

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.

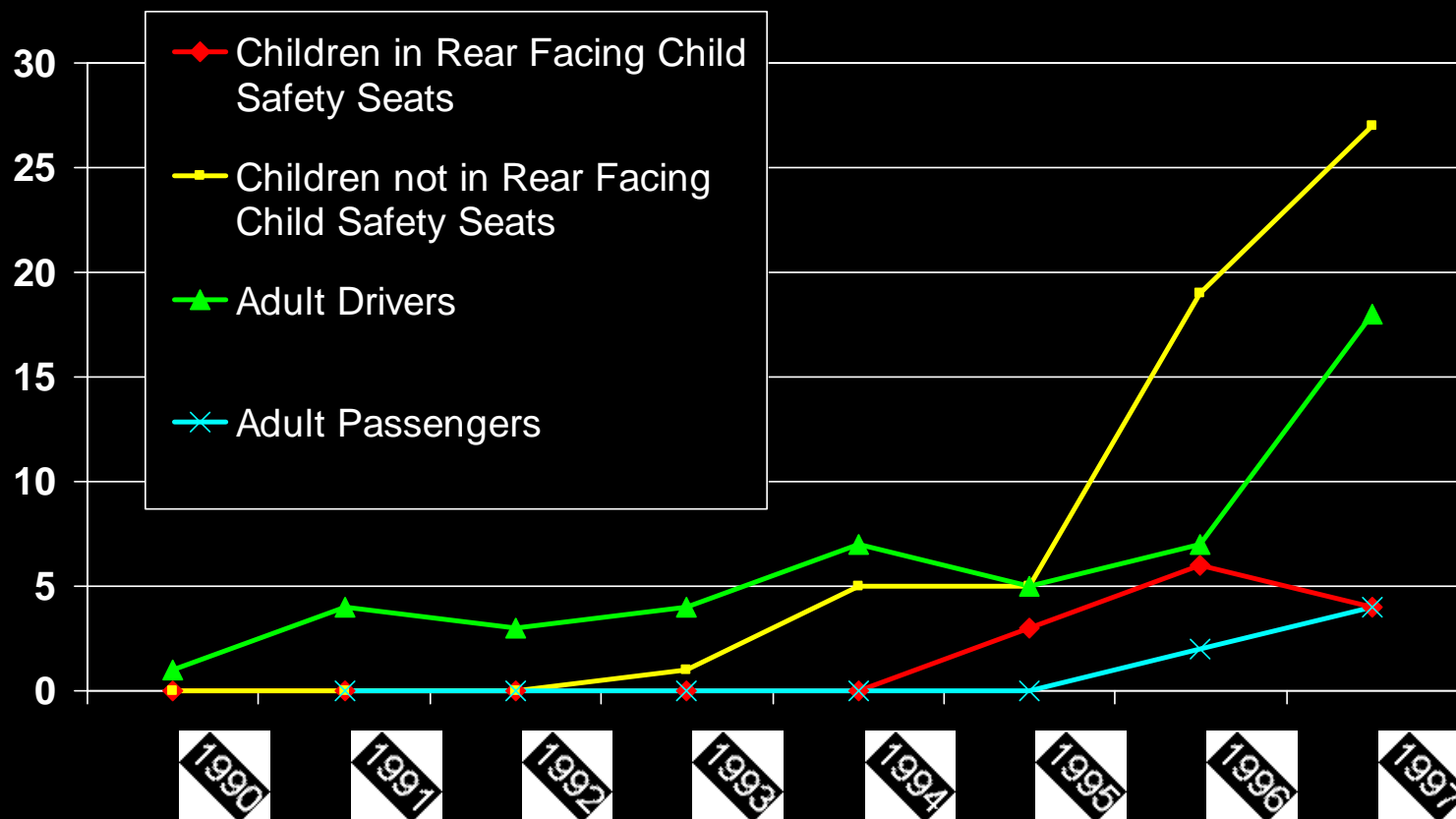
National Highway Safety Board
(1970)



