



# NTSB 2016 MOST WANTED TRANSPORTATION SAFETY IMPROVEMENTS

## STRENGTHEN OCCUPANT PROTECTION



### *What is the issue?*

The NTSB has investigated many accidents where improved occupant protection systems—which includes seat belts, child restraints, and the traveling compartment or vehicle body—could have reduced injuries and saved lives.

In cars, restraint use has been required in most states for more than 20 years. Yet, in 2013, nearly 50 percent of the more than 20,000 fatally injured vehicle occupants were found to be unrestrained.

While the daytime seat belt use rate for front seat occupants in the United States is 87 percent, seat belt use is significantly lower in states without primary enforcement laws and for back seat passengers. Only 22 states and the District of Columbia have primary enforcement seat belt laws that apply to all seating positions, and New Hampshire has no adult seat belt law.

Recent NTSB investigations have also highlighted the importance of proper seat belt use and readily accessible and identifiable evacuation routes on larger passenger vehicles, such as school buses, motorcoaches, and other commercial vehicles.

In commercial aviation, the NTSB saw how a lack of restraint use led to some tragic consequences in San Francisco in 2013

as a result of the crash of Asiana flight 214. While 99 percent of passengers survived the Asiana accident, two of the three fatally injured passengers were ejected from the airplane because they were unrestrained.

While we are required to secure our luggage and even small items such as snacks and beverages during take off and landing, the Federal Aviation Administration exempts the most vulnerable passengers—children under age 2—allowing them to travel unrestrained, on an adult's lap. And when accidents occur, the NTSB notes that problems with evacuation decision making and execution continue to exist among cockpit and cabin crews.

People involved in general aviation accidents have suffered serious and fatal injuries as a result of shoulder harnesses not being installed on the aircraft, a seat belt failing, or occupants simply choosing to not wear their seat belts.

In train accidents, the NTSB has seen occupant ejections that might have been prevented with better compartment design. Additionally, investigations have revealed that better evacuation procedures could have minimized injuries and prevented deaths.

## STRENGTHEN OCCUPANT PROTECTION



## What can be done?

To minimize deaths and injuries, we need to see increased use of existing restraint systems, and better design and implementation of occupant protection systems that preserves survivable space and ensures ease of evacuation—in all modes of transportation.

The first step to strengthening occupant protection in aviation and on roadways is to increase use of available occupant restraint systems. In addition, we need improved design of occupant protection systems and implementation of evacuation procedures.

In motor vehicles, we need to continue to increase proper seat belt and child restraint use. For children, the correct use of a child restraint system can mean the difference between life and death. When used correctly, child safety seats can reduce fatal injury by 71 percent for infants (under 1 year old) and by 54 percent for toddlers (1 to 4 years old). Properly worn lap/shoulder seat belts reduce the risk of fatal injury to occupants (age 5 and older) of passenger cars by about 45 percent.

In order to increase seat belt and child restraint use in motor vehicles, we must take a three-pronged approach: legislation, enforcement, and education. Strong occupant restraint laws are critical. Primary enforcement sends a message to motorists that seat belt use is an important safety issue. Education campaigns about the benefits of seat belt and child restraint use enhance user knowledge about these issues and encourage proper use in all vehicles. For larger passenger vehicles, pre-trip briefings and training on the proper use of available restraints and evacuation routes are vital.

In the air, all occupants are best protected when using a restraint, regardless of the aircraft type. General aviation pilots and passengers should use shoulder restraints whenever possible, and we should all be as diligent in securing our small children in an appropriately-sized restraint as we are in our passenger cars. It is also critical that commercial flight and cabin

crews have proper training and procedures to conduct timely and professional evacuations when conditions warrant.

On trains, protecting passengers and crews from injury requires keeping the railcars' windows intact and maintaining their structural integrity during an accident. Railcar performance in accidents can be improved. Regulators and manufacturers can make a difference by incorporating design elements that optimize crashworthiness and enhance the ease of evacuation when there is an emergency.

**\*RELATED ACCIDENTS:**

**Aviation:** July 19, 1989; Sioux City, IA; DCA89MA063; 111 dead

**Aviation:** July 6, 2013; San Francisco, CA; DCA13MA120; 3 dead

**Aviation:** August 28, 2006, Indianapolis, IN; CHI06FA245; 1 dead (pictured at right)

**Rail:** December 1, 2013; Bronx, NY; DCA14MR002; 4 dead

**Rail:** June 22, 2009; Washington, DC; DCA09MR007; 9 dead

**Highway/Rail:** June 24, 2011; Miriam, NV; HWY11MH012; 6 dead (pictured at top left)

**Highway:** June 7, 2014; Cranbury, NJ; HWY14MH012; 1 dead

**Highway:** April 10, 2014; Orland, CA; HWY14MH009; 10 dead

**Highway:** January 25, 2006; Lake Butler, FL; HWY06MH013; 7 dead (pictured at bottom left)

*\*For detailed accident reports, visit [www.nts.gov](http://www.nts.gov)*

## Critical changes needed to reduce transportation accidents and save lives



for more information visit:  
[www.nts.gov/mostwanted](http://www.nts.gov/mostwanted)

Twitter @NTSB

Twitter #NTSBMWL

NTSB on Facebook

The NTSB Most Wanted List highlights safety issues identified from the NTSB's accident investigations to increase awareness about the issues and promote recommended safety solutions.

The National Transportation Safety Board is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation - railroad, highway, marine and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the federal government and other organizations to provide assistance to victims and their family members impacted by major transportation disasters.

National Transportation Safety Board  
490 L'Enfant Plaza S.W.  
Washington, DC 20594

<http://www.nts.gov/mostwanted>  
202-314-6000