

# Declining Death Rates Due to Safer Vehicles, Not Better Drivers Or Improved Roadways

August 10 2006

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The designs of passenger vehicles have been improving for years, becoming more protective of their occupants in crashes. Without these improvements, the motor vehicle death rate per registered vehicle would have stopped declining in 1994 and started going up. This is the main finding of a study by the Insurance Institute for Highway Safety.

“Death rates per vehicle and per mile have been going down for decades, and they still are. This study shows why,” says Institute president Adrian Lund.

“In recent years it’s the vehicles, not better drivers or improved roadways. The study reveals not only the importance of the vehicle design changes and the kinds of vehicles motorists are choosing to drive but, on the downside, the loss of momentum for effective traffic safety policies on belt use, alcohol-impaired driving, and speeding.”

The researchers separated vehicle effects from other effects on motor vehicle death rates during 1985-2004 by estimating what the death rate trend would have been if vehicle designs hadn’t changed over the years — that is, if people were driving the kinds of vehicles they drove in 1985. The death rate trend given

this hypothetical vehicle fleet started to go up in the 1990s, which is very different from the actual downward trend during the past 10 years.

“This suggests that an increasingly dangerous traffic environment has been offset since 1994 only because people are driving vehicles that are more protective,”

Lund points out. “Of course the vehicle design changes are good, but people shouldn’t have to buy new, more crashworthy vehicles to maintain their safety.

Our concern is that the efforts we had been seeing in the 1980s to mandate belt use and toughen DWI laws diminished in the 1990s at the same time that states were raising speed limits. This produced an increasingly dangerous traffic environment. It has become dangerous enough that, without the design improvements that have made vehicles more crashworthy, death rates would have started up. An estimated 5,200 additional lives would have been lost in 2004 without the vehicle design changes.”

To clarify what has been making deaths per registered vehicle go down, Institute researchers focused on two factors that influenced the driver death rate during 1985-2004. One is how vehicle use patterns change as vehicles age. The other is vehicle design changes — the introduction over time of different types of vehicles and more crashworthy ones to replace vehicles that weren’t doing as good a job of protecting their occupants. In the US fleet these two factors can have countervailing influences. As vehicles age, their death rates go up. On

the other hand, more crashworthy vehicles have been introduced, and their death rates are lower than in the older vehicles they replaced. Plus the types of vehicles in the fleet have shifted, and the shift from driving cars to SUVs can change the death rates.

The researchers computed death rates for vehicle models that didn't change in design over three model years — 1996-98 models during 1999, for example. This eliminated the effects of any design changes on the death rate because there were no such changes. Computing the rates for several model year groups without design changes during individual calendar years, the researchers found that, on average, the death rate per registered vehicle increased 1 to 5 percent in each year of the first 7 years on the road.

Then the researchers separated out vehicle design effects on death rates by following the same vehicles over time. The rates still were affected by vehicle aging so, having already estimated the age effects, the researchers factored them out too. This is when the data revealed that the downward trend in death rates would have ended in the early 1990s. An upward trend would have begun if not for the changes in vehicle designs.

“The downward trend in death rates even as speed limits were being raised on US roads led some speed advocates to argue that posted limits don't matter,” Lund says. “But our research shows that speed limits do matter because, once we adjusted for vehicle age and design, what became clear are the escalating dangers of everyday traffic. We have serious problems out there with faster

travel speeds,  
and we need to address these problems with effective policies. Of course, we also need to continue to improve vehicles because right now this is the main protection in crashes associated with unchecked driving behavior like speeding.”

The research report, “Trends over time in the risk of driver death: what if vehicle designs had not improved?” by C.M. Farmer and A.K. Lund will be published in the journal, *Traffic Injury Prevention*, later this year.

Source: Insurance Institute for Highway Safety

Citation: Declining Death Rates Due to Safer Vehicles, Not Better Drivers Or Improved Roadways (2006, August 10) retrieved 6 May 2024 from <https://phys.org/news/2006-08-declining-death-due-safer-vehicles.html>

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