

# INSURANCE INSTITUTE FOR HIGHWAY SAFETY

## NEWS RELEASE

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### IN REAL-WORLD CRASHES, SIDE AIRBAGS WITH HEAD PROTECTION ARE SAVING LIVES

ARLINGTON, VA — Side airbags that include head protection are reducing deaths by about 45 percent among drivers of passenger cars struck on the near (driver) side. Side airbags that protect the chest and abdomen, but not the head, also are reducing deaths, but they're less effective (about 10 percent). These are the major findings of an Insurance Institute for Highway Safety study of the real-world effectiveness of side airbags.



Despite the obvious severity of this collision, the driver sustained no head injury. A side airbag designed like a curtain descended from the car's roof area to provide head protection.

It's the first such study to estimate the effectiveness of this type of occupant protection. Each year more than 9,000 passenger vehicle occupants die in side impacts. Head injuries are a leading cause. The new research findings mean the toll should be reduced in the future.

"The need for head protection in side impacts has been obvious for some time," says Institute president Brian O'Neill. "Before head-protecting airbags were available there was virtually nothing to prevent people's heads from being struck by intruding vehicles or rigid objects like trees and poles in serious side impact crashes. Now we know side airbags can change this and do a good job of protecting heads."

— MORE —

When occupants' heads are in the window areas of vehicles they're especially vulnerable to being struck by intruding vehicles or objects. O'Neill points out that "the increasing number of high-riding vehicles on the road these days increases this risk, making it more likely that the front end of a striking vehicle in a side impact will hit the heads of occupants in the struck vehicle. This is why side airbags with head protection are so important."

Side airbags that protect the torso only don't represent as fundamental a safety improvement. They're an alternative way to protect the chest and abdomen in a side impact, but not the only way. Padding the vehicle interior also can protect occupants' torsos.

**Range of side airbag designs:** Since the mid-1990s when Volvo introduced side airbags and BMW and others added head protection, more auto manufacturers have followed suit. By the 2003 model year, 40 percent of all passenger vehicle models offered head-protecting side airbags (24 percent standard equipment, 16 percent optional equipment; see attachment for list of 2004 model passenger vehicles equipped with side airbags).

Some passenger vehicles are equipped with combination torso/head side airbags. Other vehicles have two separate side airbags, one for the torso and another for the head. Most of the torso-only and combination torso/head designs inflate from vehicle seats, although some inflate from the door. Side airbags designed exclusively to protect the head — so-called curtains or tubular structures — inflate down from a vehicle's roof area.

**Crash test results:** Institute crash tests conducted since 1997 consistently have demonstrated the potential of head-protecting side airbag designs. These have produced much lower head injury measures on dummies in side-into-pole tests, for example, and in tests in which pickups hit the sides of lower-riding cars. In more recent tests in which a movable barrier representing the front end of an SUV or pickup struck the sides of small SUVs, the three best performers had head-protecting side airbags. In contrast, none of the seven small SUVs with the worst performances had such airbags.

**Effectiveness in real-world crashes:** To estimate side airbag effectiveness in on-the-road crashes, Institute researchers used data from the federal Fatality Analysis Reporting System and General Estimates System to compute the relative risk of dying for drivers of 1997-2002 car models with and without side airbags when their vehicles were struck on the left (driver) side. Besides computing the overall effectiveness estimates — 45 percent fatality risk reduction for drivers of cars with head-protecting side airbags, 11 percent reduction with torso-only side airbags — the researchers broke down the findings into more specific results.

Researchers found that side airbags with head protection reduce the risk of death for both male and female drivers over a wide span of ages. Significant protective effects were found for drivers of both large and small cars.

The effectiveness of side airbags with head protection is significant in two-vehicle collisions (53 percent risk reduction). The highest estimated effectiveness (74 percent risk reduction) is in two-vehicle crashes when a car with head-protecting side airbags is struck by another car or a minivan. Mortality reductions also were substantial when the striking vehicles were pickups or SUVs, suggesting that head-protecting side airbags are addressing some of the problems of incompatibility when passenger cars are struck in the side by vehicles with higher ride heights.

**End 3-page release on side airbag effectiveness in real-world crashes**  
**Attachment: List of 2004 model passenger vehicles with side airbags**  
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**Internet: [www.highwaysafety.org](http://www.highwaysafety.org)**

## 2004 MODEL PASSENGER VEHICLES WITH SIDE AIRBAGS

### ACURA

3.2 TL / MDX / TSX	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
3.5 RL	Front	Torso	Std.
	RSX	Front	Torso

### AUDI

A4 / S4 except Cabriolet	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
A4 Cabriolet	Rear	Torso	Opt.
	Front	Torso/head	Std.
A6 / Allroad	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
A8	Rear	Torso	Opt.
	Front & rear	Torso & curtain	Std.
TT	Front	Torso/head	Std.

