California School Bus Lap/Shoulder Belts

Twenty Years Revealed

January 16, 2026

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Executive Summary

In 2004/2005 California became the first state in the nation to require lap/shoulder belts on all new school buses purchased for pupil transportation. Additionally, all pupil passengers are required to wear lap/shoulder belts on school buses so equipped. This report documents the results of California's school bus crash and passenger injury data from CY-1994 through FY-2023/24, with specific focus on the 20 years since lap/shoulder belts began appearing incrementally on all new California school buses.

California Vehicle Code §12517.1 requires the California Highway Patrol (CHP) to investigate all school bus accidents. Additionally, the CHP prepares an annual "School Bus Crash and Pupil Passenger Injury Summary Report". A summary of the data from these reports are presented in both tabular and graphical form to document the changes in school bus crashes and pupil passenger injuries since lap/shoulder belts in new school buses were mandated in California.

The data clearly demonstrates a reduction in pupil passenger injuries over the 20-year period as more lap/shoulder belt equipped school buses were added each year to the California school bus fleet. This reduction is presented in terms of absolute numbers of pupil passengers who were injured as well as the reduction in pupil passenger injuries per million vehicle miles travelled.

While this report points out various factors that could have a causal impact on the documented reduction in pupil passenger injuries, the most compelling appears to be the availability and use of lap/shoulder belts. Accordingly, this report draws several conclusions of note:

- Twenty years of the CHP crash data on California school buses equipped with lap/shoulder belts, which began in 2004 show a **74.5%** decrease in the absolute number of school pupil passenger injuries. When school pupil passenger injuries are viewed in terms of "per million vehicle miles" traveled, there has been a **45.5**% decrease over the past 20 years.
- As the percentage of California school buses equipped with lap/shoulder belts has increased incrementally since 2004, it is reasonable to believe that school pupil passenger injuries will continue to decrease as more school buses equipped with lap/shoulder belts are added to the state fleet.
- The cost and safety-benefits of lap/shoulder belts demonstrated in California's school buses clearly tip the scales in favor of installing lap/shoulder belts on all new school buses across the nation.

This report also includes the National Transportation Safety Board's report on a school bus crash in Anaheim, California that occurred on April 24, 2014. That report presented the following finding: "Reducing the severity of passenger injuries in the area of maximum intrusion was the proper use of the available lap/shoulder belts by the student passengers seated in this area."

Introduction and Background

Ron Kinney was the State Director of School Transportation for the California Department of Education from 1983 through September 1997. During that span of fourteen years, a total of eight legislative bills related to seat belts in California school buses were introduced. Six bills relating to lap belts failed to pass, one bill calling for a study passed and in 1998, a bill requiring lap/shoulder belts was signed into law.

During this time period, the California Association of School Transportation Officials (CASTO) and the California Department of Education's (CDE) School Transportation Section were successful in arguing against lap belts in school buses for reasons based on multiple laboratory crash test results and the potential injuries that lap belts can cause in young children. However, as a result of a school bus crash and statements from a California Highway Patrol (CHP) officer promoting seat belts in school buses, AB 2030 was introduced by California Assembly Member Martin Gallegos in February of 1998. AB 2030 required lap belts in school buses. In addition to the growing public and political support for seat belts in California school buses, a national campaign led by the National Coalition for School Bus Safety was also spotlighting support for AB 2030. **Important Caveat:**[1]

Caught in a political crossfire and not wanting to end up like the few states that were forced to adopt lap belt-only legislation, representatives from the CDE School Transportation Section met with representatives from CASTO to develop a plan to respond to AB 2030. Both the CDE and CASTO agreed to drop their opposition to AB 2030 if Assembly Member Gallegos would amend AB 2030 deleting lap belts and replacing them with lap/shoulder belts. The amendments also included staggering the implementation until 2004 for Type 2 school buses and 2005 for Type 1 school buses.[2] The delay in the implementation date gave school bus manufacturers time to develop a lap/shoulder belt system for school buses. At this time, there were no Federal Motor Vehicle Safety Standards (FMVSS) directly related to the performance requirements for lap/shoulder belt systems in school buses. However, the school bus manufacturers and members of the supplier industry were working to develop lap/shoulder belts systems for school bus passengers and that work ultimately led to the development of the current FMVSS No. 222 requirements for lap/shoulder belt systems that are required in all small school buses and which are installed in all California Type 1 school buses manufactured on or after July 1, 2005. Assembly Member Gallegos agreed to these amendments, leading to the introduction of AB 15 on December 7, 1998. The legislation passed and the new law became effective January 1, 2002.

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[1] **Important Caveat:** The term "seat belt" is a generic term that describes both a "lap belt" which is old technology and only restrains the lower torso and "lap/shoulder belts" which restrains the upper and lower torso. Unfortunately, the term "seat belt" continues to be used to discuss the efficacy of "lap/shoulder belts", leaving the public confused and/or mislead.

[2] A Type 1 school bus is designed for carrying more than 16 passengers and the driver. A Type 2 is designed for carrying not more than 16 passengers and the driver; or manufactured on or after April 1, 1977, having a manufacturer's gross vehicle weight rating of 10,000 lb. or less, and designed for carrying not more than 20 passengers and the driver. (CVC Section 27316) **Appendix (B)**

As of 2025, there are an estimated 20,900 school buses equipped with lap/shoulder belts operating in California. This represents approximately 90% percent of the total California school bus fleet. The following CHP School Bus Crash Summary and data charts reveal the changes in California's school bus crash data from CY-1994 through FY-2023/24.

Motor Vehicle Traffic Collisions Across California:

In 2020, an estimated 3,750 people were killed on California's roads. The number of California highway deaths has increased by 40% since 2011. Speeding and improper turning (especially left turns) are commonly cited causes of motor vehicle crashes. Nationally, costs from motor vehicle crashes total over 400 billion dollars each year. In California it is estimated that motor vehicle accidents lead to over 5 billion dollars in annual damage. Most of these collisions over the last decade (2011-2019) have occurred in urban areas and on non-state highways, i.e., arterial and local roads.

These fatal and serious crashes typically cluster around "high injury corridors," segments of roadway known to be dangerous that experience high levels of crashes. This is often the result of a volatile mix of poor infrastructure (e.g., wide roadways, vehicle-oriented infrastructure) and high and/or fast traffic volumes.

Additionally, rural areas have a higher fatality rate (measured as fatalities per vehicle mile traveled) compared to urban areas. This may be because of multiple overlapping factors, including road infrastructure (e.g., undivided highways); driver behaviors (e.g., speeding, alcohol use); demographics; and/or other community characteristics (e.g., access to emergency healthcare facilities).

Definition of a California School Bus Accident:

In California, under California Vehicle Code (CVC) §12517.1,[3] the CHP is legally mandated to investigate school bus accidents to ensure the highest standards of safety for students, who are considered some of the most vulnerable members of their community.

A school bus accident in California is never just another traffic accident. These crashes involve children, multiple institutions and a complicated legal system that is costly to navigate. The stakes are high, and the outcome may have long lasting negative impacts on all parties involved. In California, understanding the specific legal definition of a "school bus accident" is important because it triggers mandatory investigations, strict reporting timelines and unique liability rules that differ from standard motor vehicle traffic collisions.

