

The Chronicle

Fall Issue 2008

Volume 56 No. 1

In this Issue:

**Driver Education
Standards & National
Conference**

Thank You Thank You

**Variable Vehicle
Performance Systems**

**Parents of Teen Drivers
Don't Practice What They
Preach**

**Text Messaging While
Driving: "R U UP 2
Speed?"**

**Driver Education for
Safety in Adverse
Conditions**

**Evaluation of PC-Based
Novice Driver Risk
Awareness**

**Teen Driver Crashes A
Report to Congress July
2008**

**Response to NHTSA's
Report to Congress on
Teen Driver**

**Licensing Age and
Teenage Driver Crashes:
A Review of the Evidence**

**New in the world of
adolescent brain
development?**

for

Driver

Education

Professionals

A Publication of the
American Driver & Traffic Safety Education Association
in cooperation with the Highway Safety Center
Indiana University of Pennsylvania

The Chronicle for Driver Education Professionals

Allen Robinson, Ph.D.
 Chief Executive, ADTSEA
 IUP Highway Safety Center
 Indiana, PA 15705-1092
 (724) 357-4051 (Office)
 (724) 357-7595 (Fax)
 arrobin@iup.edu (new)
 http://adtsea.iup.edu

~~~~~

Executive Committee  
 Gary Scott Past-President  
 Kevin Kirby Board Rep. NC  
 Region  
 Fred Nagao Secretary Treasurer  
 Rhonda Reid NSSP Liaison  
 Roger Voigt President  
 William Van Tassel Corp. Member  
 Chuck Lehning President-Elect

Board of Directors  
 Stanley Henderson NC Region  
 Catherine Broderick NE  
 Barry Thayer NE Region  
 Judy Ode NW Region  
 Wendy Bills NW Region  
 James Hathaway SC Region  
 Gerald Dickinson, Jr. SC Region  
 Jo Ellen Suter SE Region  
 Connie Sessoms Jr. SE Region  
 Shannon Woods SW Region  
 Rolando Dace SW Region  
 for contact information go to:  
 http://adtsea.iup.edu

~~~~~

Publishing Information
 Send article submissions to:
 John Palmer, Ph.D, Editor
 832 Halliday Road
 St. Cloud, MN 56301
 palmertss@cloudnet.com

