Status Report

Insurance Institute for Highway Safety | Highway Loss Data Institute

Boosters reach milestone

Nearly all new seats provide good belt fit

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Fifteen of 17 booster seats introduced in 2012 earn the top rating of BEST BET from the Insurance Institute for Highway Safety, evidence that more than ever, manufacturers are designing seats to provide good safety belt fit for booster-age children.

The improvements mean that BEST BET boosters now outnumber seats in any of the three other categories for the first time since the Institute released its inaugural booster ratings in 2008 (see *Status Report*, Oct. 1, 2008, at iihs.org). Boosters are supposed to improve how adult lap and shoulder belts fit children so the belts can properly restrain them in crashes. BEST BET boosters correctly position belts on a typical 4-to-8-year-old child in almost any car, minivan or SUV.

In all, there are 47 BEST BET boosters for 2012. This total includes the latest models, plus older top-rated designs still on the market. Five seats are a GOOD BET, meaning they provide acceptable belt fit in most vehicles. Two boosters are not recommended because they don't provide proper belt fit, and consumers are advised to avoid them.

Federal regulations don't address how a booster should position safety belts. Manufacturers crash test boosters, but these simulations don't tell parents how boosters will fit their children in their vehicles. The Institute launched its ratings program after research showed most boosters weren't doing a good job of fitting safety belts correctly and consistently in a variety of vehicles.

"Booster manufacturers have risen to the Institute's challenge to improve seat design, giving parents more choices than ever when shopping for a booster that will provide a good, safe fit for their children," says Anne McCartt, Institute senior vice president for research.

Using a belt-positioning booster is important for kids who have outgrown harness-equipped child restraints and aren't big enough for adult belts. Children ages 4-8 in boosters are 45 percent less likely to sustain injuries in crashes than kids restrained by belts alone (see *Status Report*, Dec. 22, 2009). Children who are using improperly fitted belts are at risk of a host of crash injuries known as "seat belt syndrome." These include spine injuries and internal organ injuries. Boosters help by elevating a child into position and guiding the belts for better protection.

No crash tests are conducted as part of the evaluations. The Institute's ratings focus on belt fit. They don't assess how boosters might perform in a crash because safety belts do the main job of protecting children, not boosters. Some manufacturers say their boosters provide enhanced protection in a side crash, but the Institute hasn't evaluated these claims.

To assess belt fit, Institute engineers use a test dummy representing an average-size 6-year-old child. They measure how lap and shoulder belts fit the dummy in each booster under four conditions representing the range of belt configurations in real-world vehicles.

The Institute evaluates models new to the market each year. Ratings of boosters with designs that carry over into the next model year remain on the list until the seats are discontinued. In all, the latest ratings cover 91 boosters.

Consumers have a variety of styles and a range of price points to pick from. BEST BETs retail for as little as $19 to as much as $300. Among the new BEST BET models, the backless Graco TurboBooster COLORZ sells for about $26, the highback TurboBooster retails for about $50 and the backless Harmony Carpooler starts at about $35.

Graco TurboBooster Safety Surround

Harmony V6

Graco TurboBooster

BEST BET BOOSTERS

Three dual-use boosters new for 2012 earn BEST BET: Graco TurboBooster, Harmony V6 and Graco TurboBooster Safety Surround. They join the Graco TurboBooster Elite and Harmony Dreamtime as top-rated boosters that provide good belt fit when used as highback or backless seats. Another dual-use model, the Combi Kobuk Air-Thru, is a GOOD BET.

