

## Chapter 3. Policies that Reduce Motor Vehicle-Related Injuries and Fatalities

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### 3 Introduction: Policies that Reduce Motor Vehicle-Related Injuries and Fatalities

Through much of 1960s, 70s, and 80s, 40,000 to 50,000 people were killed each year in traffic crashes.<sup>300</sup> However, in the following decades, as effects were felt from major improvements in highway design, vehicle design, seat belt and anti-drunk driving laws, enforcement, and education, the number of fatalities began to drop. Even as vehicle miles traveled rose rapidly—tripling in the space of four decades<sup>301</sup>—the number of fatalities and injuries per mile driven

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<sup>300</sup> Historical Statistics of the United States. *Motor Vehicle Traffic Fatalities and Fatality Rates: 1900–1995*. Historical Statistics of the United States, Millennial Edition. Available at: <http://hsus.cambridge.org/HSUSWeb/toc/showTable.do?id=Df184-577> [accessed June 16, 2011].

<sup>301</sup> Historical Statistics of the United States. *Distance Traveled by Motor Vehicle Type and Highway Category: 1921-995*. Historical Statistics of the United States, Millennial Edition. Available at: <http://hsus.cambridge.org/HSUSWeb/toc/showTable.do?id=Df184-577> [accessed June 16, 2011].

dropped by nearly 80 percent, a truly dramatic achievement.<sup>302</sup> In 2009, there were 33,808 traffic fatalities, the lowest number since 1950.

This progress was due to concerted policy efforts. For example, the use of seat belts in passenger vehicles alone saved an estimated 75,000 lives or more between 2004 and 2008.<sup>303</sup> Despite these successes, motor vehicle crashes continue to be the leading cause of fatality and injury for Americans age 1 to 34. In addition to the 33,808 deaths in 2009, there were more than 2 million injuries.<sup>304</sup> In 2000, crash-related costs (property damage, lost productivity, and medical expenses) totaled more than \$230 billion.<sup>305</sup>

The dramatic reduction in the rate of traffic fatalities and injuries over the past decades and the more recent reduction in the absolute number of fatalities and injuries have been the result of targeted application of policies focused on three broad strategies:

- Preventing a traffic crash from happening in the first place (e.g., preventing alcohol-impaired driving, controlling speed, improving safe driving behavior, and improved vehicle handling)
- Reducing the level of injury in the event of a crash (e.g., increased use of seat belts, improvement in child restraint systems, and improvement in vehicle design in absorbing energy of a crash)
- Increasing the speed and quality of medical care after a crash has occurred (e.g., improving emergency medical services, reducing response times, improving care on site, and improved emergency hospital care).

### **Opportunities for Further Traffic Fatality and Injury Reductions**

Very substantial additional progress can be achieved by a combination of improving and continuing to apply policies that have contributed to past success and developing and implementing new ones. We have identified 15 policies within seven areas where substantial reductions can be achieved in traffic fatalities and injuries. The seven areas are:

- Driving under the influence (DUI)
- Distracted driving

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<sup>302</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2010. Traffic Safety Facts. *Highlights of 2009 Motor Vehicle Crashes*. DOT HS 811 363.

<sup>303</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2009. Traffic Safety Facts. *Lives Saved in 2008 by Restraint Use and Minimum Drinking Age Laws*. DOT HS 811 153.

<sup>304</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2010. Traffic Safety Facts. *Highlights of 2009 Motor Vehicle Crashes*. DOT HS 811 363.

<sup>305</sup> Centers for Disease Control and Prevention. Injury Prevention & Control. *Injury Fact Sheet*. Available at: [http://www.cdc.gov/ncipc/anniversary/media/fs\\_trans.htm](http://www.cdc.gov/ncipc/anniversary/media/fs_trans.htm) [accessed May 23, 2011].

