

This fact sheet summarizes the evaluation and recommendations regarding motor vehicle occupant injury from the Task Force on Community Preventive Services (Task Force) in the Community Guide. The Community Guide addresses the effectiveness of population-based interventions for three strategies to reduce injuries sustained from motor vehicle crashes: 1) increasing the proper use of child safety seats, 2) increasing the use of safety belts, and 3) reducing alcohol-impaired driving.

State health agencies can work with other state and local agencies, such as the Department of Transportation, law enforcement, advocacy groups, child care providers, and the private sector (e.g., automobile insurers and car dealers) to improve traffic safety and reduce morbidity and mortality from motor vehicle injuries.

Background Information

- In the past 80 years, the mortality rate from motor vehicle crashes has declined by 90 percent, despite dramatic increases in the number of drivers, number of cars on the road, and the number of miles driven. This public health achievement is the result of several private and public partnerships occurring at the local, state, and federal levels.
- In 2004, there were 42,636 deaths from injuries related to motor vehicle crashes in the U.S.
- Motor vehicle occupant injuries are the leading cause of death among 3–33 year-olds in the U.S.
- In 2002, motor vehicle crash deaths among 16–20 year-olds was more than twice the number of deaths by homicide, the second leading cause of mortality for that age group.
- Child safety seats, when they are correctly installed and used, reduce the risk of death by 70 percent for infants, 47–54 percent for toddlers and reduce the need for hospitalization by 69 percent for children four years of age and under.
- Wearing a safety belt is the single most effective way to reduce fatal and nonfatal injuries from motor vehicle crashes. Only 82 percent of Americans use safety belts.
- Over 40 percent of fatal crashes are related to alcohol. In 2004, alcohol-related crashes resulted in over 16,000 deaths and about 249,000 injuries in the U.S.

Interventions recommended with strong evidence

- Child safety seat use laws
 - Review included nine studies. The laws increased child safety seat use by a median 13 percent and decreased fatal injuries by a median of 35 percent. They decreased fatal and nonfatal injuries combined by a median of 17 percent.
 - Among studies that examined the laws' effects on injury rates, researchers observed no difference in effect size based on the age of children who were required to use safety seats.
- Child safety seat distribution and education programs
 - Reviewed studies included programs that provide free loaner seats, low-cost rentals, or direct giveaways. The programs reviewed also included an education component regarding the proper way to secure children and correctly install the seat.
 - A 23 percent increase in possession of and proper use of child safety seats was observed.
 - Effective programs included: hospital/clinic distribution; auto insurance company distribution; and distribution via postnatal home visit. Programs were effective in affluent and poor populations and when located in urban, suburban, and rural settings.
- Safety belt use laws
 - Review included 33 studies. Safety belt laws decreased fatal injuries by a median of nine percent and nonfatal injuries by a median of two percent. Safety belt laws increased observed belt use by a median of 33 percentage points.

- Primary enforcement laws for safety belts
 - Primary enforcement laws allow police to stop drivers solely for being unbelted; 21 states and Washington, DC have primary safety belt laws. Secondary laws allow police to ticket drivers who are unbelted only if the driver is stopped for another reason; 28 states have secondary safety belt laws.
 - Review included 13 studies. Five of these evaluated changes in the number of fatalities between states with primary and secondary safety belt laws and a greater difference in fatalities of a median of eight percent was observed in primary law states. Five studies examined change in seatbelt use and found a median increase (relative to states with secondary laws) of 14 percentage points.
- Enhanced enforcement programs for safety belt law violations
 - These programs are conducted to supplement the normal enforcement practices and include a publicity component. Programs may either increase citations and the number of officers on patrol (supplemental approach) or encourage increased citations during an officer's normal patrol (targeted approach).
 - Review included 15 studies. Programs observed a median increase in safety belt use of 16 percentage points. These increases were similar regardless of the enforcement program approach.
 - Two of the reviewed studies reported reductions (seven percent and 15 percent) in combined fatal and nonfatal injuries.
- Lower (0.8 Percent) Blood Alcohol Concentration (BAC) Laws
 - Review included nine studies. Seven percent median decreases in fatal alcohol-related crashes were observed among the studies.
 - Estimates from three of the studies suggest that 400–600 lives could be saved annually if all states enact 0.08% BAC laws.
 - Currently, all states currently have 0.8 BAC Laws
- Minimum legal drinking age (MLDA) laws
 - Review included 14 studies that assessed the effects of raising the MLDA and nine studies that assessed the effects of lowering the drinking age. Most studies assessed changes from 18 to 21 or vice versa.
 - In studies where the MLDA was raised, the median decrease in crash-related outcomes was 16 percent for the targeted age group.
 - In studies where the MLDA was lowered, the median increase in crash-related outcomes was 10 percent for the targeted age group.
- Sobriety checkpoints
 - Law enforcement officers systematically stop drivers to assess alcohol impairment at sobriety checkpoints. Random breath testing (RBT) checkpoints test all drivers passing by periodic unannounced checkpoints for BAC. In selective breath testing (SBT), the officer must have reason to suspect the driver has been drinking. Only SBT is used in the U.S.
 - Review included 23 studies. Implementation of checkpoints led to median declines of 18 percent (RBT) and 20 percent (SBT) in crashes believed to involve alcohol. Implementation of checkpoints led to median declines of 22 percent (RBT) and 23 percent (SBT) in fatal crashes believed to involve alcohol.
 - Declines in crashes were consistent regardless of follow-up time (<1 year versus >1 year).
- Mass media campaigns to prevent alcohol-impaired driving
 - Review included 15 studies. Seven found that media campaigns were associated with a decrease (median=13 percent) in total alcohol-related crashes. Six found campaigns were associated with a decrease (median=10 percent) in injury-producing alcohol-related crashes. Two reported that campaigns were associated with net decreases (30 percent and 158 percent) in the proportion of drivers who had consumed alcohol.

