Order Code RL34153

CRS Report for Congress

Seat Belts on School Buses: Overview of the Issue

August 31, 2007

David Randall Peterman
Analyst in Transportation
Resources, Science, and Industry Division

Prepared for Members and
Committees of Congress

Seat Belts on School Buses: Overview of the Issue

Summary

It is estimated that 25% of student trips to school — 5.5 billion trips each year — are made on school buses. Nationwide, an average of seven school bus passengers die each year in crashes. Buses have the lowest death rate of any mode of transporting children to school in the United States.

Federal safety standards for school buses, established in 1977, require seat belts only on buses whose fully loaded weight is less than 10,000 pounds (Type II), but not on buses whose fully loaded weight is more than 10,000 pounds (Type I). The vast majority of Type I school buses weigh 24,000 pounds or more when fully loaded. In addition to their greater mass and structural safety features, these large school buses employ compartmentalization — a passive protection system that uses padded, high-backed seats spaced closely together in rows — to protect passengers. Compartmentalization has been found to be an effective system in protecting passengers in front- and rear-end crashes, provided the passengers are properly seated, but it is less effective in protecting them in side-impact and rollover crashes, when they may be thrown out of the compartments.

The occupant protection value of seat belts on large school buses has been debated for decades. Advocates contend that seat belts would reduce injuries to and deaths of passengers, in part through keeping them within their compartments in side-impact and rollover crashes. These advocates, who include the American Academy of Pediatrics, the National Coalition for School Bus Safety, and the National PTA, also contend that seat belts would provide other benefits, including improving student behavior on buses and reducing distractions to drivers, as well as reinforcing use of seat belts that might increase seat belt use in other vehicles. Others, including the National Association of State Directors of Pupil Transportation Services and the National Association of School Transportation, caution against requiring that seat belts be installed on large school buses. They note that studies have found that adding seat belts to large school buses is not a cost-effective safety improvement. These studies indicate that lap belts may provide no net safety benefit, and lap/shoulder belts might save one or two lives and prevent several serious injuries each year, at an annual cost of hundreds of millions of dollars for adding the belts. Also, since adding lap/shoulder belts can reduce the seating capacity of large school buses, some students might be displaced from school buses to more dangerous forms of transportation unless additional buses have been purchased to maintain existing seating capacity, further increasing the cost of the requirement. Given the relatively small number of deaths to school bus passengers, these observers contend that other measures could have greater safety benefits for school children.

Several states have passed laws requiring that large school buses be equipped with lap belts, with the result that perhaps as much as 35% of the nation's school bus fleet is already required to have some form of seat belts; only California currently requires the safer and more expensive lap/shoulder belts. Federal funding is generally not available to help communities purchase school buses. This report will not be updated.

Contents

List of Tables

Seat Belts on School Buses: Overview of the Issue

Federal regulations have required that all new passenger vehicles (cars and light trucks) be equipped with seat belts since 1970. The National Highway Traffic Safety Administration (NHTSA) has estimated that seat belts in passenger vehicles have saved tens of thousands of lives in crashes during that time. Given the safety benefit provided by seat belts in passenger vehicles, some observers contend that seat belts should be required on school buses as well.

Some school buses — those with van-like body structures, whose fully loaded weight is under 10,000 pounds — are required by federal regulations to be equipped with safety belts. Those whose fully loaded weight is more than 10,000 pounds are not, though some states and individual school districts require seat belts in those vehicles.

This report examines the issue of adding seat belts to large school buses. It begins by looking at the number of children who use school buses to get to school each year, the number who are killed while riding in school buses, and the relative risk of school bus travel compared with other modes of school transportation. The history of congressional interest in the issue is then summarized, followed by a description of the current occupant protection features in large school buses. The results of several studies evaluating the potential safety benefit of seat belts are presented, then the potential consequences of requiring seat belts in large school buses are examined. Next, the various state requirements for seat belts on school buses are described. The report concludes by discussing policy options should Congress consider this issue.

Context

The Transportation Research Board reports that school buses transport an estimated 25% of the nation's K-12 students — some 12.5 million students[1] — to school and school-related events each year. This produces an estimated 5.5 billion student trips annually.[2] Between 1995 and 2005, there were a total of 1,368 fatal

---

[1] Transportation Research Board, National Research Council, *Special Report 269: The Relative Risks of School Travel*, 2002, p. 159. Projected 2006 student enrollment in public elementary and secondary schools was 49 million (United States Department of Education, *Digest of Education Statistics: 2006*, Table 1: "Projected number of participants in educational institutions, by level and control of institution: Fall 2006"); 25% of that number would be roughly 12.5 million.