...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



Air Bag & Seat Belt Safety Campaign



**Always Slide the Seat Back
– And Sit Back!**

**Buckle Everyone!
Children in Back!**



NHTSA “Consumer Information Label” 1992

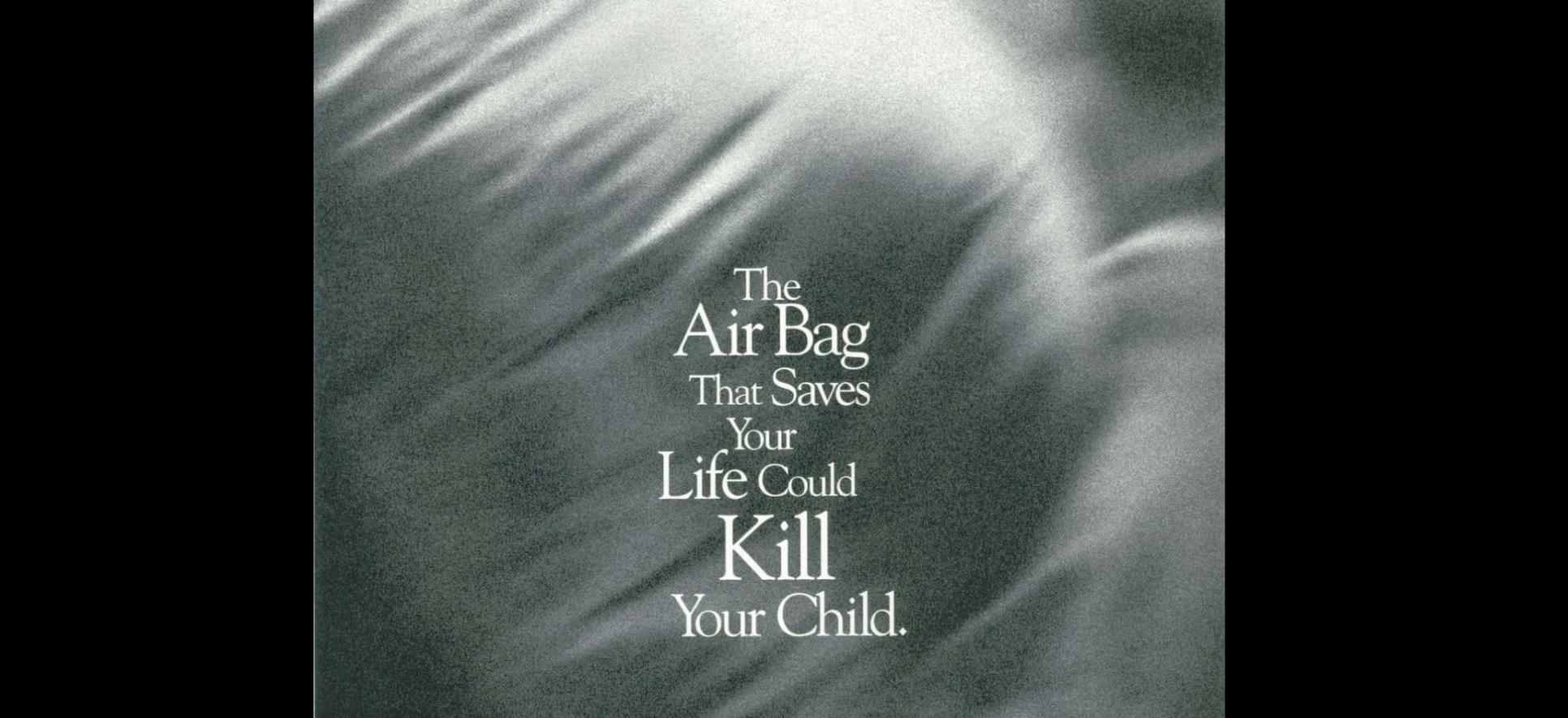
**CAUTION
TO AVOID SERIOUS INJURY:**

- 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





The
Air Bag
That Saves
Your
Life Could
Kill
Your Child.