Interventions recommended with sufficient evidence

- Community-wide information and enhanced enforcement campaigns to promote correct child safety seat use.
 - Four studies were reviewed. Campaigns used mass media, mailings, and safety seat displays in public locations to promote use and included enforcement strategies.
 - Child seat use increased by a median of 12 percent.
 - The studies reviewed included populations from cities, suburbs, and states and examined effects on all socioeconomic levels.
- Child safety seat incentive and education programs
 - Four studies were reviewed. Use of safety seats increased by a median of 10 percent within 4.5 months after the program. Effectiveness beyond 4.5 months was not evaluated.

- Programs were implemented in day care centers and were effective in diverse populations and in urban and rural settings.
- Lower BAC Laws for young or inexperienced drivers
 - In the U.S., these laws apply to all drivers under the age of 21. The illegal level varies by state from any detectable BAC to 0.02 percent.
 - Six studies were reviewed. Three reported declines in fatal crash outcomes (ranging from 9-24 percent), two reported declines in injury crash outcomes (four percent and 17 percent), and one reported a decline (11 percent) in crashes which the investigating officer believed to be alcohol-related.
- Server intervention training programs
 - These programs alter server practices to prevent intoxication at drinking establishments.
 - Review included four studies. In three, server training was associated with a median decrease of 33 percent in the proportion of intoxicated drivers. One study observed a 23 percent decrease in single-vehicle nighttime injury crashes associated with the server training programs.
- School-based instructional programs to reduce riding with alcohol impaired drivers
 - These programs alter server practices to prevent intoxication at drinking establishments.
 - Review included four studies, which indicated instructional programs led to small, but consistent change on self-reported riding with drinking drivers among participants.
 - The review also included five studies which examined the impact instruction programs have on driving and drinking. It found a small but inconsistent change on self-report drinking and driving.

Interventions with insufficient evidence to determine effectiveness

- Education-only programs to promote correct child safety seat use
- School-based peer organizations for reducing alcohol impaired driving
- School-based social norming campaigns reducing alcohol impaired driving
- Designated driver promotion campaigns reducing alcohol impaired driving
- Designated driver incentive programs reducing alcohol impaired driving

Resources

- The Guide to Community Preventive Services: www.thecommunityguide.org
- ASTHO Fact Sheet: Preventing Motor Vehicle Related Injuries <http://www.astho.org/pubs/factsheet1-05.pdf>
- Paving the Road to Health Together http://www.astho.org/pubs/25861_ASTHO.pdf
- The Centers for Disease Control and Prevention, National Center for Injury Prevention and Control <http://www.cdc.gov/health/motor.htm>
- National Highway Traffic Safety Administration <http://www.nhtsa.dot.gov/>
- National Council of State Legislatures <http://www.ncsl.org/programs/transportation/transp2.htm>
- Governors Highway Safety Association <http://www.ghsa.org/>
- Insurance Institute for Highway Safety <http://www.iihs.org/>
- The World Health Organization <http://www.who.int/world-health-day/2004/en/>
- Click it or Ticket Campaign <http://www.buckleupamerica.org/nmay05/nmay05.php>
- Healthy Mothers, Healthy Babies <http://www.hmhb.org/childpassengersafety.html>

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