[2] Transportation Research Board, op. cit., Table 2-2: "Population Estimates for Number of

(continued...)

crashes involving school transportation vehicles.[3] School buses are larger and heavier than most other vehicles on the road, so most fatalities in school transportation-related crashes are not to school bus occupants, but to occupants of other vehicles or pedestrians. Only 97 (7%) of those crashes resulted in a fatality to an occupant of the school transportation vehicle. In those 97 crashes, a total of 119 occupants of the school transportation vehicles were killed — 45 school vehicle drivers and 74 school vehicle passengers. Thus, during that 11-year period, there were an average of 8.8 school transportation vehicle crashes and 6.7 school vehicle passenger deaths each year.[4]

Table 1. Relative Risks of School Travel During School Travel Hours

Mode	Number of Student Trips (100 million trips) (% of Total)	Fatalities[a] (% of Total)	Fatalities Per 100 Million Trips
School Bus	58 (25%)	20 (2%)	0.3
Other Bus	5 (2%)	1 (<1%)	0.1
Passenger Vehicle, Adult Driver	105 (45%)	169 (20%)	1.6
Passenger Vehicle, Teen Driver	34 (14%)	448 (54%)	13.2
Bicycling	5 (2%)	46 (6%)	9.6
Walking	28 (12%)	131 (16%)	4.6
Total	235	815	3.5

Source: Adapted from Transportation Research Board, National Academy of Sciences, *Board Special Report 269: The Relative Risks of School Travel*, 2002, Table 3-3: "Summary of Student Injury and Fatality Data per Year," p. 90.

a. Annual Average, 1991-1999. Of the 20 average annual school bus fatalities, 15 were killed while boarding or alighting from the bus; only 5 died as passengers in crashes.

---

[2] (...continued)
Student Trips Made During Normal Morning and Afternoon School Travel Hours by Mode," p. 33.

[3] NHTSA, *2005 Traffic Safety Facts: School Transportation-Related Crashes*, DOT HS 810 626. NHTSA defines a school-bus related crash as one involving a vehicle, regardless of body design, which is being used as a school bus. Thus vehicles not meeting federal regulations for school bus design, but being used as school buses, would be included in this statistic.

[4] Of the 119 total fatalities, 20 (17%) were riding in vehicles being used as school buses but not meeting federal requirements for school buses. The NHTSA report does not indicate how many of the 20 were passengers versus drivers. All school buses are required to have seat belts for the driver, so the driver deaths are omitted for the purpose of considering the impact of seat belts for passengers.

As **Table 1** shows, in a 2002 study of the relative risks of different modes by which children are transported to school, the Transportation Research Board found that school buses were the safest mode (except for other buses).[5] The study found that between 1991 and 1999, an average of 815 school-aged children were killed each year in motor vehicle crashes during normal school travel hours; of that 815, five were passengers in school buses, and another 15 were pedestrians killed by school buses.[6] Thus, on average 790 out of 815 (98%) school-aged child deaths in motor vehicle crashes during school travel hours occurred in passenger vehicles or to walkers, bicyclists, or motorcyclists.[7] More than half of all the deaths occurred to occupants of vehicles driven by a teenager.

Congressional Interest

School bus safety, and the question of whether seat belts should be required on school buses, has been of interest to Congress for many years. In the Motor Vehicle and School Bus Safety Amendments of 1974 (P.L. 93-492), Congress directed NHTSA to promulgate regulations for school bus safety, including the protection of occupants. When NHTSA decided not to require seat belts on large school buses, Congress asked NHTSA to report on the extent to which seat belts and other occupant restraint systems could reduce injuries to school bus occupants (P.L. 94-346). In the Surface Transportation and Uniform Relocation Assistance Act of 1987 (P.L. 100-17), Congress directed the Department of Transportation (DOT) to contract with the National Academy of Sciences for a study of the principal causes of fatalities and injuries to school children riding in school buses, the use of seat belts in school buses, and other measures that might improve the safety of school transportation. In the 1998 Transportation Equity Act for the 21st Century (P.L. 105-134), Congress directed DOT to analyze options for improving the safety of school bus occupants, and directed DOT to contract with the National Academy of Sciences to study the safety issues related to the various modes of school and school-related transportation.

School Bus Design for Occupant Protection

The school bus industry defines four basic types of school buses used in the United States: Type A and B are similar in design, and are smaller in size than the other two types, more like vans; Type C is a traditional school bus, with the engine

---

[5] Transportation Research Board, National Research Council, *Special Report 269: The Relative Risks of School Travel*, 2002.

