

Statistics Suggest That Safety Features Are Worth The Cost

By Rick Popely and Jim Mateja - Knight Ridder News Service, Chicago

The death rate was 1.5 per 100 million miles driven in 2000, down from 5.5 in 1966. Seat belts get most credit.

Cars and light trucks, come with dozens of standard safety features that add hundreds of dollars to the vehicle's price. But are they worth the cost?

Traffic statistics are convincing. In 1966, before a federal traffic safety agency was created to develop regulations for new vehicles, 50,894 Americans died in highway accidents. That includes people on motorcycles and bicycles, pedestrians, and occupants of all types of vehicles.

By 2000, the latest year for which statistics are available, the number of deaths had fallen to 41,821. Traffic fatalities declined 18 percent in that period though the number of vehicles on the road more than doubled to 217 million from 95.7 million, and the number of licensed drivers nearly doubled to 190.6 million. The death rate dropped to 1.5 per 100 million miles driven in 2000, the lowest ever, from 5.5 in 1966. Seat belts, one of the few safety features required in 1966, receive most of the credit.

The National Highway Traffic Safety Administration, the agency established to oversee these regulations, estimates that front seat belts saved 11,899 lives in 2000. The agency puts an asterisk on this statistic by saying it counts lives saved by seat belts first and air bags second. If someone is belted when an air bag deploys, the belt gets the credit, even if the air bag helped.

There is no comparable statistic for 1966, but one obvious difference between then and now is that only a handful of people used seat belts in 1966, and 73 percent of front-seat occupants buckle up today. Another is that, in 1966, seat belts consisted of a lap belt only, with

lap/shoulder belts, which offer greater protection, not required until the 1968 model year.

Jim Simons, the traffic safety agency's director of regulatory analysis and evaluations, said front seat belts cost \$61 to \$86 per vehicle. The agency estimates that belts have saved 135,000 lives since 1975, the first year the agency kept such statistics.

Air bags are the most expensive safety feature required on new vehicles and the most publicized in recent years. A recent study by the traffic safety agency concluded that air bags cost \$328 to \$477 per vehicle, depending on manufacturer, and that they saved 1,585 lives in 2000 and 8,852 since 1984.

In 1984, before air bags became widely available, the agency projected that dual front air bags on cars and light trucks would save 4,500 lives per year based on 46 percent seatbelt use. Simons says air bags have saved far fewer lives than expected because the agency's projections were based on results of a government crash test. Vehicles are run head-on into a flat, fixed barrier, what Simon's calls the "12 o'clock position," and most real-world crashes are at angles. "More real-world crashes are at 1 or 2 o'clock, or, 10 and 11, and there are fewer head-on crashes," he said. "As the angle got more away from directly head-on, the air bags would become less effective."

Nevertheless, Simons said, "anything that can save that many lives a year is huge." Air bags also have been cited in 208 deaths, primarily children and small-women who in most cases were not belted.

Because of this, the traffic safety agency changed its rules in 1998 to allow automakers to use air bags that deploy with less force and asked that children younger than 13 sit in rear seats.

Before 1998 federal regulations called for bags to deploy at a force sufficient to protect an unbelted 175-pound adult male, a rule that automakers met with air bags that deployed at speeds of up to 200 MPH.

Since the rule was changed, air-bag-related deaths have dropped dramatically. On Oct. 1, 1999, 146 air-bag-related deaths were confirmed; there have been 62 since. Simons says bags will become less risky as the industry phases in advanced versions that deploy based on the size and weight of the seat occupant, impact speed and whether the occupant is belted.

"I don't think it's possible to totally eliminate that as a problem, but we'll get very close," he said.

The number of lives saved by air bags increases annually as the percentage of vehicles equipped with them increases. "when we eventually have a full fleet of vehicles with both air bags and seat belts, if belt use increases the number of lives saved by belts increases and the number of lives saved by air bags goes down," Simons said.

The traffic safety agency estimates that 70 percent of vehicles have at least a driver's-side air bag and 60 percent or more have dual-front air bags.

