

A silver car is shown from the side, with its roof and rearview mirror visible. Above the car, several large balloons in blue, red, and yellow are tied to the roof. Interspersed among the balloons are several triangular pennants in red and yellow. The background is a plain, light color.

# SHOPPING *FOR A* SAFER CAR *2006*



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So you've decided to buy a car, minivan, SUV, or pickup. Now the question is, which one? If you factor safety into your choice (most people do), then you probably want to know, what's the safest one to buy? Safety includes numerous aspects, so there's no direct answer, although it's clear that some vehicles are safer than others. You can find safer vehicles in various price and style groups — and you can use this publication to help identify the best choices. Start by recognizing that safety involves **AVOIDING CRASHES** to begin with and **PROTECTING YOU IF AND WHEN A CRASH OCCURS**.

## **CRASH AVOIDANCE**



*To choose from a list  
of crashworthy cars, turn  
the page to find the Insurance  
Institute for Highway Safety's*  
**TOP SAFETY PICKS**

All vehicles have basic features to reduce crash likelihood — lights so other motorists can see you, brakes to stop when needed, etc. Now innovative technologies are being added to help avoid crashes. These include features to alert you if you stray from your travel lane or warn if you're about to back into something. Most of these new features haven't been scientifically evaluated. We don't know yet if they reduce crashes, though some of them show promise. One that already is proving effective is **ELECTRONIC STABILITY CONTROL**. You'll find it by a variety of tradenames (StabiliTrak, Stability Assist, etc.), but the systems are basically the same. They're extensions of antilock brake technology that help drivers maintain control in the worst situation — loss of control at high speed. Then electronic stability control engages automatically to help bring the vehicle back in the intended line of travel. This technology lowers the risk of a fatal single-vehicle crash by about half. It lowers the risk of a fatal rollover crash by as much as 80 percent. To see if a vehicle you're thinking of buying has electronic stability control, go to [iihs.org/ratings/esc.aspx](http://iihs.org/ratings/esc.aspx).

### ***DON'T COUNT ON AVOIDING CRASHES.***

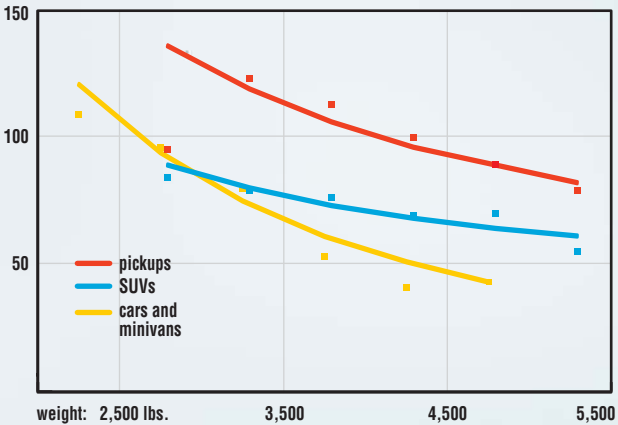
Despite everyone's best efforts, millions of crashes occur each year. Tens of thousands of them involve deaths. So the most important aspect of shopping for safety is to choose a crashworthy vehicle — one that reduces death and injury risk during a crash.

## CRASHWORTHINESS

The first crashworthiness attributes to consider are vehicle size and weight. Small, light vehicles generally offer less protection than larger, heavier ones. There's less structure to absorb crash energy, so deaths and injuries are more likely to occur in both single- and multiple-vehicle crashes. If safety is one of your major considerations **PASS UP VERY SMALL, LIGHT VEHICLES**. This doesn't mean you have to buy the heaviest vehicle you can find. It wouldn't necessarily be safer because those weighing more than about 4,500 pounds afford only small injury risk reductions. Meanwhile they increase the injury risks for people in the other vehicles with which they collide.

