

Better injury data management can save fire departments hundreds of thousands of dollars

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Fire departments and their municipalities could be shorting their budgets by hundreds of thousands of dollars since limited resources are keeping them from accurately counting firefighter injury data, according to new research out of Drexel University.

Combining data from four different databases to look at injury

occurrence and reporting in the Philadelphia Fire Department, researchers from the Firefighter Injury Research & Safety Trends (FIRST) program of Drexel's Dornsife School of Public Health discovered that, once injuries were more accurately coded, the difference in workers' compensation costs was as much as \$1 million for some injuries.

"It is very important for fire departments to understand causes and cost of injury in order to ensure their limited budget is being properly distributed," said Shannon Widman, project manager at FIRST and lead author on the study published in *Injury Prevention*. "If departments can accurately pinpoint specific injuries that lead to specific costs, they are empowered to prioritize decisions when considering prevention."

In the study, researchers from FIRST linked data from the Philadelphia Fire Department's human resources records, dispatch data, workers' compensation records, and the records of the first report of firefighter or paramedic injuries. By doing so, they were able to track injuries across the datasets, which allows for more accurate counting and classification.

The issue is that information in any of the four databases could be incomplete or contain discrepancies. Linking them allowed for resolution of the discrepancies and yielded a more complete picture of the injuries. Across three of the databases, researchers were able to track 88 percent of injuries and developed new metrics on which to create prevention strategies.

Widman and the team, which included FIRST principal investigator and associate professor Jennifer Taylor, PhD, found that the most costly injuries to firefighters and paramedics were strains, falls and burns. With the ability to link all of the data, they found that workers' compensation due to burn injuries was undervalued by \$750,000, while strain injuries were undervalued by \$1 million.

Getting such precise data could save municipalities that fund fire departments money by allowing them to better allocate funds for prevention and training.

"The cause of injury resulting in the most numerous claims may not result in the highest costs," Widman explained. "A smaller number of more serious injuries may result in higher costs to departments and municipalities."

Linking all of the databases also provided for the creation of a new factor that could help when it comes to better allocating resources for [injury prevention](#): years of experience.

Most data just took into account what age a firefighter or paramedic was when they were injured. But not everyone in the fire service starts at the same age.

"Now, with the years of experience variable, we can more adequately explain where risk occurs," Taylor said. "For example, in our study, we saw that the first 15 years of a firefighter's tenure, regardless of their age, was the time for which they were most at risk for injury. Injuries during that time period represented over 70 percent of total costs incurred."

As a firefighter became more experienced, the data showed they were less likely to get hurt. Although it seems like common sense, there were never hard numbers to back that before. Having those numbers is important because it provides statistical justifications for funding.

However, putting together all the data that the FIRST team did isn't easy.

"Most fire departments collect data on a regular basis, but lack resources to analyze them," Taylor said. "Work like this is very resource-intensive

and requires specialized skills, so we need to find continuing resources to building these data architectures."

Since FIRST has developed data systems like these not only for the Philadelphia Fire Department, but also for the Boston Fire Department and the State of Florida, the good news is that the system they've developed is "ready to be reproduced throughout the entire fire service," according to Taylor.

In addition to the ongoing injury research, the FIRST team, including graduate student Genevieve Adair and co-author Loni Philip Tabb, PhD, an assistant professor, from the Dornsife School of Public Health, is continuing to analyze more closely different aspects of the dispatch data collected through geographic information systems, also known as mapping.

"Some of the analyses we are working on now, with additional years of [data](#), include maps showing where different causes and types of injuries are occurring, where pockets of increased numbers and rates of [injury](#) are throughout the city, where different types of calls occur, and on which type of call specific injuries occur," Widman said. "Such activities will give us better insights into how to keep Philadelphia Fire Department members safe, as well as assessing the needs of the Philadelphia community."

More information: Shannon A Widman et al, The benefits of data linkage for firefighter injury surveillance, *Injury Prevention* (2017). [DOI: 10.1136/injuryprev-2016-042213](https://doi.org/10.1136/injuryprev-2016-042213)

Provided by Drexel University

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