days of work. Liberty Mutual data are then used to estimate the proportion of cost associated with each event type and body part. These proportions are then scaled to the total workers compensation costs reported by NASI to estimate total costs by event and body part. The Index then ranks those events by total workers compensation costs, which includes medical and lost wage payments.

Additional sources of data were used to complete the industry sector analysis.

- 2020 National Compensation Survey data were used to estimate the cost per hour worked of workers compensation to employers by industry sector.
 - [Employer Costs for Employee Compensation](#)
 - [Employment, Hours, and Earnings from the Current Employment Statistics survey \(National\)](#)
- [The Current Employment Statistics National Database](#) was then used to estimate the total number of hours worked by industry sector from the [Employer Costs for Employee Compensation Archived News Releases](#)

From these data, we estimate the percentage of total direct costs of injuries by industry sector. Because data were analyzed by both industry and cause, some combinations of sector and cause have small numbers of claims; thus, not all industry sectors could be included in the analysis. Industry sectors with sufficient data represented 87.3% of all direct costs for non-fatal injuries with more than five days away from work.

Accounting for the onset of COVID-19

In developing the COVID-19-related findings, the study's authors noted that BLS data exhibited an unusual spike in the number of "Exposure to Other Harmful Substances" injuries in 2020 compared to 2019, driven by the onset of the pandemic. To more accurately reflect the true impact of COVID-19 on workers compensation, the authors turned to data from the National Council on Compensation Insurance's (NCCI) [COVID-19 and Workers Compensation special report](#). That report reflects data on workers compensation claims from 45 state workers compensation bureaus, while BLS data reflects OSHA-recordable workplace illnesses and injuries that may or may not result in workers compensation claims.

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The NCCI report demonstrated that COVID-19 accounted for 11% of lost-time claims. The number of injuries reported by the BLS for the 550 code (Exposure to other harmful substance, unspecified) was reduced by the 2019 count for this code to estimate those due to COVID-19 versus those traditionally identified with that code. This estimate of COVID-19 cases was then removed from the total BLS injury count to estimate the non-COVID-19 injury count. Estimated illnesses due to COVID-19 applied to worker's compensation were then added back to the injury count to represent 11% of total cases. These added cases were applied to the same event type and body part as used by the BLS, and for the by-industry WSI, the added cases were applied according to the same proportion of 550-code COVID-19 cases provided by the BLS.

Because the severity of COVID-19 cases was lower than average and represented such a large proportion of claims, the term for the BLS count multiplied by Liberty average claim cost was performed separately for COVID-19 and non-COVID-19 cases and then added together before scaling that cost to the NASI estimate to derive the final estimated total cost.

Acknowledgement

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Reference

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