[3] CVC §12517.1 – definition of a school bus accident. **Appendix (C)**

Knowing this definition is critical for the following reasons:

1. **Immediate Reporting Requirements - Driver & Carrier Duties:** Drivers must immediately notify the CHP, their employer and the school district if a pupil was aboard or if an injury occurred due to bus movement (e.g., sudden braking).

2. **Critical Legal Deadlines - Public Entity Claims:** If the accident involves a public school district, victims must file a claim within six months under the California Tort Claims Act. This is significantly shorter than the standard two-year personal injury deadline.

3. **Broad Scope of Liability -** The legal definition includes incidents that many may not be considered typical "accidents," such as:
   - **On-Board Injuries:** Pupils injured inside the bus due to sudden acceleration, deceleration or other vehicle movements, even without a collision.
   - **Loading/Unloading Zone Incidents:** Collisions between a vehicle and a pupil or driver while they are crossing the highway to load or unload, provided red flashing lights were required or active.
   - **Property Damage Thresholds:** Any motor vehicle accident involving a school bus with a pupil aboard that results in property damage exceeding $1,000.

California's Statewide Intergrated Traffic Records System:

California Traffic Collision data is collected by the CHP and stored within the Statewide Integrated Traffic Records System (SWITRS). This database collects and processes data gathered from a collision scene. The Internet SWITRS application is a tool that leverages this database to allow CHP staff, members of its Allied Agencies, as well as researchers and members of the public to request various types of statistical reports in an electronic format.

The application allows for the creation of custom reports requested by the user based on different categories including, but not limited to locations, dates and collision types. The number of injuries displayed in the Total Pupil Passengers Injured chart reflects the total injuries for each period, (Calendar Year or Fiscal Year). From CY-2004 until FY-2015/16, SWITRS also recorded injuries in three additional injury categories – Severe Injury, Moderate Injury, Possible Injury. Unfortunately, starting on FY-2016/17 SWITRS no longer provides passenger injury data in those three categories. Only Total Pupil Passengers injured are now recorded. The following page provides three decades of California school bus crash data. This data reveals notable changes in all the school bus crash and injury categories.

California School Bus Crash Data Summary

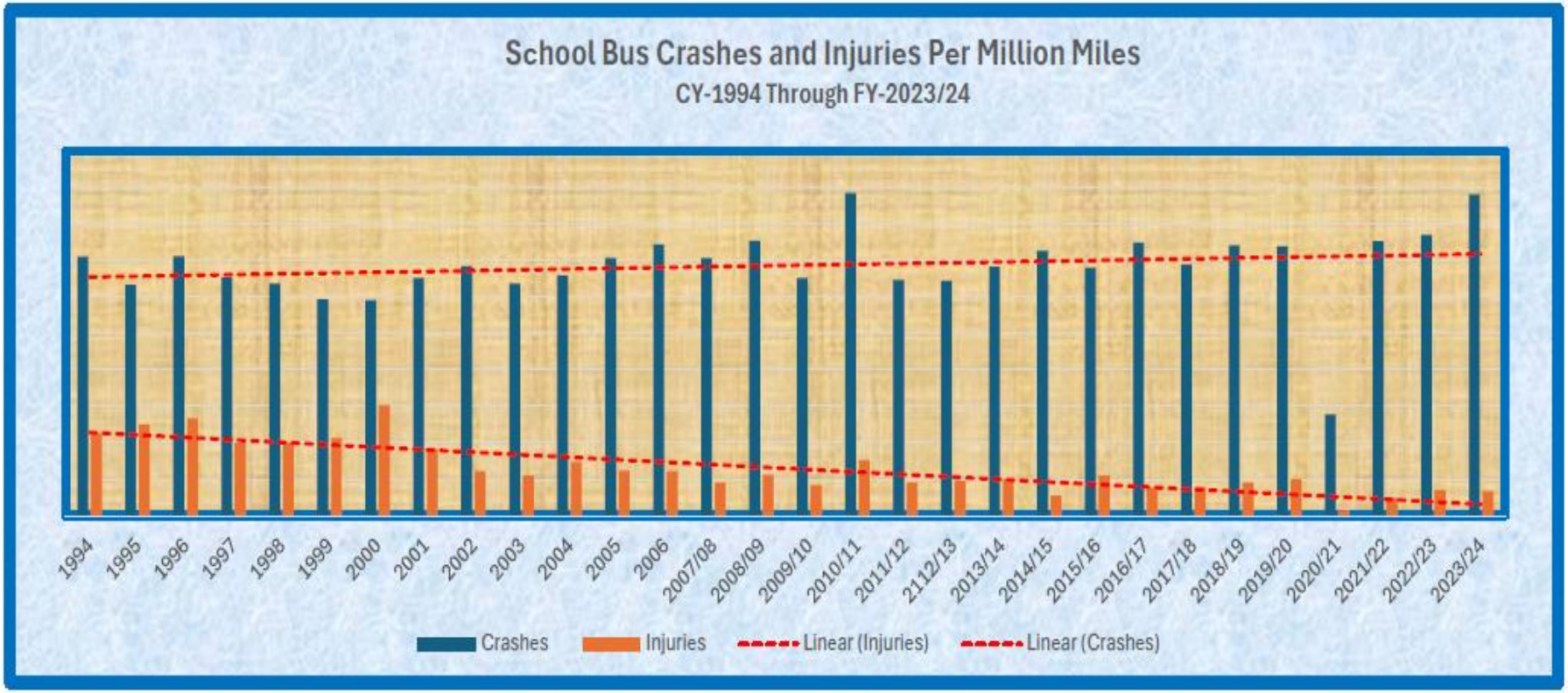
CY - 1994 Through CY - 2003											
CATEGORY	CY-1994	CY-1995	CY-1996	CY-1997	CY-1998	CY-1999	CY-2000	CY-2001	CY-2002	CY-2003	Total
Total School Buses	22,881	22,279	22,342	22,878	24,372	25,273	26,291	25,496	26,171	25,199	243,182
Total Miles Traveled	310,405,620	305,012,946	287,697,152	312,957,435	331,343,687	354,260,319	367,893,624	342,936,178	347,189,181	355,184,350	3,314,880,492
Total School Bus Crashes	2,209	1,930	2,048	2,044	2,108	2,104	2,173	2,238	2,378	2,260	21,492
Total SB Crashes per Million Miles	7.10	6.32	7.11	6.53	6.36	5.93	5.90	6.52	6.84	6.36	65
Total Pupil Passengers Injuried	700	768	769	632	663	758	1,112	629	425	388	6,844
Total Pup. Pas. Injur. Per Million Miles	2.25	2.51	2.67	2.01	2.00	2.13	3.02	1.83	1.22	1.09	18
School Bus Driver at Fault Crashes	874	782	799	832	860	892	891	940	960	933	8,763
Total Pupil Passengers Killed	0	2	0	0	0	0	0	0	0	0	2