Editorial Deadlines

Winter '09 Issue Jan. 15, 2009
 Spring '09 Issue April 15, 2009
 Fall '09 Issue Oct. 15, 2009

~~~~~

*The Chronicle for Driver Education Professionals* is published three times a year in cooperation with the Indiana University of Pennsylvania Highway Safety Center.

**Table of Contents  
 Fall 2008**

**Volume 56**

**Number 1**

**Driver Education Standards & National Conference..... 2**  
 Allen Robinson, Ph.D.

**Survey Reveals Parents of Teen Drivers Don't Practice  
 What They Preach.....3**

**Thank You Thank You Thank You .....4**  
 Gary Scott, Past President

**Variable Vehicle Performance Systems Designed to  
 Reduce Risk to Teen Drivers .....4**  
 W. E. Van Tassel, Ph.D.

**Text Messaging While Driving: "R U UP 2 Speed?".....5**  
 William Van Tassell, Ph.D. and R. Chidester

**Driver Education for Safety in Adverse  
 Driving Conditions.....6**  
 Jonathan Skolnik, Kristin Noyes, Paul Nguyen

**Evaluation of PC-Based Novice Driver Risk Awareness.....8**

**Teen Driver Crashes A Report to Congress July 2008.....11**

**Response to NHTSA's Report to Congress on Teen Driver  
 Crashes.....13**  
 Rich Hanson, M.S.

**Licensing Age and Teenage Driver Crashes:  
 A Review of the Evidence.....15**  
 Allan F. Williams, Ph.D.

**What's new in the world of adolescent brain  
 development?.....23**  
 Erin Floyd-Bann, Ed.D.

**The 2008 Kaywood Award Recipient Micky Johnson..... 23**  
 Micky's comments on receiving the award will be published in the Winter Issue. Her photo appears on page 23.

**Printing Information**

This publication is prepared using PageMaker 7.0 and printed by Speedy Print, Waite Park, MN.



## Driver Education Standards & National Conference

Allen Robinson, Ph.D. CEO ADTSEA

As we start the new school year all of us will face many new challenges. At the National level we are striving to establish standards that will guide driver education programs throughout the U.S. Since this is an ongoing process I can't give a final report at this time. Beginning November 1, 2008 there will be a new section on the ADTSEA web page titled, *Driver Education Standards*. I encourage you to check this regularly so you will know the status of these driver education standards

The concept for national standards has been around for a long time. ADTSEA began developing BTW standards in the late 90's and in 2000 drafted the first complete set of standards. These standards were then revised in 2005 and are currently available on the ADTSEA web site.

These standards were discussed with the membership and approved by the Board of Directors. The first complete set of standards were presented and approved at the Billings, Montana 44<sup>th</sup> Annual Conference and the current set of standards were presented and approved at the Kalamazoo, Michigan 50<sup>th</sup> Annual Conference.

These standards were the focal point in developing our current ADTSEA Curriculum and have been adopted by several states.

There are three components to the ADTSEA Standards: curriculum content; delivery standards; and outcomes.

The curriculum content standards have been the most effective in guiding changes in state driver education curriculum throughout the U.S. The delivery standards have been largely ignored because they are based on sound educational principles and would be too expensive for commercial

schools and most public school courses that are offered outside of the school day.

We have made positive changes in our curriculum content, teaching strategies and use of technology, but this is not enough. We need programs that not only teach basic driving skills, but also teach safe driving practices.

The National Highway Traffic Safety Administration began discussing with ADTSEA in 2005 the possibility of developing standards and conducting a national conference. A proposal was completed and budget was agreed to in 2006. However, in December 2006, NHTSA decided a contractor with more objectivity should develop these standards. Finally in 2008, Eureka Technologies was contracted to develop these proposed standards.

Our first meeting was held on May 7, 2008 in Washington, DC. A panel of experts was brought together to brain-storm new driver education standards. We were told that when the standards were completed they would be presented at a national driver education meeting for ratification. This meeting was to have two to three representatives from each state.

On July 25, 2008 a meeting was held in Fort Worth, Texas prior to the ADTSEA Conference to discuss driver education standards. While the meeting was productive, we only discussed the process of standards development and did not discuss any actual standards.

Finally, on September 24, 2008 the panel of experts met at NHTSA offices to discuss the standards.

Rather than describing a driver education program that teaches safe driving practices, we have for the most part described a driver education program that leads to a

driver license. If this is, in fact, our goal, then we are doing a good job. If this is our goal, then we shouldn't be advertising the program as an accident counter measure. These standards were developed under contract to NHTSA by Eureka Technologies. A panel of experts was assembled to assist with this task. The time line for this development was May 7, 2008 to be completed by February 2009 at a national driver education conference. There are three DETA members, three DSAA members, one researcher, two national organizations, and one ADTSEA member. Throughout the meeting, considerable concessions were made by the group to meet the needs of DSAA. On critical issues, each of the groups put their interests first and the interest of a unified, quality driver education program last. Depending on the final written language of these standards, the product may be more harmful than useful.

We tried to be inclusive and make everyone happy, and I believe the end result was a document you would not be pleased with. Throughout the meeting, I tried to help draft standards that could have a direct impact on state driver education programs. The stated description of the standards we developed is supposed to be the "Gold Standard For Driver Education". Throughout the discussion, I asked for specifics rather than generalizations. I wanted language that was easily understood. Apparently, I am the only one in disagreement with what was developed.

Working group members representing DSAA, DETA state agencies and AAA had great difficulty in agreeing on what should

## Fall 2008

(from page 2)

be said. Eureka Technologies worked hard to obtain consensus on this document. Many of the experts on the panel were promoting self interests rather than describing a Gold Standard, which would provide uniform standards to prepare accident free drivers.

I do not believe we developed the Gold Standard. At best, we may have described the status quo but, in fact, probably went backwards.

At the conclusion of the meeting we discussed the National Driver

Education Conference that is scheduled for February 17, 2009 in Phoenix, AZ. The participant list is limited to 50 individuals: the expert panel, consisting of fifteen people, ten staff members from NHTSA and twenty-five individuals selected by NHTSA from our recommendations. I am allowed to recommend ten names. While we had been told earlier that NHTSA would assist with the travel expenses for these twenty five people, we are now told that funds are not available.

We were also told that the

## The Chronicle for DE Professionals

purpose of the conference has changed. The group will not be asked to ratify the standards, but rather, they are to develop implementation plans. This will be done by dividing the group into five sub-committees who will look at all of the standards and bring their implementation plan back to the whole group for discussion.

As of today I do not have a draft of the proposed Gold Standards for Driver Education for you to read. Check the ADTSEA web page for the latest update on these standards.

## New Survey Reveals Parents of Teen Drivers Don't Practice What They Preach Survey Shows Teens Exhibit Similar Driving Habits to Their Parents; Findings Relevant as Teen Vehicle Crashes Expected to Spike in October

Bloomington, Illinois, September 29, 2008 – State Farm® released the findings of a national survey today revealing that parents unknowingly may be contributing to teens' risky driving behaviors by not practicing what they preach. To help reduce teen driver vehicle crashes, the No. 1 killer of U.S. teens, State Farm conducted the survey to learn more about how parents approach their driver's education roles.

The findings are important because State Farm Claims data from the past five years show that October averages the highest number of teen auto insurance claims. According to State Farm, the nation's largest auto insurer, an increase in the number of 16- and 17-year-old driver claims\* involving injury or collision can be expected to jump nearly 20 percent in October as compared to other months.

Key findings from the parent survey show that in many instances the majority of parents are not following the safe driving advice they give to their teens, possibly setting dangerous examples for young, inexperienced drivers:

\* 65 percent of parents talk on cell phones at least sometimes while driving; however 94 percent restrict

their teens from doing the same  
\* 68 percent of parents are in a hurry at least sometimes when they drive

\* 65 percent of parents drive when they are tired at least sometimes

The parent survey is a follow-up to the 2007 National Young Driver Survey, conducted by State Farm and The Children's Hospital of Philadelphia® (CHOP), which examined driving through the eyes of teens and found that they drive under dangerous conditions—while fatigued, talking on cell phones, and with multiple passengers. More specifically:

\* 89 percent of teens said they see their peers talking on cell phones while driving at least sometimes

\* 91 percent of teens see their peers driving in a hurry at least sometimes

\* 75 percent of teens said they see their peers drive when they are tired at least sometimes

"We are asking parents to be aware that their teens are watching and learning from their behaviors," said Laurette Stiles, vice president of Strategic Resources for State Farm. "State Farm is committed to working with parents to ensure their teens develop safe, smart driving

behaviors. We will again join Congress in support of National Teen Driver Safety Week, October. 19-25, to encourage parents, as well as young drivers, lawmakers and educators to work together to change risky driving behaviors and help save lives."

The parent survey also found that parents would have liked more information or advice on teaching their teens to drive. For example:

\* Half of parents would have liked more information on helping their teens avoid distractions

\* One out of three could have used more advice on freeway driving, nighttime driving and road rage

\* One fourth would have liked information on ways to help their teen avoid drinking and driving

To ensure parents are equipped with the right tips and tools as they assist their teens with learning to drive, State Farm created an interactive Facebook® page devoted to teen driver safety. Parents who join the page can learn ways to help their teens navigate the road and share safe driving tips with other parents. Parents can go to Facebook for more details about the teen driver safety page.

## Variable Vehicle Performance Systems Designed to Reduce Risk to Teen Drivers

W. E. Van Tassel, Ph.D. AAA National Office

Most modern vehicles feature more than enough performance to overcome both traction and driving ability, a result that often ends in a collision. With new teen drivers, there is even more reason for concern about handing over a full-power vehicle to them for use during unsupervised driving.

Almost 20 years ago, Chevrolet was thinking ahead and equipped its 1990 ZR-1 Corvette with an "power switch." With this key-controlled switch, the owner could reduce the V-8 engine's output by one-third by deactivating selected intake valves and fuel injectors. Dubbed the "valet key," the system was intended to prevent drivers with underdeveloped or otherwise questionable driving abilities or intentions from using the car's full performance.

Over time, manufacturers of other vehicles have adopted similar approaches to variable performance. For example, several personal water craft manufacturers now offer a "reduced RPM" mode, where engine output is reduced to limit maximum performance. These variable vehicle performance systems (VVPS) may represent another step forward in protecting teen drivers.

The latest iteration of VVPS will be offered by Ford on the 2010 Focus- its "My Key" system is specifically designed to limit the

performance of vehicles driven by new teen drivers. The system is activated when the special (i.e., teen) key is used to start the vehicle.

To be available first on the Focus, My Key is intended to reduce risk by:

- Limiting the top speed to 80 mph
- Limiting the radio volume to 44 percent of its maximum
- Sounding a warning chime every 60 seconds if safety belts are not worn
- Sounding a warning chime if the teen exceeds 45/55/65 mph (speed pre-selected by the parent)
- Sounding an extra-early warning chime when fuel becomes low.

With regard to the "My Key" system specifically, it appears to be a well-intentioned engineering-based effort to protect teens without reducing their mobility or privacy. By limiting vehicle performance and radio volume, it may have the potential to limit risky high-speed driving and enhance drivers' abilities to detect important audible communications, such as sirens from emergency vehicles. Further evaluation should reveal the short- and long-term effects of the "My Key" system.

Regarding VVPS in general, it is possible, even likely, that other vehicle manufacturers will follow Ford and offer additional systems. It is even conceivable that similar aftermarket systems could be

developed for vehicles not originally equipped with a VVPS. We can expect the research community to be very interested in assessing the impact of variable vehicle performance systems on teen driving behavior. Future research might include investigating questions such as:

- To what degree do these systems enhance teen drivers' ability to monitor the immediate driving environment?
- To what degree do these systems reduce the likelihood of a teen driver becoming distracted?
- What are the systems' impacts on actual driving behaviors?
- How do parents view the systems as a safety-enhancing feature?

