

**Statement before the  
Subcommittee on Consumer  
Affairs, Foreign Commerce,  
and Tourism**

**U.S. Senate  
Committee on Commerce,  
Science, and Transportation**

**Child restraints and  
booster seats**

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The Insurance Institute for Highway Safety is a nonprofit research and communications organization that identifies ways to reduce motor vehicle crashes and crash losses. I am the Institute's chief operating officer, and I am here to discuss the issue of child occupant protection — in particular, the advisability of requiring booster seats.

### Main issue is whether restraints are used

The proportion of children who ride restrained has increased markedly since the early 1980s,<sup>1,2</sup> but too many children still ride unrestrained. The results are deadly. In 1999, more than 1,300 child passengers (12 and younger) died in crashes. Only 36 percent of them were restrained. Another 14 percent were either improperly restrained (in all likelihood, gross misuse of the child seat or safety belt)

CHILDREN KILLED IN PASSENGER VEHICLES, 1999						
<u>AGE</u>	<u>COUNT</u>	<u>UNRESTRAINED</u>		<u>UNKNOWN/ IMPROPER RESTRAINT</u>		<u>RESTRAINED</u>
		<u>NO.</u>	<u>PERCENT</u>	<u>NO.</u>	<u>PERCENT</u>	
0-3 years	451	172	38%	80	18%	199 44%
4-6 years	281	148	53%	37	13%	96 34%
7-8 years	215	119	55%	33	15%	63 29%
9-12 years	362	212	59%	33	9%	117 32%
<b>TOTAL</b>	<b>1,309</b>	<b>651</b>	<b>50%</b>	<b>183</b>	<b>14%</b>	<b>475 36%</b>

Source: Fatality Analysis Reporting System

or restraint use was unknown. Fifty percent of the children who died were unrestrained. Thus, nearly two of every three child deaths probably involved a failure to use an available restraint system. Among the older children in this group, restraint use was lower than among the infants and youngest children (0-3 years old).

So, when it comes to protecting infants and children in motor vehicles, the key issue is whether a restraint system is used — not what type of restraint or whether it is installed precisely as the manufacturer intended (research indicates that, even when restraints are misused, they often provide good protection).<sup>3</sup> What matters is that so many children still are riding unprotected by any kind of restraint.

### Ratings of state laws based on likelihood of increasing restraint use

The Insurance Institute for Highway Safety always has placed the highest importance on enacting and enforcing laws that require restraint use by all children sitting in all vehicle seats. Last year the Institute rated selected traffic safety laws in every state, based on research indicating the extent to

which the laws enhance highway safety (attachment).<sup>4</sup> To evaluate laws protecting child passengers, the Institute considered the comprehensiveness of both child restraint and adult belt use laws, which cover older children. The laws that earn the highest ratings provide primary coverage for all children 12 and younger in all vehicle seats. (Primary coverage means police may stop and ticket motorists for restraint violations alone. All child restraint laws are primary, but most adult belt laws are secondary, which means motorists have to be stopped for some other violation first.) Laws with low ratings allow some children to ride unrestrained.

Children too old to be covered under the child restraint laws in 11 states (Alabama, Arizona, Idaho, Illinois, Indiana, Iowa, Minnesota, Mississippi, New Jersey, Ohio, and Pennsylvania) are protected by adult belt laws that apply only to people riding in the front seat. Thus, it is perfectly legal in these states for children to ride unrestrained in rear seats. This makes no sense. The back seat is where we tell parents it is safest for their children to ride, so restraint laws should cover the kids who sit there. Closing such loopholes in the laws should be our highest priority.

In rating the laws, the Institute did not consider what kind of restraint a law requires for children of various ages. Adults could buckle children into rear-facing infant restraints, forward-facing child re-

straints, or adult lap/shoulder belt systems, as appropriate. This reflects the Institute's major concern, which is to ensure that all children in all vehicle seats are restrained all the time.

<b>PERCENT OF CHILDREN RESTRAINED</b>		
	<b>FRONT SEAT</b>	<b>REAR SEAT</b>
<b>MICHIGAN</b>		
younger than 1	82%	96%
1-2 years	69%	98%
3-6 years	56%	44%
7-12 years	69%	39%
<b>NORTH CAROLINA</b>		
younger than 1	89%	94%
1-2 years	83%	96%
3-6 years	66%	57%
7-12 years	79%	39%
<b>TEXAS</b>		
younger than 1	77%	89%
1-2 years	64%	92%
3-6 years	55%	42%
7-12 years	73%	37%

Source: Ferguson, Susan A.; Wells, JoAnn K.; and Williams, Allan F. 2000. Child seating position and restraint use in three states. *Injury Prevention* 6:24-28.

#### **Restraint use declines after age two**

The problem of children riding unrestrained is not uniform from infant through preteen years. Restraint use declines after age two, according to recent Institute surveys conducted in three states. In particular, restraint use drops off precipitously among children ages 3-6 compared with 0-2 year-olds.<sup>5</sup> We do not know why this is happening, but it means these children are at unnecessary injury risk in crashes.