How booster seats rate

BEST BET

- Britax Frontier 85
- Britax Frontier 85 SICT
- Britax Parkway SGL (highback mode)
- BubbleBum
- Chicco KeyFit Strada (highback mode)
- Clek Oobr (highback mode)
- Cosco Pronto (highback mode)
- Diono Monterey (highback mode)
- new Diono RadianR100
- new Diono RadianR120
- new Diono RadianRXT
- Eddie Bauer Auto Booster (highback mode)
- Evenflo Big Kid Amp
- new Evenflo Big Kid Amp High Back (backless mode)
- Evenflo Big Kid Sport (backless mode)
- Evenflo Maestro
- new Evenflo Secure Kid LX/DLX
- Evenflo Symphony 65 e3
- Ferrari Dreamway SP (highback mode)
- Graco Argos 70 (highback mode)
- Graco Backless TurboBooster
- Graco Nautilus (highback mode)
- new Graco TurboBooster (backless mode)
- new Graco TurboBooster (highback mode)
- new Graco TurboBooster COLORZ
- Graco TurboBooster Elite (backless mode)
- Graco TurboBooster Elite (highback mode)
- new Graco TurboBooster Safety Surround (backless mode)
- new Graco TurboBooster Safety Surround (highback mode)
- Harmony Carpooler
- new Harmony Cruz Youth Booster
- Harmony Dreamtime Booster (backless mode)
- Harmony Dreamtime Booster (highback mode)
- Harmony Olympian
- new Harmony V6 Highback Booster (backless mode)
- new Harmony V6 Highback Booster (highback mode)
- Harmony Youth Booster Seat
- new Kiddy Cruiserfix Pro
- new Kiddy World Plus
- Kids Embrace Dale Earnhardt Jr.
- Maxi-Cosi Rodi XR (highback mode)
- Recaro ProBOOSTER
- Recaro ProSPORT
- Recaro Vivo
- Safety 1st Boost Air Protect (highback mode)
- Safety 1st S1 Rumi Air/Essential Air
- The First Years Pathway B570

GOOD BET

- Britax Parkway SG (highback mode)
- Combi Kobuk Air-Thru (backless mode)
- Combi Kobuk Air-Thru (highback mode)
- Evenflo Symphony 65
- Maxi-Cosi Rodi (highback mode)

NOT RECOMMENDED

- Safety 1st All-in-One
- Safety 1st Alpha Omega Elite

To access photos and model numbers of every booster evaluated go to iihs.org or m.iihs.org from your smartphone.

Top-rated boosters don't have to be pricey. The Graco TurboBooster COLORZ (right) is a BEST BET and retails for about $26. The COLORZ is a better choice than the Cosco Top Side (left), a new backless model that is a Check Fit because it doesn't consistently provide good shoulder belt fit. The Top Side sells for about $15.

CHECK FIT

Britax Parkway SG (backless mode)
Britax Parkway SGL (backless mode)
Chicco KeyFit Strada (backless mode)
Clek Olli
Clek Oobr (backless mode)
Clek Ozzi
Cosco Ambassador
Cosco Highback Booster
Cosco Pronto (backless mode)
new Cosco Top Side
Diono Monterey (backless mode)
Diono SantaFe
Eddie Bauer Auto Booster (backless mode)
new Evenflo Big Kid Amp High Back (highback mode)
Evenflo Big Kid LX (backless mode)
Evenflo Big Kid LX (highback mode)
Evenflo Big Kid No Back Booster
Evenflo Big Kid Sport (highback mode)
Ferrari Dreamway SP (backless mode)
Ferrari Ola
Graco Argos 70 (backless mode)
Graco Nautilus (backless mode)
Graco Nautilus Elite (backless mode)
Graco Nautilus Elite (highback mode)
Graco Smart Seat
Maxi-Cosi Rodi (backless mode)
Maxi-Cosi Rodi XR (backless mode)
Safety 1st Boost Air Protect (backless mode)
Safety 1st Go Hybrid
Safety 1st Summit
Safety 1st Vantage
Safety 1st Ventura
The First Years Compass B505
The First Years Compass B530
The First Years Compass B540
Volvo Booster (backless mode)
Volvo Booster (highback mode)

Dual-use boosters

Boosters come in two main styles: highback and backless. Highbacks have guides to route lap and shoulder belts and can offer some head support. Backless models have lap belt guides but may need a plastic clip to properly position shoulder belts in many vehicles. Some highbacks, called dual-use, can be converted to backless seats. These get two ratings, one for each mode, because belt fit can differ by mode. Consumers should pay attention to each rating and consider how they will use the seats in their vehicles.

Six of the 24 dual-use boosters included in the 2012 ratings earn BEST BET or GOOD BET in both modes. These include two from Harmony Juvenile Products, the Dreamtime and V6 Highback Booster; one from Combi USA Inc., the Kobuk Air-Thru; and three by Graco Children's Products Inc., the TurboBooster, TurboBooster Elite and TurboBooster Safety Surround.

Graco now has 10 BEST BETs, and all eight of the boosters Harmony makes are BEST BETs.

