Tackling the Challenges in School and Head Start Transportation in 2021

Stephanie Shaw
Safety Advocate
Stephanie.Shaw@ntsb.gov
Lifesavers Conference on Highway Safety Priorities

Overview

- NTSB background
- Investigations of seat belt equipped school buses
  - Concussion Study
  - Rochester, Indiana investigation

Our Mission

The NTSB is an independent Federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in the other modes of transportation – highway, marine, railroad and pipeline – and issuing safety recommendations aimed at preventing future accidents.
Board Members and Staff

5 Board Members
- Chairman Robert L. Sumwalt
- Vice Chairman Bruce Landsberg
- Jennifer Homendy
- Michael Graham
- Tom Chapman

- 400 staff (HQ, 4 Regional Offices, Training Center)

Best Occupant Protection

- Compartamentalization
  - Works well for all seated occupants and all occupant sizes
  - Requires no passenger action
  - Designed for longitudinal impacts

- Seat Belts
  - Significantly increases protection for side impacts and rollovers

- Encouraged by the school districts and states who have taken action to equip their school buses with seat belts

NTSB Investigations of Seat Belt Equipped School Buses

- Central Bridge, NY - 1999
- Conasauga, TN - 2000
- Milton, FL - 2008
- Chesterfield, NJ - 2012
- Port Saint Lucie, FL - 2012
- Anaheim, CA - 2014
Port St. Lucie, Florida: What Happened

- April 24, 2014, about 3:37 p.m.
- School bus departed roadway at about 43 mph, struck pole and trees climbing a ~30 degree embankment
- Partial roll onto embankment, sliding/lateral impact
- 5 serious injuries, including driver, 5 minor, 2 uninjured
- Lap/shoulder belts
- On-board video

Anaheim, California: What Happened

- April 24, 2014, about 3:37 p.m.
- School bus departed roadway at about 43 mph, struck pole and trees climbing a ~30 degree embankment
- Partial roll onto embankment, sliding/lateral impact
- 5 serious injuries, including driver, 5 minor, 2 uninjured
- Lap/shoulder belts
- On-board video
Conclusions

- Properly worn lap/shoulder belts reduce injuries related to upper body flailing
- Educate students, parents and school districts about proper belt use on school buses

Chattanooga, Tennessee: What Happened

- November 21, 2018
- 24-year-old driver and 37 students on-board
- 62-mph in 30-mph speed limit zone
- Excessive speed resulted in loss of control
Chattanooga, Tennessee: What Happened

- Student passengers
  - 6 fatalities
  - 26 serious-to-minor injuries
  - 5 uninjured
- School bus driver
  - Uninjured

Chattanooga, Tennessee: What Happened

- Passengers in front of bus vulnerable to ejection
- All vulnerable to secondary impact
- More students thrown into rather than out of intrusion zone
- Loss of benefits of compartmentalization

Seat Belts on Large School Buses

- NTSB has recommended seat belts on school buses
- Federal Motor Vehicle Safety Standard (FMVSS) 222
  - Established performance standards for voluntary installation of lap/shoulder belts on large school buses
- School districts using seat belts
  - Reduced driver distraction, improved student behavior
Recommendation to States:

- Amend your statutes to upgrade the seat belt requirement from lap belts to lap/shoulder belts for all passenger seating positions in new large school buses in accordance with Federal Motor Vehicle Safety Standard 222.
- Enact legislation to require that all new large school buses be equipped with passenger lap/shoulder belts for all passenger seating positions in accordance with Federal Motor Vehicle Safety Standard 222.

Purpose

Present changes in baseline concussion assessment scores as a result of school bus crash.
Concussion Management Program

- Immediate Post-Concussion Assessment and Cognitive Testing (ImPact)
- Pre-Injury testing (established baseline)
- Post-injury testing
- Program
  - Demographic data
  - Neurocognitive and balance tests
  - Post-concussion symptom scale

Results

- 16/30 athletes (53.3%) had significant post-crash cognitive changes suggestive of a concussion
- Mean symptom duration: 26 days
  - Range: 6 – 101 days
Results

Changes in Baseline Concussion Assessment Scores Following a School Bus Crash

Kristin Poland, Mary Pat McKay, Mark Zonfrillo, Thomas Barth, Ronald Kaminski

Assoc. for the Advancement of Automotive Medicine
September 19, 2016

(Published in Traffic Injury Prevention, Vol. 17)

School Bus Transportation: Pedestrian Safety
Rochester, Indiana: What Happened
• About 7:12 am, October 30, 2018
• School bus was stopped with red lights on and stop arm deployed
• Approaching traffic passed a “WATCH FOR SCHOOL BUS” sign
• No roadway lighting

Rochester, Indiana: Why it Happened
The pickup truck driver’s failure to stop for the school bus for unknown reasons, despite its clearly visible warning lights and stop arm, as well as a roadway warning sign indicating an upcoming school bus stop.
Contributing to the crash was the Tippecanoe Valley School Corporation’s
• Inadequate safety assessment of school bus routes that required student pedestrians to cross a 55-mph roadway, increasing the risk of injury during a collision
• Failure to establish a clear policy for bus drivers to follow in determining when it is safe to signal students to cross the roadway

Rochester, Indiana: Safety Issues
• Deficiencies in establishing safe school bus routes and stop locations
• Failure of other drivers to stop or otherwise respond safely when approach a school bus that is stopped with its warning lights on and stop are extended
• Need for greater use of technologies to prevent collisions with, and mitigate injuries of, student pedestrians, include V2V, pedestrian AEB, and school bus safety-enhancing technologies.
Transportation Director Training

- Responsible for student safety and route planning
- Transportation 101
  - Not mandatory
  - Less than 2% of all directors have attended

Student Training

- Conduct
- Emergency evacuation
- Universal crossing signal
  - Horn used as warning signal

Summary

- Students were required to cross high-speed roadway
- Safety of the route
  - Not evaluated
  - No tracking
- Training deficiencies
  - Drivers
  - Transportation director
  - Students
Rochester, Indiana: What We Recommended

- 12 new safety recommendations and 3 reiterated recommendations related to:
  - Connected Vehicle and collision avoidance technology
  - Legislation to permit use of stop arm cameras
  - Training for school transportation directors and others on evaluating school bus routes and stop risks
  - Driver and student training

Enforcement Technology
Stop Arm Cameras

Source: buspatrol.com

Rochester, Indiana: Webinar

Source: National Transportation Safety Board
Get the latest episode on Apple Podcasts, Google Play, Stitcher, or your favorite podcast platform.

NTSB DIGITAL PLATFORMS
- Twitter - @NTSB
- Facebook - @NTSBgov
- Instagram - @NTSBgov
- LinkedIn - linkedin.com/company/NTSB
- YouTube - youtube.com/user/NTSBgov
- Flickr - flickr.com/photos/ntsb/
CONTACT INFORMATION

Stephanie Shaw
Stephanie.Shaw@ntsb.gov
(202) 236-1428