VVPS may constitute an effective supplement to a comprehensive family plan to protect and prepare teen drivers. However, caution may be needed to guard against the promotion of these systems as "The Answer" to teen driving safety. Additionally, it will be important for parents to be educated on how these systems fit into a comprehensive teen driver development plan. To ensure the potential for a net safety benefit, it will be critical for parents to not reduce their deep involvement in their teen's learning-to-drive process, including conducting supervised practice driving, instituting appropriate driving restrictions and consequences, and adopting a parent-teen driving agreement.

### Thank You!!! Thank You!!! Thank You!!!

#### Gary Scott, Past President

You have all been so kind to me this year as I had the opportunity to serve as your ADTSEA President. I enjoyed the opportunity to visit many of your state and regional conferences on behalf of ADTSEA. We have some very amazing and wonderful people in our

organization, the talents and knowledge that you hold makes us truly a unique group of people. We are out to promote the well being of the whole drive public and not our own personal agendas.

I would be remiss if I did not thank each of you for the kind words

that my family received after the passing of my wife Denise on February 6, 2008. Our family enjoyed the summer vacations to the ADTSEA conference. Each of you has been such an excellent role model/ extended family for us as we grew

(more on page 5)



## Text Messaging While Driving: "R U UP 2 Speed?" (Are You Up to Speed?)

William E. Van Tassel, Ph.D. and R. Chidester

### AAA National Office

Text messaging continues to grow in popularity, especially among younger cell phone users. Some young drivers may be tempted to text message while driving, increasing the risk to themselves and other drivers. To support driver education instructors, AAA has created a free, 10-15 minute classroom mini-module designed to address the dangers of text messaging while driving. Instructors can email [aaadtprograms@national.aaa.com](mailto:aaadtprograms@national.aaa.com) to obtain a free copy.

While the risks of talking on a cell phone while driving are generally well known, far less is known about the dangers of text messaging while behind the wheel. Text messaging, sending short text messages with a cellular phone, has become a very common method of communication. In fact, according to the CTIA, approximately 432 million text messages are sent each day in the U.S. That's about 300,000 per minute! Unfortunately, many of those are sent by people while driving.

Although not much research

exists yet on the specific risks of text messaging while driving, it is likely that more can be expected in the near future. Indeed, text messaging while driving might be even more dangerous than talking on a cell phone while driving. Both involve dedicating significant concentration to the phone; however, text messaging could more frequently require the use of both hands, leaving a driver with no physical contact with the steering wheel- a poor choice. Because of the risk involved, some states have already banned text messaging while driving.

Because 79 percent of all teenagers own cell phones, it is important to address the risks of text messaging while driving, and driver education represents a powerful way to accomplish this. Although it would not be safe or practical to demonstrate the dangers of text messaging during a teen's in-car driving sessions, it may be possible to fully inform teens about the risks involved during classroom sessions.

To support driving instructors, AAA has created a free classroom

mini-module to discuss the dangers of text messaging while driving. Approximately 10-15 minutes in length, the mini-module addresses the following:

- A brief review of the risks of talking on a cell phone while driving
- A definition of text messaging
- How text messaging can affect perception, decision-making and execution, and driving safety overall
- An interactive hands-on demonstration of the effects of distraction
- How to prevent becoming distracted by cell phones, regardless of how they are used.

Although instructors can use the mini-module in conjunction with any curriculum, it includes information on how to best integrate it when using Responsible Driving, How To Drive, or Licensed To Learn curriculums.

AAA is making the text messaging mini-module available to driving instructors free of charge. To receive an electronic copy e-mail: [aaadtprograms@national.aaa.com](mailto:aaadtprograms@national.aaa.com)

### Thank You from page 4

each year. Denise was a very private person, yet she was so comfortable and at ease with all of you at the conferences. My family cannot repay your kindness. Just know that you are always welcome to come to our home.

I look forward to being your Past President and planning the program for Charlotte, North Carolina, in 2009. Past President Carol Hardin's work for ADTSEA can not be duplicated. She is such a tireless and organized worker and is truly in "a league of her own". I will strive to reach as many of her high standards as possible. I have excellent division chairs to help plan the program and I am sure they will maintain our

**The Chronicle**

standard of excellence for our next conference. Roger Voight will do an outstanding job as President as will Chuck Lehning as President Elect. Chuck and Lynn Lehning have already organized the North Carolina host committee and have many excellent outings already on tap for the conference attendees.

Please continue to promote the importance of a good driver education program. The skills that we teach affect the lives of each individual in our country regardless of their profession or socio-economic backgrounds. We should not as a nation tolerate the number of traffic collisions and resulting injuries and fatalities that occur each year. There is a way to lower the

number of collisions if we would just work on priorities. We just need to be more vocal about the importance of our skills and the good that can come from a quality driver education and traffic safety program.

Load up your families (just like the Lees – Minnesota/Scotts-Kansas/Woods-California and others) and make it a family vacation to North Carolina in the summer of 2009. The information that you will receive and the friendships you make are invaluable to a traffic safety professional.

Thanks again for all of your assistance during my year of being ADTSEA President. I truly appreciate each of you and what you have to offer to our organization.

## Driver Education for Safety in Adverse Driving Conditions

Jonathan Skolnik, Kristin Noyes, Paul Nguyen Jack Faucett Associates, Inc. for: Arizona Department of Transportation

The contents of the report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Arizona

Department of Transportation. This report does not constitute a standard, specification, or regulation. Trade or manufacturers' names that may appear herein are cited only because they are considered essential to the objectives of the report. The U.S. Government and The State of Arizona do not endorse

### EXECUTIVE SUMMARY

Under certain adverse driving conditions, often times the driver of a vehicle has inadequate training or education and ends up taking wrongful actions leading to severe crashes and injuries. Examples of such situations include a tire blowout in the middle of a high speed facility, driving during a dust storm, driving too closely behind a large truck, approaching a sudden bottleneck or emergency vehicle in the roadway, etc. Not knowing how to avoid an impending collision, many drivers do not take the right emergency action in such situations. Moreover, any inappropriate action by a single driver on a roadway facility can result in crashes of various severities involving one or more vehicles and other road users.

Poor driver behaviors that lead to crashes and injuries cannot be prevented by highway design or traffic control devices. This study sought to identify those driver behaviors that lead to crashes and that could be added to Arizona's driver education program to train the reasonable driver on how to avoid such crashes.

### Purpose of This Study

The purpose of this research was to determine the state-of-the-art practices in educating drivers for safety in certain adverse driving conditions and to develop a realistic

module of a driver education program addressing that topic. In addition, the research sought to determine whether any relevant laws and regulations related to driving in the State of Arizona should be changed in order to properly address safety under adverse driving conditions.

### How This Study Was Conducted

The study consisted of four main tasks, which included a literature review, statistical analysis of Arizona crash data, a survey of other states regarding their driver education programs, and targeted case studies of selected states and other private or semi-government agencies involved in driver education curriculum development and implementation.

### Literature Review

The literature review compiled and summarized the current body of technical reports, educational materials, papers and articles pertaining to adverse driving conditions and the impacts of driver education on adverse driving conditions-related crashes. The purpose of the literature review was three-fold:

- 1) To amalgamate the leading definitions of the term "adverse driving conditions" and create an operational definition to be applied in the quantitative analysis of Arizona crash data;
- 2) To collect examples of model curriculum addressing driver education for adverse driving conditions; and
- 3) To summarize the knowledge gained through a literature search on crash cause statistics, the impacts of driver education on crashes and adverse driving conditions-related crashes in particular, and policy

issues related to highway safety in general.

### Analysis of Arizona Crash Data

The statistical analysis of Arizona crash data was conducted to extract whatever information may be available relative to crashes under adverse driving conditions. This data was analyzed to ascertain whether any sort of driver training might have reduced the frequency or severity of these crashes.

### State Survey and Case Study

The survey of officials from other states was conducted to ascertain information on each state's existing driver education program and the estimated effectiveness of those programs. Information was also solicited on desired or planned improvements that may not yet have been made. More detailed information on driver education for safety in adverse conditions was also collected. Points of contact were obtained for all 50 states. A cover letter and link to the online survey were then e-mailed to each state contact. Survey responses were received electronically via online response over a period of 5 weeks with additional responses obtained as a result of follow-up phone calls.

The second part of this task involved conducting more detailed follow-up case studies of six states, in addition to a more detailed analysis of Arizona's program. These case studies examined the following attributes of the programs in the selected states:

- Mission and rationale,
- Program description,
- Implementation and participation,
- Training materials and methods,
- Effectiveness and related factors.

(continue on page 7)



## Fall 2008

(from page 6)

States were selected based on geographical factors, innovative approaches, measured or anecdotal success in improving traffic safety and availability of well-formulated curriculum or training module materials. States interviewed in addition to Arizona included: Montana, Texas, Michigan, Oregon, Delaware and Idaho.

### Other Entity Case Study

Private or semi-government agencies were interviewed to ascertain what driver education programs currently exist and to gather their opinions and willingness to sponsor an improved driver education program that includes an added element for driving in adverse conditions. The entities interviewed were selected based on information gained through the literature review and other subsequent research into the primary entities engaged in either the research or development of driver education curricula. They included:

Governor's Highway Safety Association (GHSA),

National Institute for Driver Behavior (NIDB),

National Highway Traffic Safety Administration (NHTSA),

American Driver and Traffic Safety Education Association (ADTSEA),

AAA (American Automobile Association) Foundation for Traffic Safety.

### Study Findings

The literature review revealed that based on existing, albeit limited research, driver education is not terribly effective in reducing crashes by novice drivers. However, it was also a point in the literature that evaluating the effectiveness of driver education is difficult in that driver education has traditionally not been tasked with teaching or specifically influencing traffic safety.

Rather, it has taken on the role of teaching driving skills. Consequently, crash rates are not necessarily a reasonable measure of the traditional driver education program's performance or effectiveness. Moreover, the literature revealed that there appear to be many educational tools, driver safety behaviors and other identifiable factors that could be incorporated into driver education in order to make it more responsive to the outcome of reducing crashes should we, as a society, decide that should be an intended purpose of driver education.

In looking at Arizona vehicle crash statistics between 2001 and 2005, it was found that adverse conditions are present in just fewer than 40 percent of accidents and approximately 60 percent of fatalities. When cross-tabulated with identified driver education indicators, this strong correlation is maintained. The results indicate that both adverse conditions and driver education indicators are present in about a third of accidents and half of fatalities.

The survey and case study exercises revealed there is a great disparity amongst states in terms of how driver education is addressed and the specific topics that are covered under driver education programs. In addition, there is a groundswell of individuals particularly active in the area of driver education that is working hard to change that fact. Not only do many proponents of driver education reform seek some uniformity amongst driver education programs, or at least the standards on which they are based, but many also seek to promote the basic premise that driver education needs to address certain key driver behaviors that should be taught and reinforced through proper training and

## The Chronicle for DE Professionals

education in order to minimize the risky behaviors that lead to crashes.

