

---

# a d v i s o r y

---

# a d v i s o r y

---

# a d v i s o r y

---

## **WHAT'S BEING DONE TO REDUCE THE ADVERSE SIDE EFFECTS OF INFLATING AIRBAGS**

Recent media coverage of injuries and deaths caused by inflating airbags, especially USA TODAY's July 8 cover story on infant and child deaths, has raised questions about the overall benefits of airbags and what can be done to reduce their side effects.

Airbags already have inflated in hundreds of thousands of crashes, and the best estimate is that they've saved more than 1,500 lives and prevented many more serious injuries. Occupants with and without safety belts have been protected.

### **Adverse Side Effects**

But inflating airbags also have caused a small number of deaths and serious injuries. Twenty-two infants and children reportedly have been killed in the United States by inflating airbags. Seven were infants in rear-facing restraints in the front seats. Fifteen were children ages 3-9, and 13 of the 15 are believed to have been unbelted. The other two are believed to have been using lap belts only. Nineteen adults, mostly elderly and/or short women, also are known to have been killed by inflating airbags.

In Canada, where a much higher percentage of motorists use safety belts than in the United States, there has been one reported death of a child from an inflating airbag, and the child is believed to have been using a lap belt only. Two adults, one belted and the other not, reportedly have died from airbag inflation injuries.

There also are patterns of serious injuries from inflating airbags, in particular arm fractures to female drivers. At least six children are known to have suffered serious head injuries. Four of these were infants in rear-facing restraints, one was a three-year-old in a booster seat, and one was an improperly belted six-year-old. A 34-year-old passenger reportedly suffered a serious neck injury.

These deaths and injuries are occurring because the energy required to inflate an airbag can injure an occupant who is very close to the bag as it begins to inflate. For example, all of the child deaths involved braking before impact, which is likely to have moved the children very close to, or even on top of, the airbags early in inflation. Many of the adult deaths involved drivers believed to have been very close to, or even slumped over, the steering wheel. There's additional risk for children because airbag energy levels are tailored to protect adults, not people of lighter weight.

### **Short-Term Ways to Reduce Side Effects**

A number of things can be done to reduce the deaths and injuries airbags cause. In the short term, it becomes a high priority to increase belt use and ensure that infants and children are correctly restrained in the back seat. These measures keep people out of the

Number 19  
July 1996

---

INSURANCE  
INSTITUTE  
FOR  
HIGHWAY  
SAFETY

---

HIGHWAY  
LOSS  
DATA  
INSTITUTE

---

1005 N. Glebe Rd.  
Arlington, VA  
(703) 247-1500

paths of inflating bags. The Institute has prepared educational materials and developed model programs to address this problem:

1. Nearly a million copies of the Institute publication, “Kids and Airbags,” have been distributed so far. It tells parents and other adults how to protect children in motor vehicles and, at the same time, how to keep kids out of the paths of inflating air bags. A short videotape version of this publication will be available next month.
2. “Reducing Your Risks in the Crash,” an Institute videotape, also is available. It expands the message about protecting infants and children to all motor vehicle occupants and tells how to get the maximum benefits from restraints.
3. North Carolina’s “Click It or Ticket” program, which has achieved 83 percent belt use, is the established model for the new national program to increase belt use.
4. Also a model is the special program in Durham, North Carolina that successfully increased infant and child restraint use at daycare centers and elementary schools.

### Technological Solutions

In addition to these education and enforcement programs, airbags themselves need to be improved to reduce the risk of inflation injuries. Reduced-energy inflators offer the quickest opportunity for improvement. It’s the energy of inflating bags that causes the injuries, and Institute research indicates this energy could be reduced without significantly compromising the protection airbags afford. Institute staff have discussed this with every major automaker and, without exception, they would reduce the energy of their inflators if it weren’t for design constraints imposed by the unbelted test requirements of Federal Motor Vehicle Safety Standard 208. Paradoxically, these requirements, intended to guarantee protection of unbelted occupants, actually are increasing their risk of inflation injury.

The Institute has joined automakers in urging the National Highway Traffic Safety Administration to put the highest priority on amending the unbelted test requirements to allow manufacturers greater design freedom to choose less aggressive airbag inflators. But in part because reduced-energy inflators wouldn’t eliminate children’s injury risk, the agency is moving slowly and appears to be seriously considering ineffective alternatives including switches to deactivate passenger bags. Such switches, which currently are allowed only in vehicles without rear seats, have obvious potential for misuse. There’s absolutely no reason to expect that adults who already fail to understand, or ignore, warnings about the risk of using infant restraints in front of airbags, or who allow children to travel unrestrained in front seats, would use airbag on/off switches correctly.

### Solutions in the Longer Term

In the longer term, improvements beyond reduced-energy inflators are needed that will further reduce the risk of injury from inflating airbags. Some “smart” airbag systems will be available before too long that will determine whether an infant restraint or small child is in front of a passenger airbag and deactivate it automatically. Some of these systems will begin to appear on new models soon.

Later airbags will become even “smarter.” They’ll be capable of determining occupants’ positions immediately before deployment and of tailoring airbag energy levels so they’re optimum for occupant positions and expected crash severities. But it will take several years for these more advanced systems to become widely available.

In the meantime, millions of cars with airbags already are on the road. This is why efforts to increase both belt use and correct infant and child restraint use are important. Copies of “Kids and Airbags” and “Reducing Your Risks in the Crash” are available from the Institute.

*Some “smart” airbag systems will be available before too long that will determine whether an infant restraint or small child is in front of a passenger airbag and deactivate it automatically.*