Boosters: Who Needs Them?
Research Findings

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www.carseat.org  800/745-SAFE
Objectives

• News on best practices for school-aged kids
• What are the research findings?
• Goal: Improved laws
• Brief research review on keeping older kids in back; shows effect of driver behavior on kids in vehicles
• Law can affect social norming, shown to be a key factor in behavioral change.

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Key Best Practices: What & Why

Before
As long as possible face rear
Harness in tethered seat to age 6
Boosters Are For Big Kids!

As long as possible face rear
Back Seat is the Better Seat, BUT the occupant needs to stay there.

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Best Practice Review: Booster Use

SBS USA 5-Step Test Data

9146 children age 4 – 12

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5-Step Test Results - % by age

- Passing 5-Step Test
- Failing 5-Step Test

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Best Practice Review: Booster Use

Predicting vehicle belt fit for children 6-12
Mathew Reed and Kathy Klinich, PhD,
Traffic Injury Prevention (2016) University of MI Transportation Research Institute
Summarized in March 2016 SafetyBeltSafe News

- Detailed measurements of kids and cars to develop “ideal fit” of belt
- Calculated how VEHICLES might be changed to enable fit of belts on kids.
- With boosters, 75% of kids, 6 to 12, had good fit; without boosters, even in better cars, under 25% could achieve lap belt fit.

**Conclusion:** “Overall, these results support the conclusion that relatively few children under 12 years of age can ‘graduate’ from a booster without experiencing a marked degradation in lap belt fit.”
Background: Current American Academy of Pediatrics (AAP) recommendations regarding transition from child safety/booster seat to safety belt use indicate that children should be at least 4'9", 8 years old, or 80 pounds.

Proper fit in the vehicle seat, assessed with a 5-point fit test, also should be met. While most children reach 4'9" at about age 8, each child and vehicle present a unique combination; thus a child may not fit appropriately in all vehicle types, using only the 4'9" requirement.

90% was set as the threshold proportion of children who meet all criteria for proper fit to validate current AAP recommendations* of a height of 4'9”.
Best Practice Review: Booster Use

Child Seat Belt Guidelines: Examining the 4'9" Rule as the Standard

CONCLUSIONS:

• Substantial proportions of children meeting AAP height guidelines* for using safety belt only do not meet safety requirements for fit, especially in larger, commonly used vehicles (large SUVs and trucks).

• This emphasizes the need for evaluation of fit by trained personnel and/or development of standard back seat dimensions in all vehicles for maximum safety.

*NHTSA dropped 4’9” several years ago and 80 lbs. even longer ago. (SMT)
27% taller than 4’9” FAILED the 5-Step Test.
5% shorter than 4’9” passed the 5-Step Test.
Best Practice Review: Booster Use

Booster Seat Effectiveness Among Older Children: Evidence From Washington State

D. Mark Anderson, PhD, L Carlson, MD, D Lee, PhD
American Journal of Preventive Medicine

- Review of all Washington State data on crashes on public roads with children ages 8-12 involved and police reports.
- 79,859 children with full data included in comparing belt vs. booster outcomes.
- Booster use correlated with back seat travel and newer cars, both of which can reduce injury risk.
- Booster seat use associated with 29% (19% adjusted for other factors which might reduce risk) reduction in risk of injury. AAP printed summary in AAP News!
  - 2002-15: overall 7.4% of 8-12-year-old children in boosters; 92.6%, in belts.
  - 2002-15: 2% of 8-12-year-old children in boosters in ‘02 vs. 14% in 2015.
Best Practice Review: Booster Use

SBS USA 5-Step Test*:

1. Does the child sit all the way back against the auto seat?
2. Do the child’s knees bend comfortably at the edge of the auto seat?
3. Does the belt cross the shoulder between the neck and arm?
4. Is the lap belt as low as possible, touching the thighs?
5. Can the child stay seated like this for the whole trip?

* Created in 2001. Curricula available for K-3, 4-5 grades in “Boosters Are For Big Kids”.

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Predicting Parents’ Use of Booster Seats
Beth S. Bruce, Anne W Snowden, Charles Cunningham, Carolyn L Cramm, Krista Whittle, Heather Correale, Melanie Barwick, Caroline Piotrowski, Lynne Warda, Jessie Harrold
Injury Prevention, March, 2011

Looked at predicted behavior of 1480 parents of 4-to-9-year-old children in Canada. Filled in questionnaire at various sites in 8 Canadian provinces.

“Behavioural attitude (benefits of protecting child) and subjective norms (perceived community use of booster seats) positively predicted intent to use booster seats.”

“The usefulness of legislation is that it lends itself to establishing a social norm that has demonstrated effectiveness with many health-promoting initiatives.” Also suggests day care centers or schools can contribute to social norming by setting expectations/policies.
Best Practice Review: Rear Seat Travel

Rear seat belt laws and restraint use in rear-seated teen passengers traveling in passenger vehicles involved in a fatal collision on a U.S. roadway

J. Pressley, H. Gollatari, C. Liu,

*Trauma Acute Care Surgery*, October, 2016

Notable research on teens highlights importance of being buckled up in rear but indicates how hard it seems to be to maintain this habit.

RESULTS – Independent Predictors of Restraint Use:

**LAW:**

- Primary safety belt law: teens 60% more likely to be belted.
- Secondary safety belt law – with Graduated Driver Licensing Law, 50% belted; without, 40% belted. However, effect temporary – passengers riding with 18- or 19-year-old drivers have restraint levels similar to teens with no rear-seat restraint law.

**DRIVER:**

- Largest single predictor of teen belt use: driver use of safety belt (64% vs. 19%). **Key area for injury prevention strategies – education AND enforcement.**
- Negative effect: male driver; driver use of drugs or alcohol.
RESULTS:

• Half of rear-seated teens restrained, half unrestrained. Unrestrained rate increased with age (65.8% of 13-14 year olds restrained to 43.3% of 18-19 year olds restrained).

• 25% died. 77% of deaths in unrestrained teens.

• 18.5% ejected – 96% of them unrestrained. 56% died.
CONCLUSION:

• Findings support the need for coverage of rear-seated teen passengers in law; primary enforcement.

SafetyBeltSafe U.S.A. comment:

• Importance of education, enforcement AND involvement of CPS professionals in legislative & regulatory processes.
Further Information

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• Founded in 1980
• The national non-profit solely focused on child passenger safety.
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