

U.S. NEWS

THE NUMBERS | By Jo Craven McGinty

Taking a Back Seat Is No Longer Safer



If you're one of the 41.4 million Americans AAA predicts will hit the road this Independence Day weekend—typically, a high point for motor-vehicle deaths—here's something to keep in mind:

Front and rear seat belts don't offer the same level of protection.

In a 2015 study that compared fatalities, belted passengers riding in the rear were 46% more likely to die than those riding up front.

That's a shift from the past.

Rear-seat passengers used to be less likely to die in a car crash, but technology has erased the advantage. It's no more dangerous to ride in the rear than it once was—especially in newer vehicles, which offer all passengers more protection than older models—but front seats are now equipped with sophisticated restraints that generally aren't used in back.

"There are no regulations for crash testing the rear seat," said David Zuby, head

researcher at the Insurance Institute for Highway Safety. "That's largely why you don't see features in the back that you see in front."

Seat belts work by restraining passengers when a motor vehicle decelerates rapidly or comes to an abrupt halt. Without the restraints, occupants would hurl through the passenger compartment at the speed the vehicle was traveling before crashing.

For the sake of comfort, modern seat belts give a little as occupants move. But if a passenger suddenly pitches forward, a mechanism called an inertia-lock retractor will prevent the belt from completely unspooling. This device is used in both front and rear seat belts.

"It doesn't get any tighter," Mr. Zuby said. "It just stops where it is."

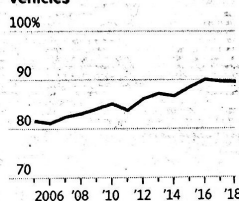
Front seat belts, though, have two safety features that typically aren't found in back: a pretensioner and a load limiter.

The pretensioner reels in a seat belt when a vehicle rap-

Buckling Up

In the U.S., seat-belt usage has gone up, helping to reduce motor vehicle fatalities.

Seat-belt usage in passenger vehicles



Note: Fatality rates include all motor vehicles. 2018 fatality rate is projected.
Source: U.S. Department of Transportation

idly decelerates, pulling occupants firmly against the seat to prevent them from smashing into the steering wheel or glove compartment.

The load limiter causes the belt to loosen slightly if the tension of a passenger launching forward against an unyielding belt reaches a dangerous threshold.

"The idea of a seat belt is twofold," Mr. Zuby said.

"Pretensioners take out slack before the occupant pushes into the belt. Load limiters

allow the belt to pay out to make sure the forces that keep you with the car don't get high enough to injure you, in particular your chest."

To see what happens in frontal crashes—when seat belts offer the most protection—the Insurance Institute examined injuries to 117 belted rear-seat passengers in collisions that occurred from 2004 through 2015.

The occupants in the study, which was published

in April, were age 6 or older. The vehicles were model year 2000 or later and were no more than 10 years old at the time of the crash.

Thirty-six of the rear-seat passengers were seriously injured and 81 were killed. More than half were more seriously injured than front-seat passengers in the same crash.

"What the study found is that we now have crashes where front-seat occupants are surviving with minor or no injuries, and yet people in rear seats are severely injured or in some cases dead," Mr. Zuby said.

Forty-four of the crashes, or about 79% of those with enough data to make a determination, were considered survivable.

A primary cause of injury in the crashes was seat-belt loading, when extreme force was exerted by the belt against the passenger.

The National Highway Traffic Safety Administration doesn't require manufacturers to install pretensioners or load limiters, but by model year

2008, all new cars, light trucks and vans sold in the U.S. were equipped with the devices in the driver's and right-front passenger seats.

Since then, a 2013 study by NHTSA has found that front-seat occupants of passenger vehicles wearing seat belts with pretensioners and load limiters had a 12.8% lower fatality risk than occupants restrained by front-seat belts without them.

Still, it's difficult to predict how well front-seat safety features would work in the rear because of differences in the compartments and their passengers.

"There is less space between where you're sitting and the thing in front of you that you would hit," Mr. Zuby said, "and whatever you put in the rear-seat compartment has to work for teeny-weeny kids in child restraints, up to full-size adults."

Nevertheless, he said, the institute's preliminary findings suggest the additional safety devices would reduce injury risk—"even if we can't put a number on it at this time."

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