Designing a Better Air Bag
The Continuing Search for a Technical Fix

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Experience since the issuance of the initial safety standards has shown that public resistance to the use of seat belts prevents them from achieving their potential for reducing the death and injury rate.

National Highway Safety Board (1970)
…will not require the driver or any occupant of that car to do a single thing, and yet be protected.

Sec. of Transportation John Volpe (1971)
NHTSA Counts for Air Bag Fatalities
1990-1997

- Children in Rear Facing Child Safety Seats
- Children not in Rear Facing Child Safety Seats
- Adult Drivers
- Adult Passengers
Air Bag & Seat Belt Safety Campaign

Always Slide the Seat Back – And Sit Back!

Buckle Everyone!

Children in Back!
CAUTION
TO AVOID SERIOUS INJURY:

- For maximum safety protection in all types of crashes, you must always wear your safety belt.
- Do not install rearward-facing child seats in any front passenger seat position.
- Do not sit or lean unnecessarily close to the air bag.
- Do not place any objects over the air bag or between the air bag and yourself.
- See the owner's manual for further information and explanations.
NHTSA mandated “Warning Label”
1996

WARNING

DEATH or SERIOUS INJURY can occur
- Children 12 and under can be killed by the air bag
- The BACK SEAT is the SAFEST place for children
- NEVER put a rear-facing child seat in the front
- Sit as far back as possible from the air bag
- ALWAYS use SEAT BELTS and CHILD RESTRAINTS

- The back seat is the safest place for children of any age to ride.
- Never put an infant (less than one year old) in the front of a car with a passenger-side air bag.
- Infants must always ride in the back seat facing the rear of the car.
- Make sure everyone is buckled up. Unbuckled occupants can be hurt or killed by an air bag.

For Safety's Sake... The Back Seat is the Best Seat.
Your Measure of Safety

U.S. Department of Transportation
National Highway Traffic Safety Administration

Air Bags & On-Off Switches

Information for an Informed Decision

Keeping the Benefits for the Many and Reducing the Risks for the Few

DOT HS 808 629
Sec. of Transportation Rodney Slater
Change in restraint use from beginning of 1996 to end of 1998

Seat belts: 60% to 70%

Infant Restraints (1-12 months): 85% to 93%

Toddler restraints (1-4 years): 60% to 87%

Child Restraints (5-15 years): 65% to 69%
NHTSA Counts for Air Bag Fatalities (1990-2000)
Dual-Stage Airbag

Minor Impact
Belt Tensioners Activated
Airbags not Activated

Severe Impact
Belt Tensioners Activated
Airbags Activated to Second Stage (100%)

Moderate Impact
Belt Tensioners Activated
Airbags Activated to First Stage (70%)

Volvo V70
SeatSentry™
occupant sensing system

SeatSentry™ detects human body mass and enables the passenger-side airbag for adult occupants, and it disables the passenger-side airbag for children (with or without a Child Restraint Seat).

Flexible sensors are installed in the seat cushion.
SeatSentry™ Occupant Sensing System for Side Airbags

- e-field sensors detect the child’s head
- e-field sensors detect the occupant’s size: child

Airbag

AIRBAG WILL NOT DEPLOY
Elesys

A smart parent *still* beats a smart airbag.

**Tip #1:** Multi-stage airbags can still injure children! Keep infants and small children in the back seat, buckled into child seats or safety belts.

**Tip #2:** Drivers and front-seat passengers should always buckle up, slide the seat back to a comfortable position, and avoid sitting or leaning close to the air bag.

**Tip #3:** If your vehicle has an air bag on/off switch, check to make sure it is set properly on each trip for the occupant in that seat.

**Tip #4:** To reduce the risk of injury, put 10-inches between your chest and the air bag cover.

**Tip #5:** Never place your feet on the dashboard, which contains the airbag.

**Tip #6:** Adult passengers should sit straight and stay buckled.
WARNING

Even with advanced air bags

- Children can be killed or seriously injured by the air bag
- The back seat is the safest place for children
- Never put a rear-facing child seat in the front
- Always use seat belts and child restraints
- See owner's manual for more information about air bags