[6] Injuries to school bus occupants are another measure of the effectiveness of occupant protection strategies, but problems with the injury data limit their usefulness. NHTSA estimates that only about 4% of crash-related injuries to school bus occupants are incapacitating injuries, a category that encompasses nonfatal injuries ranging from severe lacerations to quadraplegia. The National Transportation Safety Board has concluded that school bus crash injury data are incomplete and therefore injuries cannot be reliably estimated (National Transportation Safety Board, *Bus Crashworthiness Issues*, Highway Special Investigation Report NTSB/SIR-99/04, 1999, p. 69).

[7] Data for pedestrian and bicycle deaths in the study came from motor vehicle crash databases, and so only include fatalities resulting from interactions with motor vehicles. As such, the number of fatalities for the bicycling and pedestrian mode may be understated.

mounted in front of the windshield; and Type D is a transit type bus, with the windshield flush with the front of the bus.

Federal regulations divide school buses into two categories: Type I, those with a gross vehicle weight rating (GVWR)[8] of more than 10,000 pounds; and Type II, those with a GVWR of less than 10,000 pounds. Type II buses are required to have seat belts; Type I buses do not have to have seat belts. Type A and B buses may have a GVWR greater or less than 10,000 pounds, thus may be either Type I or Type II; Types C and D buses are Type I. An estimated 80%-85% of the nation's 482,000 school buses are Type I buses.[9]

The largest school buses (Types C and D) have GVWRs of 24,000 pounds or more.[10] Type C school buses are the most common of the four types, making up about 57% of school bus purchases during the period 1993-2005.[11] Type D buses represented about 23% of purchases during that period. Thus, the largest and heaviest types of school buses make up about 80% of the school bus fleet. In addition to the crash protection afforded to school bus occupants by the mass of these vehicles, which reduces the crash forces on occupants compared to those experienced in smaller passenger vehicles, these bus bodies also have energy-absorbing designs for front-end crashes, and their occupants are positioned above the level of most other vehicles on the road, providing protection from side-impact crashes (except those involving similar-sized vehicles). Despite the general absence of seat belts, ejections of passengers from large school buses during crashes are "extremely rare."[12]

NHTSA established regulations for school bus occupant protection in 1976.[13] In the course of that rulemaking, consideration was given to requiring seat belts on school buses. NHTSA decided that a passive approach, compartmentalization, would

---

[8] Gross vehicle weight rating refers to the maximum load-carrying capacity of the vehicle. In the case of school buses, it would be the weight of the bus when loaded with passengers.

[9] School bus number from School Transportation News, *Buyers Guide 2005*, cited in 72 *Federal Register* 30740 (footnote #1), June 4, 2007. The 80%-85% estimate is from the Transportation Research Board's 1989 report *Improving School Bus Safety*, p. 1. Though that estimate is dated, Type C and D school buses, all of which are Type I, have accounted for roughly 80% of total school bus sales since at least the early 1990s, according to data from School Bus Fleet. Data was not available on the number of Type A and B buses sold which were Type I.

[10] School Transportation News, "School Bus Weights," available at [http://www.stnonline.com/stn/data_statistics/schoolbus_weights.htm].

[11] School Bus Fleet, "U.S. Bus Sales (by type)."

[12] Letter from Ronald L., Medford, Senior Associate Administrator for Safety, NHTSA, to Deborah Lincoln, President, National Association of State Directors of Pupil Transportation Services, no date (date-stamped January 23, 2004), available at [http://www.nasdpts.org/documents/NHTSALetter-lap%20belts-smaller.pdf].

[13] Federal Motor Vehicle Standard (FMVS) 222: School Bus Passenger Seating and Crash Protection.

provide the most reliable protection.[14] Compartmentalization refers to a system of protecting the passengers by using high-backed padded seats designed to absorb energy from impacts, placed in relatively closely-spaced rows. In addition to protecting passengers without requiring any action on their part, compartmentalization allows for quicker and easier loading and unloading of occupants than an active restraint system.

Compartmentalization has been found to be effective in protecting school bus passengers in head-on collisions. It is less effective at protecting passengers in side-collisions or roll-over accidents, when occupants may be thrown out of their compartments, or at protecting passengers when they are not properly seated. In a 1999 study of school bus crashes, the National Transportation Safety Board (NTSB) termed compartmentalization a very effective, yet incomplete, system of occupant protection, and called on NHTSA to develop performance standards for occupant protection systems that protect passengers in frontal impact collisions, side impact collisions, rear impact collisions, and rollovers.[15] NHTSA has announced that it is planning to propose: standardized test procedures for voluntary installed lap/shoulder belts; an increase in the required school bus seat back height (from the current standard of 20 inches above the level of the seat to 24 inches, to reduce the risk of a passenger striking the passenger in the seat ahead); and that smaller (Type II) school buses, currently required to have lap belts, be required to have lap/shoulder belts.[16]

Potential Safety Benefits of Seat Belts in Large School Buses

Several studies have examined the potential safety benefits of seat belts in large school buses. In general, the studies have found that lap belts are of uncertain benefit, but that lap/shoulder belt systems do provide a safety benefit to occupants, provided that they are properly used; if misused, they have the potential to cause injuries.

