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Rollover Casualties: Unnecessary Losses

Rollover crashes have killed more than 250,000 people since the inadequate roof crush standard went into effect in 1973. The physics of rollover crashes are indisputable: Rollover crashes occur over 4 to 6 seconds, whereas other crashes are over in milliseconds. Consequently, occupant protection can readily be achieved through a proper pretensioned rollover restraint keeping the occupant in the survival zone of the vehicle; maintenance of the occupant survival space; and keeping the portals of ejection, e.g., side windows, intact thus preventing exposure to partial ejection.

Too Many Occupants are Killed and Injured in Rollover Crashes

- Each year, more than 10,500 people die in rollovers, and another 24,000 to 30,000 are seriously injured.¹²
- Nearly one third of all vehicle occupant fatalities are in rollovers, and nearly half of all rollover fatalities are in SUVs and pickups.
- SUVs and pickups are two-to-three-times likelier to be involved in a rollover than passenger cars per registered vehicle.

These Costly Losses Can Be Affordably Prevented

- Using NHTSA's estimates of the cost of injury³ and data from the National Accident Sampling System, we estimate that the lifetime cost of deaths and injuries in rollovers is substantial: more than \$1,000 for passenger cars, nearly \$4,000 for SUVs, and more than \$2,000 in pickups.⁴ Rollovers with ejections are the largest single class of casualties.
- If NHTSA's estimates about electronic stability systems (ESC) are correct and if ESC can cut the number of rollovers roughly in half, the casualty losses from rollovers would justify a major expenditure to reduce those losses. However, the cost of a strong roof and an effective restraint system is on the order of \$100 per vehicle.

Adequate Occupant Protection Makes Rollovers Survivable

- Most rollovers are essentially low-force crashes that have been demonstrated to be easily survivable if occupants are properly protected.
- Race cars have been equipped with roll cages and effective restraint systems for decades, and while they are routinely involved in more serious rollovers than the rollovers that occur on public roads, there has never been a documented case of a race car driver seriously injured or killed in a crash where a rollover was the most serious event.
- In a passenger vehicle, the protection of a racing car can be provided with a strong roof, a safety belt system that has a rollover-triggered pretensioner, the interior padding in the head impact area now required by FMVSS 201, and windows that do not fail in a rollover.

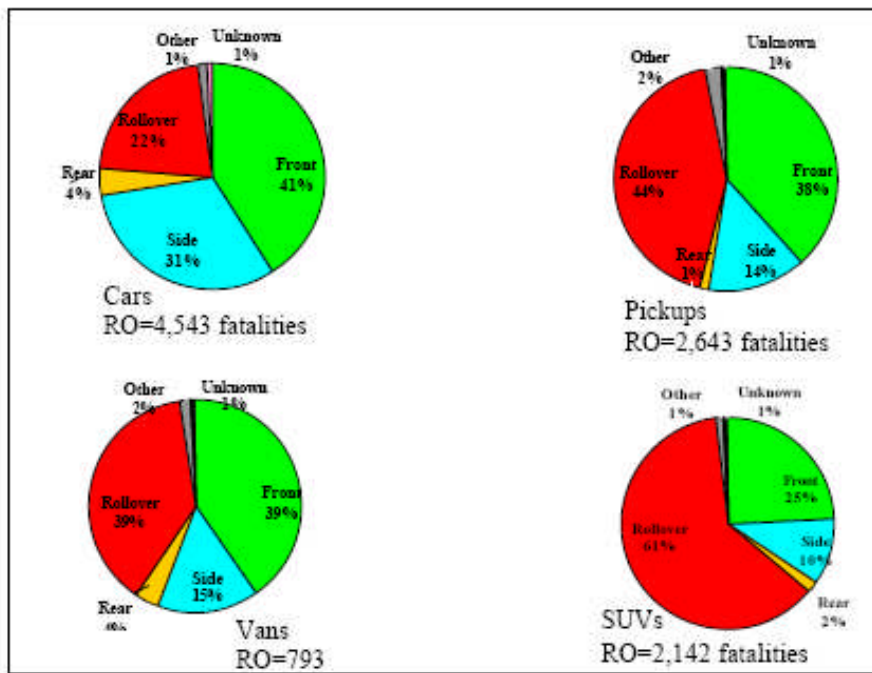
¹ *Initiatives to Address the Mitigation of Vehicle Rollover*, National Highway Traffic Safety Administration, Washington, D.C.: June 2003. This document gives the higher estimate of serious injuries.

² 70 F.R. 49223, Roof Crush Resistance. This document gives the lower estimate of serious injuries.

³ Blincoe, Lawrence J., et al, *The Economic Impact of Motor Vehicle Crashes 2000*, National Highway Traffic Safety Administration, Washington, D.C.: May 2002.

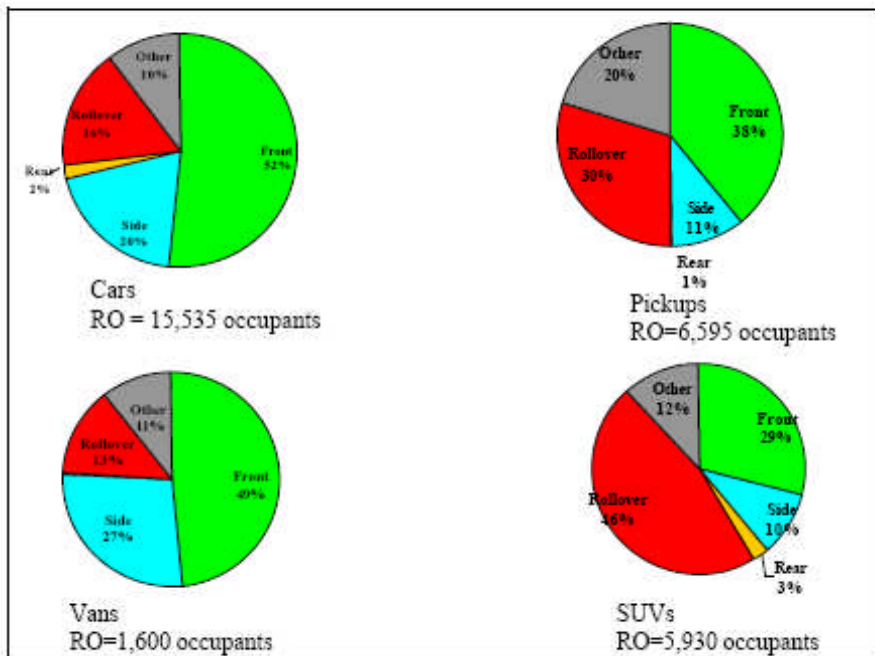
⁴ Nash, Carl E., *What NASS Rollover Cases Tell Us*, National Crash Analysis Center, the George Washington University, Experimental Safety Vehicle Conference, Leon, France: 2006.

FIGURE 3: Rollover Occupant Fatalities by Vehicle Type



Source: FARS 2001

FIGURE 2: Seriously Injured Non-Fatal Rollover Occupants by Vehicle Type



Source: Average Annual Estimate NASS-CDS 1997-2001

From NHTSA's *Initiatives to Address the Mitigation of Vehicle Rollover*.