But belts and bags are not the whole story. New vehicles come with dozens of other federally required safety features, including collapsible steering columns, padded dashboards, and side marker lights, and rules governing seat strength, roof strength and braking capability.

The traffic safety agency, for example, calculated in 1981 that energy-absorbing, collapsible steering columns added \$19.30

(adjusted to 2000 dollars) to the cost of a passenger car, and prevented 23,000 injuries and 1,300 fatalities per year. The study has not been updated, and Simons said the numbers would be lower today because belt use was about 11 percent in 1981 and air bags had been installed in only about 10,000 cars at that time.

The agency does not calculate the total cost of safety regulations, which would be difficult given that automakers have leeway to devise their own compliance methods for several regulations. Automakers, which know the cost, won't say for competitive reasons and because of antitrust restrictions. The total adds up to several hundred dollars, and may run into the thousands.

How effective the regulations are is hard to measure, but the traffic safety agency estimated in 1991 that the safety rules saved 243,400 lives from 1966 to 1990.

"And that was before seat-belt use really started increasing," Simons said. "It's difficult to put a dollar figure on it, but there's no question that if you look at the investment made to improve vehicles, safety systems have proved to be cost-effective," said Brian O'Neill, president of the Insurance Institute for Highway Safety, a research and lobbying organization funded by the insurance industry.

O'Neill said he was pleased that automakers now offered safety devices that weren't required, such as side air bags and side curtains. But he wants more features, including ones that can prevent accidents.

"What interests me most are electronics that could be added to detect what is going to happen before it happens and automatically react to it," he said, such as a sophisticated stability-control system that detects a slide before it happens and applies the brakes or reduces engine power to prevent it.

"I'm very interested in precrash electronics that have the potential to improve the restraints we already have in vehicles," O'Neill said. He noted technology such as side-curtain systems offered in the Ford Explorer coming this fall in the Volvo XC90 sport-utility vehicle. They detect an impending rollover and deploy side curtain air bags before the vehicle rolls, and keep them deployed during the rollover.

History of U.S. Auto Safety Standards

1 Roof
1973: Crush-strength standards are adopted.

2 Windshield
1968: Defroster, wiper, washer and materials standards adopted.
1976: Minimum distance from passengers established.
1978: Minimum mounting strength established.

3 Power windows
1971: Operational standards implemented to prevent injuries.

4 Mirrors
1968: Side-view mirrors are made standard; they are required on the passenger side when the rear window view is limited.

5 Steering column
1968: Crash safety and padding rules established.

6 Interior protection
1968: Instrument panel, seat back, armrest crash standards established; head restraints are made mandatory.
1972: Interior flammability rules enacted.
1995: Window pillar strength requirements established.

7 Nonreflecting surfaces
1968: Nonreflecting surfaces are required on dashboards, steering wheels, wipers, etc.

8 Hood
1969: Two latches are required.

9 Lights
1968: Side marker lights, reflectors, backup lights are required.

10 Controls, displays
1968: All are required to lie within reach of belted driver; marking rules are established.
1972: All controls and displays must be labeled with words, and some must be illuminated.
1980: Standard marking symbols are adopted.

11 Bumpers
1982: Must survive a 2.5-m.p.h. impact without damage.

12 Seats
1968: Crash-strength rules are enacted.

13 Seat belts
1968: Lap or lap and shoulder belts are required for all seats, with exceptions for convertibles. The belts must hold in a 30-m.p.h. crash.
1971: Child seats must be tested and warnings issued on their use.

14 Air bags
1972: Air bags must pass a 30-m.p.h. impact test.
1998: They are required in the front seat.

15 Side impact
1993-96: Protection standards established in side-impact accidents.

16 Doors
1970: Strength standards are adopted for latches, locks and hinges.

17 Transmission
1968: Automatics cannot be started while in gear. Standard manual shift patterns are implemented.

18 Brakes
1968: Parking brake rules implemented; indicator lights are required.
1985: A high center brake light is required.

19 Fuel system
1968: Crash strength rules put in place.

20 Tires
1968: Ratings and labeling rules established.

SOURCE: General Motors, U.S. National Highway Traffic Safety Administration

Knight Ridder Tribune