CY - 2004 Through FY - 2013/14											
CATEGORY	CY - 2004	CY - 2005	CY - 2006	FY - 2007/08	FY - 2008/09	FY - 2009/10	FY - 2010/11	FY - 2011/12	FY - 2012/13	FY - 2013/14	TOTAL
Total School Buses	26,188	25,414	25,822	25,319	23,678	24,895	21,483	25,152	24,215	24,571	246,737
Total Miles Traveled	347,556,234	323,147,188	315,463,456	312,948,466	277,317,718	288,227,524	199,314,160	240,988,640	271,316,107	267,842,183	2,844,121,676
Total School Bus Crashes	2,292	2,282	2,345	2,215	2,091	1,878	1,763	1,561	1,748	1,828	20,003
Total SB Crashes per Million Miles	6.59	7.06	7.43	7.07	7.54	6.51	8.84	6.47	6.44	6.82	71
Total Pupil Passengers Injuried	512	400	387	284	313	242	304	217	262	266	3,187
Total Pup. Pas. Injur. Per Million Miles	1.47	1.23	1.22	0.90	1.12	0.83	1.52	0.90	0.96	0.99	11
School Bus Driver at Fault Crashes	954	884	990	903	833	726	692	327	231	325	6,865
Total Pupil Passengers Killed	0	0	0	0	0	0	0	0	0	0	0

FY - 2014/15 Through FY - 2023/24											
CATEGORY	FY - 2014/15	FY - 2015/16	FY - 2016/17	FY - 2017/18	FY - 2018/19	FY - 2019/20	FY - 2020/21	FY - 2021/22	FY - 2022/23	FY - 2023/24	TOTAL
Total School Buses	24,575	28,982	27,472	25,661	21,062	21,662	20,333	22,203	21,914	23,265	237,129
Total Miles Traveled	247,106,345	283,812,564	252,137,625	280,801,584	241,523,998	167,209,632	93,742,953	202,612,287	207,176,966	195,405,339	2,171,529,293
Total School Bus Crashes	1,794	1,945	1,886	1,932	1,792	1,236	260	1,524	1,597	1,720	15,686
Total SB Crashes per Million Miles	7.26	6.80	7.48	6.88	7.41	7.39	2.77	7.52	7.70	8.80	70
Total Pupil Passengers Injuried	136	313	191	224	219	167	13	100	147	131	1,641
Total Pup. Pas. Injur. Per Million Miles	0.55	1.10	0.75	0.79	0.90	0.99	0.13	0.49	0.70	0.67	7
School Bus Driver at Fault Crashes	354	434	217	741	713	500	115	569	628	701	4,972
Total Pupil Passengers Killed	0	0	0	0	0	0	0	0	0	0	0

Source: California Highway Patrol School Bus Crash Data

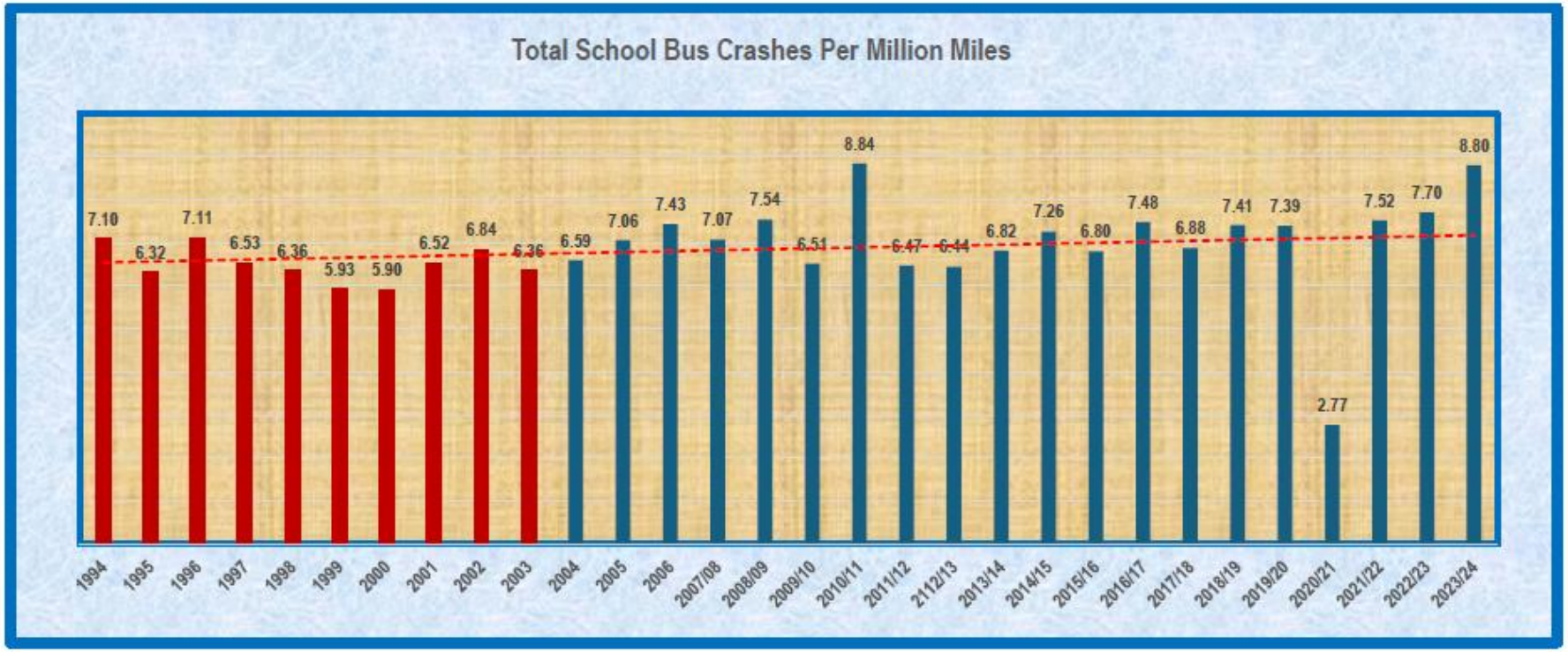
Total School Bus Crashes and Injuries Per Million Miles



The 30-year trendline shows an increase in school bus crashes and a decrease in school pupil passenger injuries per million miles traveled. From CY- 2004 through FY-2023/24 there was a **45.5%** reduction in pupil passenger injuries. In drawing conclusions from the data on this chart, consider the following factors:

- State and local school bus driver training requirements.
- State and local law enforcement and investigation.
- School district pupil management, training policies and enforcement.
- The number of California school buses equipped with lap/shoulder belts.
- The number of pupil passengers wearing lap/shoulder belts.
- The reduction of driver distractions from pupil passengers.