There exist high quality and fully applicable driver education curricula as well as stand alone driver education modules addressing driving under adverse conditions that Arizona could adopt to enhance the state's driver education program. There is no compelling reason to develop a completely new curriculum or module. There are two primary national level sources of driver education curriculum and/or standards including the Driver Education and In-Car Curriculum developed by ADTSEA and the Driving Behaviors for Risk Prevention developed by Fred Mottola of NIDB. Moreover, a number of states have recently developed driver education curricula, some of which specifically address the topic of safety under adverse driving conditions. Some of these curricula align themselves directly with either the NIDB risk prevention model or the ADTSEA model, others have adopted some aspects of these models, while still others have been developed independently.

The research identified four of the best examples of these modules and curricula. The recommendation on which to use is dependent on several factors that only the Arizona Department of Transportation (AzDOT) can determine including: the level of effort the state wishes to expend on the issue of improving driver education, the legal or regulatory actions the state is interested in pursuing, and the nature of the reform the state is interested in addressing, *i.e.* comprehensive program changes, limited program changes including adoption of full driver education curriculum, limited program changes including adoption of one module of a driver education curriculum addressing adverse conditions.

The recommendations and the rationale for adopting each option are summarized in the table appearing on page 9. (continue on page 9)

## Evaluation of PC-Based Novice Driver Risk Awareness

It is well known that new drivers have a greatly increased risk of a motor vehicle crash. In response to this problem, States enacted graduated driver licensing laws over the last decade, and the legislation is linked with reduced crash rates during the first six months of solo driving. However, crash rates per vehicle mile traveled in the first months post-licensure are still significantly higher than other age groups.

Research indicates that these crashes frequently result from poor hazard perception or attention maintenance. Thus, this five study project, completed by the Human Performance Lab at the University of Massachusetts at Amherst, had two goals: testing the efficacy of hazard perception training for young drivers, and assessing differences between young and experienced drivers' attention maintenance. The hazard perception studies were based on prior work that showed training novice drivers to recognize potentially risky scenarios (e.g., a truck obstructing the view of a pedestrian who might enter a crosswalk) significantly improved scanning for hazards. The training procedure was similar across the first four studies. First, researchers showed drivers schematics and/or pictures of potentially risky driving scenes and asked them to indicate places that deserved relatively constant monitoring and where sudden risks could occur.

The experimenters provided feedback to the drivers regarding the correct locations and reasons why certain situations were hazardous. The drivers' behavior was assessed in various conditions using either simulators or actual vehicles to answer questions about the efficacy of training young drivers to improve their risk perception.

*Experiment 1: Will the effects of training remain after several days?* The first study assessed hazard detection accuracy of trained relative to untrained young drivers three to five days after training sessions. The researchers also tested "near-" and "fartransfer" scenarios to assess the extent to which the training would generalize novel scenarios. Near-transfer scenarios were driving situations analogous to training scenes (e.g., hidden driveway on the left during training and post-test).

Far-transfer scenarios were not introduced during training. The researchers evaluated the training program with a driving simulator and an eye-tracker – a device that monitors and records eye movements. There were predetermined "critical regions" for each post-training scenario. If the eyetracker indicated that drivers looked in these regions, participants were counted as having detected the potential hazards.

Trained novice drivers were nearly twice as likely (51.8% detection) as their untrained counterparts (28.8% detection) to recognize hazards in near-transfer scenarios several days after training. The results also indicate that trained drivers were more accurate than untrained drivers in detecting hazards in far-transfer scenarios (53.1% versus 27.1%).

*Experiment 2: Will training extend to the actual roadway?* The studies that showed a benefit to hazard perception training were evaluated with a driving simulator. Training would be of little value if the behavior did not transfer to an actual motor vehicle. Therefore, the researchers assessed the effects of training on young drivers' ability to detect hazards on actual roadways. The training program used in Experiment 1 was modified to include photographs in addition to

plan views. As with the earlier studies, the researchers reported that across all scenarios trained young drivers were nearly two times more likely than untrained young drivers to detect potential roadway risks (60.6% trained versus 31.8% untrained). Further, trained drivers were significantly more accurate at perceiving potential risks in far transfer scenarios than were untrained drivers.

*Experiment 3: Will the modified training program obtain similar results when evaluated with a simulator?* Now that one has established that training does generalize to the field, one would like to know that the absolute size of the effects obtained in the field and on the simulator were identical. But, because different training programs were used in Experiments 1 (simulator) and 2 (field), the results from these two experiments cannot be compared. Thus, in Experiment 3, the training procedure and evaluation scenarios used were identical to Experiment 2, but the effectiveness of the training program was evaluated with a simulator. Again, the findings indicate that trained participants more accurately perceived risks than untrained participants (77.4% versus 40%), and the results of the simulator assessment were similar to the evaluation completed in the field. Figure 1 shows a comparison of the overall training effects associated with Experiments 2 (field) and 3 (simulator).

*Experiment 4: Will training that uses a low-cost simulator improve risk perception?* The researchers devised a new training program that was hoped would bring novice drivers closer to criterion performance. Participants in training group were first exposed to the methods described in Experiments 1 through 3, and then they were

(more on page 10)

The Chronicle

**Exhibit 1-1: Module Recommendations**

| <b>Curriculum/Module Recommendations</b>                                 | <b>Circumstances Under Which to Implement</b>                                                                                                                                                                                                                                                                                                      | <b>Required Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) Oregon Driver Risk Prevention Curriculum                              | Desire to implement a full and complete national level driver education curriculum based on NIDB driver risk prevention model that is readily available, but which will require some consultation with developer.                                                                                                                                  | Full CD-ROM containing all curriculum materials, student activities, quizzes, etc. provided with this report and available on line. Oregon DOT estimates 100 hours necessary to train instructors who will use curriculum. Developer of curriculum, however, must grant permission for use of materials. Conversations indicate that permission would be granted only with some fee-based consultation (minimum hourly fee is \$125) on his part regarding use, understanding and implement of the materials. |
| 2) ADTSEA Curriculum                                                     | Desire to implement a full and complete driver education curriculum based on national standard which is readily available at a fixed price and limited consultation with developer.                                                                                                                                                                | CD-ROM can be ordered online including all curriculum discs, recommended videos, printed materials, and parent mentor guide for \$225 (ADTSEA members \$175) plus \$25 shipping and handling. Limited consultation (no fee) would be required in order to obtain usage rights and to discuss distribution and attribution.                                                                                                                                                                                    |
| <b>Curriculum/Module</b>                                                 | <b>Circumstances Under Which to Implement</b>                                                                                                                                                                                                                                                                                                      | <b>Required Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3) Montana Driver Education and Training Curriculum Guide                | Desire to implement full and complete driver education curriculum incorporating some NIDB driver risk prevention concepts, but organized in more traditional fashion and including a module on adverse conditions.                                                                                                                                 | All materials available for download free of charge. Developer willing to provide fee based consultation for training, curriculum modification or other purposes.                                                                                                                                                                                                                                                                                                                                             |
| -----<br>3a) Montana Module 14, Strategies for Adverse Conditions        | Desire to adopt a stand-alone module on adverse conditions that incorporates many driver risk prevention concepts and covers adverse conditions topics including: glare, low light, darkness, fog, smoke, dust, rain, winter weather and reduced traction.                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 4) Texas/Virginia, Module 8, Driver Responsibilities: Adverse Conditions | Desire to adopt stand-alone module on adverse conditions that includes the adverse conditions topics of: visibility, extreme weather, vehicle restraints, roadway and vehicle technologies, traction loss and that incorporates some driver risk prevention concepts and is part of a curriculum that largely follows the ADTSEA curriculum model. | All materials available for download online free of charge.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

(from page 9)

**Recommendations**

It is the recommendation of this report that Arizona continue its ongoing efforts to convene a driver education task force consisting of both Arizona Department of Education and Motor Vehicle Division representatives with the goal of developing uniform standards for both driver education curriculum and training for driver education instructors to apply to both the public school driver education program and the professional driver training schools. In addition, because Arizona does not have an existing state-level driver education curriculum, the state should adopt a complete driver education curriculum as opposed to a module geared towards adverse driving conditions. That said, should that effort not be possible, it is the recommendation of this report that a training module very similar to one of the two adverse conditions related modules (Montana or Texas/Virginia) presented in the table above be implemented. Arizona may need to tailor its modules to take care of the local or regional conditions. Both of these modules are well designed and thorough and both would serve Arizona well. They are similar in their coverage of adverse driving conditions. The choice between the two would come down to Arizona's preference between the NIDB model with which the Montana curriculum is more closely aligned, and the ADTSEA model with which the Virginia/Texas modules are more closely aligned.

**(from page 8)**

trained further with a low cost driving simulator (different from the one being used to evaluate the effects of training in Experiments 1 – 3 and in this experiment). During simulator training, the participants drove through scenarios repeatedly until they made head movements toward the area that contained the

risk.

Researchers assessed the training program with a high-fidelity simulator. The assessment again included near-transfer scenarios (situations present during training) and far-transfer scenarios (situations not present during training). Overall, the training group recognized significantly more risks (72.4%) than the control group (46.9%). Further research is needed to determine whether the simulator training offers a benefit beyond the training program used in Experiments 1 through 3.

*Summary: Experiments 1-4.* The findings indicate that training effects are evident with several days between training and evaluation, that the effects extend to the field and to scenarios different than those presented in training, and that the results are similar whether evaluated in the field or on a driving simulator.

*Experiment 5: Are young drivers more likely than experienced drivers to divert attention away from the forward roadway?* The 100-car naturalistic driving study found that glances away from the forward roadway lasting longer than 2 seconds were related to increased near-crash risk.<sup>1</sup> In the fifth study, participants completed several in-vehicle tasks, such as searching for a road on a map, and one outside-of-vehicle task – searching a roadside sign for the presence of a particular letter. Several seconds of while driving a simulator and wearing eye-tracking equipment. Young drivers were significantly more likely than older drivers to look away from the road when completing the in-vehicle tasks focused visual attention were needed to complete the tasks. Participants completed the tasks the

One measure showing this difference was the percent of scenarios in which the maximum glance duration was greater than 2 seconds. Among the young driver