A 1989 study by the National Transportation Safety Board (NTSB) of 43 serious school bus crashes concluded that seat belts (lap belts) probably would not have reduced the total number of deaths in the crashes studied.[17] A 1989 study of school bus safety by the Transportation Research Board (TRB) estimated that if all large school buses were equipped with seat belts, one life might be saved and several dozen serious injuries averted each year.[18] The study suggested that lap/shoulder belt systems might provide a greater safety improvement than lap belts, but that the necessity of stiffening the seat back to support the lap/shoulder belt might increase

---

[14] NHTSA chose to also require seat belts on school buses with GVWRs under 10,000 pounds, because their lighter mass and lower position offered less protection to occupants.

[15] National Transportation Safety Board, *Bus Crashworthiness Issues*, Highway Special Investigation Report NTSB/SIR-99/04, 1999, pp. 39-41.

[16] 72 Federal Register 30741, June 4, 2007.

[17] National Transportation Safety Board, *Crashworthiness of Large Poststandard School Buses*, NTSB/SS-87/01, 1987, cited in NTSB 1999, p. 2.

[18] Transportation Research Board, National Research Council, *Special Report 222: Improving School Bus Safety*, 1989, pp. 2-6.

the risk to students who did not wear the belts, since the increased rigidity of the seat backs would exacerbate injuries to unrestrained passengers striking them. The study concluded that the estimated benefit of requiring seat belts on large school buses did not justify a federal mandate requiring their installation, and listed a variety of options that might produce a greater improvement in safety for school bus passengers.

A 1999 NTSB study of side-impact crashes school bus crashes found that, while laps belts and lap/shoulder belts might have prevented or mitigated some of the injuries in the crashes studied, they might have caused, or exacerbated, other injuries. However, while NTSB was not able to determine whether "current restraint systems" would have reduced injuries in the study crashes, it concluded that the potential exists for an occupant crash protection system to be developed that would protect school bus passengers by retaining the passengers within the seating compartment in most accident scenarios.[19]

A 2002 NHTSA study used crash testing to study the effects of compartmentalization, lap belts, and lap/shoulder belt systems.[20] Lap belts were found to help keep passengers within their seat compartment, which added a measure of protection, but also to increase the risk of neck injury. The lap/shoulder belt system was found to offer the greatest degree of safety, when used properly; if misused (e.g., if used as laps belts), they could also increase the risk of injury to occupants. NHTSA estimated that, out of the two average annual deaths from frontal crashes in large school buses between 1990-2000, one life might be saved each year by lap/shoulder seat belts, if they were universally used. Also, NHTSA found that lap/shoulder belts have the potential to be effective in reducing fatalities and injuries in non-frontal crashes.[21]

Potential Impacts of Requiring Seat Belts on Large School Buses

Proponents of requiring seat belts on large school buses include the American Academy of Pediatrics, the National Coalition for School Bus Safety, the National PTA, and others. They note that compartmentalization is designed primarily to protect occupants in front- and rear-end collisions, and provides limited protection in side-impact collisions and rollover accidents, as well as limited protection even in front- and rear-end collisions to students who are not properly seated. They contend that requiring students to wear seat belts on school buses will increase the safety of school bus occupants in case of accident. They also contend that requiring students to wear seat belts will reduce injuries from children sticking their arms and heads out the bus windows, improve student behavior on buses, reduce opportunities for bullying, and limit behavior that might distract the bus driver's attention from

---

[19] National Transportation Safety Board, *Bus Crashworthiness Issues*, Highway Special Investigation Report NTSB/SIR-99/04, p. 68.

[20] National Highway Traffic Safety Administration, *Report to Congress on School Bus Safety: Crashworthiness Research*, April 2002.