Total School Bus Crashes Per Million Miles

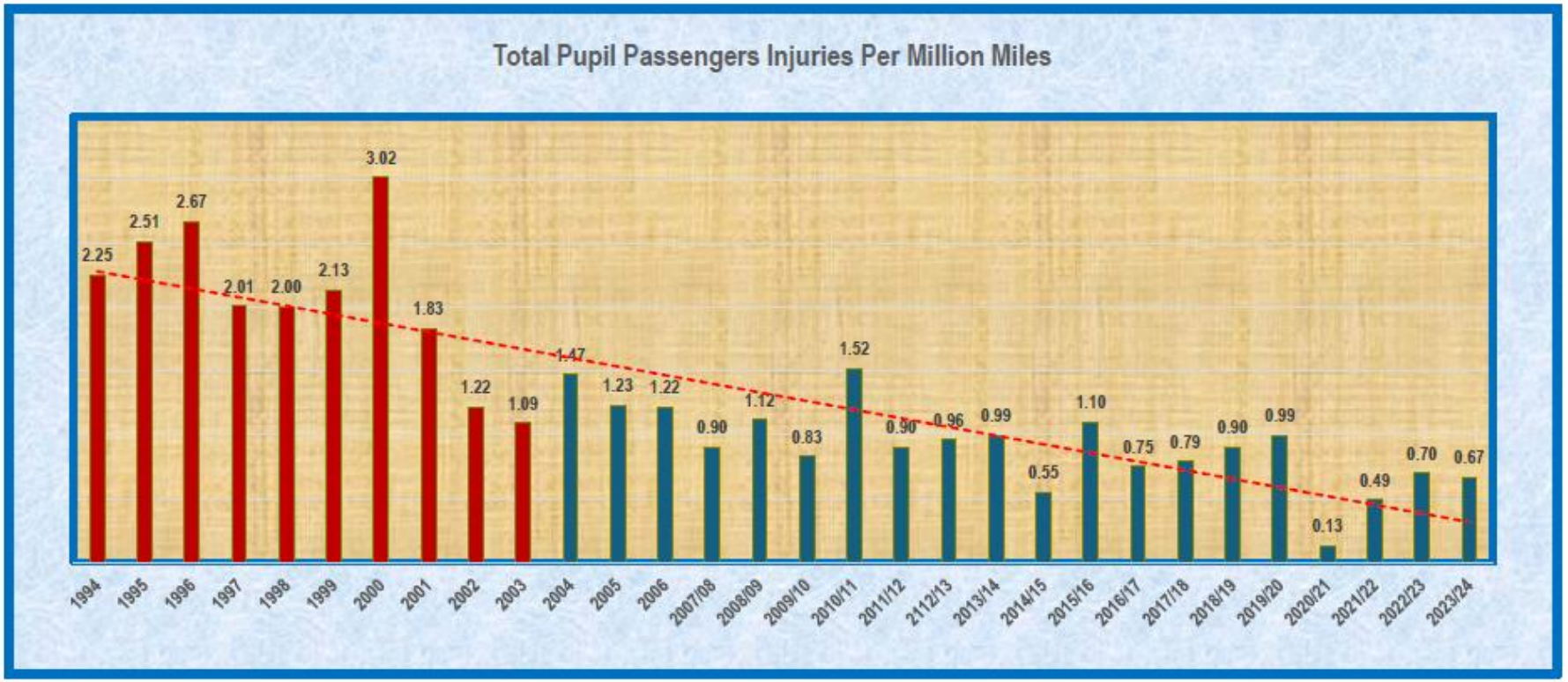


Note: **Red columns are pre-lap/shoulder belt years.** Lap/shoulder belts were required on Type 2 school buses beginning July 1, 2004 and Type 1 school buses beginning July 1, 2005.

The trendline shows a slight increase in school bus crashes per million miles. In drawing conclusions from the data on this chart, consider the following factors:

- School buses equipped with lap/shoulder belts do not positively impact school bus crashes per million miles.
- State and local school bus driver training requirements.
- State and local law enforcement and investigation.
- School district pupil management, training policies and enforcement.
- Type of operation, urban, suburban or rural.
- Climatic conditions – day or night operation, home-to-school or activity trip transportation.

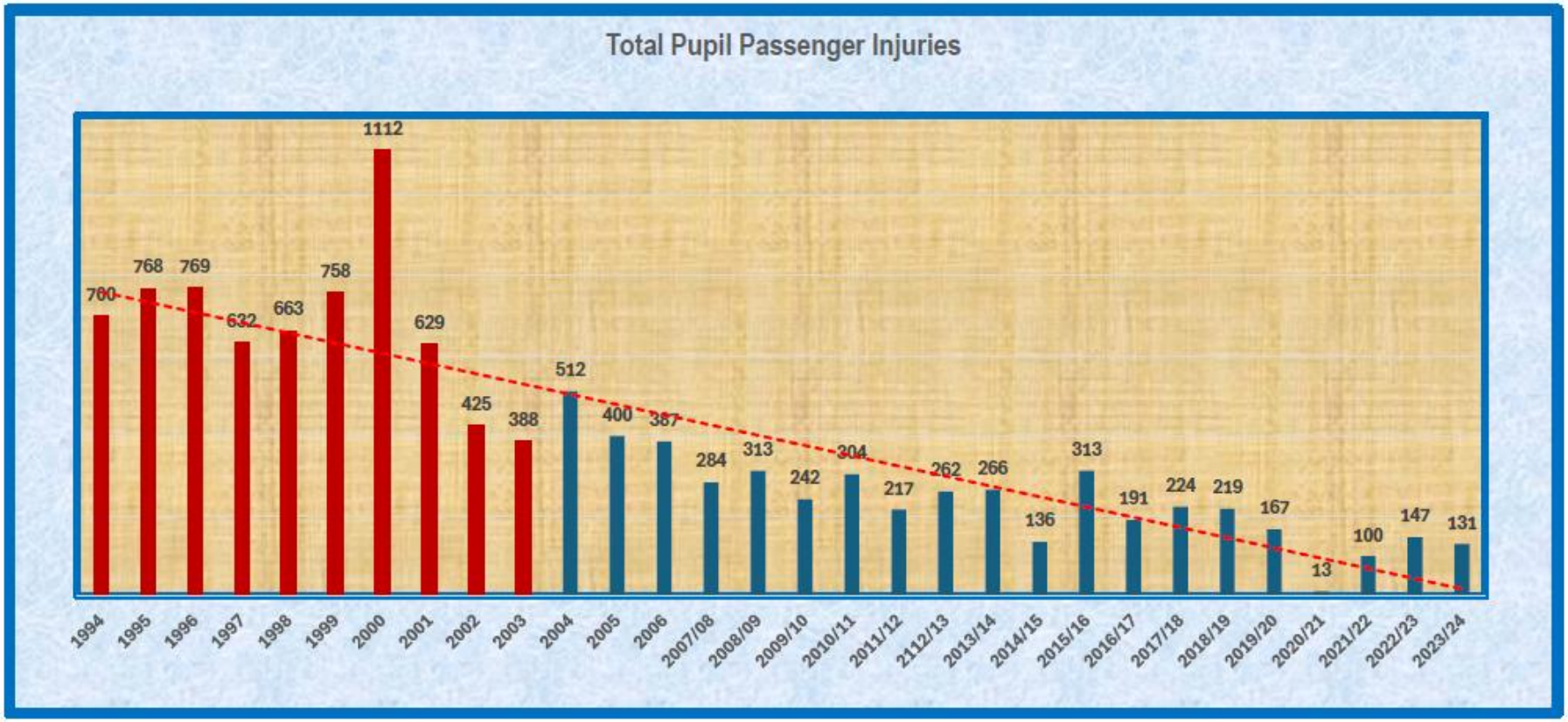
Total Pupil Passenger Injuries Per Million Miles



When trying to draw conclusions from the data on this pupil passenger injury chart, consider the following factors:

- Lap/shoulder belts have a positive impact in reducing pupil passenger injuries per million miles.
- California's reduction in regular education home-to-school transportation.
- California's expansion of special education home-to-school transportation.
- The increased number of California school buses equipped with lap/shoulder belts.
- The number of pupil passengers wearing lap/shoulder belts.
- The reduction of driver distractions from pupil passengers.
- Reduction in driver turnover due to improved pupil behavior/management on school buses equipped with lap/shoulder belts.