### BMW

3 Series / M3 except conv.	Front	Torso & inflatable tube	Std.
	Rear	Torso	Opt.
3 Series / M3 conv.	Front	Torso	Std.
	Rear	Torso	Opt.
5 Series	Front	Torso & inflatable tube	Std.
	Rear	Inflatable tube	Std.
6 Series except conv.	Rear	Torso	Opt.
	Front	Torso & inflatable tube	Std.
6 Series conv.	Front	Torso	Std.
	Z4 Roadster	Front	Torso
7 Series	Front	Torso & inflatable tube	Std.
	Rear	Inflatable tube	Std.
X3	Rear	Torso	Opt.
	Front	Torso & inflatable tube	Std.
X5	Rear	Inflatable tube	Std.
	Rear	Torso	Opt.
Mini Cooper	Front	Torso & inflatable tube	Std.
	Rear	Torso & inflatable tube	Std.

### BUICK

Century / Regal	Driver only	Torso/head	Opt.
	Front	Torso	Opt.
LeSabre / Rainier	Front	Torso	Std.
	Park Avenue	Driver	Torso/head
Rendezvous	Front passenger	Torso	Opt.

### CADILLAC

CTS	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
DeVille	Front	Torso	Std.
	Rear	Torso	Opt.
Escalade & ESV & EXT	Front	Torso	Std.
	Seville / XLR Roadster	Driver	Torso/head
SRX	Front passenger	Torso	Std.
	Front	Torso & curtain	Std.
Rear	Curtain	Std.	

### CHEVROLET

Avalanche / Cavalier	Front	Torso	Opt.
	Front	Torso	Opt.
Suburban / Tahoe	Front & rear	Curtain	Opt.
	Colorado / Malibu	Driver only	Torso/head
Impala / Monte Carlo	Front	Torso	Opt.
	SSR	Front	Torso
TrailBlazer & EXT	Front	Torso	Opt.
	Venture	Driver	Torso/head
Front passenger	Torso	Opt.	

### CHRYSLER

300M / Concorde / PT Cruiser	Front	Torso/head	Opt.
	Crossfire	Front	Torso
Pacifica	Front & rear	Curtain	Opt.
	Sebring 4dr	Front & rear	Curtain
Sebring 2dr except conv.	Front	Torso/head	Opt.
	Town & Country	Front	Torso/head

### DODGE

Caravan / Grand Caravan	Front	Torso/head	Opt.
	Stratus 2dr	Front	Torso/head
Stratus 4dr	Front & rear	Curtain	Opt.
	Durango / Ram pickup	Front & rear	Curtain
Intrepid / Neon / SRT-4	Front	Torso/head	Opt.

### FORD

Crown Victoria	Front	Torso/head	Opt.
	Escape	Front	Torso/head
Explorer & Sport Trac	Front & rear	Curtain	Opt.
	Expedition	Front & rear	Curtain
Focus / Taurus	Front	Torso/head	Opt.
	Freestar	Front	Torso & curtain
Rear		Curtain	Opt.
Thunderbird	Front	Torso/head	Std.

### GMC

Canyon	Front & rear	Curtain	Opt.
	Envoy & XL & XUV	Front	Torso
Yukon & XL	Front	Torso	Opt.

### HONDA

Accord	Front	Torso & curtain	Opt.
	Rear	Curtain	Opt.
Civic / CR-V / Element	Front	Torso	Opt.
	Civic Hybrid / Pilot	Front	Torso
Odyssey	Front	Torso	Std.

### HYUNDAI

Accent / Elantra / Sonata / XG350	Front	Torso/head	Std.
	Santa Fe / Tiburon	Front	Torso/head

### INFINITI

FX-series / G35 / M45 / Q45	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
I35	Front	Torso/head	Std.

### ISUZU

Ascender	Front	Torso	Std.
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### JAGUAR

S-Type / XJ-Series / X-Type	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
XK-Series	Front	Torso/head	Std.

### JEEP

Grand Cherokee / Liberty	Front & rear	Curtain	Opt.
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### KIA

Optima	Front	Torso/head	Std.
	Sorento	Front & rear	Curtain
Amanti	Front & rear	Torso & curtain	Std.

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**LAND ROVER**

Range Rover	Front	Torso & inflatable tube	Std.
	Rear	Inflatable tube	Std.