- 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



Sec. of Transportation Rodney Slater



HonoluluAdvertiser.com

STATE OF SOUTH CAROLINA UNIFORM TRAFFIC TICKET											
CITY OR COUNTY OF <u>MY</u>										VERSUS	
FIRST NAME <u>THOMAS</u>				MIDDLE NAME <u>ALLEN</u>				LAST NAME <u>BELL JR</u>			
STREET AND NO. <u>1605 THOMAS AVE</u>				CITY <u>CHARLOTTE</u>				STATE <u>NC</u>			
STATE LICENSED <u>DC</u>				LICENSE PLATE NO. <u>8Y83600</u>				DR. LIC. CLASS <u>6</u>			
VEH. LIC. NO. <u>D-FLAVEN</u>		STATE <u>NC</u>		MAKE OF VEH. <u>TOYOTA</u>		YEAR <u>2004</u>		AUTO <u>YES</u>		TRUCK <u>NO</u>	
<p>YOU ARE SUMMONED TO APPEAR BEFORE THE TRIAL OFFICER</p>											
NAME OF TRIAL OFFICER <u>Hudson</u>				STREET AND NO. <u>1101 OAK ST</u>							
DATE OF TRIAL <u>9/15/00</u>				TIME OF TRIAL <u>2:00 PM</u>				CITY <u>MB</u>		ZIP CODE <u>24577</u>	
VIOLATION - COURT APPEARANCE REQUIRED: <u>YES</u>										VIOLATION SECTION NO. <u>18-5-6520</u>	
OWNER OF VEHICLE <u>DEARBECT VIOL</u>										DATE OF ARREST <u>8/26/00</u>	
ADDRESS OF OWNER <u>SAME</u>										DATE OF VIOLATION <u>8/26/00</u>	
BAIL DEPOSITED <u>CS</u>		NAME OF ARRESTING OFFICER <u>McKiff</u>						RANK <u>DET</u>		TOYOTA	
<p>PRESENT THIS SUMMONS TO THE TRIAL OFFICER SHOWN ABOVE</p>											
<p>Be sure you understand from the arresting officer the exact time and before whom you are to appear. If this ticket is written for a traffic violation and you forfeit bail, plead guilty or nolo contendere or are convicted after a trial, this violation will be placed against your driving record or forwarded to your home state. FAILURE TO COMPLY WITH THE TERMS OF THIS SUMMONS MAY RESULT IN THE SUSPENSION OF YOUR DRIVERS LICENSE BY YOUR HOME STATE. YOU ARE REQUIRED BY LAW TO APPEAR IN COURT FOR CERTAIN OFFENSES.</p>											
COUNTY <u>Horry</u>				RANK <u>357</u>				DISTRICT <u>4</u>			
TIME OF VIOLATION <u>11:35 AM</u>				WEATHER <u>CLR</u>				DISTANCE IN FEET FROM INTERSECTION <u>2974 S</u>			
ROAD <u>KINGS</u>				DIRECTION <u>N</u>				CITY <u>MB</u>			
STATE CODE <u>94</u>				BIA LEVEL <u>56148 BP</u>				SEE IMPORTANT INFORMATION ON THE REVERSE SIDE OF THIS TICKET			
<p>VIOLATOR'S COPY <u>\$37.00</u></p>											