Total Pupil Passenger Injuries



(CY-2004 through FY-2023/24, no school pupil passengers were killed during this 20-year reporting period)

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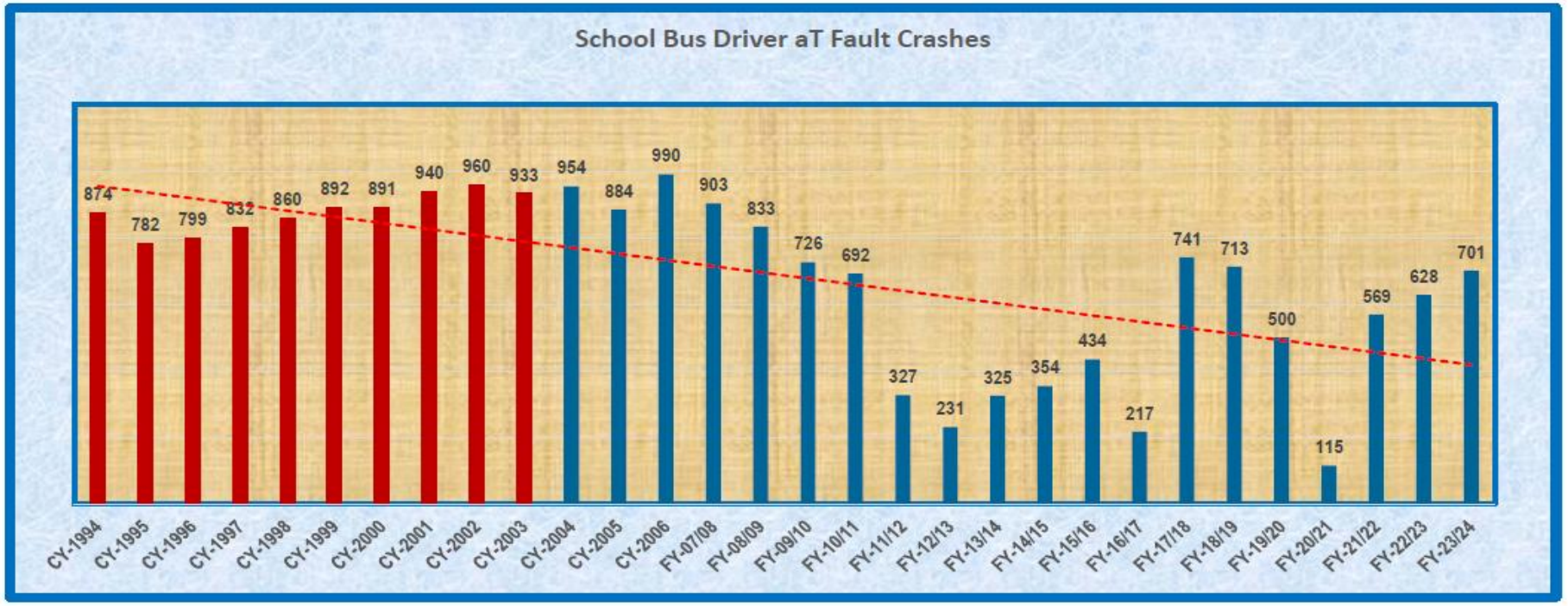
- The reduction of driver distractions from pupil passengers.
- Reduction in driver turnover due to improved pupil behavior/management on school buses equipped with lap/shoulder belts.

Total School Bus Driver at Fault Crashes



Beginning in 2004 the trendline continues downward for twelve years. Beginning in FY-2017/18 the trendline begins and upward movement. When trying to draw conclusions from the data on this chart, consider the following factors:

Downward Trends:

- The effect of lap/should belts in reducing school bus driver distractions.
- The reduced turnover of school bus drivers as a result of improved pupil management on school buses and thereby having more experienced drivers.
- Changes in State or Local school bus driver training programs.
- Traffic patterns in urban, suburban or rural areas.

Upward Trend:

- The loss of senior (age) drivers as a result of COVID concerns.
- The closing of school transportation operations.
- Inadequate training of new school bus drivers.
- Shortage of qualified school bus drivers.

The Lap/Shoulder Belt Revelation:

What have the past 20 years of California school bus crash data revealed? Are school buses equipped with lap/shoulder belts safer than school buses without lap/shoulder belts given that lap/shoulder belt systems provide a higher degree of protection in all types of collisions? While standard school buses are already exceptionally safe due to "compartmentalization" (padded, high-backed, evenly-spaced seating), and other requirements specific to school buses and drivers, lap/shoulder belts address the following safety gaps:

- **Protection in Side Impacts and Rollovers:** Compartmentalization is highly effective, but not perfect, in frontal and rear impacts but of little consequence in lateral, angular or rollover events. When worn properly, lap/shoulder belts keep students securely in their seats during all incidents, preventing them from being thrown from their "compartment" or colliding with other passengers.

- **Injury Reduction Statistics:** Twenty years of the CHP crash data on California school buses equipped with lap/shoulder belts, which began in 2004, show a **74.5%** decrease in the absolute number of school pupil passenger injuries. When school pupil passenger injuries are viewed in terms of “millions of vehicle miles” traveled, there has been a **45.5**% decrease over the past 20 years. As the percentage of California school buses equipped with lap/shoulder belts has increased incrementally over the past 20 years, it is reasonable to believe that school pupil passenger injuries will continue to decrease as more school buses equipped with lap/shoulder belts are added to the state fleet.

- **Operational Safety, Improved Behavioral and Pupil Passenger Lap/shoulder Belt Use:** Districts using school buses equipped with lap/shoulder belts report a reduction in disciplinary problems and driver distractions which directly reduces the risk of accidents caused by driver errors. While the exact number of pupil passengers properly using lap/shoulder belts is unknown, the reduction in pupil passenger injuries which begin to decline around FY-2007/08 suggest that as new school buses were added to the fleet, more and more pupil passengers had the opportunity to use the lap/shoulder belt system. For many Pre-K and elementary grade pupils this was a normal transition since they had been belted in the family car all their lives. By 2016 all pupils from Pre-K through grade 12 had been exposed to lap/shoulder belts on California school buses. It was anticipated, as a matter of habit, that a high percentage of school pupil passengers would use lap/should belts on school buses so equipped.

This also contributes to reduced driver turnover by creating a safer, less stressful and more rewarding work environment. By physically containing students, these belts address the primary stressors that lead drivers to leave the profession.

Key benefits of lap/shoulder belts for a school bus driver:

- **Significant Reduction in Driver Distraction:** Belts keep students in their seats and out of the aisles, allowing drivers to focus on the road instead of monitoring inside mirrors for misconduct. This reduction in distraction is directly linked to higher job satisfaction.
- **Lowered Stress and Improved Workplace Climate:** A calmer and quieter bus environment leads to lower driver stress. Districts have reported that once initial skepticism is overcome, drivers become strong proponents of lap/shoulder belts because their daily work lives become easier to manage.
- **Reduced Administrative Burden:** With fewer behavior write-ups, drivers spends less time on disciplinary paperwork and in-office meetings with administrators.
- **Improved Route Efficiency:** Drivers are less likely to have to pull the bus over to address discipline issues, helping them stay on schedule and reducing the frustration of chronic lateness.
- **Enhanced Driver Safety and Control:** In the event of sudden swerving or hard braking, lap/shoulder-belted passengers are less likely to be thrown into the aisle or even the driver, helping the driver maintain vehicle control and avoid accidents.
- **Increased Professional Empowerment:** When drivers are trained to enforce consistent lap/shoulder belt usage policies, they view lap/shoulder belts as a professional tool that simplifies their job, leading to higher retention rates.

