

# NTSB MOST WANTED LIST

CRITICAL CHANGES NEEDED TO REDUCE TRANSPORTATION ACCIDENTS AND SAVE LIVES

2014

## STRENGTHEN OCCUPANT PROTECTION IN TRANSPORTATION

### What is the Problem?

Each year, a staggering number of lives are tragically lost or changed forever due to transportation accidents; more than 35,000 deaths in 2012 alone. A great deal of attention is placed on identifying ways to prevent these accidents, but steps to preventing injuries in the event of an accident are just as critical. One successful approach has been occupant protection systems, which often appears as a seat belt. Since its establishment in 1967, the NTSB has investigated many aviation, highway and rail accidents in which the failure to either provide adequate occupant protection systems or the failure of operators and passengers to use available systems caused preventable deaths and injuries.

Although motor vehicle travel is the primary means of transportation in the United States, it is also the leading cause of death for individuals between the ages of 4 and 34. For highway travelers, properly using a child safety seat, motorcycle helmet, or seat belt are the best means of occupant protection. Unfortunately, far too many people do not use these lifesaving devices. In 2010, the NTSB investigated a crash near Munfordville, Kentucky between a tractor trailer and a passenger van carrying 12 people. As a result of the accident, the truck driver, van driver and nine van passengers died. Eight of the fatally injured adult passengers were not wearing seat belts. However, two young children in the van restrained in child safety seats sustained minor injuries.

In March 2001, an NTSB report on commercial aviation accidents stated that the best way to avoid injury and death is to be restrained in a seat during a crash, turbulence, and during takeoff and landing. Ironically, we are required to stow our luggage, and small bags, and even the snacks and beverages served during flight, yet the Federal Aviation Administration (FAA) exempts the most vulnerable passengers, children under age 2, allowing them to travel unrestrained, on an adult's lap. Moreover, what is required varies greatly if a family travels overseas.

Occupant protection is not just about restraints; it also involves vehicle designs that maintain survivable space and minimize sharp interior surfaces that can lead to injury. NTSB accident investigations have



Photo showing the crushed interior of the Sky Express, Inc. motorcoach after it departed and overturned on Interstate 95 near Doswell, Virginia on May 31, 2011.

found that current passenger railcar and bus designs lack adequate crashworthiness protection for occupants and operators. Buses often lack roof crush strength and railcars often lack sidewall crush strength to limit intrusion into occupant seating areas. Likewise, passenger railcars and buses usually are built with large side windows, which can become safety hazards when they break or pop-out during an overturn accident, but they are also considered safety features to help passengers escape or emergency personnel enter during an emergency.

### What can be done?

The first step to strengthening occupant protection in transportation is to increase use of available occupant protection systems. When used correctly, child safety seats reduce the risk of fatal injury for infants and toddlers in passenger cars; lap and shoulder seat belts reduce the risk of fatal injury to front seat occupants of passenger cars by 45 percent and the risk of moderate-to-critical injury by 50 percent. Similarly, U.S. Department of Transportation (DOT)-compliant motorcycle helmets are estimated to be 37-percent effective in preventing fatal injuries to motorcycle riders and 41 percent for motorcycle passengers. In addition, strong occupant restraint laws are critical to increasing their use. In states with a primary enforcement seat belt law, which allows law enforcement to stop a vehicle solely for not wearing a seat belt, seat belt use was higher than in states with a secondary law. Motorcycle helmet use is also higher in states with mandatory helmet laws.

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### What can be done? *con't...*

We are careful to strap our children into car seats when we drive to the airport; we should be as diligent in securing them in their own seat aboard the aircraft. Even the FAA acknowledges that a child younger than age 2 is safer in a restraint system than on an adult's lap, but does not require them to be properly restrained in their own seat. The laws of physics do not change, whether in an airplane or in an automobile. All passengers are best protected when using a restraint regardless of the type of aircraft or whether it is operated as a commercial or general aviation flight.

Another critical element to occupant protection is preserving survivable space when a crash occurs. In 2011, the NTSB investigated a highway-railroad grade crossing collision in Miriam, Nevada, and a motorcoach roadway departure and overturn near Doswell, Virginia, both of which raised awareness of the role crashworthiness plays in protecting occupants. Both of these crashes caused a loss of occupant survivable space, resulting in death and serious injury. Regulators and manufacturers can make sure that future crashes are more survivable by designing railcars and buses with improved crashworthiness that minimizes intrusion into and loss of occupant survivable space and keep occupants within the seating compartment.

### What is the NTSB doing?

Assessing the factors involved in death, injury and survival are essential components of any NTSB investigation. In addition, we have issued a number of studies, such as *Airbag Performance in General Aviation Restraint Systems* and *The Performance and Use of Child Restraint Systems, Seatbelts, and Air Bags for Children in Passenger Vehicles*, and convened a number of forums, such as the 1997 *Public Forum on Air Bags and Child Passenger Safety* and the 2010 forum on *Child Passenger Safety in the Air and in Automobiles*. Through decades of investigations and studies, the NTSB has called on the DOT's modal agencies, vehicle and occupant protection manufacturers, industry professionals, and the states to ensure the best occupant protection available to the traveling public regardless of the mode of transportation.

Most recently, the NTSB took steps to address the specific concern of a lack of an international aviation standard for restraining infants and small children. In September 2013, at the NTSB's request, the United States government submitted a working paper to the International Civil Aviation Authority (ICAO) asking ICAO to establish an international recommended practice regarding the use of child safety restraints on aircraft and provide recommendations and guidance that address the use of different types of restraints.

Likewise, the NTSB has studied the evolution of crashworthiness standards for passenger railcars and buses and has identified several engineering shortcomings in the current standards and regulations. The NTSB has made safety recommendations to the Federal Railroad Administration to revise and improve these sidewall crashworthiness regulations. Additional efforts are ongoing with the Federal Transit Authority to encourage improvements in the engineering standards for transit railcars.

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



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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.

