

Alabama School Bus Seat Belt Project

The Governor's Study Group on School Bus Seat Belts
and the Alabama Department of Education

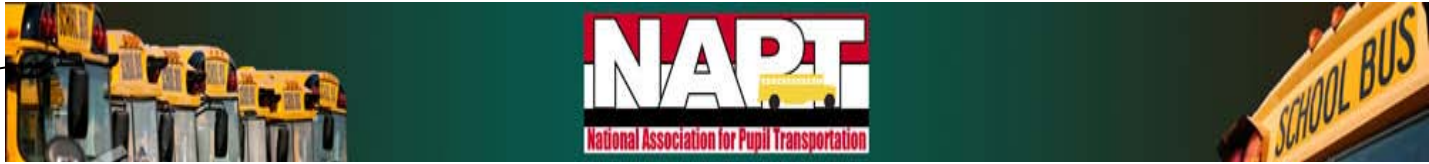
By

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The University of Alabama

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Outline

- School buses in Alabama
- Major research initiatives
 - Stakeholder attitudes
 - Safety Effectiveness of Seatbelts
 - Seat belt use rates
 - Seat belt effects on capacity
 - Cost effectiveness
- Summary and Recommendations



“Alabama is to be commended for adding much needed, common sense information to the body of knowledge....

“This, along with crash tests and data analysis, is critical and long overdue to help put to rest the question of whether school buses should have lap-shoulder belts.”

Huntsville crash, November 2006

- Plunged 30 ft from interstate
- Driver was ejected, injured
- 4 students killed
- 33 students injured
- 3 students unharmed



Governor's Task Group

- Found no complete studies
- Federal agencies did not know answers
- They decided
 - Do no harm
 - Get own data
 - Fund pilot study

Pilot Study

- Goal: assess impact of installation of lap/shoulder belts on Alabama school buses
- 12 buses
- 10 school systems
 - 6 Counties: Autauga, Calhoun, Conecuh, Elmore, Perry, Tuscaloosa
 - 4 Cities: Boaz, Decatur, Dothan, Madison
- Total Cost: \$1.4M

Alabama School Bus Facts

- 7,341 route buses (97% <10 years old)
- 457,258 daily route miles (82 million/yr)
- 376,650 pupils transported (51% of pupils)
- \$4/mile to operate (\$4.41/pupil/day)

- Alabama: pupil fatalities inside buses

5 since 1977

(when major upgrades to school buses)

School Bus Safety

- Safest vehicles on the road
 - Size
 - Visibility
 - Rugged construction
 - Compartmentalization
- 6-8 times safer than cars and SUVs
- Nationally, ≈ 20 pupils die annually in school bus crashes. 2/3rds are outside the bus

Stakeholder Attitudes

Pre- and Post-Project Surveys

- Parents & children
- Drivers & aides
- Transportation supervisors
- Principals



Survey General Findings

All groups think buses are safe
but would be safer with seat belts.

- Parents: as concerned with bullying as with safety
- Drivers/aides: buses safe, but concerned seat belts reduce visibility of pupils (possible discipline problems)
- Transportation supervisors: concerned about loss of fleet capacity, expenses, etc.
- Principals: most positive group

Predicting Lives Saved

- Most recent 10 years of data (4 fatalities in AL.)
- Estimate future Alabama fatalities
- Apply school bus seat belt safety factor
- But there is no school bus safety belt factor!
- Patterned after NHTSA (2008)

Point of Impact	Fatalities Reduced	Source
Rollover	74%	Proxy (auto)
Front	44% ±	Crash tests
Side	21%	Proxy (auto)
Rear/Other	0%	Compartmentalized

Capacity Loss

- Important factor
- UA study of seat/row configurations
- Potential for additional buses needed

CAROLINA PUBLIC SCHOOLS
WAKE COUNTY

1142



Capacity Loss

Thicker Seat Backs

- Seat backs 2-4" thicker -> lose one row?
- Lengthen bus?
- Rear axle moves backward; harder to control