**LEXUS**

ES 300 / GX 470 / LS 430	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
LX 470 / RX 330	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
GS series / IS 300	Front	Torso & curtain	Std.
SC 430	Front	Torso	Std.

**LINCOLN**

Aviator / Navigator	Front & rear	Curtain	Std.
LS	Front	Torso/head	Std.
	Front	Torso & curtain	Opt.
	Rear	Curtain	Opt.
Town Car	Front	Torso/head	Std.

**MAZDA**

6	Front	Torso & curtain	Opt.
	Rear	Curtain	Opt.
MPV / Tribute	Front	Torso/head	Opt.
RX-8	Front	Torso & curtain	Std.
	Rear	Curtain	Std.

**MERCEDES-BENZ**

C / CL class / CLK class 2dr	Front & rear	Torso & curtain	Std.
CLK class conv.	Front	Torso/head	Std.
	Rear	Torso	Std.
E class / S class	Front & rear	Torso & curtain	Std.
M class	Front & rear	Torso & curtain	Std.
SL class	Front	Torso/head	Std.
SLK class	Front	Torso	Std.

**MERCURY**

Grand Marquis	Front	Torso/head	Std.
Monterey	Front	Torso & curtain	Opt.
	Rear	Curtain	Opt.
Mountaineer	Front & rear	Curtain	Opt.
Sable	Front	Torso/head	Opt.

**MINI**

Cooper	Front	Torso & inflatable tube	Std.
	Rear	Inflatable tube	Std.

**MINI**

Eclipse / Galant / Lancer	Front	Torso	Opt.
Endeavor / Outlander	Front	Torso	Opt.
Montero	Front	Torso	Std.

**NISSAN**

350Z except conv.	Front	Torso & curtain	Opt.
350Z conv.	Front	Torso	Opt.
Altima / Pathfinder / Titan	Front	Torso & curtain	Opt.
	Rear	Curtain	Opt.
Pathfinder Armada / Quest	Front	Curtain	Std.
	Front	Torso	Opt.
	Rear	Curtain	Std.
Maxima / Murano	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
Sentra	Front	Torso/head	Opt.
Xterra	Front & rear	Curtain	Opt.

**OLDSMOBILE**

Bravada	Front	Torso	Opt.
Silhouette	Driver	Torso/head	Std.
	Front passenger	Torso	Std.

**PONTIAC**

Aztek	Driver	Torso/head	Opt.
	Front passenger	Torso	Opt.
Bonneville	Front	Torso	Std.
Grand Prix	Front & rear	Curtain	Opt.
Montana	Driver	Torso/head	Std.
	Front passenger	Torso	Std.
Sunfire / Vibe	Front	Torso	Opt.

**PORSCHE**

911 / Boxster	Front	Torso	Std.
Cayenne	Front	Torso & curtain	Std.
	Rear	Curtain	Std.

**SAAB**

9-3 except conv.	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
9-3 conv. / 9-5	Front	Torso/head	Std.

**SATURN**

ION / VUE	Front & rear	Curtain	Opt.
L series	Front & rear	Curtain	Std.

**SCION**

xA	Front	Torso & curtain	Opt.
	Rear	Curtain	Opt.

**SUBARU**

Forester	Front	Torso/head	Std.
Impreza	Front	Torso/head	Opt.
Legacy / Outback	Front	Torso	Opt.

**TOYOTA**

4Runner / Camry	Front	Torso & curtain	Opt.
	Rear	Curtain	Opt.
Camry Solara except conv.	Front	Torso	Std.
	Front	Curtain	Opt.
	Rear	Curtain	Opt.
Camry Solara conv. / Avalon	Front	Torso	Std.
Celica / Corolla / Echo / Matrix	Front	Torso	Opt.
Highlander / Land Cruiser	Front	Torso & curtain	Opt.
	Rear	Curtain	Opt.
Prius / RAV4 / Sienna	Front	Torso & curtain	Opt.
	Rear	Curtain	Opt.
Sequoia	Front	Torso & curtain	Opt.

**VOLKSWAGEN**

Golf / Jetta / Passat / Touareg	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
New Beetle / New Beetle conv.	Front	Torso/head	Std.
Phaeton	Front & rear	Torso & curtain	Std.

**VOLVO**

C70	Front	Torso/head	Std.
S40 / S60 / S80	Front	Torso & curtain	Std.
	Rear	Curtain	Std.
V40 / V70 / XC90	Front	Torso & curtain	Std.
	Rear	Curtain	Std.