Change in restraint use from beginning of 1996 to end of 1998

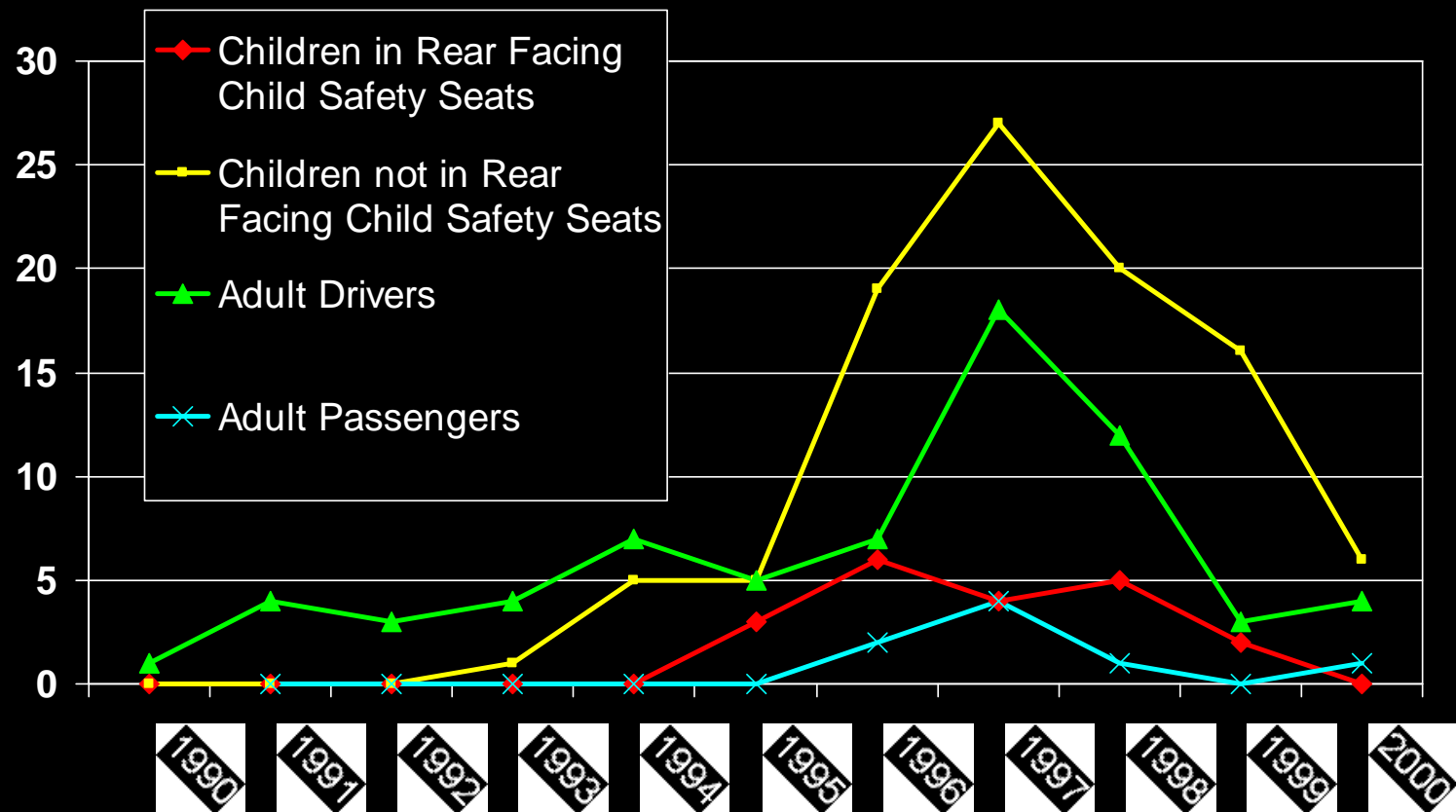
Seat belts: 60% to 70%

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