[21] Ibid., p. 47.

driving, thus reducing the risk of crashes. Proponents also contend that requiring students to wear seat belts on school buses will send a consistent message to students regarding the importance of wearing seat belts that will promote their use of seat belts in other vehicles.[22]

Others, including the National Association of State Directors of Pupil Transportation Services and the National School Transportation Association, caution against requiring that school buses be equipped with seat belts. Their concerns are that such a requirement would involve significant expense and yet, given less than universal usage rates and the already low number of school bus passenger fatalities, might produce little or no improvement in safety for the occupants of school buses. At the same time, the resulting reduction in school bus seating capacity might increase the risk to students who were displaced from school buses to more dangerous forms of transportation, unless significant additional resources were made available to maintain the overall bus fleet seating capacity. Some of these organizations, such as the National School Transportation Association, do not oppose requiring lap/shoulder belts on Type I school buses if sufficient funding is also provided so that no students are displaced due to loss of seating capacity.

Opponents of seat belts on school buses have also expressed concern about the ability to rapidly evacuate a bus after a crash if students are belted in, and that lap belts and misuse of lap/shoulder belts may cause additional injuries in crashes. However, NHTSA notes that lap belts have been present on some large school buses for more than 30 years without any documented serious injuries resulting from their use.[23]

Lap Belts Versus Lap/Shoulder Belts. Some states and school districts have chosen to require that all school buses be equipped with seat belts. Lap/shoulder seat belt systems did not become available as an option for Type C and D school buses until the early 2000s.[24] As a result, most Type I school buses that are equipped with seat belts have lap belts. The additional cost of equipping a Type I school bus with lap belts is relatively modest, around $1,000, and installing lap belts does not reduce the seating capacity of a bus. There is insufficient data from states that require lap belts on school buses with which to judge their impact on safety.[25]

---

[22] The 1989 TRB study found some evidence to support some of these additional benefits, though not for the notion that seat belts on school buses would result in increased usage of seat belts in other vehicles. TRB, *Improving School Bus Safety*, 1989, pp. 84-87.

[23] 72 *Federal Register* 30741.

[24] Charlie Hood, Director, Student Transportation, Florida Department of Education, *Seat Belts in School Buses: The View from Florida*, presentation to the National Highway Traffic Safety Administration public meeting on Federal Motor Vehicle Safety Standards for School Bus Passenger Protection, July 11, 2007, available at [http://dmses.dot.gov/docimages/pdf101/476603_web.pdf].

[25] NHTSA, Roger A. Saul, National Highway Traffic Safety Administration, *Seat Belts on Large School Buses: Overview*, presentation to the National Highway Traffic Safety Administration public meeting on Federal Motor Vehicle Safety Standards for School Bus Passenger Protection, July 11, 2007, p. 28, available at [http://dmses.dot.gov/docimages/

Several studies, based on analysis of actual crashes and/or simulated crashes, have failed to find a net safety benefit for lap belts, due to the potential for lap belts to cause or exacerbate certain types of injuries in school bus crashes.[26] NHTSA is considering requiring that the smaller Type II school buses, which are currently required to have lap belts, be equipped with lap/shoulder belts.[27]

Only one state (California) requires that school buses be equipped with lap/shoulder belts. Adding lap/shoulder belts to a school bus is much more costly than lap belts, and may result in a reduction of seating capacity. Studies have suggested that lap/shoulder belts could improve safety for school bus occupants, if they are widely used and used correctly. They are more complicated to fit correctly than are lap belts, given the wide range of physical sizes of school bus passengers, which could reduce the extent of their usage by passengers. Given the uncertain safety benefit of lap belts, the focus of the rest of this analysis is on lap/shoulder belts.

Costs of Adding Lap/Shoulder Belts. Large school buses cost roughly $75,000.[28] Estimates of the cost of equipping a large school bus with 3-point (lap/shoulder) seat belts range from $8,000 to $15,000, a 10%-20% increase.[29] Based on estimated annual sales of roughly 31,000 new large school buses,[30] the annual additional capital cost of equipping the nation's fleet of large school buses with lap/shoulder belts could be in the range of $250 million to $465 million.[31] This would represent an increase of roughly 10%-20% in total annual spending on large school buses.

---

[25] (...continued)
p102/477975.pdf].

[26] For similar reasons, NHTSA changed the requirement for seat belts in passenger vehicles to require lap/shoulder belts, rather than lap belts.

[27] 72 *Federal Register* 30741, June 4, 2007.

[28] Ken Hedgecock, Vice-President of Sales, Marketing and Service for Thomas Built Buses, Inc., presentation at NHTSA public meeting on Federal Motor Vehicle Safety Standards for School Bus Passenger Protection, July 11, 2007, p. 3, available at [http://dmses.dot.gov/docimages/p101/476599.pdf]; Robin Leeds, National School Transportation Association, personal communication, August 16, 2007.

