



ISSUE: OCCUPANT CRASH PROTECTION

Introduction

Occupant protection is a shared responsibility of vehicle and equipment designers and passenger car occupants. While seat belts and child restraints must be well designed, easy to use and readily available to the public, drivers and other occupants must make proper use of this equipment to increase their chances of surviving a crash.

Not all occupants, however, exercise good judgment regarding their personal safety, or take simple steps to protect the welfare of their loved ones. Occupant protection is a matter of public health and safety, and the human and financial consequences of motor vehicle crashes, injuries and deaths are borne by society as a whole. The failure of drivers and other occupants to take basic steps to ensure their protection is not merely an individual decision, but a matter of general concern to society.

While portions of the population decide to adopt good safety practices, which may then become a matter of habit, other portions of the population require outside intervention to embrace good safety practices. To reach all segments of society, state laws and federal requirements are necessary.

Safety requirements set in legislation establish a clear and uniform code of conduct for all citizens. State laws and federal requirements have played a major role in convincing the majority of citizens to adapt their behavior on a number of health and safety issues. Such laws protect not only society's interest in reducing motor vehicle crashes, deaths and injuries, but they also improve the safety of individuals by increasing their chances of surviving a crash, even for those who only reluctantly abide by the law.

Mandatory legal requirements, coupled with educational materials and information, backed up by effective enforcement strategies, are the most effective means of reaching the maximum number of people.

Through the proper use of safety belts and other occupant protection devices, the number of motor vehicle-related deaths and injuries in Iowa is being dramatically reduced.



Photo credit: Airbagcrash.com

Air bags

The National Highway Transportation Safety Administration estimated 1,263 lives were saved by air bags in 1999 and an estimated 4,969 lives were saved by air bags from 1987 to 1999. Air bag overall fatality reducing effectiveness is estimated at 11 percent.

All new passenger cars, light trucks and vans are equipped with both driver and passenger front air bags. Air bags supplement the safety belt by reducing the chance that the occupant's head and upper body will strike some part of the vehicle's interior. They also help reduce the risk of serious injury by distributing crash forces more evenly across the occupant's body.

Front air bags are designed to deploy only in moderate to severe frontal or near-frontal collisions, and do not reduce the risk of injury in

rear, side or rollover crashes. Safety belts help reduce injury risk in many types of crashes.

Many new vehicles are also equipped with side air bags. While there are several types of side air bags, all are designed to reduce the risk of injury in moderate to severe side impact crashes. Unlike front air bags, side air bags are neither required nor regulated by NHTSA.

In addition, many advanced air bag technologies are being developed to tailor air bag deployment to the severity of the crash, the size and posture of the vehicle occupant, belt usage and how close that person is to the air bag module.

Even with advanced air bag technologies, children ages 12 and under should always ride in a rear seating position in an appropriate restraint system.



Image credit: NHTSA

Child restraint

Motor vehicle crashes are the leading cause of death for children between the ages of one and fifteen years old. A majority of the children who die in motor vehicle crashes are unrestrained.

When child occupants are properly restrained in a child safety seat, booster seat or safety belt, as appropriate for their age and size, their chance of being killed or seriously injured in a crash is greatly reduced. Child safety seats reduce fatal injury by 71 percent for infants and by 54 percent for toddlers.

During 2002, vehicle occupants killed in Iowa traffic crashes included six children under age six, down five from 11 killed in 2001. Nine traffic deaths for children under age six in vehicles were recorded in 2000. Three of the six children killed in 2002 were restrained in the vehicle while seven of the 11 children killed in 2001 were restrained. In addition to the fatalities, 60 - 80 young children are seriously injured in Iowa vehicle crashes each year.

Iowa has had a child passenger safety restraint law in effect since Jan. 1, 1985, requiring that all vehicle occupants under age 6 be restrained regardless of seating position. Surveys conducted by the University of Iowa for the Governor's Traffic Safety Bureau (GTSB) during 2003 measured Iowa's average child restraint usage at 84 percent, up 8 percent from the 2002 figure of 76 percent.

Iowa has 20 child safety seat fitting stations—using local partnerships with fire departments, law enforcement and emergency response entities, auto-related commercial businesses, and local volunteers. As of March 2001, Iowa had 246 child safety seat technicians and nearly 20 certified child safety seat instructors. Hundreds of Iowans have learned the correct use of child restraints through Iowa's fitting stations and the Safe Kids Buckle Up van. These multidisciplinary successes are brought about through the Iowa GTSB, Iowa Department of Public Health and National Safe Kids Campaign.