"Parents often tell us they want a dual-use booster that's a BEST BET no matter how they use it," McCartt says. "Having more to pick from really simplifies things."

For its dual-use TurboBoosters, Graco revised the instruction manual and relocated the belt clip to the back center of the seat from the side. The change allows the clip to correctly position the shoulder belt, lifting the backless mode rating from Check Fit, in line with the highback rating.

Check Fit seats

The 37 boosters in the Check Fit category may provide good fit for some children in some vehicles, but not as many as a BEST BET or GOOD BET. As with any booster, parents should make sure the lap belt lies flat across their child's upper thighs and the shoulder belt crosses snugly over the middle of the shoulder. If not, try a different seat.

Two boosters in this group are new for 2012, the Evenflo Big Kid Amp High Back and the Cosco Top Side. The Big Kid Amp High Back is a BEST BET in backless mode, but parents will need to check how the belt fits if the seat is used as a highback. In some cases, the Big Kid Amp may position the lap belt too high on the abdomen in highback mode. The seat is made by Evenflo Company Inc. Evenflo discontinued four models that had been not recommended last year (see *Status Report*, Oct. 13, 2011). The company picks up two additional BEST BET designations, earning it six BEST BETs and one GOOD BET for 2012.

Shoulder belt fit is the issue with the Cosco Top Side. The owner's manual atypically instructs installers to route the shoulder belt over the backless booster's lap belt guide instead of under it. This puts the belt too far off the shoulder in one measurement condition and against the neck in another. Some parents might be able to get good shoulder belt fit with the booster, depending on

An engineer at the Institute's Vehicle Research Center evaluates how lap and shoulder belts fit a test dummy representing an average-size 6-year-old child under four conditions representing a range of belt configurations in real-world vehicles.

Combination seats like this Britax Frontier 85, a BEST BET in highback mode, can be used as a harness-equipped child restraint in addition to a booster.

their vehicle setup and the age and size of their child. The Top Side is made by Dorel Juvenile Group Inc., whose brands include Cosco, Eddie Bauer Baby, Maxi-Cosi and Safety 1st. Five of Dorel's boosters are BEST BETs and one is a GOOD BET.

3-in-1 boosters

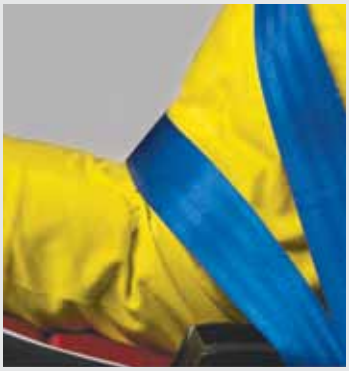
The two not recommended boosters — both from Dorel — are older designs first evaluated in 2009 (see *Status Report*, Dec. 22, 2009). They are the Safety 1st All-in-One and Safety 1st Alpha Omega Elite. These models are 3-in-1s that can be used as rear-facing and forward-facing child restraints with a built-in harness. They can be converted to boosters by removing the harness and using lap and shoulder belts to restrain a child. Although these seats should work well as child restraints, they aren't the best option for boosters because they leave the lap belt too high on the abdomen and the shoulder belt too far out on the shoulder.

"Dorel should redesign the All-in-One and Alpha Omega Elite to improve booster function," McCartt says. "Parents who own these seats should use them with the built-in harness as long as possible, up to Dorel's recommended height and weight limits."

There are better options for consumers who prefer the versatility of a 3-in-1. Four BEST BETs are 3-in-1s. These include the Evenflo Symphony 65 e3 and three models from Diono LLC — the Radian R100, RadianR120 and RadianRXT. Another choice is the Evenflo Symphony 65, which is a GOOD BET.

McCartt points out that manufacturers sometimes use similar names for different seats, or even the same names for new models, so consumers should consult the Institute's website at iihs.org for model numbers, manufacture dates and photos when they shop for a booster.

She advises parents not to be in a hurry to switch to a booster. Kids should ride in harness-equipped child restraints in rear seats as long as possible, up to the height and weight limits of the seats. Many typically accommodate children up to about 65 pounds — and some go higher. When children outgrow child restraints, they should use boosters until adult belts fit properly, usually when a child reaches 4 feet 9 inches and 80 pounds. ■



Evaluating belt fit

Boosters elevate children and position safety belts so the belts will fit them better. The lap belt should lie flat and on top of a child's upper thighs (far left), not higher up on the abdomen (near left).