[29] Hedgecock at #14; Chad Conley, Director, Bus Products, IC Corporation, Seat Belt Systems for Buses, presented at NHTSA public meeting on Federal Motor Vehicle Safety Standards for School Bus Passenger Protection, July 11, 2007. p. 6, available at [http://dmses.dot.gov/docimages/p102/477479.pdf].

[30] Average of 2001-2005 sales of Type C and D buses; data from School Bus Fleet, "U.S. Bus Sales (by type)." The data does not indicate how many Type A and B buses sold were Type I.

[31] In its 2002 study, NHTSA did not do a thorough calculation of the costs of installing lap/shoulder belts on school buses, but came up with an estimate for the total cost for equipping all new buses sold each year, both large and small (about 47,000), of around $120-$150 million.

One concern of opponents of requiring seat belts on large school buses is that the additional expense of the seat belts might lead states and school districts to purchase fewer buses, thus reducing the availability of school bus transportation. Any change that results in fewer students riding school buses is likely to increase the overall risk of death and injury to students, since every other form of school transportation is more dangerous than riding a large bus.

Adding lap/shoulder belts may reduce the seating capacity of school buses (discussed in more detail below). So, in order not to increase the risks to some students by displacing them to more dangerous modes of school transportation, additional school buses might need to be purchased in order to maintain the overall seating capacity of the school bus fleet.

These additional costs would be faced by school districts and states that have already seen the costs of their most widely used buses jump by 20% from 2006 to 2007 due to increases associated with a federal mandate for reducing emissions from diesel engines and rising costs of commodities such as steel, according to the National School Transportation Association.[32] The emissions standards are expected to bring a new round of price increases when the standards rise in 2010. In addition, NHTSA is proposing to amend the standard for Type II buses to require that they be equipped with lap/shoulder belts, rather than lap belts. If adopted, that requirement may increase the cost of Type II buses as well.

Proponents of requiring seat belts on school buses contend that estimates of the cost of adding seat belts to school buses should take into account the costs of not having seat belts on school buses. These include the medical costs of school bus injuries and the costs to school districts (and school bus companies, whose costs are passed on to school bus purchasers) of lawsuits filed by parents whose children have been killed or seriously injured in school bus crashes. Data on these costs are not available.

The federal government does not generally provide funding for school transportation. Congress is providing $7 million annually to help school districts retrofit or replace school buses with older diesel engines,[33] and in the 1987 surface transportation authorization act Congress authorized DOT to set aside up to $5 million for FY1989-FY1991 for grants to states to implement school bus safety measures.[34]

Impact on Seating Capacity. The impact on seating capacity of adding lap/shoulder belts to large school buses is complex. Type C and D buses typically have seating capacities of 60-84 elementary-age students, based on 10 or more rows of seats that are 39 inches across, seating three students to a seat and six to a row (3-3 seating). Lap/shoulder belt systems cannot accommodate three students in a 39-inch

---

[32] Robin Leeds, National School Transportation Association, personal communication, August 16, 2007.

[33] Under the Clean School Bus program in the U.S. Environmental Protection Agency.

[34] P.L. 100-17, Section 204(b).

seat.[35] The bus body could be made wider to retain the existing seating capacity, but opponents contend this would make such buses more dangerous on narrow roads and more difficult to maneuver on neighborhood streets. Buses with lap/shoulder belt systems either have 3-2 seating (making one seat on a row wide enough to accommodate three lap/shoulder belts, and reducing the other to accommodate two such belts) or 2-2 seating. That is, the elementary school student seating capacity of a large school bus is typically reduced by 16%-33% when lap/shoulder belts are added.

However, not all school buses operate at maximum seating capacity. Also, most school districts use the same buses for K-12 students.[36] The seating capacity of a large bus is lower for middle- and high-school students than for elementary school students, since older students take up more than 13 inches of seat space. Consequently, the reduction in seating capacity resulting from adding lap/shoulder belts to a large school bus may range from zero to 30%, depending on ridership characteristics. As an indication of the potential cost impact, if a 10% increase in the number of large school buses purchased nationwide was needed to prevent students from being displaced, that would represent an additional annual capital expense of perhaps $260 to $290 million.[37] Other potential capital costs could include increasing the storage area to accommodate increased fleet sizes. There would also be increased operating costs for additional drivers, fuel, and maintenance for the extra buses.[38]

Usage. For lap/shoulder belts to reduce the already small number of deaths of school bus occupants each year, they would need to be widely used and used correctly. NHTSA's estimate of one life saved in frontal crashes is based on 100% proper use of lap/shoulder belts.[39] There is little experience with lap/shoulder belt usage on school buses. Only California requires lap/shoulder belts on school buses, and that requirement applies only to buses purchased after 2004 (for Type II buses) and 2005 (for Type I buses). Fitting lap/shoulder belts to the wide range of physical sizes of K-12 students is more complicated than fitting lap belts, so the rate of usage might be lower, all else being equal. Evidence indicates that usage of lap belts varies by age group, with higher rates of usage by elementary age students and progressively lower rates of usage by middle and high school age students. New York requires all school buses to be equipped with lap belts, but does not mandate their use, leaving that decision to each school district (only around 45-50 of New York's 720+ school

---

[35] NHTSA, *Report to Congress: School Bus Safety: Crashworthiness Research*, p. 48.

