

Ralph's Accident Reconstruction Newsletter

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added a second (shoulder) belt to the already present lap belt, but this two-belt system for three-point restraint was cumbersome, unsightly, and often not properly used. This led to the current three-point, single-belt design now almost universally present in cars and light trucks.

Still, the injuries and fatalities increased. Some of the increase was related to the failure of the drivers and occupants to use (or to properly use) the simple safety devices incorporated into their vehicles. But some of the increase was also attributable to higher speeds and higher traffic densities. Many people are not aware that the webbing of a safety belt has some elasticity. You wouldn't notice it when you pull on it—it seems unstretchy. But a 200 pound man driving a car which experiences a 20-g deceleration at impact will briefly weigh 4000 pounds (yes, that's two tons), and his safety belt will stretch if it's being properly worn. The effects of this high load on a safety belt will demonstrate, after a collision, that it was in use at the time of the impact: usually, there will be witness marks (which look like scratches) on the "D" ring of a safety belt which was in proper use at the time of the collision, and the webbing will often exhibit failures of some of the strands. Some safety belts incorporate a region which opens at impact, revealing a message that it has been involved in a collision and must be replaced. Do you really want slack in your safety belt as you drive down the highway? (Subtle hint: The answer is NO!)

So, the safety belt stretches. In a severe impact, parts of the anatomy can still strike interior components, even with a properly worn safety belt. So we now have air bags. These are called supplemental impact restraints (or similar terms) because they are not intended to be the main method of occupant protection. Although air bags alone have provided injury protection in a few isolated cases, they can often create more harm than good when the seat belt isn't worn. An air bag can be an ejection aid to an unrestrained driver or occupant in a lateral collision, and some air bags have caused fatal injuries to unrestrained occupants and to occupants (or their victims) who did not follow specific recommendations, such as NEVER using a rear-facing child car seat in a front seat position with an adjacent active air bag.

Not as obvious as safety belts and air bags are energy-absorbing front and rear bumpers and other components of a motor vehicle designed to provide occupant protection during a collision. The government and other organizations conduct crash tests on cars, SUVs, and light trucks, reporting the results to the motoring public in simple terms, such as a crash rating based on stars awarded, with five stars being the highest rating. This testing and the proliferation of the results have caused manufacturers to design the structures of their vehicles to better protect the people inside during a crash.

As long as there are personal automobiles and open roads, there will be crashes. If you need forensic consulting services related to a motor vehicle collision or to the other vehicle-related services I offer, please call.

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