Previous Studies

Study	Cost per Bus	Capacity Reduction
NHTSA Report to Congress '02	\$2,440 to \$3,550	17%
Indiana School Bus Study '05	-	0 to 33%
NC School Bus Study '07	\$7,700	8 to 17%
CRS Report to Congress '07	\$8,000 to \$15,000	16 to 33%
Texas Leg. Budget Study '09	\$9,300 to \$14,000	-

Seat Belt Use Rates

- Use overhead cameras to determine belt use on a periodic basis
- 170,000 observations of individual pupils
- Could not see 1/3 of the pupils
- Identified important factors in belt use
- Average belt use over 2 years: **61.5%**
- Belts cannot help the 38.5% not wearing them



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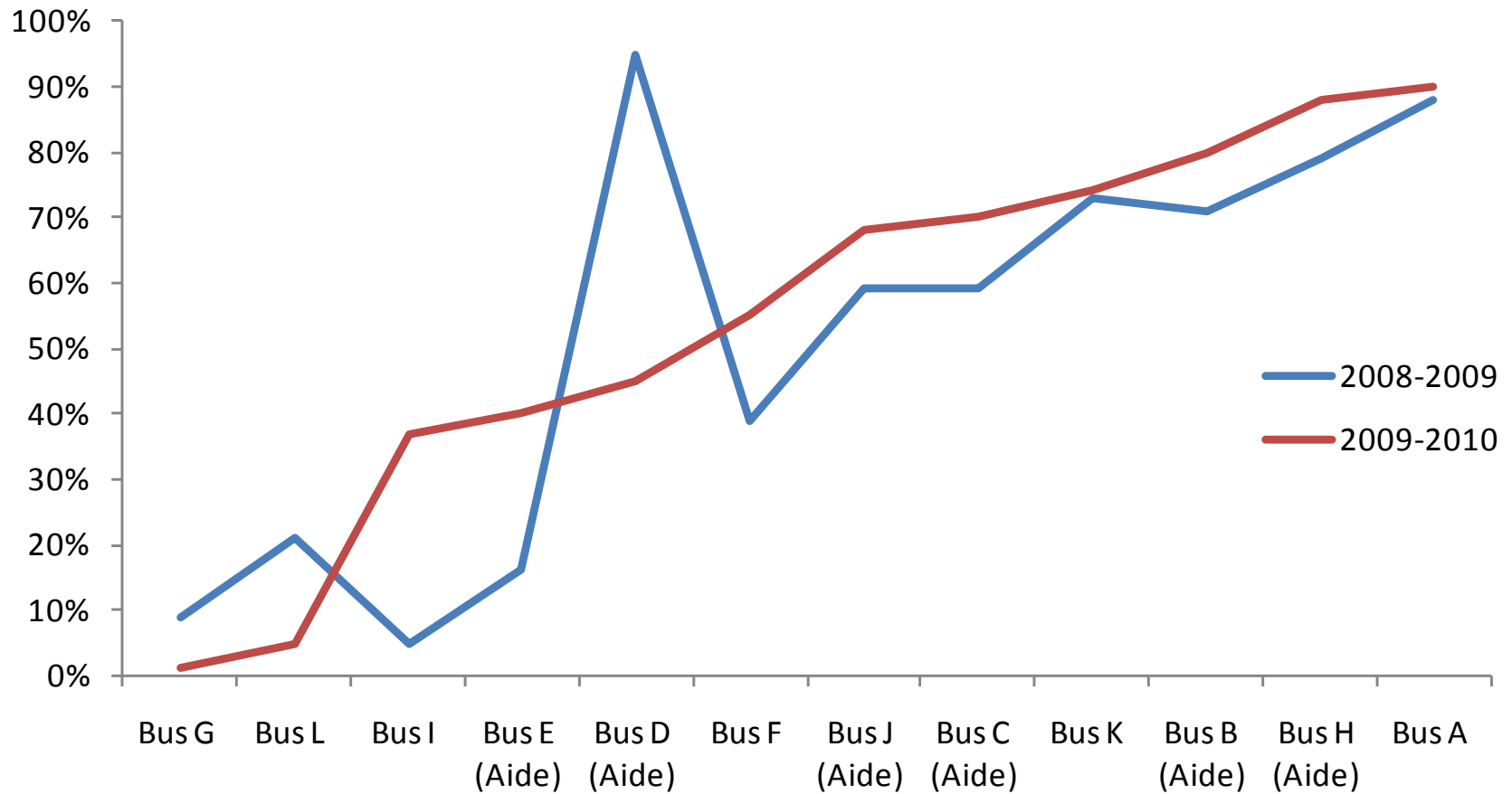
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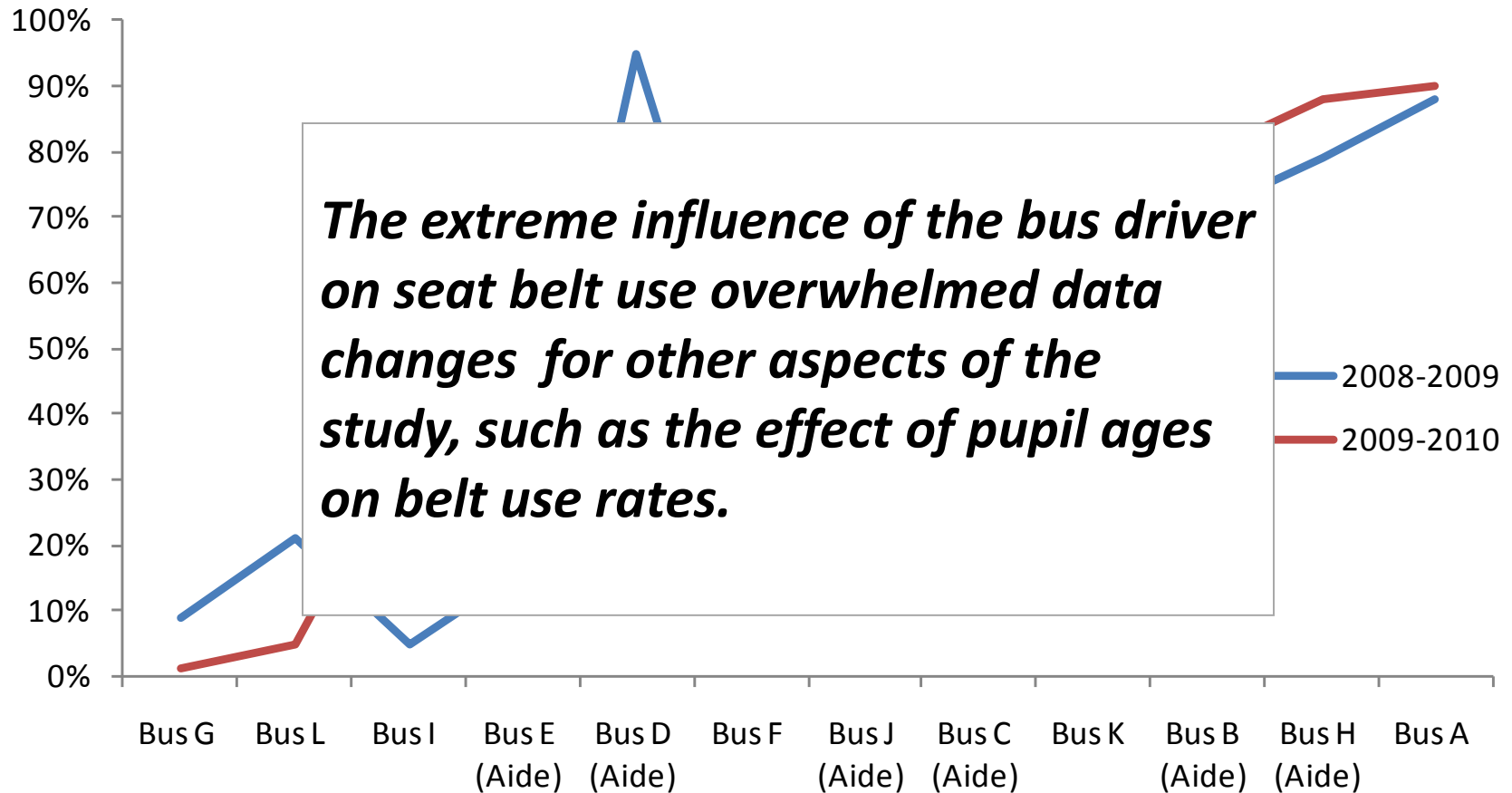
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Variability In Belt Use Rates