Seat belts

It would be impossible to overstate the lifesaving and dollar saving impact of increases in safety belt use. Seat belts are widely recognized as the single most effective safety device in passenger motor vehicles and are estimated to have saved more than 5,431 lives in Iowa since July 1, 1986, including 210 lives so far this year.

One individual's decision can lead to dangerous consequences affecting others. In the event of a crash, an unbelted driver has less control of the vehicle, and unbelted occupants can become projectiles and injure other occupants. Additionally, medical costs for an unbuckled crash victim are 50 percent higher than those for a victim who used a seat belt. According to NHTSA, 85 percent of crash costs are absorbed by society. Moreover, and most poignantly, children imitate the behaviors of their parents -- if parents don't buckle up, neither will children. Similarly, a driver who uses a seat belt is three times more likely to restrain a child passenger than a driver who does not buckle up.

According to the NHTSA, in 2001, 73 percent of restrained passengers involved in a fatal crash

survived, compared to 44 percent of unrestrained occupants. Additionally, six out of 10 children who died in passenger vehicle crashes were unbelted.

Forty states plus the District of Columbia and Puerto Rico achieved higher safety belt use rates in 2003 than the year before, according to a new statistical analysis released in November 2003 by NHTSA. Safety belt use in the United States has reached 79 percent – the highest level in the nation’s history. Iowa reached an 86.2 percent usage rate, an increase of nearly 4 percent over 2002 (82.4%).

In July 1987, the Iowa Insurance Division ordered insurance companies to cut auto liability premiums 5 percent because the state’s seat belt law had reduced insurance losses. The change saves Iowans an estimated \$11 million per year in insurance premiums.

Studies conducted in several states revealed integrating safety belt enforcement with other traffic enforcement programs (i.e., speed, operating while impaired, child restraint use) results in greater and longer lasting gains in usage rates. Therefore, one of the key advantages of an occupant protection enforcement program is that it does not require the use of additional resources (equipment or personnel), nor does it require an increase in patrol hours (i.e., overtime, etc.).

A policy to ticket safety belt or child restraint violations as part of an ongoing patrol activity can be subscribed to easily. Integrated enforcement can be conducted even in situations where personnel resources have been diminished.

During the autumn of 2002, 82.35 percent of motorists surveyed on all Iowa roadways were wearing safety belts, an increase of nearly 1.5 percent from the previous year (see Chart 1- Seat Belt Usage).

For the second consecutive year, safety belt usage increased on three of the four road systems studied. Belt usage on secondary road systems (county roads) led the way with a 3.7 percent increase over the previous year. Since more than 30 percent of all motor vehicle fatalities occur on secondary road systems, this usage increase is great news. Continued belt usage enforcement and ongoing public

education for the motoring public concerning the importance of safety belt and child safety seat usage on the secondary road system, even for short distance trips, must be maintained.

Safety belt use on municipal road systems (city streets) increased 3.31 percent. This, too, is encouraging since more than 45 percent of all motor vehicle crashes occur on city streets and belt usage on the municipal road system has historically been the lowest of the road systems studied. In communities with good usage, sustained enforcement efforts and public education will further improve safety restraint use; in communities where usage is still low, intensified enforcement efforts and enhanced public education is necessary.

Primary System (U.S. and state highways) safety belt usage rose .21 percent. Since this falls within the +/- 0.29% estimated variance, actual belt usage could range from no increase to an increase of .5 percent. This drops usage on state and U.S. highways from the highest in 2001 to ranking third among the road systems. This is of concern to safety specialists because almost half of the traffic fatalities (47 percent) occur on the Primary Road System.

There was a decline in interstate belt use of -.37 percent. Since these surveys began, this is only the second year that Interstate System usage has not been the highest of all the roadway systems. This is the fourth decline since its highest usage rate in 1995, and may be cause for concern for safety officials due to the increasing traffic density and higher travel speeds on the Interstate System. One possible explanation for this decline is the increased number of out-of-state drivers traveling through Iowa on the interstates. These drivers may not be aware of Iowa’s safety belt law. Increased enforcement, public education, media-supported awareness and additional signage could restore these roadways to their highest usage status.

Belt usage for 15,078 front seat occupants of cars, vans and pickups was observed at 100 locations. Of these front seat occupants, 83.45 percent of drivers (9,537 out of 11,428) and 76.06 percent of front seat passengers (2,777 out of 3,650) were observed using safety belts. For 583 front seat occupants, belt usage or non-usage could not be determined.