



2007 Graduated Driver Licensing Symposium: Part I

Session 1 Teens & Driving

Progress in Teenage Crash Risk During the Last Decade Presenter: Susan Ferguson, PhD – President, Ferguson International

Abstract: Objective: The purpose of the present study was to examine the most recent data on teenagers' fatal and nonfatal crashes in the United States to determine current crash rates as well as changes in crash rates during the past decade.

Methods: Data for calendar years 1996 and 2005 were extracted for fatal crashes from the Fatality Analysis Reporting System and for police-reported crashes from the National Automotive Sampling System/General Estimates System. To calculate crash rates, population data were obtained from the Census Bureau, and mileage data were obtained from the 2001 National Household Travel Survey.

Results: During 2001-02, the latest year for which mileage data are available, 16 year-old drivers had higher fatal and nonfatal crash rates per mile traveled than all but the very oldest drivers. However, fewer 16 year-olds typically are licensed to drive and they drive fewer miles per year than all but the oldest drivers. Thus, their fatal and nonfatal crash rates per population in 2005 were lower than among other teenagers and among drivers 20-29. During the past decade the most progress has been made in reducing crashes among the youngest drivers. Between 1996 and 2005 both fatal and police-reported crashes per population declined about 40 percent for 16 year-old drivers, compared with about 25 percent for 17 year-old drivers and 15-19 percent for 18 year-old drivers. The greatest reductions for 16 year-olds occurred in nighttime crashes, alcohol-related fatal crashes, and fatal crashes involving multiple teenage passengers.

Conclusions: Substantial progress has been made in reducing fatal and nonfatal crashes per population among 16 year-old drivers. Although this study was not designed to examine the role of graduated licensing, the results are consistent with the increased presence of such laws, many of which restrict nighttime driving and driving with teenage passengers. These features should be made a part of all states' graduated licensing systems.

Understanding Adolescent Development: Implications for Driving Safety Presenter: Daniel Keating, PhD – Director, The Center for Human Growth and Development, University of Michigan

Abstract: Problem: The implementation of Graduated Driver Licensing (GDL) programs has significantly improved the crash and fatality rates of novice teen drivers, but these rates remain unacceptably high.

Method: A review of adolescent development research was undertaken to identify potential areas of improvement.

Results: Research support for GDL was found to be strong, particularly regarding early acquisition of expertise in driving safety (beyond driving skill), and to limitations that reduce opportunities for distraction. GDL regimes are highly variable, and no US jurisdictions have implemented optimal regimes.

Summary: Expanding and improving GDL to enhance acquisition of expertise and self-regulation are indicated for implementation and for applied research. Driver training that effectively incorporates safety goals along with driving skill is another target. Impact on Industry: The insurance industry will benefit from further GDL enhancements. Benefits may accrue to improved driver training, improved simulation devices during training, and automated safety feedback instrumentation.

Session 2

GDL: What's Known and How to Improve

GDL Then & Now

David Preusser, PhD – President, Preusser Research Group, Inc.

Abstract: The first comprehensive Graduated License (GDL) law was implemented in Florida in 1996. Now, most states have implemented one or more GDL provision including: extending the time for which a learners permit must be held prior to licensure; passenger restriction; and night driving restriction. Evidence to support each of these provisions existed prior to 1996 and has been largely confirmed with the evaluation of each new state to implement GDL. Nationally, fatal crash involvements of 16 year-old drivers have decreased 23 percent (1993-95 versus 2003-05). Greater reductions have been seen for crash involvements at night and with passengers. The single most effective GDL provision appears to be the extension of the learners period when this extension has the effect of delaying the time at which unsupervised driving is permitted.

GDL: Review of Evaluation Results Since 2002

Jean T. Shope, MSPH, PhD – Associate Director and Research Professor, University of Michigan Transportation Research Institute

Abstract: Unintentional injury from motor vehicle crashes is the number one cause of death among teenagers in the United States. Increasingly, jurisdictions have adopted three-stage graduated driver licensing (GDL) systems for young novice drivers. Since a previous review of US GDL evaluation results, many more US states and Canadian provinces have implemented GDL and/or had enough time pass that additional evaluation results are now available. Twenty-one studies of GDL within 14 individual jurisdictions, and six studies of GDL in the US nationwide, were collected, reviewed, and summarized. Positive results (usually crash reductions) of varying degrees were reported from nearly all the studies. Given differences in approaches, study goals, methods, and analyses, the results are surprisingly consistent. Overall, GDL programs have reduced the youngest drivers' crash risk by roughly 20 to 40%. Research on teen driving and comprehensive GDL enhancements could further reduce teen drivers' motor vehicle crashes, injuries and fatalities.

Contribution of the Components of Graduated Licensing to Crash Reductions

Allan Williams, PhD – Chief Scientist, Insurance Institute for Highway Safety (retired)

Abstract: Problem: It has been established that graduated licensing systems lead to crash reductions among beginning drivers. What is the contribution of the various components of graduated licensing to these reductions, and how can their effectiveness be increased?

Method: Literature review and synthesis

Results: Extended learner periods, nighttime restrictions, and passenger restrictions have contributed to crash reductions. Presently there is insufficient evidence concerning the contribution of seat belt or cell phone provisions, or contingent advancement penalties.