[36] National School Transportation Association, "School Bus Belts: Economic Issues," NHTSA Public Meeting, July 11, 2007.

[37] Assuming a cost of $75,000 per bus, and 31,000 large school buses purchased annually, a 10% increase would require an additional 3,100 buses annually.

[38] The Alabama *Governor's Report on Seat Belts on Buses* estimated the annual operating costs for a school bus in Alabama at around $25,000.

[39] NHTSA, 2002, p. 47.

districts require students to use the belts).[40] Nationwide, for areas where school buses are equipped with lap belts, estimates of overall usage are around 50%.[41] Where usage is required, another issue is how to effectively enforce that requirement. Stationing adults on each bus to monitor and enforce the use of seat belts might result in higher rates of usage, but could increase the district's personnel costs.

State Actions

Federal bus safety regulations allow states to require seat belts, and a few states have done so. Since 1987, New York state has required that all new school buses be equipped with seat belts (lap belts),[42] but does not require students to use them. New Jersey has required seat belts (lap belts) on all new school buses since 1994, and requires that students use them. California, Florida, and Louisiana passed laws in 1999 mandating seat belts on new school buses: California requires lap/shoulder belts on new buses purchased since 2004 (Type II) and 2005 (Type I) and requires student to use them; Florida requires lap belts on new buses purchased since 2001 and requires students to use them; and Louisiana requires that an "occupant restraint system" be installed on every school bus, though this requirement does not take effect unless funding for this purpose is provided by the state.[43] Texas passed a similar law in 2007, requiring lap/shoulder belts on school buses purchased as of 2010, but school districts do not have to purchase buses equipped with seat belts until the state legislature has arranged to reimburse them for the additional cost of the belts. The Texas law will require students to use the belts. States that have required seat belt usage have also typically protected the bus drivers and school districts from criminal liability in the event students do not use the belts.

Options for Congressional Action

Status Quo. One option is to maintain the status quo regarding federal requirements for seat belts on school buses. Congress might focus instead on further improving the crashworthiness of school buses. Experts who have looked at the issue at Congress' direction have repeatedly concluded that lap belts offer little or no additional safety benefit, and that the benefits of lap/shoulder belts do not justify their considerable costs and potential unintended consequences. NHTSA is in the process of issuing regulations that will provide an improved performance standard for

---

[40] Peter F. Mannella, Executive Director, New York Association for Pupil Transportation, Statement to National Highway Traffic Safety Administration Public Forum: Federal Motor Vehicle Safety Standards for School Bus Passenger Protection, July 11, 2007, Washington, DC, p. 3, available at [http://dmses.dot.gov/docimages/pdf101/476600_web.pdf].

[41] Transportation Research Board, 1987; NHTSA, 2002; Transport Canada "Review of Bus Safety Issues — School Bus Passenger Protection," no date, available at [http://www.tc.gc.ca/roadsafety/tp/tp13330/bussch_e.htm].

[42] Retrofitting existing buses with seat belts is more expensive and less safe than adding belts during the construction of a school bus, so states and school districts generally require belts be added to buses purchased (manufactured) after a certain date.

[43] Through 2007, the state legislature has not provided funding to implement this requirement.

occupant protection systems in school buses. Between the federal mandate for seat belts on Type II school buses and the actions of individual school districts and some states, already as much as 35% of the nation's total school bus fleet is required to have some form of seat belt (though the percentage actually equipped with seat belts is less than that, since California and Florida have not fully equipped their fleets yet). If Texas implements its seat belt law, that ratio could rise to over 40%, without any additional federal action.[44] Most of these buses are required to have lap belts. But NHTSA is considering requiring that the smaller Type II school buses, which are currently required to have a lap belt, be required to have a lap/shoulder belt. If NHTSA does make that change, some 20% of the nation's school bus fleet would be required to have lap/shoulder belts (including the impact of California's requirement that all its school buses be equipped with lap/ shoulder belts). That ratio could rise to almost 30% if Texas implements its law. Other states may follow, if their assessments of the costs and benefits justify the change.