group, 56.7 percent of the maximum glances were greater than 2 seconds compared to 20 percent for the older participant group. *Limitations.* First, the sample sizes of the research projects were small and may not represent the population of young drivers. Second, participants in hazard perception Experiments 3 and 4 ranged in age from 18 to 21, an age range with different crash patterns than 16- to 17-year-old drivers. The benefits of hazard detection training were consistent across studies. Future research is needed to determine whether these findings can reduce crashes or crash risk.

**References**

1 Klauer, S. G., Dingus, T. A., Neale, V. L., Sudweeks, J. D., & Ramsey, D. J. (2006). *The Impact of Driver Inattention On Near-Crash/Crash Risk: An Analysis Using the 100-Car Naturalistic Driving Study Data*. Washington, DC: National Highway Traffic Safety Administration.

**How to Order Evaluation PC-Based Novice Driver Risk Awareness** (100 pages) from NHTSA.dot.gov or write to the Office of Behavioral Safety Research, NHTSA, NTI130, 1200 New Jersey Ave. SE., Washington, DC 20590.

**Medical Fitness to Drive and a Voluntary Reporting Law**

The AAA Foundation for Traffic Safety has released a report that explores the functional impact and efficacy of Missouri's Voluntary Reporting Law (HB-1536) for drivers considered as potentially unfit due to real or suspected medical-functional deficit or compromise. Passed in 1998, HB-1536 provides a voluntary, legal process whereby concerned family members, police officers, physicians, license office staff, and others can report a driver for re-evaluation and possible license revocation. Copy at: <http://www.aaafoundation.org/pdf/MedicalFitnessToDriveReport.pdf>



### Teen Driver Crashes A Report to Congress July 2008

The House Report (109-12 Section 2012) accompanying H.R. 3, *Transportation Equity Act: A Legacy for Users*, requested the Secretary to conduct a Teen Driver Study on the major causes of traffic crashes involving teen drivers and evaluate existing teen driver programs. It went to request that the Secretary “transmit a report to the Committee on the results of the study and recommendations to reduce the number of traffic crashes involving teenagers, including recommendations for model driving school curriculum and graduated licensing requirements.” This report documents the study’s findings and recommendations.

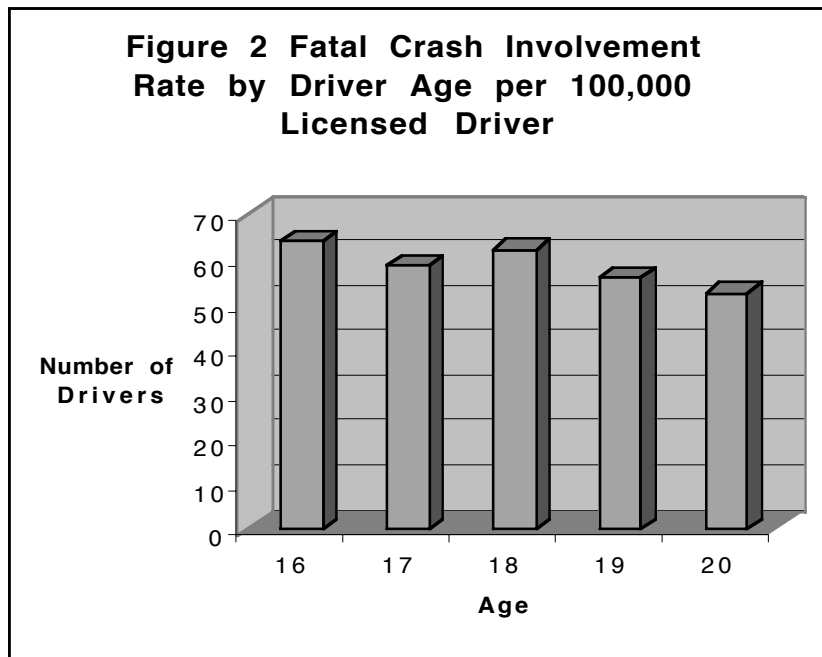
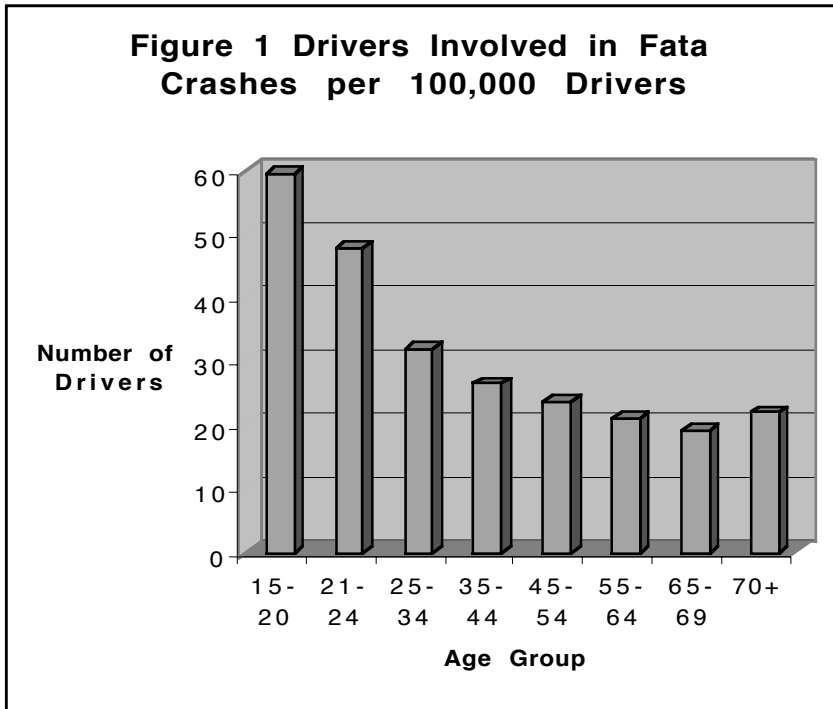
#### Teen Driver Crashes

Motor vehicle crashes are the leading cause of death for 15- to 20-year-olds. In 2006, 3,490 15- to 20-year-old drivers died and an additional 272,000 were injured in motor vehicle crashes. In 2006, 12.9 percent of all the drivers involved in fatal crashes were between 15 and 20 years old. In comparison, these young drivers represent 6.3 percent of all licensed drivers. Overall, driver fatalities for this age group increased by 3 percent between 1996 and 2006. For young males, driver fatalities rose by 5 percent, compared with a 3 percent decrease for young females (NHTSA Traffic Safety Facts – Young Drivers, DOT HS 810 817, 2006).

Figure 1 shows that in 2006 young drivers between 15 and 20 years old had the highest fatal crash involvement rate of any age group with 59.5 fatal crashes per 100,000 licensed drivers. This rate is significantly higher than any other age group and more than double the rate for any age group 35 and older.

Figure 2 shows that in 2005 the involvement rate per 100,000 licensed drivers was highest (63.98) for 16-year-old drivers and lowest for 20-year-old drivers (53.52). Rates

for 17- and 18-year-old drivers are close to each other but are lower than the rate for 16-year-olds. to a combination of immaturity and inexperience, have a higher propensity for risk-taking behaviors



#### Contributing Factors to Teen Driver Crash Rates

Highway safety literature has documented that teen drivers, due

than do older and more experienced drivers. Research and crash data tell us that teen drivers are less likely to (more on page 12)



(from page 11)

buckle up, and more likely to speed or drive too fast for prevailing conditions (Hedlund, Shults, & Compton, 2003). Other factors shown to place teen novice drivers at greater risk of crash involvement include driving late at night (Lin & Fearn, 2003), driving while impaired by alcohol (Williams, 2003), and driving in the presence of teenage passengers (Lin & Fearn, 2003; Williams, 2003). In fact, in-depth studies of novice-driver crashes suggest that contributing factors to teen crashes are much the same as for adult experienced driver crashes.

Teenagers appear to use new technology at a greater rate than older people do. The latest survey of driver cell phone use found younger drivers ages 16-24 using hand-held cell phones at a higher rate than older drivers (Traffic Safety Facts – Driver Cell Phone Use in 2006 – Overall Results, DOT HS 810 790, 2007). While younger drivers may not be more likely to use their Personal Digital Assistants (PDAs), iPods, and other portable entertainment devices while driving than older drivers, younger drivers are less experienced at multitasking while driving and are therefore more easily distracted than their older counterparts (Stutts et al., 2001). In fact, preliminary research has identified different visual scanning patterns between younger novice drivers and older, more experienced drivers, providing support for teen drivers' apparent inability to detect high-risk situations (Pradhan et al., 2005).

Younger drivers are frequently inexperienced in hazard recognition and often take unnecessary risks due to a combination of poor decision making and an illusion of invulnerability (Williams, 2006). Younger drivers do not always consider the consequences of their actions. Recent research in adolescent development supports

the contention that younger people are often developmentally less capable of making sound judgments and decisions regarding potentially risky behavior. Areas of the brain involved in rendering judgments and making decisions are not fully developed until around age 25 (Keating, 2007). Young drivers are particularly vulnerable to certain high-risk driving situations, such as driving at night (Lin & Fearn, 2003; Williams, 2003), after drinking alcohol (Williams, 2003), with other teenage passengers (Lin & Fearn, 2003; Williams, 2003), and when unbelted (Ferguson, 2003).

**Programs for Teen Driver Crashes**

A variety of approaches have been taken to reduce teen driver crashes. These include laws and sanctions, licensing programs, and educational programs. These will be discussed briefly in turn.

**Laws and Sanctions** – A number of laws that restrict teenage drinking and driving have been shown to reduce teen crashes. Studies about raising the drinking age to 21 years old and enacting zero tolerance laws have been shown to reduce teen crash rates. Zero-tolerance laws make it unlawful for drivers under age 21 to ensure the content kept pace with automotive technical advances. ADTSEA provides technical assistance to States and jurisdictions planning to implement or expand driver education programs and graduated driver licensing requirements. (See the Appendix for details.) NHTSA is in the process of reviewing the current state of driver education in the United States. The U.S. Department of Education has joined with NHTSA in a review of current knowledge and state-of-the-art instructional tools, training methods, and curricula consistent with identified best teaching methodologies for teenagers. One component of this

project will convene an expert panel to determine the optimal sequencing and timing of the components of driver education training (classroom, in-vehicle, supervised driving). Given the lack of definitive research and evaluation on many of these issues, it is possible the panel will not be able to clearly identify one "best" approach. In this case, NHTSA will assess the feasibility of moving forward with research to test alternative approaches to driver education to see if one approach produces safer novice drivers.

NHTSA also is exploring the development of consensus national guidelines for driver education program content, delivery, and quality control. As part of the process to develop these guidelines driver education administrators and specialists from every State will be invited to a national conference in late 2008. The development of these guidelines will help to ensure that quality driver education is delivered and monitored uniformly throughout the country.

**RECOMMENDATIONS**

The available evidence shows that: Twenty-one-year-old minimum drinking age laws and zero-tolerance laws have been effective in reducing teen alcohol-related crashes. GDL programs have been shown to reduce teen crashes by approximately 20 percent. Primary seat belt laws lead to higher seat belt use among drivers and passengers of all ages. Driver education is effective at ensuring that novice drivers know the rules of the road, learn basic vehicle control skills, and have been introduced to safe driving information.

Near-term efforts to reduce teen crashes should focus on encouraging States to strengthen their GDL laws to include provisions demonstrated to be effective in reducing teen crash rates. This includes adopting a three-stage GDL

(go to page 14)



## Response to NHTSA's Report to Congress on Teen Driver Crashes

Rich Hanson, 2006 ADTSEA Teacher of the Year

In July 2008 NHTSA sent a report to congress which stated NHTSA's position on the causes of teen fatal crashes and a cursory analysis of interventions to prevent those crashes. This paper is the Oregon Traffic Safety Education Association (OTSEA) Board of Director's response to that report and our recommendations for Driver Education in the future.

In the report, NHTSA authors summarize data we have seen repeatedly. Those data point to the fact that 16 year olds have a higher crash and fatality rate than any other age group. They said "... literature has documented that teen drivers, due to a combination of immaturity and inexperience, have a higher propensity for risk-taking behaviors than do older and more experienced drivers." From the literature they found that "... teen drivers are less likely to buckle up and more likely to speed, or drive too fast for prevailing conditions." They also stated that teen's exposure to risk is greater because "They are involved in more late night crashes, driving while impaired by alcohol and driving in the presence of other teen passengers." These are all statements we can fully agree with. The reasons for teen crashes and fatalities have not changed since the introduction of the automobile and teens started driving. It is the nature of the novice teen driver to engage in risky driving behavior more frequently than other more experienced drivers.

The report goes on to address three common interventions in place to reduce teen fatal crashes. They are "Laws and Sanctions," "Graduated Driver Licensing," and "Driver Education." With each of the interventions there is a description of the intervention, a summary of its effectiveness and a prescription for its continuation or not. It is the

position of OTSEA's Board that the report is accurate in its description and prescription for the first two points. We know that Laws and Sanctions against drunk driving, distracted driving, and seat belt usage work to reduce injury and fatal crashes. We also believe and have seen data demonstrating that the Graduated Driver Licensing which progressively introduces novice teen drivers to more complex driving situations in a three stage licensing strategy is one of the best decisions state legislatures and state departments of licensing did to reduce teen serious and fatal crashes. The most recent data from Oregon supports that finding with a 48% reduction in teen serious injury and fatal crashes since the introduction of Oregon's GDL.

We don't, however, agree with the conclusions regarding driver education for the following reasons:  
 - NHTSA's description of driver education is inaccurate and antiquated. Their comments about "Traditional pre-licensing driver education for novice driver typically entails 30 hours of classroom instruction (theory, rules of the road, safe/defensive driving techniques, risk assessment) and 6-10 hours of in-vehicle training (vehicle control). . ." does not accurately describe current practices in progressive driver education programs that focus on teaching and reinforcing behaviors to help the novice driver recognize and manage risk.

"Teens don't get into crashes because they are uninformed about the basic rules of the road or safe driving practices; rather, studies show they are involved in crashes as a result of inexperience and risk-taking." While this is most likely true it misses the point that driver education is gradually changing to focus more on helping students understand the risk they are

exposed to and what steps they need to take to manage that risk. Driver education needs to be focused less on the concepts that NHTSA perpetuates in its perennial reports to congress which say that driver education doesn't work, and more on the concepts and risk management skills that properly taught and reinforced lead to crash reduction and teen fatalities.

-The report makes reference to partnering with ADTSEA to produce driver education program standards on curricula, delivery and outcomes. While partnering with the national driver education association makes perfect sense it doesn't make sense if that same organization continues to utilize outdated videos, delivery methods and curricula that has demonstrated to be ineffective in their first incarnation.

- The report makes little if any mention of teacher training, the standards and programs available and the monitoring in place designed to meet teaching and delivery standards.

- Only toward the end of the report do the authors mention that no study has been done to show that driver education works in conjunction with a GDL program.

However, they have dismissed out of hand the Oregon study that demonstrated the effectiveness in reducing crash severity and frequency, and citation frequency and severity for students who had taken driver education. Selection bias was cited as the reason for ignoring data that clearly demonstrates that students benefited from taking driver education.

On page six of the study, in the last paragraph, NHTSA clearly identifies why this report is premature and incomplete with the following statement. "Given the lack

(Continued on page 22)

## The Chronicle for DE Professionals ( from page 12)

system that incorporates a learner's stage, a provisional license, and finally an unrestricted license. A strong GDL system should provide the novice driver the opportunity to gain experience driving with a fully licensed adult driver under all conditions, including daytime and nighttime, adverse weather, high-speed roads, and congested traffic. The provisional license should contain the following restrictions, which have been shown to reduce teen crashes:

Restricted nighttime driving; Limiting the number of teenage passengers; Mandatory seat belt use; Zero tolerance for alcohol and drugs; and Delayed transition to an unrestricted license until the driver meets a minimum 1-year period of violation-free driving.

NHTSA's Vehicle and Behavioral Safety Research Office has several ongoing projects examining the feasibility and potential of monitoring systems to encourage safer driving behavior by teens. One project is currently determining the specific driving behaviors that should be monitored to reduce risky driving by teens, including using data from naturalistic driving to learn how novice teen driving behavior changes over the first 18 months of driving. Another study is looking at commercially available monitoring systems, coupled with weekly feedback to parents of teen drivers to reduce risky driving behavior and crashes. These projects are still in formative stages, but may eventually result in systems for voluntary use by parents who want to enhance the safety of their children as they learn to drive. In addition, NHTSA is examining a closer integration of driver education with graduated driver licensing programs for novice drivers that would involve a multistage driver education program. For example, the first

stage of such an integrated system might involve teaching novice drivers the rules of the road and basic vehicle control skills. Later, when the novice drivers progress to the provisional license phase, they would be required to take a course that focuses on safe driving. Whether this approach would prove beneficial in reducing teen driver crashes remains to be seen.

### REFERENCES

American Driver and Traffic Safety Education Association (ADTSEA), personnel communication, September 2007.

Coben, J. H., & McKay, M. P. (2003). *Evaluation of the effectiveness of Pennsylvania's graduated driver licensing program*. Harrisburg, PA: Pennsylvania Department of Transportation.

Ferguson, S. A. (2003). Other high-risk factors for young drivers - how graduated licensing does, doesn't, or could address them. *Journal of Safety Research, 34*, 71-77.

Foss, R., Feaganes, J. R., & Rodgman, E. A. (2001). Initial effects of graduated driver licensing on 16-year-old driver crashes in North Carolina. *Journal of the American Medical Association, 286*(13), 1588-1592.

Friedlander, B. R., Joyce, J. J., Kane, L. R., & Raleigh, R. L. (under review). Fatal and disabling young driver crashes in Maryland: Assessment of three years experience with graduated licensing for 16-year-olds.

Hedlund, J. (2007). Novice teen driving: GDL and beyond. *Journal of Safety Research, 38*, 259-266.

Hedlund, J., Shultz, R., & Compton, R. (2003). What we know, what we don't know, and what we need to know about graduated driver licensing. *Journal of Safety Research, 34*, 107-115.

Insurance Institute for Highway Safety (September, 2007). U.S. Licensing Systems for Young Drivers. Arlington, VA. <http://www.iihs.org/laws/graduatedLicenseIntro.aspx>

Keating, D. (2007). Understanding adolescent development: Implications for driving safety. *Journal of Safety Research, 38*, 147-157.

Lin, M-L., & Fearn, K. T. (2003). The provisional license: nighttime and passenger restrictions — a literature review. *Journal of Safety Research, 34*, 51-61.

Mayhew, D. R., Simpson, H. M., & Pak, A. (2002). Ontario graduated licensing system evaluation-2002. Toronto, Canada: Ministry of Transportation.

Mayhew, D. R., Simpson, H. M., Desmond, K., & Williams, A. F. (2003). Specific and long-term effects of Nova Scotia's graduated licensing program. *Traffic Injury Prevention, 4*(2), 91-97.

Pradhan, A. K., Hammel, K. R., DeRamus, R., Pollatsek, A., Noyce, D. A., & Fisher, D. L. (2005). Using eye movement to evaluate effects of driver age on risk perception in a driving simulator. *Human Factors, 47*(4), 840-852.

Shope, J. T., Molnar, L. J., Elliott, M. R., & Waller, P. F. (2001). Graduated driver licensing in Michigan: early impact on motor vehicle crashes among 16-year-old drivers. *Journal of the American Medical Association, 286*(13), 1598-1599.

Stutts, J. C., Reinfurt, D. W., Staplin, L. W., & Rodgman, E. A. (2001). The role of driver distraction in traffic crashes. Washington, DC: AAA Foundation for Traffic Safety.

*Traffic Safety Facts: Young Drivers 2006 Data*. NHTSA. DOT HS 810 817. Washington, DC: National Highway Traffic Safety Administration.

*Traffic Safety Facts: Seat Belt Use in 2007 – Overall Results*. NHTSA. DOT HS 810 841. Washington, DC: National Highway Traffic Safety Administration.

Ulmer, R. G., Preusser, D. F., Williams, A. F., Ferguson, S. A. & Farmer, C. M. (2000). Effects of Florida's graduated licensing program on the crash rate of teenage drivers. *Accident Analysis and Prevention, 32*(4), 527-532.

Williams, A. F. (2003). Teenage drivers: patterns of risk. *Journal of Safety Research, 34*, 5-15.

Williams, A. F. (2006). Young driver risk factors: successful and unsuccessful approaches for dealing with them and an agenda for the future. *Injury Prevention, 12* (Supp), 14-18.

## Licensing Age and Teenage Driver Crashes: A Review of the Evidence

Allan F. Williams, Ph.D

### LICENSING AGES AND THEIR ESTABLISHMENT

One of the functions of a licensing system is to ensure that people allowed to drive on public roadways have demonstrated a minimum level of proficiency to do so in a safe manner. Licensing systems measure knowledge and skills, but jurisdictions also have to decide at what age people are mature enough to be granted this opportunity. There is substantial variation around the world in where the minimum licensing age has been set, anywhere from 14 to 18. In the United States, with 51 jurisdictions setting separate policies, unsupervised driving has been allowed at 14, 15, 16, and 17 years old, with most states opting for 16. In the United States, state licensing ages were established long ago, and the rationale for choosing one age in preference to another is not well understood (Mayhew et al., 2000). Many state laws pertaining to minimum licensing ages date back to the beginning of the 20th century, when the United States was a more agrarian society. Historical records note the age restrictions but not the rationale behind them. Canada is similar. More information is available for New Zealand, where the minimum age was set at 15 when the first national licensing system was introduced in 1925. Influencing factors in New Zealand are believed to be the rural economy, and the need for young people to drive to and from school and related activities, and to work. Fifteen was the legal age for being able to drop out of school at that time.

Whatever the original rationale for setting a minimum licensing age and its relevance in today's environment, until recently there

has been little discussion or debate about changing the status quo. Policy decisions to increase the licensing age have been rare. Two US states (Mississippi in 1995, Louisiana in 1998) raised the licensing age from 15 to 16, although Mississippi changed back to 15/ 6 months when it introduced graduated licensing in 2000. In Australia, the state of South Australia raised the licensing age from 16 to 16/6 months in 1989. In this paper, raising the age refers to the minimum age at which an initial license allowing unsupervised driving can be obtained, although there may be restrictions on the types of driving that can be done and/or special penalties or other provisions that do not apply to a full license.

### GRADUATED LICENSING

The early licensing countries — Canada, New Zealand, and the United States — have addressed the young driver crash problem by introducing graduated driver licensing (GDL). In a graduated system, beginners are phased in to full driving privileges in stages, in ways designed to protect them while they are accumulating on-road driving experience. The first stage is an extended learner phase of driving under adult supervision, followed by an intermediate license with restrictions on unsupervised driving in the highest-risk situations, late at night or with young passengers present.

Following completion of these stages, a license with no restrictions on unsupervised driving is granted. Such a system was introduced in New Zealand in 1987, and since the mid-1990s, all US states and Canadian provinces have enacted versions of graduated licensing that include some or all of these features.

GDL raises the age of full privilege driving, since the intermediate license now comes with restrictions. Evaluations of GDL have been strongly positive, with crash reductions generally in the 20-40 percent range (Shope, 2007). However, recognition that graduated licensing has only partially reduced the crash problem has spurred interest in raising the licensing age, and legislation was introduced in several US states in 2006-07 to raise the age from 16 to 17 or even 18 (discussed later).

It should be noted that some states have increased licensing ages by a few months as a by product of graduated licensing policies. That is, policies designed to augment the learner stage have occasionally resulted in a situation in which the minimum required permit holding period extends beyond the minimum licensing age. For example, that would be the case if the minimum permit age were 15, 6 months, the minimum holding period 9 months, and the minimum licensing age 16. In this example, it is not possible to get a license until 16 years, 3 months, even though there may have been no official change in the legal minimum driving age. This development will be discussed separately in this paper.

During the past 50 years there have been a few occasions when the policy issue of raising (or lowering) the existing driving age has surfaced, both in the United States and in other countries. In the ensuing debates, arguments have been made about the justification for doing so, based largely on comparisons of crash rates by age. Separately, there are a few studies on the safety and mobility effects of having a higher or lower licensing age in jurisdictions where different minimum ages

( continued on page16)

(from page 15)

actually exist. Both sets of studies will be reviewed in an attempt to inform current debates about changing the licensing age in the United States.

### **DEBATES ABOUT CHANGING THE EXISTING LICENSING AGE**

The issue has usually been debated in terms of whether the youngest licensed drivers have a higher crash rate than drivers in adjacent older age groups. For example, in California, concern about the teenage driver crash problem in the 1960s led to discussions about raising the driving age to 18. A study undertaken in response found no difference in crash rates per licensed driver by age among a crosssection of 16-19 year-olds (Ferdun et al., 1967). In a subsequent, more detailed study, a longitudinal analysis was undertaken in which the same people were followed for their first four years of driving (Harrington, 1972). According to Harrington, the average number of crashes showed little change over the four years, although as Drummond (1994) has noted, as 16-17 year-olds, the group actually had 17 percent more crash involvements than they did as 18-19 year-olds. Both studies concluded that differences between the crash rates for 16-17 and 18-19 year-olds did not support raising the driving age.

In Australia, where the licensing age has been 16, 17, or 18, Cameron (1972) addressed the question of what the appropriate driving age should be, arguing that driving privileges should not be denied to 16 and 17 year-olds unless they can be shown to be more dangerous than 18 year-olds. He concluded that on safety grounds, there was no reason why the minimum licensing age should not be 16, based on California data and a study conducted in a suburb of Detroit that found that crash rates

per miles driven were highest at 18 and 19 (Pelz and Schuman, 1971).

In Canada, the opposite conclusion was reached in a study conducted in response to a proposal to raise the licensing age from 16 to 18 in Quebec (Laberge-Nadeau et al., 1992). In this study, drivers were divided according to whether they had less than one year of experience or one year or more. It was found that newly licensed 16 year-olds, particularly females, had higher injury crash rates than newly licensed older teenagers, and that 16-18 year-olds as a group had the highest crash rates of any age taking driving experience into account. Based on these findings, it was recommended that the driving age be raised to 18, although this did not happen.

Despite the mixture of findings reported in the above studies regarding comparative crash rates by age, more modern pre-GDL national US data indicate that 16 year-olds have the highest crash rates per licensed driver and per miles driven, with rates decreasing linearly at ages 17-19, and further decreases in the 20s and beyond (Williams, 1996). More current California data also have consistently reported a linear decrease in crash rates per licensed driver from age 16 to 19 (Aizenberg and McKnezie, 1997; Gebers et al, 1993; Janke et al., 2003). However, in cross-sectional comparisons such as these, the effects of age and driving experience are confounded. That is, although 17 year-olds may have a lower crash rate than 16 year-olds, is this because they have an extra year of maturity, or because they have an extra year of driving experience, known to reduce crash risk? Of the above studies, only Laberge-Nadeau et al. (1992) addressed this issue.

The best current evidence concerning the relative contribution of age and experience to young driver crash rates comes from a

review of 11 studies undertaken since 1990 that tried to separate these effects (McCartt et al., 2008). Taken together, the studies consistently found that 16-19 year-old drivers had substantially higher crash rates than older drivers, after controlling for length of licensure. Four of the five studies that distinguished 16 year-old drivers reported that during the first licensure year, per-driver crash rates for 16 year-olds were higher than at any other age. However, crash rates of novice 17 year-olds were not consistently higher than crash rates of novice 18-19 year-olds. The authors concluded that efforts in the United States to increase the licensing age from 16 to 17 as a way to reduce the young driver problem are warranted.

### **EFFECTS OF DIFFERENT LICENSING AGES ON CRASHES**

Opportunities for studying the effects of different licensing ages are limited. Comparing countries like the United States with the United Kingdom (17) or northern European countries (18) is not meaningful because of the substantial differences in driving practices and amount and type of exposure. Much of the relevant information comes from cross-sectional studies in the United States and Australia, comparing jurisdictions within these countries with different licensing ages.