Discussion: There is more to learn about graduated licensing and its component features. However, there are ways to increase the contribution of all the components through stronger laws and greater compliance. With the right kind of community commitment and focus, substantial further reductions in young driver crashes are achievable.

Improving GDL Systems: A Conceptual Approach & its Implications

Robert Foss, PhD – Director, Center for the Study of Young Drivers, University of North Carolina Highway Safety Research Center

Abstract: Graduated driver licensing (GDL) is a concept for how to transform non-drivers into reasonably safe drivers while minimizing the risks as they learn. Several state GDL programs can be improved by moving their structures closer to an adequate implementation of that concept. The learner stage of a GDL system needs to be long enough for beginners to obtain a thorough introduction to the vagaries of driving. The second or intermediate stage needs to effectively limit exposure to known high risk conditions as novices adapt to being fully in charge of the vehicle. The benefits of GDL to date are due almost entirely to the risk-reducing conditions it implements. To improve the functioning of GDL will probably require a better understanding of teen driving than we presently have. The likelihood of further gains will be enhanced by efforts to learn more about the actual causes of teen crashes, the nature and type of teen driver exposures and what parents do with their teens during the supervised driving stage of GDL. Without a better understanding of these, and other, phenomena it will be difficult to further reduce crashes among young beginning drivers, whether through GDL enhancements or with other approaches.

Session 3

Beyond GDL: Other Pieces of the Comprehensive & Collaborative Strategy

Parent Involvement in Novice Teen Driving: Rationale, Evidence of Effects & Potential for Enhancing GDL Effectiveness

Bruce Simons-Morton, Ed.D – Chief, Prevention Research Branch, National Institute of Child Health and Human Development

Abstract: Motor vehicle crash rates are highly elevated immediately after licensure and then decline gradually over a period of years. Young age, risk taking, and inexperience contribute to the problem, but inexperience is particularly important early on. Driving is like other complex, skilled behaviors in which subtle improvements in perception and judgment develop gradually over a period of years. After all, safe driving is more a matter of attention and perception than physical management of the vehicle. Inexperience is particularly linked to driving performance and safety outcomes under certain driving conditions, with driving at night and with teen passengers as the most important cases. Surprisingly, driving outcomes do not appear to be affected by the pre-license training or supervised practice driving. Given the limits of training, safety effects can best be achieved by countermeasures that delay licensure or limit driving novice teen driving under high risk driving conditions while novices gain experience and develop safety competence. The two complementary approaches of Graduated Driver Licensing policies and parent management have been shown to provide safety effects by limiting the driving conditions of novice teenagers.

Steering Toward Safety: Promoting Healthy Driving Behavior through Developmental Prevention

Richard Catalano, PhD – Director, University of Washington Social Development Research Group

Technology & Teen Drivers

John Lee, PhD – University of Iowa College of Engineering

Abstract: The rapid evolution of computing, communication, and sensor technology is likely to affect young drivers more than others. The distraction potential of infotainment technology stresses the same vulnerabilities that already lead young drivers to crash more frequently than other drivers. Cell phones, text messaging, MP3 players, and other nomadic devices all present a threat because young drivers may lack the spare attentional capacity for vehicle control and the ability to anticipate and manage hazards. Moreover, young drivers are likely to be the first and most aggressive users of new technology. Fortunately, emerging technology can also support safe driving. Electronic stability control, collision avoidance systems, intelligent speed adaptation, and vehicle tracking systems can all help mitigate the threats to young drivers. However, technology alone is unlikely to make young drivers safer. One promising approach to tailoring technology to teen drivers is to extend proven methods for enhancing young driver safety. The success of graduated drivers license programs (GDL) and the impressive safety benefit of supervised driving suggest ways of tailoring technology to the needs of young drivers. To anticipate the effects of technology on teen driving it may be useful to draw an analogy between the effects of passengers and the effects of technology. Technology can act as a teen passenger and undermine safety or it can act as an adult passenger and enhance safety.

Extending Parental Mentoring Using an Event-Triggered Video Intervention in Rural Teen Drivers

Daniel V. McGehee – Director, Human Factors and Vehicle Safety Research Program, University of Iowa Public Policy Center

Abstract: Teen drivers are at high risk for car crashes, especially during their first years of licensure. Providing novice teen drivers and their parents with a means of identifying their risky driving maneuvers may help them learn from their mistakes, thereby reducing their crash propensity. During the initial phase of learning, adult or parental supervision often provides such guidance. However, once teens obtain their license, adult supervision is no longer mandated, and teens are left to themselves to continue the learning process. This study is the first of its type to enhance this continued learning process using an event-triggered video device. By pairing this new technology with parental feedback in the form of a weekly video review and graphical report card, we extend parents' ability to teach their teens even after they begin driving independently. Twenty-six 16- to 17-year-old drivers were recruited from a small U.S. Midwestern rural high school. We equipped their vehicles with an event-triggered video device, designed to capture 20-sec clips of the forward and cabin views whenever the vehicle exceeded lateral or forward threshold accelerations. Preliminary findings suggest that combining this emerging technology with parental weekly review of safety-relevant incidents resulted in a significant decrease in events for the more at-risk teen drivers. Implications for how such an intervention could be implemented within GDL are also discussed.