- Younger drivers driving beyond their skills
- Older drivers driving beyond their abilities
- Excessive speed
- Failure to wear seat belts
- Inappropriate or no use of child restraint systems

### **Driving under the Influence (DUI)**

Driving under the influence (DUI) is defined as driving with a blood alcohol concentration (BAC) equal to or greater than .08 grams per deciliter (g/dL), or 0.08 percent. The percentage of fatalities that occurred in DUI crashes decreased from 53 percent in 1982 to 34 percent in 1997. It then leveled off for two years, increased by 1 percent in 2000, and remained at that level for two years before it decreased to 33 percent in 2005.<sup>306</sup> In 2009, DUI-related crash fatalities still numbered almost 11,000. The drop in the DUI fatality rate is a public health success story that can be built upon by extending the use of ignition interlocks, increasing the use of sobriety checkpoints, maintaining and increasing enforcement of the national minimum drinking age at 21, and strengthening zero-tolerance laws for young drivers.

### **Distracted Driving**

Distracted driving is playing an increasing role in traffic crashes. In 2005, driver distraction was a factor in 10 percent of all fatal crashes and 22 percent of all injury crashes. In 2009 distracted driving was a factor in 16 percent of all fatal crashes and 21 percent of injury crashes, resulting in 5,474 deaths and 448,000 injuries.<sup>307</sup> The rise in the use of cell phones and other electronic devices while driving has created a new form of distracted driving, and a large number of drivers admit to using cell phones or texting while driving. Countermeasures for reducing these distractions are in the early stages of implementation and evaluation. However, based on the success of similar policies in increasing seat belt use, providing incentives for states to pass cell phone laws and providing funds for enforcement and education should help reduce distracted driving collisions.

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<sup>306</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2008. *Statistical Analysis of Alcohol-Related Driving Trends, 1982-2005*. DOT HS 180 942.

<sup>307</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2010. Traffic Safety Facts. *Distracted Driving 2009*. DOT HS 811 379.

## Younger Drivers Driving Beyond Their Skills

Motor vehicle crashes are the leading cause of death for adolescents in the U.S. In 2009, motor vehicle crashes killed 2,336 drivers age 15 to 20 and injured 196,000.<sup>308</sup> The crash rate per mile driven for 16- to 19-year-olds is four times that of older drivers. The risk is highest at age 16—twice as high as for 18- to 19-year-olds.<sup>309</sup> Strong graduated driver licensing (GDL) programs for new drivers are highly effective in reducing their crash risk.<sup>310</sup> GDL requires young drivers to drive under supervision and limits their exposure to hazardous situations until they gain necessary driving skills. While all states have GDL programs in place, increased benefits can be achieved by ensuring compliance and testing.

## Older Drivers Driving Beyond Their Cognitive and Physical Abilities

The number of older (age 65 and over) licensed drivers increased 23 percent between 1999 and 2009; there were a total of 33 million licensed drivers age 65 and older in 2009. In 2008, they comprised 13 percent of all licensed drivers.<sup>311,312</sup> Drivers age 70 and older have (per capita and per mile traveled) elevated risk of being at fault for fatal crashes.<sup>313,314</sup> In addition, older adults have an increased susceptibility to injury and medical complications when involved in a crash.<sup>315</sup> For older drivers, the use of license evaluation for identifying perceptual or cognitive deficits reduces crashes.<sup>316</sup>

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<sup>308</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2009. Traffic Safety Facts. *Young Drivers*. DOT HS 811 400.

<sup>309</sup> Insurance Institute for Highway Safety. *Fatality Facts 2009: Teenagers*. Available at: [http://www.iihs.org/research/fatality\\_facts\\_2009/teenagers.html](http://www.iihs.org/research/fatality_facts_2009/teenagers.html) [accessed March 30, 2011].

<sup>310</sup> Williams, A.F. and Shults, R.A. 2010. Graduated Driver Licensing Research, 2007-Present: A Review and Commentary. *Journal of Safety Research*, 41: 77-84.

<sup>311</sup> Stutts, J., Martell, C. and Staplin, L. 2009. *Identifying Behaviors and Situations Associated With Increased Crash Risk for Older Drivers*. Available at: <http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/811093.pdf> [accessed May 23, 2011].