### BIGGER GENERALLY IS SAFER

**DRIVER DEATHS PER MILLION REGISTERED VEHICLES,  
BY VEHICLE WEIGHT, 2001-04 MODELS DURING 2002-05**



Rates are adjusted to account for some differences in driver age and sex within and between vehicle types. Remaining differences in vehicle use patterns and driver demographics may account for some of the death rate differences.

While the risk of death generally is higher in lighter cars, SUVs, and pickups than in heavier ones, size and weight don't tell the whole story. Some light car models, for example, are safer than others. Some midweight SUVs are safer than others. And so on. This is because some models have more crashworthy designs. You can't tell this by looking at the vehicles. You need crash test results to make comparisons. Most popular vehicles have been tested, so buy a vehicle in your chosen size class with **GOOD FRONT, SIDE, & REAR CRASHWORTHINESS RATINGS**.

To shop for safety, first determine the vehicle type and size that suit your purposes, keeping in mind that bigger generally is safer. Then it's easy to shop for a crashworthy vehicle by choosing one that earns a

## **TOP SAFETY PICK AWARD.**

These models afford the best occupant protection in front, side, and rear crashes, based on evaluations conducted by the Insurance Institute for Highway Safety (IIHS). Another requirement is that every *TOP SAFETY PICK* must be equipped with electronic stability control as standard or optional equipment.



### **2008 WINNERS:**

#### **LARGE CARS**

Audi A6  
Ford Taurus  
with optional ESC  
Mercury Sable  
with optional ESC  
Volvo S80

#### **MIDSIZE CARS**

Audi A3  
Audi A4  
Honda Accord  
Saab 9-3  
Subaru Legacy  
with optional ESC

#### **MIDSIZE CONVERTIBLES**

Saab 9-3  
Volvo C70

#### **SMALL CAR**

Subaru Impreza  
with optional ESC

#### **MINIVANS**

Honda Odyssey  
Hyundai Entourage  
Kia Sedona

#### **MIDSIZE SUVs**

Acura MDX  
Acura RDX  
BMW X3  
BMW X5  
Ford Edge  
Ford Taurus X  
Honda Pilot  
Hyundai Santa Fe  
Hyundai Veracruz  
built after Aug. 2007  
Lincoln MKX  
Mercedes M class  
Saturn Vue  
built after Dec. 2007  
Subaru Tribeca  
Toyota Highlander  
Volvo XC90

#### **SMALL SUVs**

Honda CR-V  
Honda Element  
Subaru Forester  
with optional ESC

#### **PICKUP**

Toyota Tundra

To compare the front, side, and rear crashworthiness of other passenger vehicles, go to [www.iihs.org](http://www.iihs.org)

## CHOOSING A **CRASHWORTHY DESIGN**

The main aspects of design that determine vehicle crashworthiness are structure and restraints. A good **STRUCTURAL DESIGN** means a strong occupant compartment (safety cage), crumple zones to absorb the force of a serious crash, and side structure that can manage the force of a striking vehicle or struck object.

Until recently **RESTRAINT SYSTEMS** typically included a basic lap/shoulder belt and frontal airbags. But now restraints are becoming more sophisticated. Crash-activated tensioners can reduce safety belt slack. Force limiters can reduce the chance of a rib injury from the belt itself. Advanced frontal airbags have inflation characteristics geared to specific crash circumstances, and other airbags are protecting people's heads and chests in side impacts. Even vehicle seats and head restraints, which can reduce the risk of neck injuries in rear impacts, are being upgraded.

The best way to evaluate a vehicle's structural design and restraint system is in dynamic tests that indicate how well people in real collisions would fare. Based on test performance, vehicles earn crashworthiness ratings from good to poor.

