



Seat Belts in School Buses

This report examines the effectiveness of installing seat belts in school buses. It encompasses safety statistics, federal and state legislation, and costs of adding seat belts to buses.

Safety

In 2002 the Transportation Research Board (TRB) released a comprehensive report that examined the relative risks associated with children (K-12) traveling to and from school. The Board analyzed data from the 1995 Nationwide Personal Transportation Survey to determine the major modes of transportation children use to get to school. Table 1 presents the results of this survey.¹ (NOTE: a trip constitutes a round-trip to school or a school-related event).

Table 1: Estimated Mode of Transportation for Children

Mode of Transportation	100 Million Student Trips (%)
School Bus	58 (25%)
Other Bus	5 (2%)
Passenger Vehicle, Adult Driver	105 (45%)
Passenger Vehicle, Teen Driver	34 (14%)
Bicycle	5 (2%)
Walking	28 (12%)

¹ Transportation Research Board, National Academy of Sciences. "Board Special Report 269: The Relative Risks of School Travel." 2002. Table ES-1.
<http://onlinepubs.trb.org/onlinepubs/sr/sr269.pdf>.

The Transportation Research Board (TRB) estimated that approximately 5.8 billion student trips are taken on school buses per year. Thus 25 percent of all students are taken by school bus. Below, Table 2 illustrates the number of fatalities per year for each of the six major modes of transportation. It is based on data collected by police reports.

Table 2. Relative Risks of School Travel During School Travel Hours² *
(Annual Average, 1991-1999)

Mode	Fatalities (average per year)	Fatalities per 100 Million Trips
School Bus	20 (2%)	0.37
Other Bus	1 (<1%)	0.1
Passenger Vehicle, Adult Driver	169 (20%)	1.6
Passenger Vehicle, Teen Driver	448 (54%)	13.2
Bicycling	46 (6%)	9.6
Walking	131 (16%)	4.6
Total	815 (100%)	29.47

*Normal school travel hours were defined by the committee to be 6 a.m. to 8:59 a.m. and 2 p.m. to 4:59 p.m. each weekday from September 1 through mid-June

Of the 20 average annual deaths on school buses, approximately 15 children are killed while boarding or exiting the bus, and five die while riding the school bus. With the exception of "Other Buses," the fatality rate per year for school buses is the lowest of all transportation modes.³

Federal Legislation and the NHTSA

In 1977 the federal government established safety standards for school buses. Buses weighing over 10,000 pounds (Type I buses) were not required to provide seat belts, while buses weighing under 10,000 pounds (Type II buses) were required to have seat belts. Approximately 80%-85% of school buses in the United States are Type 1 buses. Type I school buses are not required to provide seat belts because larger buses utilize a safety technique called compartmentalization; "a passive protection system that uses padded, high-backed seats spaced closely together in rows to protect passengers." Compartmentalization has shown to be more effective in protecting passengers

in front and rear impact crashes, and not as effective in side-impact and rollover crashes.³

In an effort to update school bus safety, in 1999 the National Highway Transportation Safety Administration (NHTSA) examined data from previous school bus crashes and analyzed a series of crash tests on school buses conducted by the National Transportation Safety Board (NTSB). The NHTSA determined that most fatal two-vehicle crashes occurred on roadways where the speed limit exceeded 55-60 mph, and involved heavy trucks. The crash tests conducted by the NTSB involved a frontal and a side-impact collision of a heavy truck into a school bus.⁴ The tests showed that while the lap/shoulder belts may prevent certain types of injuries, they may also have caused or worsened other minor injuries.⁴ The NTSB drew three main conclusions from the crash tests:

- the height of bus seat backs should be increased
- lap/shoulder belts should be required in buses under 10,000 pounds
- there should be a required standardized test procedure for voluntarily installed lap/shoulder belts on buses over 10,000 pounds