<sup>312</sup> Insurance Institute for Highway Safety. 2010. *Fatality Facts 2009. Older people*. Available at: [http://www.iihs.org/research/fatality\\_facts\\_2009/olderpeople.html](http://www.iihs.org/research/fatality_facts_2009/olderpeople.html) [accessed April 7, 2011].

<sup>313</sup> Stutts, J., Martell, C. and Staplin, L. 2009. *Identifying Behaviors and Situations Associated With Increased Crash Risk for Older Drivers*. Available at: <http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/811093.pdf> [accessed May 23, 2011].

<sup>314</sup> Insurance Institute for Highway Safety. 2010. *Fatality Facts 2009. Older people*. Available at: [http://www.iihs.org/research/fatality\\_facts\\_2009/olderpeople.html](http://www.iihs.org/research/fatality_facts_2009/olderpeople.html) [accessed April 7, 2011].

<sup>315</sup> Centers for Disease Control and Prevention. Injury Prevention & Control: Motor Vehicle Safety. *Older Adult Drivers: Fact Sheet*. Available at: [http://www.cdc.gov/MotorVehicleSafety/Older\\_Adult\\_Drivers/adult-drivers\\_factsheet.html](http://www.cdc.gov/MotorVehicleSafety/Older_Adult_Drivers/adult-drivers_factsheet.html) [accessed May 23, 2011].

<sup>316</sup> Nasvadi, G.C. and Wister, A. 2009. Do Restricted Driver's Licenses Lower Crash Risk Among Older Drivers? A Survival Analysis of Insurance Data From British Columbia. *The Gerontologist*, 49.4: 474-84. Available at: <http://gerontologist.oxfordjournals.org/content/49/4/474.abstract> [accessed June 10, 2010].

## Speeding

In the most recent National Survey of Speeding and Unsafe Driving Attitudes and Behavior by the National Highway Traffic Safety Administration (NHTSA), more than 25 percent of drivers reported speeding on the day of the interview.<sup>317</sup> Speeding contributes to nearly one-third of fatal crashes. Under extreme weather-related road conditions, such as snow, slush, and ice, speeding is a factor in more than one-half of fatal crashes—54 percent on snowy or slushy roads and 59 percent on icy roads.<sup>318</sup> Encouraging use of automated speed enforcement cameras where appropriate and when used as an adjunct to traditional enforcement methods and engineering approaches is an important strategy for reducing excess speed.<sup>319,320</sup> Use of traffic calming methods can also reduce speed and increase safety and is particularly effective in reducing risk for vulnerable road users.<sup>321</sup>

## Seat Belt Use

Studies on seat belt use have shown that they reduce the risk of fatal injury to front-seat passengers by 45 percent and reduce the risk of moderate to critical injury by 50 percent.<sup>322</sup> In 2010, nationwide seat belt use rose to 85 percent as measured by the NHTSA National Occupant Protection Use Survey (NOPUS).<sup>323</sup> However, a large number of deaths and injury occur each year because occupants are not wearing seat belts. A 2009 U.S. Department of Transportation study estimated that 1,652 additional lives could be saved and 22,372 serious injuries prevented annually in the U.S. if seat belt use rates rose to 90 percent in all states.<sup>324</sup> Although estimates of the impact vary, NHTSA estimates that each 1 percent increase in seat belt use could save 270 lives annually.<sup>325</sup>

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<sup>317</sup> Royal, D. 2003. *National Survey of Speeding and Unsafe Driving Attitudes and Behavior: 2002, Volume II*, NHTSA, Washington, D.C. DOT HS 809 688.

<sup>318</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2007. Traffic Safety Facts. *Speeding*. DOT HS 810 998.

<sup>319</sup> Pilkington, P. and Kinra, S. 2005. Effectiveness of Speed Cameras in Preventing Road Traffic Collisions and Related Casualties: Systematic Review. *British Medical Journal*, 330: 331-34.

