

# Warehousing & Storage Spotlight

A Sector of the Transportation and Warehousing Industry

**Purposeful interventions can prevent work-related musculoskeletal disorders (MSDs).**

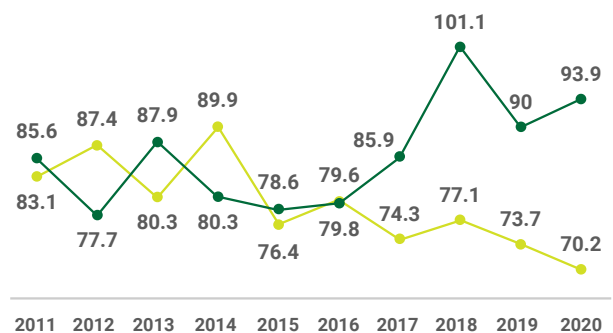
## Injury Trends

As per the **Bureau of Labor Statistics**, the transportation and warehousing industry includes the warehousing and storage sector and other sectors that address air, rail, water, and truck transportation, postal service, and couriers and messengers.

In terms of direct workers' compensation costs, the **transportation and warehousing industry** lost nearly \$4.67 billion in 2019 to nonfatal workplace injuries that include MSDs, a 9.5% loss in direct workers' compensation costs out of a total of \$49.18 billion.

Although the transportation and warehousing industry has seen a decrease in MSD cases resulting in lost workdays since 2016, the warehousing and storage sector within this industry has seen an increase in MSD cases resulting in lost workdays since 2015. So, while the entirety of the transportation and warehousing industry is seeing a decline in MSDs, the increase in MSDs seen in the warehousing and storage sector specifically highlights the need to further identify MSD solutions in this sector. In 2020 alone, 94 MSD cases resulting in lost workdays were experienced for every 10,000 workers in the warehousing and storage sector<sup>†</sup>. Lastly, while employers have made efforts to combat MSDs in warehousing and storage, these injuries have consistently represented about half of all non-fatal injuries in the warehousing and storage sector since 2011.

**Transportation & Warehousing Industry vs Warehousing & Storage Sector MSD Rates\*\***

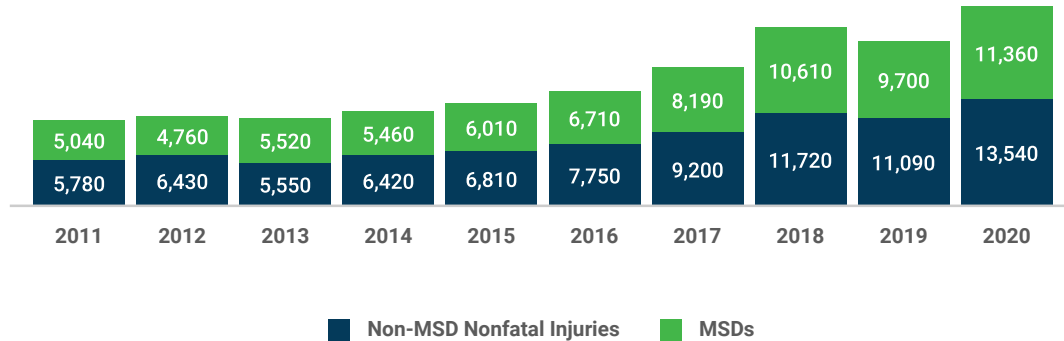


\*per 10,000 full-time, private sector workers

— Transportation & Warehousing Industry  
— Warehousing & Storage Sector

<sup>†</sup> These numbers represent the number of nonfatal occupational injuries and illnesses involving days away from work with or without job transfer or restriction within the U.S. and private industry according to Injury Facts and the Bureau of Labor Statistics.