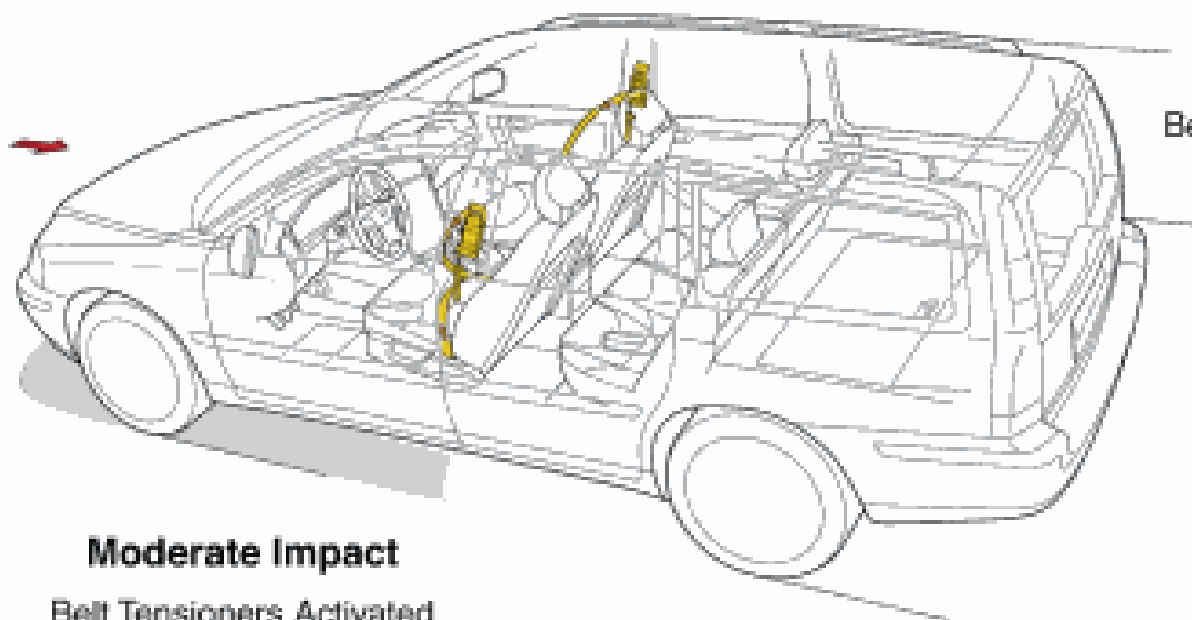
Toddler restraints (1-4 years): 60% to 87%

Child Restraints (5-15 years): 65% to 69%

NHTSA Counts for Air Bag Fatalities (1990-2000)