The shoulder belt should fit across the middle of a child's shoulder (bottom left). If it falls off the shoulder (bottom center), or rests on the neck (bottom right), a child might move the belt behind their back or under an arm, where it would be out of position for proper protection.

Freeway speeds rise as more drivers exceed posted limits

Drivers continue to exceed posted speed limits on all kinds of roads, but the problem has worsened on freeways and expressways. That is the takeaway from a new national survey of traffic speeds by the National Highway Traffic Safety Administration (NHTSA).

The agency measured free-flow travel speeds during 2007 and 2009 for all types of motor vehicles on freeways, arterials and collector roads across the United States. On limited-access highways, the percentage of vehicles exceeding posted speed limits by any amount jumped 23 percentage points from 2007 to 2009. Fourteen percent of all vehicles traveling limited-access highways exceeded posted speed limits by 10 mph or more during 2007. The percentage rose to 20 percent during 2009. On other types of roads, proportions of drivers exceeding the speed limits fell slightly in 2009 compared with 2007. Still, 13 percent of vehicles on major arterials and 15 percent on minor arterials traveled at least 10 mph over posted speed limits during 2009.

NHTSA cautions that the increase in travel speeds may be due to differences in data collection periods. Continued speed-enforcement campaigns in some states and a 2009 decline in vehicle miles traveled amid the U.S. recession may have had an effect, the agency says. Less-congested roads may have prompted motorists to drive faster.

The survey marks the first time NHTSA has collected nationally representative estimates of travel speeds on public roads for all types of motor vehicles. States used to submit speed data to the Federal Highway Administration, but that requirement was abolished with the 1995 repeal of the national maximum speed limit.

"National travel speeds survey II: 2009" by R. Huey et al. is available at www.nhtsa.gov/staticfiles/nti/pdf/811647.pdf. ■

Percentage of vehicles exceeding speed limit by mph over limit and year

Road class	Percentage of vehicles 2007	2009	change
Limited access			
By any amount	48%	72%	23%
By > 5 mph	28%	46%	17%
By > 10 mph	14%	20%	6%
Major arterial			
By any amount	60%	56%	-4%
By > 5 mph	34%	31%	-3%
By > 10 mph	15%	13%	-2%
Minor arterial/collector			
By any amount	61%	59%	-2%
By > 5 mph	35%	33%	-2%
By > 10 mph	16%	15%	-1%

Viewpoint: Choosing speed over safety in Texas

By Adrian Lund
Institute president

Imagine cruising down the highway at 85 mph without getting so much as a raised eyebrow, let alone a ticket. For many drivers, it sounds like a dream, and it's set to come true on one Texas road. But we've seen this one before, and it doesn't end well.

Decades of research show that when speed limits are raised, drivers go faster and more people die in crashes. The Texas Transportation Commission's decision to establish the highest speed limit in the land on a new toll road between Austin and San Antonio means drivers there will be able to get to their destinations quickly, but at a cost.

High speeds increase the likelihood of a crash while simultaneously slashing the odds of surviving one. Crashes are more likely because, at a higher speed, a vehicle travels a longer distance in the split second it takes to react to an emergency. And the faster the vehicle is going, the further it will travel before coming to a stop after the driver slams on the brakes. When crashes occur, they are deadlier at high speeds because the energy involved increases exponentially as speed rises.

At the Insurance Institute for Highway Safety, before we rate a vehicle for frontal crashworthiness, we send it hurtling toward a barrier at 40 mph, resulting in a severe collision. Most new vehicles today do well in our moderate overlap frontal test, meaning people could survive a similar real-world crash without serious injuries. But at high speeds, all bets are off. The vehicle's structure won't hold up, and airbags and safety belts won't be able to do their job. When a crash is imminent, a car traveling 65 mph has a much better chance of getting down to a survivable speed before impact than a car traveling 85 mph.

We know that many drivers exceed posted limits, but that doesn't mean they don't take them into account. Drivers typically pick a speed at which they think they won't get a ticket — often 5-10 mph over the limit. Many Texas drivers are no doubt already used to driving 85 mph on roads with 75 or 80 mph limits. They'll read the 85 mph signs as license to go 90 or more.