## Number of Non-MSD, Nonfatal Injuries Compared to Number of MSDs from 2011-2020 in the Warehousing & Storage Sector



## Potential Risks

According to [OSHA](#), the top MSD risks for warehousing personnel include:



Lifting, lowering,  
pushing and pulling  
heavy loads



Order  
picking



Bending and  
twisting



Whole-body  
vibration



Overhead  
reaching



Sustained and  
awkward postures



Task  
repetition



Workplace stress and  
fatigue associated with  
fast paced work



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# Potential Solutions

Manual material handling is an operation often associated with MSD hazards, especially among warehousing and storage personnel. Manual handling can happen in a variety of ways in the warehousing and storage environment, such as through storing, picking, staging, packing, loading and unloading. Where possible, this risk should be eliminated or reduced through prevention through design techniques. If appropriate, automation, robotics or exoskeletons may be used as part of the solution to eliminate and reduce MSD risks. Additional solutions to reduce risks for MSDs include:

- Establishment of a weight limit for manual lifting using a risk assessment tool such as the **NIOSH Lifting Equation**
- Minimize extended reaching, provide equipment (such as scissor lift tables, turntables, pallet positioners, disc turntables) and establish and coach workers in proper work practices (such as pull loads close to the body before lifting, lift close to the body, walk around pallets)
- Ensure that the manual handling components of your work processes in loading and unloading are considered when planning the configuration and optimization of pallets
- **Use tools, grips and handles** promoting a strong, natural wrist position while lifting and carrying
- Reduce case weights and **store** commonly used items off the floor between knee and shoulder level, and more optimally, between mid-thigh and chest, to reduce back and shoulder MSDs
- Use approved material handling assistive devices (such as powered industrial trucks, powered or manual hand trucks, carts)
- Incorporate adequate work and rest cycles
- Where possible, use technology solutions or other techniques such as limiting load height on material handling equipment to allow driving in forward position to eliminate back and neck twisting
  - If reverse driving is necessary, minimize the distance traveled until forward driving is possible
- Reduce whole-body vibration exposure for forklift operators by incorporating vibration attenuation forklift seats
- Conduct routine maintenance of powered industrial trucks to reduce transmission of vibration
- To reduce manual force and friction when moving a load, utilize slip sheets or ensure that plastic wrap is left off the bottom of the product, such as on a case of cans
- Utilize pick sticks to bring the product close to the body and reduce reaching
- Alternate work tasks (e.g., repetitive with non-repetitive tasks, tasks that use different muscle groups)
- Provide anti-fatigue mats or shoe inserts to reduce stress and fatigue in the feet, legs and back

## Additional strategies to support your MSD risk reduction efforts in warehousing and transportation may include:

- Ergonomics education and training
- Employee health and wellbeing initiatives
- **Fatigue management systems**
- Assessment of the psychosocial health and wellbeing of the workforce to identify where action is needed
- **Organizational support** (such as transparent communication, managerial support, job security)
- Acclimate employees to the physical components of their jobs gradually as part of your onboarding program
- Physical activity-based training and coaching (such as warm-up programs)



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### INDUSTRY EXAMPLE

Distribution center workers frequently consolidate products from multiple pallets into separate orders for small retailers. Aim to keep high volume items between knee and shoulder level to prevent lifting off the floor by using product organization strategies, flow racks, or stacking empty pallets to raise items off the floor.

### INDUSTRY EXAMPLE

Large retailers may utilize cross docking where incoming inventory goes onto conveyor belts that lead to trailers for individual stores in their warehouse to increase efficiency and reduce manual material handling.

## Key Takeaway

Every organization should develop manual material handling guidelines to document the expected work practices, equipment usage, and manual lifting limits for their facility. If your organization is prepared to do so, implement technology-based solutions to eliminate high frequency and high force manual handling tasks. **Research** has shown psychosocial factors can impact the risk for MSDs and should be considered in addition to physical risk factors when developing and implementing interventions.

DISCLAIMER: This educational Industry Spotlight was created by the National Safety Council for educational purposes only; as well as to provide general information and a general understanding of musculoskeletal disorders; not to replace or list the comprehensive rules and regulations relating to safety compliance and musculoskeletal disorders; and not to offer specific medical advice. This Industry Spotlight should not be used as a substitute for competent medical advice from a licensed health care professional or medical practitioner.



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