- **Crash Evidence:** The National Transportation Safety Board (NTSB) routinely investigates and issues reports on serious school bus crashes. NTSB report # HAB-16-06 deals with an April 24, 2014, school bus crash in Anaheim, California, and includes the following finding: “Reducing the severity of passenger injuries in the area of maximum intrusion was the proper use of the available lap/shoulder belts by the student passengers seated in this area.” See Appendix A for photographs of the Anaheim crash and more details on NTSB’s thorough investigation.

- **Pupil Passenger Safety Training Requirements:** California Education Code §39831.5 [4] requires the following: At least once in each school year, all pupils in prekindergarten, kindergarten, and grades 1 to 8, inclusive, who receive home-to-school transportation shall receive safety instruction that includes, but is not limited to, instruction on the use of passenger restraint systems, proper passenger conduct, bus evacuation, and location of emergency equipment. Instruction also may include responsibilities of passengers seated next to an emergency exit. As part of the instruction, pupils shall evacuate the school bus through emergency exit doors. CCR §14102[4] requires bus evacuation Instruction for all pupils transported in a school bus.

- **Mandated Lap/Shoulder Belts:** The safety benefits of lap/shoulder belts are contingent upon the mandated requirement, enforcement and proper use. If lap/shoulder belts are misused (e.g., the shoulder portion is placed behind the back), they can increase the risk of serious neck or abdominal injuries in all crash scenarios. However, when used correctly, lap/shoulder belts are recognized by every motor vehicle safety organization in the world as the "best overall" passenger protection system in any type of motor vehicle.

- **Loss of Passenger Capacity:** While this was a concern 20 years ago, the issue of lost passenger capacity has been addressed by school bus manufacturers. Large 78-passenger school buses equipped with lap/shoulder belts are available for purchase and have been added to many school bus fleets throughout the United States.

- **Increased Cost of a School Bus:** Based on the large reduction in pupil passenger injuries revealed in this report since the implementation of lap/shoulder belts in all new California school buses, the cost-benefits of lap/shoulder belts clearly tip the scales in favor of installing lap/shoulder belts on all new school buses across the nation. While there have been no school bus passenger fatalities in California during the past 20 years, the reduction in pupil passenger injuries more than justifies the few thousands of dollars initial cost. When spread over the average 20-year life cycle of a California school bus, the cost is around $500.00 per year. And, if you consider the number of trips per school year and the number of pupils transported each day, the cost is pennies per child per day. The litigation costs, not to mention the costs of settling a court case, can easily be measured in millions of dollars. The financial litigation risks, along with the pain and suffering of a pupil passenger and their family, is something to consider when drawing conclusions on the results and use of this report.

[4] CEC §35831.5 – Pupil Passenger Safety Training Requirements. **Appendix (E)** CCR §14102 Bus Evacuation Instruction. **Appendix (F)**

APPENDIX (A)

National Transportation Safety Board
Highway Accident Brief
School Bus Roadway Departure

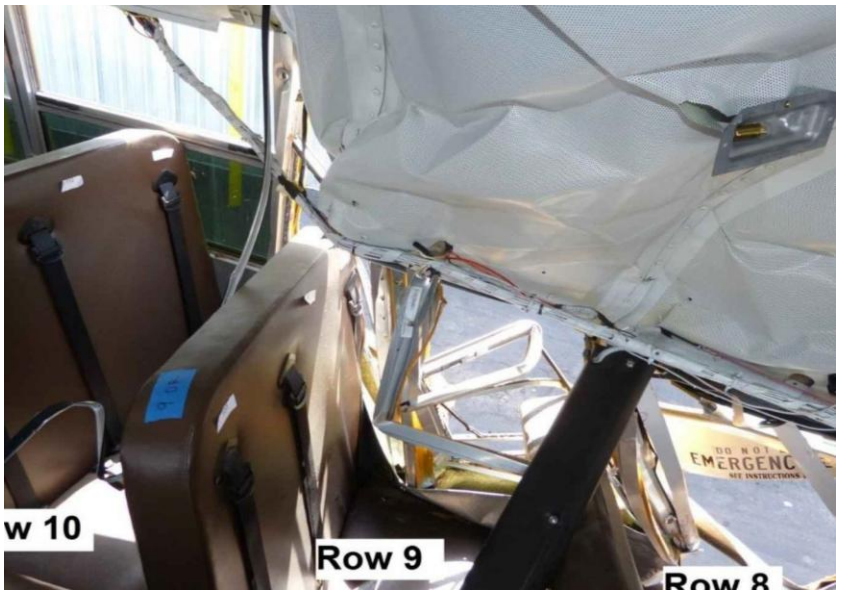
HAB-16-06 EXCERPTS

Accident Number:	HWY14H010
Accident Type:	School Bus Roadway Departure
Location:	Nohl Ranch Canyon Road, Anaheim, Orange Co. California
Date and Time:	April 24, 2014, about 3:37 p.m. Pacific daylight time
Vehicles:	2012 Blue Bird 78 passenger school bus (Type D)
Fatalities:	0
Injuries:	10 (5 serious. 5 minor)

Crash Description

About 3:37 p.m. Pacific daylight time on Thursday, April 24, 2014, a 2012 Blue Bird 78-passenger All American school bus, operated by the Orange Unified School District in Anaheim, California, and occupied by a 24-year-old male driver and 11 students, aged 12–14 years old, was returning children home from the El Rancho Charter Middle School. The bus was traveling northbound in the 6500 block of Nohl Ranch Canyon Road in Anaheim. The posted speed limit was 35 mph, but the bus was traveling at a video-estimated speed of 43 mph when it left the roadway.1 The weather was clear, and the roadway was dry.

APPENDIX (A)



APPENDIX (A)

According to witnesses, while the school bus was traveling downhill on Nohl Ranch Canyon Road, its speed increased and it traveled out of its lane to the right. The bus left the roadway and overrode the right curb, where it struck and dislodged a concrete light post. The bus continued up an embankment, where its front struck and uprooted a tree. The left side of the bus also scraped along a large tree from the front axle to the rear axle. The bus came to rest at an approximate 30-degree angle on the embankment, leaning onto this same tree, which was in contact with the left side of the bus just aft of the left-side emergency exit door and just forward of the rear wheels.

Occupant Crash Simulations:

Because of the injuries sustained by the students in row 8 and the general vulnerability of students in the regions of intrusion, simulations were conducted to better understand the restraining action of the passenger lap/shoulder belts based on a reconstruction of the crash dynamics. The simulations were used to understand where row 8 students might have been at the time of the intrusion into their seat row if they had been belted with lap-only seat belts or if they had been unbelted. These results were then compared to simulations with lap/shoulder-belted occupants.

School Bus Roadway Departure:

Results for unbelted occupants. Generally, the simulations predicted the lowest injury levels for the lap/shoulder-belted occupants. The simulations predicted that both unbelted occupants would have been thrown toward the area of tree intrusion, and they most likely would have been either partially or fully ejected as a result of being in that region at that time.