## **FRONTAL CRASHWORTHINESS**

Crash testing for consumer information began with the federal government's New Car Assessment Program (NCAP) of 35 mph **FRONTAL CRASHES HEAD ON** into a rigid barrier. A demanding assessment of vehicle restraints, this test has led to numerous restraint system improvements. The Insurance Institute for Highway Safety (IIHS) also conducts frontal tests for consumer



*IIHS and the government rate vehicles based on crash test results. Check the ratings ([iihs.org/ratings](https://www.iihs.org/ratings) and [safercar.gov](https://www.safercar.gov)) for vehicles that provide good protection in frontal crashes.*

information. These **40 MPH OFFSET TESTS** complement NCAP tests and have spurred improvements in vehicle structures. IIHS and NCAP tests are barrier impacts, equivalent to a vehicle striking the front of an identical vehicle, so the tests are easier for smaller vehicles. But a small car, for example, wouldn't be expected to fare as well in a crash with a larger, heavier vehicle. These days most passenger vehicles earn good ratings in frontal tests conducted by both IIHS and NCAP. Make sure this is true of any vehicle you're considering for purchase, and then go on to assess its performance in side and rear tests.

## **SIDE CRASHWORTHINESS**

IIHS and NCAP rate passenger vehicles based on tests that simulate **FRONT-INTO-SIDE** crashes. In the NCAP test, vehicles are struck by a moving barrier that mimics a car, so this test doesn't assess the risk to car occupants' heads when their vehicles are struck in the side by high-riding vehicles like SUVs and pickups. In the IIHS test, the moving barrier represents a pickup or SUV.



***IIHS's side crash test is more demanding than the federal government's test. The striking barrier is higher, so the test mimics impacts that put occupants' heads at risk. Choose a vehicle that earns a good rating in the IIHS test. Vehicles that do are equipped with side airbags that protect people's heads.***

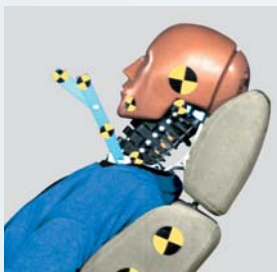
This higher profile means the IIHS test is more demanding. In real-world crashes like this test, there's an elevated risk of head injury. Performance in the IIHS test vary widely, and the vehicles rated good have side airbags that protect people's heads. Studies of real-world crashes indicate that these substantially reduce fatality risk in serious side impacts. Some side airbags also are designed to protect people in rollover crashes.

If side airbags are options in a vehicle you're thinking of buying, go ahead and purchase this option. Make sure the airbags are designed to protect your head, chest, and abdomen.



## REAR CRASHWORTHINESS

Compared with front and side crashes, rear impacts are less likely to cause life-threatening injuries. Yet rear-enders occur frequently and often cause neck injuries to people in struck vehicles. Such injuries can be painful and involve costly, long-term consequences. When a vehicle is struck in the rear, an occupant suddenly moves forward with the seat, and if the head isn't supported it will lag behind the body. This bends and stretches the neck backward in a **WHIPLASH INJURY**. Seat/head restraints can reduce these injuries by keeping the head and body moving together in a rear impact. IIHS evaluates how well seat/head restraints accomplish this by first measuring restraint geometry (the higher and closer to the back of the head, the better) and then, if the geometry is at least acceptable, testing the seat and restraint together in a simulated



***Good seat/head restraints start with good geometry. The restraints are positioned high and close behind the head.***

rear impact. You'll have to shop carefully for a vehicle that has a good rear crashworthiness rating (not many do). A complication is that vehicles are sold with optional seat packages, so one model may include multiple seat/head restraint designs with different ratings. Match the seat package in the model you're buying to its rating (most seat packages have been rated). And before you drive away in your new car, check to see if the head restraint requires adjustment to extend as high as needed. If so, adjust it for optimal protection.

## REMEMBER THE BASICS

Now that you know what safety aspects to look for — vehicle size matters, and so do crash avoidance features and crashworthiness ratings — you know how to factor safety

into your decision about a vehicle to purchase. You don't have to give up a stylish vehicle to get a safer one. You can have both.

***To find and compare safety ratings for hundreds of vehicles, go to:***  
***[iihs.org/ratings](http://iihs.org/ratings)***  
***[safecar.gov](http://safecar.gov)***



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