Dual-Stage Airbag

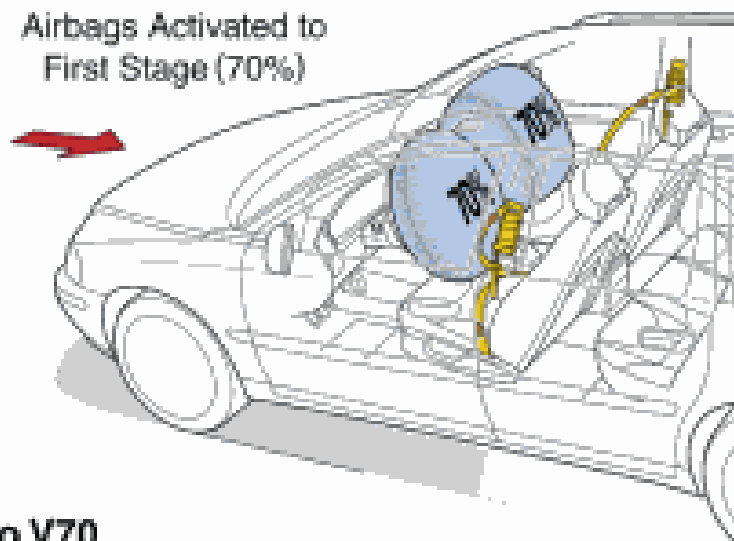


Minor Impact

Belt Tensioners Activated
Airbags not Activated

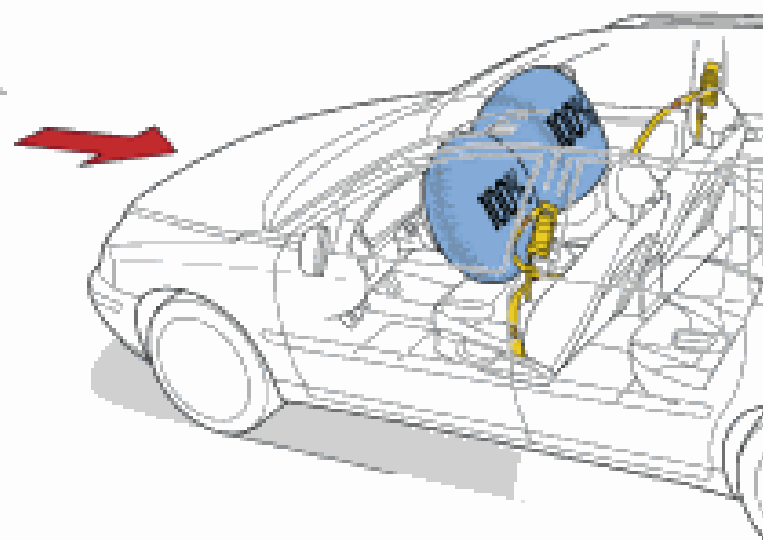
Moderate Impact

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



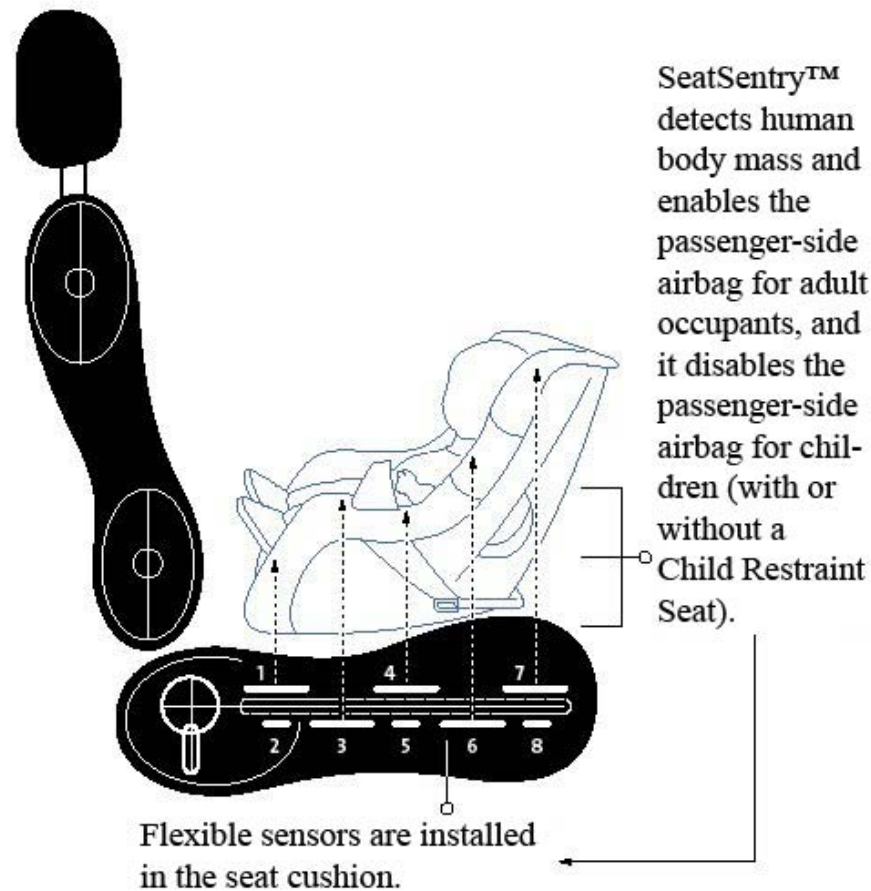
Severe Impact

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