Results for lap-belted occupants. Although in the simulations the entire bodies of the lap-belted occupants were not thrown toward the area of tree intrusion, their upper bodies still flailed in that direction. As a result of their positions, both lap-belted occupants would have been vulnerable to upper body injury due to the tree intrusion.

Results for lap/shoulder-belted occupants. The simulations indicated that lap/shoulder-belted occupants would have been generally retained within their seating compartment. Their upper body flailing was still directed to the left, but the magnitude of the movement was greatly reduced.

APPENDIX (A)

The simulations showed that lap/shoulder-belted occupants had the best retention in the seats with the lowest potential for occupant-to-occupant contacts and occupant-to-interior contacts, which are common in severe lateral impacts involving unbelted school bus occupants. The simulations also indicated that while restrained with a lap/shoulder belt, the occupant seated nearest the area of intrusion (seat 8A) maintained a more upright position than that person would have maintained if restrained only by a lap belt.

The simulations show that their injuries would probably have been greater if the occupants of row 8 had not been restrained by the lap/shoulder belts. Therefore, the NTSB concludes that the properly worn lap/shoulder belts of the two occupants of the row 8 seats most likely reduced their injuries related to upper body flailing, which are commonly seen when occupants are restrained 15 NTSB/HAB-16/06 School Bus Roadway Departure only by lap belts. Further, the NTSB concludes that the properly worn lap/shoulder belts reduced passenger motion toward the intruding tree, which probably reduced the severity of the injuries sustained, especially for the student in seat 8C.

In its 2013 Chesterfield report, the NTSB issued Safety Recommendation H-13-36 to the National Association for Pupil Transportation, National Association of State Directors of Pupil Transportation Services, and National School Transportation Association:

> Provide your members with educational materials on lap and shoulder belts providing the highest level of protection for school bus passengers and advise states or school districts to consider this added safety benefit when purchasing seat belt-equipped school buses. (H-13-36)

Safety Recommendation H-13-36 is classified “Open—Acceptable Alternate Response” for the National Association for Pupil Transportation and the National School Transportation Association. It is classified “Open–Acceptable Response” for the National Association of State Directors of Pupil Transportation Services. Based on the evidence of the benefits provided by the properly worn lap/shoulder belts in this crash, the NTSB reiterates Safety Recommendation H-13-36 to all three recipients.

APPENDIX (A)

Probable Cause

The National Transportation Safety Board determines that the probable cause of the Anaheim, California, crash was the driver's loss of consciousness, resulting in his loss of control of the school bus, which departed the roadway and collided with a light pole and trees. Reducing the severity of passenger injuries in the area of maximum intrusion was the proper use of the available lap/shoulder belts by the student passengers seated in this area.

New Recommendation

As a result of its investigation, the National Transportation Safety Board makes the following safety recommendations:

To the National Association for Pupil Transportation, National Association of State Directors of Pupil Transportation Services, and National School Transportation Association:

Inform school bus drivers of the impact their health may have on the safe transportation of school children, of their responsibility to accurately and completely report their health history and medications, and of the legal consequences of dishonesty on the medical examination report. (H-16-7)

School Bus Roadway Departure

Reiterated Recommendations

As a result of its investigation, the National Transportation Safety Board reiterates the following safety recommendations:

To the Federal Motor Carrier Safety Administration:

Develop a comprehensive medical oversight program for interstate commercial drivers that contains the following program element: Individuals performing examinations have specific guidance and a readily identifiable source of information for questions on such examinations. (H-01-20)

APPENDIX (A)

To the state of California:

Develop (1) a handout for your school districts to distribute annually to students and parents about the importance of the proper use of all types of passenger seat belts on school buses, including the potential harm of not wearing a seat belt or wearing one but not adjusting it properly; and (2) training procedures for schools to follow during the twice yearly emergency drills to show students how to wear their seat belts properly. (H-13-32)

To the National Association of State Directors of Pupil Transportation Services:

Encourage your members to ensure that any onboard video system in their vehicles provides visibility of the driver and of each occupant seating location, visibility forward of the vehicle, optimized frame rate, and low-light recording capability. (H-15-2)

To the National Association for Pupil Transportation, National Association of State Directors of Pupil Transportation Services, and National School Transportation Association:

Provide your members with educational materials on lap and shoulder belts providing the highest level of protection for school bus passengers and advise states or school districts to consider this added safety benefit when purchasing seat belt-equipped school buses. (H-13-36)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD
Adopted: October 11, 2016

APPENDIX (B)

Effective January 1, 2002, the following was added to the California Vehicle Code:

School Bus:

California Vehicle Code §27316.

(a) Unless specifically prohibited by the National Highway Transportation Safety Administration, all schoolbuses purchased or leased for use in California shall be equipped at all designated seating positions with a combination pelvic and upper torso passenger restraint system, if the school bus is either of the following:

(1) **Type 1**, as defined in paragraph (1) of subdivision (b) of Section 1201 of Title 13 of the California Code of Regulations, and is manufactured on or after **July 1, 2005**.

(a) Type 1 school bus is designed for carrying more than 16 passengers and the driver

(2) **Type 2**, as defined in paragraph (2) of subdivision (b) of Section 1201 of Title 13 of the California Code of Regulations, and is manufactured on or after **July 1, 2004**.

(a) Type 2 school bus is designed for carrying not more than 16 passengers and the driver; or manufactured on or after April 1, 1977, having a manufacturer's gross vehicle weight rating of 10,000 lb or less, and designed for carrying not more than 20 passengers and the driver.

(b) For purposes of this section, a "passenger restraint system" means any of the following:

(1) A restraint system that is in compliance with Federal Motor Vehicle Safety Standard 209, for a type 2 seatbelt assembly, and with Federal Motor Vehicle Safety Standard 210, as those standards were in effect on the date the school bus was manufactured.

(2) A restraint system certified by the school bus manufacturer that is in compliance with Federal Motor Vehicle Safety Standard 222 and incorporates a type 2 lap/shoulder restraint system.

(c) No person, school district, or organization, with respect to a school bus equipped with passenger restraint systems pursuant to this section, may be charged for a violation of this code or any regulation adopted thereunder requiring a passenger to use a passenger restraint system, if a passenger on the school bus fails to use or improperly uses the passenger restraint system.

(d) It is the intent of the Legislature, in implementing this section, that school pupil transportation providers work to prioritize the allocation of schoolbuses purchased, leased, or contracted for on or after July 1, 2004, for type 2 schoolbuses, or on or after July 1, 2005, for type 1 schoolbuses, to ensure that elementary level schoolbus passengers receive first priority for new schoolbuses whenever feasible.

APPENDIX (C)

School Pupil Activity Bus (SPAB):

California Vehicle Code §27316.5.

(a) Unless specifically prohibited by the National Highway Transportation Safety Administration, all type 2 school pupil activity buses, manufactured on or after July 1, 2004, purchased or leased for use in California shall be equipped at all designated seating positions with a combination pelvic and upper torso passenger restraint system.

(b) For purposes of this section, a "passenger restraint system" is either of the following:

(1) A restraint system that is in compliance with Federal Motor Vehicle Safety Standard 209, for a type 2 seatbelt assembly, and with Federal Motor Vehicle Safety Standard 210, as those standards were in effect on the date that the school pupil activity bus was manufactured.