In terms of having a higher minimum licensing age, the issue from a safety standpoint is the extent to which reductions in exposure are counterbalanced by increases in driver inexperience. For example, raising the age from 16 to 17 eliminates 16-year-old driver crashes, other than those involving illegal driving or supervised learner driving. On the other hand, driving experience is known to be a major factor affecting crash rates, and newly licensed 17 year-olds would have less driving experience than 17

(continued on page 17)

**Fall 2008**

(from page 16)

year-olds who had been licensed at age 16.

In a study of New Jersey's licensing law for 17 year-olds, based on 1975-80 data (Williams et al.,1983), there were four 16-year-old drivers in fatal crashes in New Jersey per 100,000 population, compared with 26 in Connecticut, where licenses were available at age 16. At age 18, rates were slightly lower in New Jersey than in Connecticut, but there was evidence of a partial offset at age 17, with per capita fatal crash involvement higher in New Jersey (46) than in Connecticut (40). When ages 16 and 17 were combined, the resulting per capita rate in New Jersey (25) was lower than in Connecticut (33; Connecticut/New Jersey =1.32). It was estimated that Connecticut could realize a 66 percent reduction in driver fatal crash involvements by raising the licensing age to 17, assuming that Connecticut would have New Jersey's lower rate for 16 year-olds and higher rate for 17 year-olds. Further analyses indicated that New Jersey and Connecticut 16 year-olds had equivalent rates of deaths in all other motor vehicle categories (primarily passengers, bicyclists, and pedestrians), suggesting that there was no substitution effect.

The New Jersey and Connecticut data were subsequently used in a report to the US Congress on injury costs, with estimates that about 1,375 deaths would have been avoided nationwide if all states had a licensing age of 17 in 1985, translating to savings of \$1.25 to \$4.5 billion, depending on the method used to estimate costs (Rice et al., 1989). A subsequent study of New Jersey's law, based on 1988-90 injury crashes, was consistent with the earlier findings (Ferguson et al., 1996). The per capita fatal and injury crash involvement rate for 16

year-olds was 0.13 in New Jersey, adjusted for population and relative to ages 25-59, compared with 1.56 in Connecticut and 1.73 in Delaware, states where the minimum licensing age was 16. The rate for 17 year-olds was highest in New Jersey, but for 16 and 17 year-olds combined, the overall rate in New Jersey (1.34 times the rate for 25-59 year-olds) was still much lower than the rates in Connecticut (1.82) and Delaware (1.83). There were modest but significant differences in crash rates among 18-20 yearolds in the three states.

Since these studies were undertaken, New Jersey has added graduated licensing provisions, instituting on January 1, 2001, a 6-month minimum permit period and night and passenger restrictions. New Jersey is unusual in that its graduated licensing law applies to novices of all ages, although the night and passenger provisions are waived for new drivers 21 and older. Connecticut began adding graduated licensing provisions in 1997, starting with a 6-month learner period. In an update of the earlier study comparing fatal crash rates in New Jersey and Connecticut based on 1975-80 data (Williams et al.,1983), a similarly wide differential in 16-17 year-old fatal crash rates was found in 1992-96, the five years prior to either state adopting graduated licensing. That is, in 1992-96, New Jersey had a much lower rate for 16-year-old drivers in fatal crashes per 100,000 population than Connecticut (4.4 vs. 20.7), a slightly higher rate for 17 year-olds (32.3 vs. 31.1), and a lower rate for 16-17 year-olds combined (18.2 vs. 25.9). The Connecticut/New Jersey

**The Chronicle for DE Professionals**

crash rate ratio for 1992-96 was 1.42, slightly higher than the differential of 1.32 in 1975-80.

The effect of New Jersey's graduated licensing program on fatal crash involvement can be estimated by comparing crash rates per 100,000 population for various age groups before the law (1992-2000) and after (2002-06), leaving out the transition year 2001 when some in the affected age groups were under

Table 1 Drivers in fatal crashes per 100,000 population in New Jersey, before and after graduated licensing Pre-GDL(1992-2000) Post-GDL(2002-06)

| Age       | Before | After | Difference |
|-----------|--------|-------|------------|
| 16        | 3.9    | 2.2   | -43.6%     |
| 17        | 30.6   | 20.6  | -32.7%     |
| 18        | 32.1   | 25.7  | -19.9%     |
| 19        | 25.7   | 27.1  | 5.4%       |
| 20-24     | 27.4   | 26.4  | -3.6%      |
| 25 and up | 15.2   | 14.2  | -6.6%      |

the new GDL rules and some were not. Table 1 displays the data.

Subsequent to graduated licensing, there were large declines in crash rates for 16 year-olds (44 percent) and 17 year-olds (33 percent). New Jersey 16 year-olds are not directly affected by GDL policies, so this may not be a law effect. However, it is possible that the restrictions on the initial license available at age 17 make it less attractive and delay learner permit driving. Given that graduated licensing in New Jersey applies to all beginners, the 20 percent reduction at age 18 also may be a law effect. At higher age levels there were minimal changes. The post-GDL results in New Jersey indicate that the combination of a higher licensing age and graduated licensing provisions is particularly effective.

Results similar to those in New Jersey were found in a 1986 study in Australia, in which Victoria, licensing at age 18, was compared

(more on page 18)



(from page 17)  
 with South Australia (16) and other Australian states (17) (Drummond,1986). The study was undertaken in response to proposals to lower the licensing age in Victoria to bring it in line with the rest of the country. Results indicated that Victoria's licensing age was associated with a net safety benefit. The crash rate for 18 and 19 year-olds in Victoria was higher than in other states, but this negative factor was overwhelmed by the virtual elimination of crashes at ages 16 and 17, combined with a lower licensing rate in Victoria at ages 18-21 than in most other states. It was estimated that lowering Victoria's licensing age to 17 would result in an additional 30-50 fatal and 650-700 injury crashes annually; lowering the age to 16 would mean 80-100 more fatal and 1,275-1,325 additional injury crashes.

**OTHER WAYS TO ACHIEVE LICENSE DELAY**

In order to provide the opportunity for more supervised practice driving, graduated licensing extends the learner stage, and in many cases parents are required to certify that a certain number of hours of practice driving have been acquired. As of mid-2008, in 45 states and DC a learner's permit must be held for a minimum of 6 months; 34 states and DC require 30 or more hours of supervised driving. Both policies may delay licensing. Delay can occur in any state with these policies, especially states in which the minimum learner's permit age (which ranges from age 14 to 16) is higher. As noted earlier, some states have in effect raised the licensing age by a few months by introducing a lengthy holding period combined with a higher starting age for obtaining a permit. Thirteen states have raised the licensing age 1-6 months in this indirect manner, which is likely to

delay licensing along with producing more practice driving.

Studies indicate positive effects on crashes in states that have instituted learner policies that result in higher licensing ages. The studies were done in states in which a 6-month holding period was the only change made at the time, so the effects could be isolated, apart from other GDL features. In Connecticut, where a permit can be obtained at age 16, a new law requiring the permit to be held 6 months (4 months with driver education) went into effect January 1, 1997. In the first year of the law, there was a 22 percent decrease in the per capita crash rate for 16-year-old drivers, relative to the rate among 25-44 year-old drivers (Ulmer et al., 2001). Licensing data were not available to document the delay effect.

In Kentucky, institution of a 6-month holding period changed the effective minimum licensing age from 16 to 16, 6 months. This resulted in a 33 percent decrease in crashes for 16 year-olds from before GDL (1993-95) to after (1997-99) (Agent et al., 1998). Notably, the proportion of 16-year-old drivers with permits increased by 31 percent in the post-GDL period, and all of the crash reduction for 16-year-olds occurred among drivers ages 16 to 16,6 months (those ineligible for licenses in the post-GDL period).

Crashes decreased 83 percent among drivers of these ages, whereas for drivers ages 16, 6 months to 17, crash rates pre- and post-GDL were virtually identical. Thus there were strong delay effects in Kentucky. It is likely that license delay also will occur in states in which the time between permit age and licensing age is equal to the time that must be spent in the permit period. As of mid-2008, this was the case in 15 states as a result of graduated licensing. For example, a permit can be obtained at age 15, 6

months in Ohio, has to be held for 6 months minimum, and the licensing age is 16. Studies are needed to determine the extent to which this affects licensing rates and crashes.

More studies are needed of the effects of permit policies in general, in particular the amount of delay that is generated as well as the overall effects. Information is scant on licensing rates for 16 yearolds before and after graduated licensing, and little is known about how teens in the post-GDL period differ from pre-GDL teens in the timing of obtaining permits and scheduling driving tests.

There are other ways that licensing can be delayed. Basically, anything that makes license acquisition more difficult or more costly can delay the process. Britain is an example, with tough written and driving tests (with a high failure rate) and high costs for training, testing, and license purchase (Calian and Stecklow, 2002). The licensing age is 17, low by European standards, but the process cannot be started until this age and it can be a lengthy one. In 1999-2001, only 41 percent of male 17-20 year-olds, and 31 percent of females of these ages had full licenses (Office for National Statistics, 2007). In 2007 the Department of Transport proposed a 12-month training period for new drivers, which if enacted would in effect raise the licensing age to 18.

**MOBILITY CONSEQUENCES OF HIGHER LICENSING AGES**

It is axiomatic that higher licensing ages result in mobility loss. In graduated licensing systems, there is an effort to maintain essential driving privileges for those who are subject to the restrictions, e.g., night driving restrictions generally exempt work-related driving and in some states driving to and from school activities. However, raising the age takes away all unsupervised driving privileges. Getting a driver's license

( continued on page 19)



**Fall 2008**

(from page 18)

at a young age is clearly important to many teenagers. It is a milestone life event, which carries prestige, and gives young people the opportunity to achieve some independence from their parents, traveling without them present.

Two studies of New Jersey's licensing law have addressed the question of how not being allowed to be licensed at 16 impacts the lifestyles of New Jersey 16 year-olds. In the first study, surveys of high school students were conducted in New Jersey and Michigan (licensing age 16) in 1983 (Preusser et al., 1985). Fifty-six percent of the Michigan 16 year-olds surveyed were licensed drivers. Results indicated that New Jersey's older minimum licensing age had minimal impact on the surveyed activities of 16 year-olds.

In fact, New Jersey 16 year-olds were more likely to work at paying jobs, probably a reflection of New Jersey's higher employment rate at the time, and more likely to go to parties. However, the transportation patterns were different. New Jersey 16 year-olds were more likely to rely on other family members for transportation and less likely to do family errands.

The second study, conducted in the early 1990s, extended this earlier work, covering the entire high school experience (Preusser et al., 2000). High school students in New Jersey and in three states licensing at age 16 (Connecticut, Delaware,

and New York) were surveyed by telephone every 6 months from their freshmen through senior years. To address the question of the effect of later licensure on teen activities, comparisons were made in the junior year, when licensing rate differences were most extreme.

Despite these differences in licensure, students in the respective states were not different in regard to time spent at activities such as a paying job, homework, watching television, dating, parties, being with friends, talking on the phone, or participating in sports or school activities. As in the earlier survey, New Jersey 16 year-olds spent less time doing family errands, and they were more reliant on their parents for transportation. These two studies are dated and are based on only New Jersey, but they suggest that 16 year-olds and their families can adapt to a 17-year-old licensing age, finding ways to do desired social, work, and school activities.

**PUBLIC OPINION ABOUT THE LICENSING AGE**

Several telephone surveys of parents of teenagers were undertaken in the United States in the 1990s, prior to the widespread adoption of graduated licensing, to determine views about the most appropriate licensing age (Ferguson and Williams, 1996; Williams and Lund, 1986; Williams et al., 1996). Table 2 summarizes these results. There was quite a bit of variation, but a clear indication of

**The Chronicle for DE Professionals**

dissatisfaction with the status quo. In the majority of surveys, fewer than half chose age 16 as appropriate. In the national surveys, and in states where the licensing age is 16, 38-66 percent of parents endorsed an age higher than 16. Overall, age 17 and age 18 were about equally popular, although there was variation across surveys. New Jersey parents stood out. Sixty-five percent endorsed New Jersey's licensing age of 17; 27 percent wanted a higher age (25 percent selected 18 or older; 2 percent chose an age between 17 and 18).

More recent surveys of parents of teenagers were done in Minnesota, North Carolina, and Rhode Island in 2006 (McCartt et al., 2007). Parents of 16-17 year-olds were interviewed while their teens were taking an on-road driving test to obtain their license. These surveys inquired about licensing age and included a category "depends on the teen," which drew some support and complicates comparisons with earlier surveys. Still, the results are consistent with the Table 2 data. Minnesota parents were most favorable toward a licensing age of 16 or younger (49 percent), with 15 percent favoring 17, 18 percent age 18, and 18 percent saying it depends. In North Carolina, 43 percent endorsed 16, 27 percent 17, 23 percent 18, and 8 percent said it depends. In Rhode Island, 39 percent favored 16, 21 percent 17, 27 percent 18, and 14