SeatSentry™

occupant sensing system



SeatSentry™ Occupant Sensing System for Side Airbags

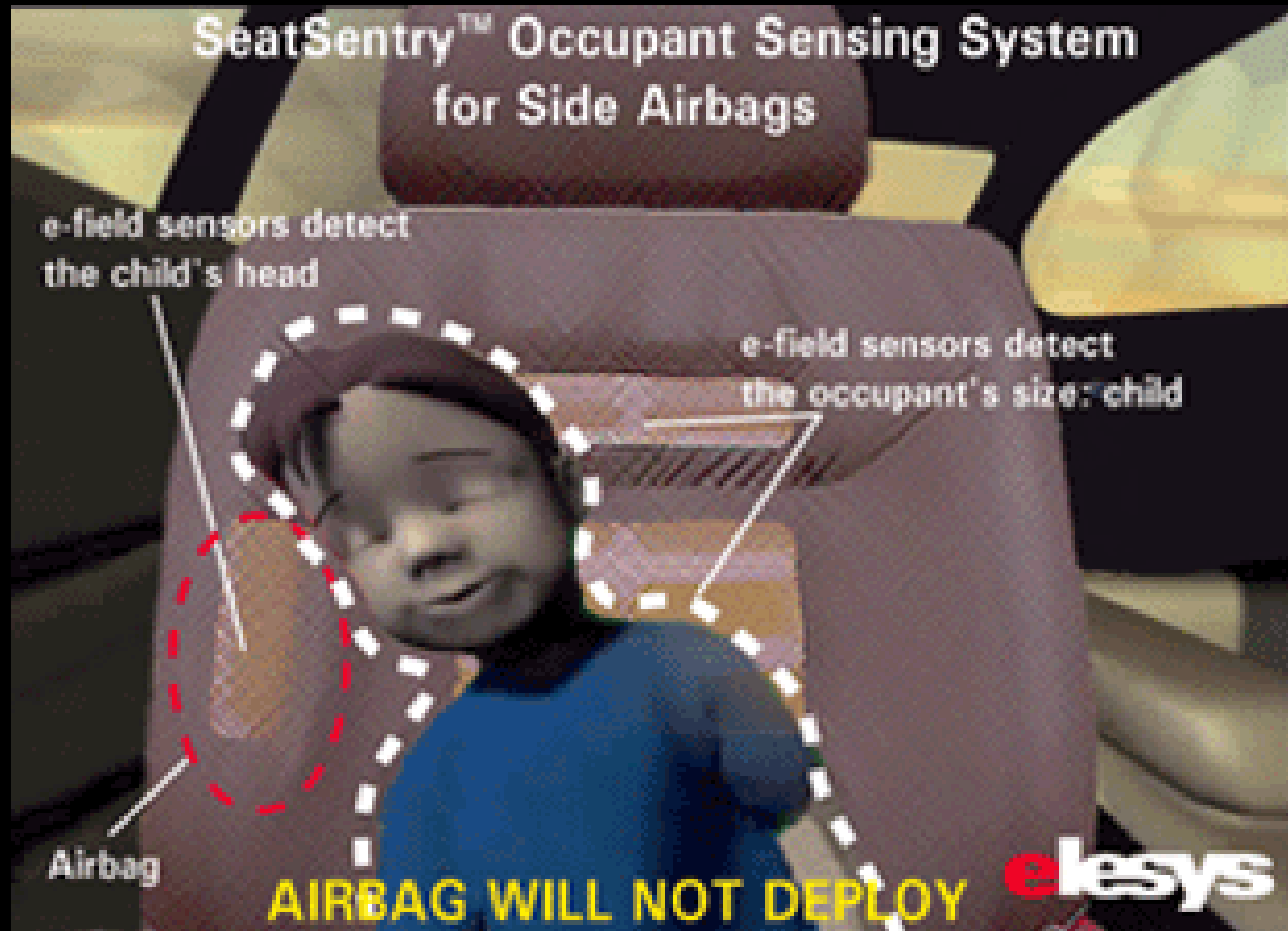
e-field sensors detect
the child's head

e-field sensors detect
the occupant's size: child

Airbag

AIRBAG WILL NOT DEPLOY

elesys



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