Variability In Belt Use Rates



Cost-Effectiveness Study

- Most difficult and technical study
- Data are limited or missing
- Patterned after NHTSA (2008)
 - cost to save an equivalent life
 - net benefits
- Best use of limited funding
- Used most recent 10 years of injury/fatality data from Alabama (1999 – 2008).

Costs

ALSDE files and vendor quotes (2010 \$)

- Bus purchase \$79,860
(buses cannot be retrofit for stronger, bigger seats)
- Driver salary/benefits \$26,271
- Aide salary/benefits \$21,443
- Max additional cost of seats \$15,000
- Min additional cost of seats \$11,000
- Annual fuel/maintenance/other \$ 7,973
- Extend passenger compartment \$ 1,000

-> determine min/max additional costs for a 10-year phase in, by bus configuration

Costs: 10-Year Phase-In (2010 \$)

- Most expensive: 3/2-11 configuration with aides
 - \$1.4 billion during first 10 years
 - \$237 million annually after that

- Least expensive: flex seats with extended passenger compartment, without aides
 - \$117 million during first 10 years
 - \$12 million annually after that

Benefits

- Fatalities and injuries would drop by 39%
 - Annual reduction of fatalities: 0.13
(average 1 saved life every 8 years)
 - Annual reduction of injuries: 7.60
- NHTSA converts fatalities + injuries to cost values using “Value of a Statistical Life” (\approx \$6.4 million)
- NHTSA uses “Equivalent Lives Saved per Year” = economic value of all lives + all injuries saved (0.427 for Alabama)

Net Benefits

1. Cost of an equivalent life saved
 - \$32 million to \$38 million for Alabama
 2. Net benefits (benefits – cost)
 - \$-104 million to \$-125 million
- Can money be better spent?

Alternatives to Seat Belts

- Up to 75% of pupil fatalities occur at bus stops
 - in Alabama, 8 pupil fatalities outside bus in 10 years
 - 1633 vehicles reported for illegally passing stopped buses in one day (2009-2010)
- Alternative treatments could be lower cost and higher effectiveness

Example Alternatives

- Additional training for drivers, teachers, students
- Public education about passing a school bus that is loading/unloading pupils
- Increased enforcement by Dept of Public Safety, local police, and school districts
- Other locally appropriate solutions

Recommendation

If funding is to be spent on school bus safety, it appears more lives could be saved by investing in alternative safety measures in loading/unloading zones rather than in installation of seat belts. The example alternatives are likely less expensive and more cost effective than seat belts.

We recommend that alternative treatments be investigated and that plans be prepared for their implementation, pending availability of funding.

UTCA School Bus Seat Belt Reports

UTCA produced 10 reports on school bus seat belts. You may find those at

<http://www.ALSDE.edu>

Under “Special Links”

Acknowledgements

- The Governor's Study Group
- Alabama State Department of Education
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