The 17 years since Congress did away with the national 55 mph maximum speed limit have given us plenty of opportunities to see what happens when speed limits are raised.

After the speed limit on three urban freeways in Texas was raised from 55 to 70 in the mid-1990s, we found that half the vehicles were going faster than 70 within a year, compared with 15 percent before. Seventeen percent were exceeding 75 mph, compared with 4 percent before the change.

Around the country, such increases translated into more deaths. In 24 states that raised speed limits we found 15 percent more fatalities on interstates and freeways than otherwise would have been expected.

Even with today's speed limits, speed-related crashes cause more than 10,000 deaths a year — nearly a third of all crash fatalities in the country. States could prevent some of these deaths if, instead of giving drivers permission to go ever faster, they vigorously enforced existing limits to slow drivers down.

(This op-ed appeared in the Sept. 18, 2012, edition of the *Atlanta Journal-Constitution*.) ■

Graduated licensing benefits older beginners in Australia

License restrictions are known to reduce crashes among 16-17-year-old drivers in the United States. Now a study of recent changes to graduated licensing in Victoria, Australia, shows they can be effective for newly licensed 18-20 year-olds, too.

The study, commissioned by VicRoads, the state agency in charge of licensing, found that after the changes, injury crashes fell 23 percent for 18-20 year-olds in their first year of probationary driving when measured against a control group of 26-38-year-old drivers. Fatal and serious injury crashes fell 31 percent.

A would-be driver must be at least 16 years old to get a learner's permit in Victoria and at least 18 to obtain a probationary, or intermediate, license. In 2007 and 2008 the requirements and restrictions accompanying each stage were beefed up.

The first set of changes, which went into effect in July 2007, required young drivers to hold their permits for a year and obtain 120 hours of supervised driving experience before applying for a probationary license. Also at that time, probationary drivers were barred from driving high-powered vehicles such as those with eight-cylinder engines.

Then, in July 2008, the probationary period was increased from three to four years. Additional restrictions were put in place for the first year of the probationary license, known as the P-1 phase. They included a ban on all cellphone use, including hands-free, and a limit of one passenger between the ages of 16 to 21. Drivers were required to maintain a good driving record in order to graduate from P-1 to P-2, which lasts the remaining three years. In addition, a new road test was introduced for obtaining a P-1 license, with the aim of better evaluating driving skills.

Injury crashes fell 23 percent among 18-20 year-olds in their first year of probationary driving in Victoria, Australia. Fatal and serious injury crashes declined 31 percent.

In addition to the crash reductions in the first year of probationary driving, the report's authors found similar decreases in the second year as a result of the changes, though not as large.

Young drivers also were surveyed about their behaviors as part of the evaluation. After the restrictions were strengthened, probationary drivers were less likely to say they drove with more than one 16-21-year-old passenger and reported fewer traffic offenses and less cellphone use.

Victoria's graduated licensing system is in many ways stricter than anything in place in the United States. The current best practices here are a minimum permit age of 16 (eight states and the District of Columbia), at least 65 supervised practice hours (Pennsylvania), a minimum intermediate license age of 17 (New Jersey), a night driving restriction starting at 8 p.m. during the intermediate stage (Idaho and South Carolina) and in 15 states and D.C., a ban on all teen passengers (see *Status Report*, May 31, 2012, at iihs.org).

Research by the Insurance Institute for Highway Safety and the Highway Loss Data Institute has shown that the stronger the graduated licensing provisions, the bigger the reductions in crashes and fatal crashes (see *Status Report*, May 7, 2009). Although the exact provisions of Victoria's law aren't identical to those familiar in the U.S., this study shows that tougher rules can drive down teen crash rates even under a higher minimum licensing age.

"Victoria's graduated licensing system evaluation interim report" by D. Healy et al. is available at www.vicroads.vic.gov.au. ■

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The **Insurance Institute for Highway Safety** is an independent, nonprofit scientific and educational organization dedicated to reducing the losses — deaths, injuries and property damage — from crashes on the nation's roads.

The **Highway Loss Data Institute** shares and supports this mission through scientific studies of insurance data representing the human and economic losses resulting from the ownership and operation of different types of vehicles and by publishing insurance loss results by vehicle make and model.

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