(2) A restraint system certified by the school pupil activity bus manufacturer that is in compliance with Federal Motor Vehicle Safety Standard 222 and incorporates a type 2 lap-shoulder restraint system.

(c) No person, school district, or organization, with respect to a type 2 school pupil activity bus equipped with passenger restraint systems pursuant to this section, may be charged for a violation of this code or any regulation adopted thereunder requiring a passenger to use a passenger restraint system, if a passenger on the school pupil activity bus fails to use or improperly uses the passenger restraint system

Effective November 9, 2004, the following section was added to the California Code of Regulation, Title 5, Education:

§14105. School Bus and School Pupil Activity Bus (SPAB) Passenger Restraint System Use.

All passengers on a school bus or a school pupil activity bus that is equipped with passenger restraint systems in accordance with sections 27316 and 27316.5 of the Vehicle Code, shall use the passenger restraint system. All pupils described in subdivision (a) of Education Code Section 39831.5, shall be instructed in an age-appropriate manner in the use of passenger restraint systems required by Education Code Section 39831.5(a)(3). The instruction shall include, but not be limited to, the following information:

(a) Proper fastening and release of the passenger restraint system:

(1) Fastening: To fasten, insert the latch plate (the metal “tongue” attached to one side of the webbing) into the proper buckle (the receptacle that comes out from the “bight” in the back of the seat, a slot in the seat cushion, or from the side). The latch plate inserts into the buckle until you hear an audible snap sound and feel it latch. Make sure the latch plate is securely fastened in the buckle.

(2) Unfastening: To unfasten, push the buckle release button and remove the latch plate from the buckle. The buckle has a release mechanism that, when manually operated during “unbuckling,” breaks the bond and separates the two sections.

(b) Acceptable placement of passenger restraint systems on pupils: Adjust the lap belt to fit low and tight across the hips/pelvis, not the stomach area. Place the shoulder belt snug across the chest, away from the neck. Never place the shoulder belt behind the back or under the arm. Position the shoulder belt height adjuster so that the belt rests across the middle of the shoulder. Failure to adjust the shoulder belt properly would reduce the effectiveness of the lap/shoulder belt system and increase the risk of injury in a collision.

(c) Times at which the passenger restraint system should be fastened and released: Passenger restraint systems shall be used at all times the school bus or school pupil activity bus is in motion except when exempted in subdivisions (e) and (f) of this section.

(d) Acceptable placement of the passenger restraint systems when not in use: When not in use, passenger restraint systems shall be fully retracted into the retractors so that no loose webbing is visible or stored in a safe manner per the school bus manufacturer's instructions.

(e) This section does not apply to a passenger with a physically disabling condition or medical condition which would prevent appropriate restraint in a passenger restraint system, providing that the condition is duly certified by a licensed physician or licensed chiropractor who shall state in writing the nature of the condition, as well as the reason the restraint is inappropriate.

(f) This section also does not apply in case of any emergency that may necessitate the loading of school children on a school bus in excess of the limits of its seating capacity. As used in this section, “emergency” means a natural disaster or hazard (as determined by the school district superintendent or their designee) that requires pupils to be moved immediately in order to ensure their safety.

APPENDIX (D)

California Vehicle Code: §12517.1:

(a) A "schoolbus accident" means any of the following:

(1) A motor vehicle accident resulting in property damage in excess of one thousand dollars ($1,000), or personal injury, on public or private property, and involving a schoolbus, youth bus, school pupil activity bus, or general public paratransit vehicle transporting a pupil.

(2) A collision between a vehicle and a pupil or a schoolbus driver while the pupil or driver is crossing the highway when the schoolbus flashing red signal lamps are required to be operated pursuant to Section 22112 or when the schoolbus is stopped for the purpose of loading or unloading pupils.

(3) Injury of a pupil inside a vehicle described in paragraph (1) as a result of acceleration, deceleration, or other movement of the vehicle.

(b) The Department of the California Highway Patrol shall investigate all schoolbus accidents, except that accidents involving only property damage and occurring entirely on private property shall be investigated only if they involve a violation of this code.

APPENDIX (E)

California Education Code §39831.5.

(a) All pupils in prekindergarten, kindergarten, and grades 1 to 12, inclusive, in public or private school who are transported in a schoolbus or school pupil activity bus shall receive instruction in schoolbus emergency procedures and passenger safety. The county superintendent of schools, superintendent of the school district, or owner/operator of a private school, as applicable, shall ensure that the instruction is provided as follows:

(1) Upon registration, the parents or guardians of all pupils not previously transported in a schoolbus or school pupil activity bus and who are in prekindergarten, kindergarten, and grades 1 to 6, inclusive, shall be provided with written information on schoolbus safety. The information shall include, but not be limited to, all of the following:

(A) A list of schoolbus stops near each pupil's home.

(B) General rules of conduct at schoolbus loading zones.

(C) Red light crossing instructions.

(D) Schoolbus danger zone.

(E) Walking to and from schoolbus stops.

(2) At least once in each school year, all pupils in prekindergarten, kindergarten, and grades 1 to 8, inclusive, who receive home-to-school transportation shall receive safety instruction that includes, but is not limited to, proper loading and unloading procedures, including escorting by the driver, how to safely cross the street, highway, or private road, instruction on the use of passenger restraint systems, as described in paragraph (3), proper passenger conduct, bus evacuation, and location of emergency equipment. Instruction also may include responsibilities of passengers seated next to an emergency exit. As part of the instruction, pupils shall evacuate the schoolbus through emergency exit doors.

(3) Instruction on the use of passenger restraint systems, when a passenger restraint system is installed, shall include, but not be limited to, all of the following:

(A) Proper fastening and release of the passenger restraint system.

(B) Acceptable placement of passenger restraint systems on pupils.

(C) Times at which the passenger restraint systems should be fastened and released.

(D) Acceptable placement of the passenger restraint systems when not in use.

(4) Prior to departure on a school activity trip, all pupils riding on a schoolbus or school pupil activity bus shall receive safety instruction that includes, but is not limited to, location of emergency exits, and location and use of emergency equipment. Instruction also may include responsibilities of passengers seated next to an emergency exit.

(b) The following information shall be documented each time the instruction required by paragraph (2) of subdivision (a) is given:

(1) Name of school district, county office of education, or private school.

(2) Name and location of school.

(3) Date of instruction.

(4) Names of supervising adults.

(5) Number of pupils participating.

(6) Grade levels of pupils.

(7) Subjects covered in instruction.

(8) Amount of time taken for instruction.

(9) Busdriver's name.

(10) Bus number.

(11) Additional remarks.

The information recorded pursuant to this subdivision shall remain on file at the district or county office, or at the school, for one year from the date of the instruction, and shall be subject to inspection by the Department of the California Highway Patrol.

(Amended by Stats. 2003, Ch. 552, Sec. 13. Effective January 1, 2004.)

APPENDIX (F)

CCR §14102 - Bus Evacuation Instruction California Code of Regulations, Title 5, Education

Each school year, the governing board shall provide, and require each pupil who is transported from home to school in a school bus to receive, appropriate instruction in safe riding practices and emergency bus evacuation drills.

Note: Authority cited: Sections 39831, Education Code. Reference: Section 39830 and 39831, Education Code.

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