

# EMS Workers & Firefighters

NIOSH Motor Vehicle Safety Impact Story

Emergency medical services (EMS) workers and firefighters are vital to disaster response. Their duties expose them to hazards that increase their risk for on-the-job injuries.



46% of all EMS provider fatalities between 2013-2017 were related to motor vehicle crashes.<sup>1</sup>

100 firefighters died as a result of motor vehicle crashes between 2008-2017.<sup>2</sup>

## Key Actions:



Partner with the Department of Homeland Security, other federal agencies, and manufacturers to crash-test ambulances and major components (e.g., patient cot).



Collaborate with the Office of Emergency Medical Services in the National Highway Traffic Safety Administration to describe nonfatal injuries and exposures to EMS providers.



- Work with industry to improve firefighter personal protective equipment (PPE) and fire apparatus design.
- Investigate fatal firefighter motor vehicle incidents.

## Key Findings:

- Ambulances fall outside most federal motor vehicle safety standards and, as a general rule, are not regulated by the federal government. Guidelines for ambulance design, purchasing, and licensing are the responsibility of individual states.
- Motor vehicle incidents led to about 2,000 injured EMS workers seeking emergency department treatment each year from July 2010 to June 2014. Most injured workers in the patient compartment were not wearing seat belts.
- Current seat belt designs do not accommodate some firefighters, especially if they wear turnout gear.
- Technically-sound design of PPE and fire apparatus requires scientific measurement of firefighters' body dimensions, not self-reported information.



<sup>1</sup>Bureau of Labor Statistics, Census of Fatal Occupational Injuries, [Query System](#)

<sup>2</sup>U.S. Fire Administration (2009-2018). Fire Fighter Fatalities in United States in 2008-2017. [Access reports](#)



## Key Outputs:



- Ambulance [crash tests](#)
- Award-winning [video series](#), Improving EMS worker safety through ambulance design and testing



- *Prehospital Emergency Care* [article](#): Occupational injuries and exposures among emergency medical services workers
- EMS employer [fact sheet](#)



- Anthropometric (body measurement) [database](#) of U.S. firefighters published on NIOSH website
- *Applied Ergonomics* [article](#): Seat and seatbelt accommodation in fire apparatus: Anthropometric aspects

## Key Impacts:

- NIOSH and industry partners worked together to develop and validate 10 new test methods, each based on crash testing, to improve worker safety in an ambulance. The Society of Automotive Engineers published each test method.
- These test methods, their adoption into 3 national bumper-to-bumper standards, and the educational campaign driven by the NIOSH video series led to nationwide changes to ambulance design and purchasing specifications.
- The Volunteer Fire Insurance Services Company used NIOSH investigations in risk management training and educational material to educate fire departments on the pros and cons of volunteer firefighters responding in privately-owned vehicles.
- Vehicle and equipment designers are using NIOSH firefighter anthropometric data to design safer vehicles and turnout gear.