The NHTSA conducted further tests in 2002 to examine the effectiveness of lap/shoulder belt systems in school buses. NHTSA concluded that if used properly the lap/shoulder belt system offers the greatest amount of protection to its passengers. If the lap/shoulder belts are misused however, they could potentially increase the threat of injury. There is an average of two deaths per year that are caused by frontal-impact crashes involving school buses. The NHTSA concluded that one life might be saved if the occupant were properly wearing a lap/shoulder belt. The NHTSA also concluded that occupants who were properly wearing lap/shoulder belts in side-impact crashes generally had a reduced chance of death and injury.³

Legislation in Other States

²ibid

³Peterman, David R. "Seat Belts on School Buses: Overview of the Issue." 31 Aug. 2007. Congressional Research Service. 17 Oct. 2007 <http://www.stnonline.com/pdf/CRS_Seat_Belt_report.pdf>.

⁴ McCray, Linda B., and John Brewer. "Child Safety Research in School Buses." 17 Oct. 2007 <<http://www-nrd.nhtsa.dot.gov/pdf/nrd-01/esv/esv19/05-0325-W.pdf>>.

The federal government allows states to impose stricter school bus seat belt laws. Table 3 shows a breakdown of states that have passed a law requiring school buses to be equipped with a form of seat belt. States that do require occupants in school buses to wear a seat belt often protect the driver of the bus and the school districts from criminal liability if a student does not wear the belt.⁵

Table 3: State Legislation⁵

State	Year Passed	Type of Seatbelt required	Students Required to Wear Seatbelt?
New York	1987	Lap Belt	No
New Jersey	1994	Lap Belt	Yes
California	1999	Lap/Shoulder Belt	Yes
Florida	1999	Lap Belt	Yes
Louisiana ^a	1999	Lap Belt	No
Missouri ^b	2005	Lap/Shoulder	No
Texas ^a	2007	Lap/Shoulder	Yes

^aLouisiana and Texas are still awaiting funding from legislature to implement seat belts into the buses.

^bThe State of Missouri leaves the decision of requiring seat belts to the individual school districts. In 2006 a bill was introduced to require all new school buses to provide seat belts, but this bill died.

Cost

There are two different ways of fitting public school buses with seat belt restraint systems. They can be fitted in the production of new buses, or added to existing buses (retrofitting).

Costs of seat belts in the production of new buses

Typically, a new 66-78 person school bus costs \$60,000 to make. Adding seat belts into the production of a new bus would cost an additional \$1,500 to \$2,000 per bus.⁶

⁵ "The History of Seat Belt Development." [School Transportation News](http://www.stnonline.com/stn/occupantrestraint/seatbelthistory/index.htm), 8 June 2007. 17 Oct. 2007 <<http://www.stnonline.com/stn/occupantrestraint/seatbelthistory/index.htm>>.

⁶ http://www.ncsbs.org/testimonies/seat_belt_background.htm

⁷ <http://www.andoauto.com/retrofit.htm>, <http://www.napt.org/>

⁸ <http://www.ode.state.or.us/services/transportation/pdfs/oar53-0517.pdf>

Costs of adding seat belts in an existing bus (retrofitting)
Retrofitting entails repairs to the school bus floor, seats, and structure to add additional seat belts. Typically, the cost to retrofit a 66-78 person school bus with seat belts is \$2,700 to \$3,400 per bus.⁷

Additional costs to adding seat belts include the following:

Crowding out effect

Currently, federal law allows up to three students to sit in a seat at once. Seat belts limit buses to two students per seat. Thus the overall capacity of students able to sit on the bus will be reduced. Schools will need to purchase additional buses to accommodate students.⁸

Maintenance

Repairing and replacing damaged belts can add \$100 to \$500 per bus to annual maintenance costs for buses.⁸

For more information of Statistics of Iowa's Public Transportation contact
515-237-3154 - Local Des Moines Driver & Crash Statistics Safety Research

This report was prepared in November, 2007 by the Iowa Civic Analysis Network (I-CAN), a non-partisan public policy undergraduate research group at the University of Iowa. For additional research on this or other issues, please visit our website at <http://www.uiowa.edu/~ican> or contact us at studorg-i-can@uiowa.edu.