

# Workers moving products in the US food supply chain at high risk of injury

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Workers tasked with moving products in the immense U.S. food system are at a high risk of serious injury, according to a new Penn State-led study, and pandemic-caused, supply-chain problems have worsened the

situation, researchers suggest.

The modern [food](#) supply chain presents unique hazards to employees that result in higher rates of death and [injury](#) when compared to most other industries, noted lead researcher Judd Michael, Penn State professor of agricultural and biological engineering. Employees in [food manufacturing](#), wholesaling and even retailing experience relatively high numbers of occupational injuries and fatalities.

One reason for the high hazard rates may be the reliance on a synergistic packaging system designed to load and transport [food products](#) within and between manufacturers, wholesalers and retailers, Michael noted. In the modern system, food products are aggregated and transported after they have been packaged, requiring potentially dangerous machinery, equipment and methods to accomplish those tasks, Michael explained.

"Materials handling and movement within and between facilities is critical to the efficient functioning of all links of the food-related supply chain, but product movement can be a source of occupational injuries," he said. "For example, manufacturers often use palletizers to aggregate individually packaged food products into a unit load before they can be transported using a pallet jack, forklift or other powered industrial truck."

Michael, who is the Penn State Nationwide Insurance Professor of Safety and Health in the College of Agricultural Sciences, noted that the COVID-19 pandemic motivated his team to undertake the research. They were curious about how the added pressure on the food supply chain was affecting workers.

News reports in the first year of the pandemic gave the impression that our food supply chain was not keeping up with the new demands from the pandemic, he explained. It was clear most Americans had to stay

home, and that changed the way that food had to be prepared, packaged and moved.

"Suddenly, we weren't eating out at restaurants, we were going to the [grocery store](#) or ordering online much more and buying food products that we hadn't purchased the same way before," he said. "We suspected this put a lot of pressure on the workers in the food supply chain. And we wanted to try to document that, to highlight the increase in injuries during the first part of the pandemic when the food supply chain was under tremendous pressure."

And significantly, Michael added, "we wanted to emphasize the importance of the blue-collar food industry workers and the sacrifices they make every day to get food from the farm to our tables."

The researchers used a database maintained by the U.S. Occupational Safety and Health Administration to investigate all severe injuries in the six years from 2015 to 2020 in the [food supply chain](#). Their results documented 1,084 severe injuries and 47 fatalities during the six-year period although the researchers noted that actual figures could be twice as high. Data indicated that 2020 saw a significant increase in [severe injuries](#) as compared to previous years.

In [findings](#) published this morning (Feb. 24) in the *Journal of Safety Research*, the researchers reported that fractures of the lower extremities were most prevalent, with the most frequent accident event type being transportation-related, such as pedestrian-vehicle incidents.

Large retailers that sell food along with many other products—such as Walmart, Sam's Club and Costco—were not included in the research, Michael pointed out.

"We wanted to be very narrow with our definition of a grocery store or a

food retailer, and those big, multi-faceted operations are not, strictly speaking, just grocery or food retailers, because food is just a part of their overall sales," he said.

"It would not have been possible for us to determine which of their accidents and injuries were related to moving food [products](#). If we had somehow been able to include their statistics, of course, the injury numbers would be considerably higher."

Serap Gorucu, assistant professor of risk analysis, safety, and health of agricultural systems at the University of Florida, contributed to the research.

**More information:** Judd H. Michael et al, Severe injuries from product movement in the U.S. food supply chain, *Journal of Safety Research* (2023). [DOI: 10.1016/j.jsr.2023.02.007](https://doi.org/10.1016/j.jsr.2023.02.007)

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