<sup>320</sup> Rodier, C.J.; Shaheen, S.A. and Cavanagh, E. 2007. *Automated Speed Enforcement in the U.S.: A Review of the Literature on Benefits and Barriers to Implementation*. Transportation Research Board Annual Meeting. Available at: [http://pubs.its.ucdavis.edu/download\\_pdf.php?id=1097](http://pubs.its.ucdavis.edu/download_pdf.php?id=1097) [accessed July 27, 2010].

<sup>321</sup> Victoria Transport Policy Institute. *Traffic Calming*. Available at: <http://www.vtpi.org/tm/tm4.htm> [accessed May 23, 2011].

<sup>322</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2000. *Fatality Reduction by Safety Belts for Front Seat Occupants of Cars and Light Trucks: Updated and Expanded Estimates Based on 1986-99 FARS Data*. DOT HS 809 199.

<sup>323</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2010. Traffic Safety Facts. *Seat Belt Use in 2010—Overall Results*. DOT HS 911 378.

<sup>324</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. Traffic Safety Facts: 2009. *The Increase in Lives Saved, Injuries Prevented, and Cost Savings if Seat Belt Use Rose to at Least 90 Percent in All States*. DOT HS 811 140.

<sup>325</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2006. *FY2006 Budget Request Statement*. Dr. Jeff W. Runge, NHTSA Administrator. Available at: [www.nhtsa.dot.gov/nhtsa/whatis/BB/2006/pages/AdminStmnt.htm](http://www.nhtsa.dot.gov/nhtsa/whatis/BB/2006/pages/AdminStmnt.htm). [accessed May 11, 2011].

Seat belt use is perhaps the single most striking transportation safety success in recent decades. Expanding primary seat belt laws to all 50 states and increased funding for well-crafted enforcement will have significant paybacks in terms of increased safety.

### **Use of Age- and Size-Appropriate Child Safety Seats and Booster Seats**

In the United States, 1,314 children age 14 and younger died in traffic crashes in 2009. For those children whose restraint use was known, 23 percent were unrestrained. NHTSA estimates that 309 children age 5 and under were saved by restraint use in 2009. An additional 63 lives could have been saved if child restraints had been used by all children age 5 and under. When used correctly, child safety seats reduce fatality rates in passenger vehicles by 71 percent for infants less than a year old and by 54 percent for toddlers age one to 4.<sup>326</sup> Surveys have found very high rates of inappropriate use of child safety seats and booster seats.<sup>327</sup> In 1999, NHTSA estimated that 68 deaths and 874 nonfatal injuries could be prevented each year if misuse of child restraints were eliminated.<sup>328</sup> NHTSA has developed age-based standards for their use, and incentives to states to adopt them, along with incentives for standards in child restraint designs would, along with increased funding for education and enforcement, help reduce deaths and injuries among child passengers.

## **Chapter 3 at a Glance**

In this chapter we examine seven policies that could reduce motor vehicle-related injuries and fatalities. They are:

### **3.1 Decrease Driving Under the Influence (DUI)**

### **3.2 Decrease Distracted Driving**

### **3.3 Reduce the Incidence of Younger Drivers Driving Beyond Their Skills**

### **3.4 Reduce the Incidence of Older Drivers Driving Beyond Their Cognitive and Physical Abilities**

### **3.5 Reduce Speeding**

### **3.6 Increase Seat Belt Use**

### **3.7 Increase Use of Age- and Size-Appropriate Child Safety Seats and Booster Seats**

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<sup>326</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2009. Traffic Safety Facts. *Children*. DOT HS 811 387.

<sup>327</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 2009. Traffic Safety Facts. *Child Restraint Use in 2008 – Use of Correct Restraint Types*. DOT HS 811 132.

<sup>328</sup> U.S. Department of Transportation National Highway Traffic Safety Administration. 1999. *Final Economic Assessment, FMVSS No. 213 and 225, Child Restraint Systems, Child Restraint Anchorage Systems*, Office of Regulatory Analysis. Available at: <http://www.nhtsa.gov/cars/rules/rulings/ucra-omb-j08/econ/regeval.213.225.html> [accessed May 21, 2011].