### **Are booster seats the answer?**

There is merit in the idea of booster seats for some children who have outgrown their child restraints. Experts agree that a child should use a lap belt that fits over the upper legs or pelvis (not the stomach) and a shoulder belt that crosses the center of the chest (not the face or neck). The knees should bend at the edge of the vehicle seat so the child is not encouraged to slouch down for comfort, displacing the lap belt up over the stomach or perhaps even allowing the child to slide out from under the belt system.

For some children, this level of restraint may not be achievable without a booster seat, so some people would like to require boosters. The idea is that adult belts will fit better, more 3-6 year olds will ride restrained, and these children will be better protected than in adult belts alone. Three states already have passed booster seat requirements covering children to age 6 or 60 pounds: Arkansas, California, and Washington. States also are considering legislation that would extend booster seat requirements to children who weigh less than 80 pounds or are shorter than 57 inches, as recommended on the National Highway Traffic Safety Administration's website.<sup>6</sup>

The Institute believes emphasizing boosters is a misplaced priority. One problem is that it complicates the task of complying with the law. Parents have to buy boosters and have them available for any children they might take along in their cars. A parent who buckles a child into a vehicle's lap/shoulder belt alone would become a lawbreaker, even if no booster were needed to achieve a good belt fit. Adding booster seat requirements for 4-6 year olds without also extending the coverage of child restraint laws to 7-12 year-olds still would leave substantial numbers of children unprotected.

Booster seat requirements still might be a good idea if the boosters were to greatly improve the fit of adult safety belts. But it is not clear that they do. Institute researchers have tried to get a handle on this by buckling two children (a 6-year-old girl 52 inches tall weighing 62 pounds; a 5-year-old boy 45 inches tall weighing 42 pounds) into 6 different booster seats positioned in 3 different passenger vehicles (a small car with contoured seats, a midsize car with bench seats, and a passenger van with captain's chairs). For comparison, the researchers conducted the same placements with a Hybrid III dummy representing a 6-year-old boy (50th percentile height at 45 inches tall; 75th percentile weight at 52 pounds). Sixty-three different placements were assessed, including ones in which no booster seats were used (adult belt systems only).

One finding is that some booster seats are very good — that is, they route the adult lap/shoulder belt correctly — while others provide only marginal improvement in belt fit. Getting a good one does not necessarily mean buying the most expensive one. The Britax Star-Riser is a good choice at \$100. Evenflo's Right Fit is another good booster seat costing only \$20.



*Adult safety belts alone (above left) do not fit some children, like 5-year-old Camron who weighs 42 pounds. The shoulder belt cuts across his face and neck, while the lap belt is much too high across his stomach instead of lower on his upper legs or pelvis. Plus his knees do not bend at the edge of the vehicle seat, so he is likely to scoot forward. The right booster seat can help. The key is to get the right one. The Jupiter Komfort Rider GTX (above middle) does not help much. The shoulder belt is routed better than with an adult belt alone, but the lap belt still is positioned too high. A better fit is in the Britax Star-Riser (above right), which routes both the lap and shoulder portions for a correct fit. But not every child 4-8 years old needs a booster seat. Laura (below), who is nearly 7 and weighs 62 pounds, fits reasonably well in an adult belt system without a booster.*



The main finding of this research is that booster seats enhance belt fit in some configurations. In others, a booster makes no difference or results in a poorer fit. All of this variability makes it difficult, if not impossible, to generalize about which groups of children would benefit from a booster seat requirement. It depends on the specific child, the specific booster seat, and the specific car model in which the two are positioned.

An even more basic problem with requiring booster seats is that we in the United States do not have a clear definition of what boosters for older children are. In general, a booster seat raises a child up for a better fit in an adult belt system. Does this mean a firm cushion would qualify as a

booster seat? What about a phone book? Kids, even when they are the same age, vary widely in height and weight. Booster seats vary in size and shape. Vehicle seats vary from bench-type to contoured. Safety belt systems also vary from car model to model. So which boosters work best in which vehicles? Which children need booster seats in what vehicle models? For how long? The answers vary from child to child and vehicle to vehicle. There is too much variability to apply a single booster seat requirement to all kids of specified ages (or heights or weights) in all cars.

Another issue involves testing. The National Highway Traffic Safety Administration sets forth extensive testing requirements for infant and child restraints. All states require the use of federally approved seats. But these requirements do not apply to booster seats for children who weigh more than 50 pounds. It makes no sense to promote, let alone require, the use of devices for older children that have not been tested or approved.

### **Recommendations**

The first order of business is to get older children in restraints regardless of what type of restraint is used. Lap/shoulder belts may have limitations, but they still greatly improve the likelihood that children will survive in crashes. State legislators already are extending child restraint laws to cover older children, which accomplishes two objectives. It closes loopholes that once allowed some children to ride unrestrained, and it extends primary enforcement of restraint laws to more children. (All child restraint laws are primary, but most adult belt laws are secondary.)

At the same time, government and other researchers are proceeding with studies to document the benefits that booster seats can and cannot provide. These studies should continue. We need to understand not only the limitations of lap/shoulder belts for children but also the aspects of booster seats that help remedy such limitations. Not all booster seats are the same, and we do not yet know which differences are the important ones. At a minimum, we need a federal definition of booster seats based on science and test requirements that are standard and realistic.

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