

Unbelted backseat passengers produce deadly results

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Holiday travelers: Listen up and buckle up. New research shows that unbelted backseat passengers risk injury or death to themselves and the driver seated in front of them in the event of a head-on crash.

Automobile sled tests simulating head-on crashes between two vehicles and using crash-test dummies have demonstrated the likelihood of severe head and chest traumas for driver and passenger caused by an unbelted passenger slamming into the seat of a belted driver.

The risk of severe injury was not evident during sled tests involving driver and passenger dummies restrained by seat belts, according to the researchers. A driver's side airbag was used in all tests.

"The tests show clearly that unrestrained rear-seat passengers place themselves, as well as their driver, at great risk of serious injury when involved in a head-on crash," says lead researcher James Mayrose, Ph.D., adjunct assistant professor of mechanical and aerospace engineering in the University at Buffalo School of Engineering and Applied Sciences.

Tests using unbelted "adult" crash dummies and dummies approximating the size and weight of a six-year-old child showed similar results: severe chest and head trauma for both passenger and belted driver, according to Mayrose.

The injuries were indicated by sensors mounted to and within the dummies. The sensors showed significant acceleration of the dummies' head, neck and chest, as well as dramatic impact loads to these body parts. All sled tests were conducted according to the protocols of the Federal Motor Vehicle Safety Standard.

"It doesn't matter if it's an adult-sized person seated behind you, a small child, or even if you have packages or luggage placed in the seat behind you, if they are not belted or safely secured, they can inflict fatal injuries to a driver," Mayrose warns.

The researchers also tested the possibility of injury occurring during a side-impact collision to the driver's side of a car. The results showed that an unbelted backseat passenger on the driver's side would receive severe or fatal injury, but the belted driver was not at greater risk for injury.

The results, published in November in the Journal of Trauma, validate previous findings by Mayrose and co-researchers that were based on analysis of data from nearly 300,000 fatal crashes over seven years and on preliminary sled tests.

Mayrose points out that seat-belt use has increased significantly over the years, reaching 82 percent compliance in 2005, according to the U.S. Department of Transportation. But most seat-belt laws for adults, including New York State law, do not require adult rear-seat passengers to buckle up.

"Based on our results, state law should mandate that everyone in the vehicle must wear a safety belt, no matter where they sit," Mayrose concludes.

Source: University at Buffalo

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