Require Lap/Shoulder Belts on Large School Buses. Given that NHTSA must evaluate any regulation to require seat belts on school buses against the significant costs and the relatively small apparent benefits, it appears unlikely that seat belts will be required on large school buses through the regulatory process. Congress could mandate that lap/shoulder belts be available on all school buses. NHTSA has estimated that such a requirement could potentially save an average of one life, and prevent some proportion of serious injuries, each year in frontal crashes, assuming 100% proper usage, and could also reduce fatalities and injuries in non-frontal crashes. However, if improperly used (e.g., for any students who slipped the shoulder strap behind them, using only the lap portion of the lap/shoulder belt), they could increase, rather than decrease, the risk of injury.

States have had the option of requiring the additional protection of seat belts, and a few have done so, but so far only California has required the considerably more expensive, yet safer, lap/shoulder belt restraints.[45] Requiring lap/shoulder belts on Type I school buses would increase their cost by 10%-20%, and could reduce the seating capacity of the buses, necessitating the purchase of additional buses to maintain the student ridership levels.

Congress could impose this requirement without providing funding to offset the additional costs of maintaining the existing ridership of the nation's school bus fleet. Congress could also choose to provide funding to states and school districts to offset the additional costs of maintaining existing ridership. It is more expensive to retrofit

---

[44] All Type II buses are required to have seat belts; they represent an estimated 15%-20% of the total fleet. New York, California, New Jersey and Florida have the nation's first-, third-, fourth-, and fifth-largest state school bus fleets, representing 23.5% of the total fleet. Texas has the second-largest state school bus fleet, 7.5% of the total fleet. Data is not available showing the number of Type I and Type II buses per state. The estimate of the nationwide ratio of buses with belts assumes that 15% of the nation's fleet are Type II buses, and that 85% of the fleets of New York, Texas, California, New Jersey, and Florida are Type I buses. State bus fleet size data from School Bus Fleet, "School Transportation: 2004-2005 School Year."

[45] Unlike some states, California does not require school districts to provide transportation to all eligible students.

existing buses, whose seats and floors were not designed to support the loads that may be exerted on lap/shoulder belts, so this requirement could be phased in by applying it to buses manufactured and purchased after a certain date. States and school districts usually replace large school buses on a 12-15 year cycle, so it could take that long to equip the nation's school bus fleet with lap/shoulder belts. The full extent of the additional costs is not known, but the capital costs could exceed $500 million annually. There would be additional operating costs as well.

Encourage the Purchase of Large School Buses with Lap/Shoulder Belts. Since 1999 several states have required that large school buses be equipped with seat belts. Given this evidence of growing interest in providing seat belts, Congress could encourage more states and school districts to adopt such requirements — and encourage those which currently require lap belts to require lap/shoulder belts instead — by providing incentive grants for the purchase of school buses equipped with lap/shoulder belts. Such grants could be conditioned on the states or school districts having a requirement that the belts be used. Congress could also encourage usage of the belts, perhaps by having the amounts of the grants in future years depend in part on the rate of proper lap/shoulder belt usage observed on a state or school district's buses that have such belts.

Pursue Alternative Safety Initiatives. Given that 98% of school-age child deaths during school travel hours occur in modes other than school buses, there are other options that could have a greater impact on increasing the safety of school children than requiring that seat belts be installed on large school buses. For example, shifting students from relatively more dangerous modes of transport to school (such as bicycling, walking, and passenger vehicles driven by teens) to relatively safer modes (such as school buses) is one way of making school children safer.[46] While federal funding is generally not provided for purchasing large school buses, a grant program to encourage school districts to increase the percentage of students who travel to school by bus could promote safety. Congress also recently created a new program to make the most dangerous modes of school transportation — walking and bicycling — safer.[47] Other options include making school bus and passenger vehicle pick-up and drop-off locations safer and implementing and enforcing graduated licensing programs for teen drivers.[48] The NTSB has recommended that school buses be equipped with onboard data recorders, both to provide additional information about crashes that could lead to improved occupant protection practices, and also because experience has shown that the mere presence (and presumably, knowledge on the part of drivers) of onboard data recorders on vehicles has often led to reductions in the number of crashes experienced by those vehicles.[49]

---

[46] Transportation Research Board, National Research Council, *Special Report 269: The Relative Risks of School Travel*, 2002.

[47] The Safe Routes to Schools program in the Department of Transportation, funded at $612 million over FY2005-FY2009.

[48] Ibid., p. 160.

[49] NTSB, 1999, p. 65.