percent said it depends. Despite these views of parents, it is notable that the large majority of their sons and daughters obtained licenses well before reaching age 17. Surveys of adults

Table 2 Licensing age preferences of parents (percent)

|                                       | 16 or Less | 17 | 18 or more | Older than 16 |
|---------------------------------------|------------|----|------------|---------------|
| 1985 US parents of 17 year-olds       | 47         | 13 | 41         | 53            |
| 1994 US parents of 17 year-olds       | 60         | 22 | 17         | 41            |
| 1996 FL parents of 15 year-olds       | 56         | 28 | 15         | 44            |
| 1996 CT parents of 15 year olds       | 34         | 28 | 29         | 66            |
| 1996 CT parents of graduating seniors | 37         | 26 | 33         | 63            |
| 1996 DE parents of graduating seniors | 61         | 17 | 20         | 38            |
| 1996 NJ parents of graduating seniors | 6          | 65 | 25         | 93            |
| 1996 NY parents of graduating seniors | 36         | 36 | 25         | 64            |



(from page 19)

in general (parents plus others) have found strong support for higher licensing ages. A survey conducted by the Insurance Research Council in 1999 found that 56 percent thought the licensing age should be at least 18. A USA Today/CNN/ Gallup poll conducted in 2004 found 37 percent of respondents endorsed 16 or younger, compared with 8 percent who wanted 17, and 53 percent who favored 18 or older.

**RECENT DEVELOPMENTS**

New Zealand came close to raising its driving age in 1999, when its graduated licensing system was revamped. Prior to the 1987 graduated licensing law, a license could be obtained on the 15th birthday. Under graduated licensing, a learner license was available at age 15, permitting supervised driving, and a license with night and passenger restrictions at 15, 6 months, or 15, 3 months upon passing an approved driving course. A proposal to raise the learner's permit age to 16 was not adopted. Among the interested public, it had support, however, as a greater-than-expected number of people (41,000) responded to a questionnaire that was included in all daily newspapers, with 80 percent saying they favored the increased age (Land Transport Safety Authority, 1998). In 2007 a bill was introduced to raise the driving age to 16, but as of mid-2008 no action had been taken.

In jurisdictions worldwide where licensing ages are higher than in other jurisdictions, attempts to lower the age have been resisted. Pressure on Victoria to lower its licensing age of 18 inspired the Drummond (1986) study, which found safety benefits for age 18. During the early 1990s there was discussion of a trade-off, lowering the licensing age to 17 or 17, 6 months, but adding restrictions on high risk driving. Analyses indicated

that even with substantial constraints on driving at age 17, this policy would increase crashes because of the increased exposure, and it did not go forward (Cameron, 2001).

There have been no legislative attempts to lower the licensing age in New Jersey, and as indicated earlier, New Jersey parents overwhelmingly support a licensing age of 17 or older. The most recent discussions of the policy of raising the driving age have come from the United States. In 2006-07, Delaware, Florida, and Georgia introduced legislation to increase the age to 17; North Carolina proposed 16, 6 months; Massachusetts introduced one bill to raise the age to 17 and another to raise it to 18; Illinois proposed a licensing age of 18. No state has raised the age to 17 or higher so far. It is unclear whether this recent interest in higher licensing ages will culminate in any states actually doing so. In this context it is of interest to note that it took more than 20 years for graduated licensing to catch on, despite its popularity with parents in

surveys, although once it was enacted by the early adopters, it spread rapidly across the country.

During 2006, the Organisation for Economic Co-operation and Development and European Conference of Ministers of Transport (2006) issued a comprehensive report on the young driver problem around the world and available countermeasures. Based on a review of international crash data, it recommended that jurisdictions seriously consider raising licensing ages, especially where solo driving ages are younger than 17. In regard to the trade-off between safety and mobility, it was noted that "...the need for mobility at a given age should be balanced with the cost of that mobility, in terms of human life and health, as well as economic impact...Put differently, how much personal mobility should be exchanged for how many deaths and injuries related to young driver risk?" Clearly this is not an easy decision for societies. Drummond (1989) also has commented on the acceptance of the status quo, saying

(continued on next page)

**Corporate Members of ADTSEA**

AAA Foundation for Traffic Safety  
American Automobile Association  
AA Driving Ventures  
Advanced Auto Parts  
Country Insurance & Financial Services  
Delnar, Cengage Learning  
Doron Precision Systems, Inc.  
General Motors Corporation  
National Association of State

Motorcycle Safety Administrators  
National Road Safety Foundation  
NTSA International  
Motorcycle Safety Foundation  
Raydon Corporation  
Simulator Systems International  
State Farm Insurance Companies  
Toyota Motor Sales, USA, Inc.  
U-Haul International



## Fall 2008

(from page 20)

“the choice of licensing age is a crucial determinant of the public health outcomes of young driver training. However, licensing age is often viewed as a given in any jurisdiction rather than a variable that can be manipulated to achieve optimal safety outcomes.”

### SUMMARY

Licensing ages around the world have varied from 14 to 18. There is limited information to gauge the effects of higher licensing ages. However, the evidence suggests they would save many lives, primarily through reductions in exposure. In the United States, 16 year-olds have the highest per driver crash rates, there is evidence that 16 year-olds are more crash prone than older teenagers after controlling for driving experience differences, and there is public support for licensing ages older than 16.

There is evidence from studies in New Jersey in the 1980s and 1990s that lifestyles are not unduly affected by a licensing age of 17. Debates in states about higher licensing ages often include concerns about inconveniences to parents, and disruption of work, social, and educational opportunities of teens (Keilman and Aduroja, 2006). However, there also have been supportive articles (Davis, 2005) and favorable comment from teenagers (Willingham, 2005).

Since the mid-1990s, North American jurisdictions have adopted graduated licensing systems. GDL has reduced the young driver problem among 16 year-olds, but it is not a panacea, and the continuation of teen deaths has influenced some states to consider raising the licensing age to 17 or 18. Graduated systems can be configured so that they increase the licensing age by raising the permit age and/or the permit holding

period, and this has positive benefits. However, currently the highest licensing age achieved by this approach is 16, 6 months, and night and/or passenger restrictions are generally lifted prior to age 18. Licensing at 17 raises the age an additional 6 months or more, thereby addressing a larger number of crashes. In New Jersey, night and passenger restrictions are in place at least until age 18 and the law also applies to older novices. With a licensing age of 17 and a strong and successful graduated system, New Jersey is a model for the United States. In this context it is notable that a study commission appointed by New Jersey's governor has recommended several measures to strengthen the graduated licensing system, including extending the present 6-month permit phase to 1 year for all new drivers 16 to 20 years of age, and strengthening night and passenger restrictions (New Jersey Teen Driver Study Commission, 2008). The New Jersey legislature has introduced bills calling for these actions and they are presently under consideration. The minimum permit age in New Jersey is 16 and, if the 12-month learner period is adopted, this policy would be likely to further delay licensure past age 17.

Concurrently, countries with higher licensing ages are starting to consider New Zealand/North America-style graduated licensing, with restrictions on nighttime driving and driving with peer passengers once an initial license is obtained. This development has been spurred by recognition that crash risk is very high the first few months of licensed driving, whether the licensing age is 16, 17, or 18. Several Australian states with licensing ages of 17 are adopting these provisions (Senserrick, 2007), suggesting that some global convergence may be developing in how to address the

## The Chronicle for DE Professionals

young driver problem that all motorized societies face.

### ACKNOWLEDGMENTS

The author gratefully acknowledges the helpful comments from Adrian Lund and Anne McCartt of the Insurance Institute for Highway Safety. This work was supported by the Insurance Institute for Highway Safety. The opinions, findings, and conclusions expressed in this publication are those of the author and do not necessarily reflect the views of the Insurance Institute for Highway Safety.

### REFERENCES

- Agent KR, Steenbergen L, Pigman JG, Kidd PS, McCoy C, Pollack SH. (1998) Impact of the Partial Graduated Licensing Program in Kentucky on Teen Motor Vehicle Crashes, *Transportation Research Record*, Vol. 1779, pp. 54-61, Transportation Research Board, Washington DC.
- Aizenberg R, McKenzie DM. (1997) *Teen and Senior Drivers*, 4th Edition, California Department of Motor Vehicles, Sacramento, CA.
- Calian S, Stecklow S. (2002) In Britain, Getting a Driver's License Can be a Royal Pain, *The Wall Street Journal*, October 30.
- Cameron C. (1972) The Optimum Age for Driver Licensing, *Proceedings of the National Road Safety Symposium*, pp 384-388. Canberra, Australia.
- Cameron M. (2001) Personal communication, May 29.
- Davis R. (2005) Is 16 Too Young to Drive a Car? *USA Today*, March 2.
- Drummond AE. (1986) *Driver Licensing Age and Accident Involvement Rates of Young Drivers*, Road Traffic Authority, Victoria, Australia.
- Drummond AE. (1989) *An Overview of Novice Driver Performance Issues: A Literature Review*, Report no. 9, Monash University Accident Research Centre, Victoria, Australia.
- Drummond AE. (1994) *Young Driver Research Program: A Technical and Strategic Overview of Exposure Reduction Measures as a Means of Reducing Young Driver Crashes*, Report no. CR 130, Monash University Accident Research Center, Victoria, Australia. (more on next page)

## The Chronicle for DE Professionals

(from page 21)

Ferdun GS, Peck RC, Coppin RS. (1967) The Teenaged Driver, *Highway Research Record*, No. 163.

Ferguson SA, Leaf WA, Williams AF, Preusser DF. (1996) Differences in Young Driver Crash Involvement in States with Varying Licensing Practices, *Accid. Anal. Prev.*, Vol. 28, pp. 171-180.

Ferguson SA, Williams AF. (1996) Parents' Views of Driver Licensing Practices in the United States, *J. Safety Res.*, Vol. 27, pp. 73-81.

Gebers MA, Romanowicz PA, McKenzie DM. (1993) *Teen and Senior Drivers*, California Department of Motor Vehicles, Sacramento, CA.

Harrington DM. (1972) The Young Driver Follow-Up Study: An Evaluation of the Role of Human Factors in the First Four Years of Driving, *Accid. Anal. Prev.*, Vol. 4, pp. 191-240.

Insurance Research Council. (1999) *Public Attitude Monitor, 1999; Issue 3: Vehicle Theft – Reducing Accidents among the Youngest and Oldest Drivers*. Malvern, PA.

Janke MK, Masten SV, McKenzie DM, Gebers AM, Kelsey SL. (2003) *Teen and Senior Drivers*, California Department of Motor Vehicles, Sacramento, CA.

Keilman J, Aduroja G. (2006) Raise Driving Age? Parents Not Thrilled, *Chicago Tribune*, January 24.

Laberge-Nadeau C, Maag U, Bourbeau R. (1992) The Effects of Age and Experience on Accidents with Injuries: Should the Licensing Age be Raised, *Accid. Anal. Prev.*, Vol. 24, pp. 107-116.

Land Transport Safety Authority. (1998) *Minimum Driver Licensing Age to 16 Years Rationale*, Wellington, New Zealand.

Mayhew DM, Fields M, Simpson HM. (2000) Why 16? Insurance Institute for Highway Safety, Arlington, VA.

McCartt AT, Hellinga LA, Haire ER. (2007) Age of Licensure and Monitoring Teenagers' Driving: Survey of Parents of Novice Teenage Drivers, *J. Safety Res.*, Vol. 38, pp. 697-706.

McCartt AT, Mayhew DR, Braitman KA, Ferguson SA, Simpson HM. (2008) Effects of Age and Experience on Young Driver Crashes: Review of Recent Literature. Insurance Institute for Highway Safety, Arlington, VA.

New Jersey Teen Driver Study Commission. (2008) Teen Driver Study Commission Recommendation Report, Division of Highway Traffic Safety, Office of the Attorney General, State of New Jersey, Trenton, NJ.

Office for National Statistics. (2007) *Table 12.9 Full Car Driving Licence Holders by Sex and Age* (Source: National Travel Survey, Department of Transport), Newport, Wales. Available: <http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=7237>, Last Updated: January 28, 2004.

Organisation for Economic Co-operation and Development, European Conference of Ministers of Transport. (2006) *Young Drivers; The Road to Safety*, Transport Research Center, Paris, France.

Pelz DC, Schuman SH. (1971) Are Young Drivers Really More Dangerous after Controlling for Exposure and Experience? *J. Safety Res.*, Vol. 3, pp. 68-79.

Preusser DF, Leaf WA, Ferguson SA, Williams AF. (2000) Variations in Teenage Activities with and without a Driver's License, *J. Public Health Policy*, Vol. 21, pp. 224-239.

Preusser DF, Williams AF, Lund AK. (1985) Driver Licensing Age and Lifestyles of 16 Year Olds, *Am. J. Public Health*, Vol. 75, pp. 358-360.

Rice DP, MacKenzie EJ, Jones AS, Kaufman SR, deLissovoy GV, Max W, et al. (1989) *Cost of Injury in the United States: A Report to Congress*, Institute for Health and Aging, University of California, San Francisco, CA.

Injury Prevention Center, Johns Hopkins University, Baltimore, MD.

Senserrick TM. (2007) Recent Developments in Young Driver Education, Training, and Licensing in Australia, *J. Safety Res.*, Vol. 38, pp. 237-244.

Shope JT. (2007) Graduated Driver Licensing: Review of Evaluation Results Since 2002, *J. Safety Res.*, Vol. 38, pp. 165-175.

Ulmer RG, Ferguson SA, Williams AF, Preusser DF. (2001) Teenage Crash Reduction Associated with Delayed Licensing in Connecticut, *J. Safety Res.*, Vol. 32, pp. 31-41.

Williams AF. (1996) Magnitude and Characteristics of the Young Driver Crash Problem in the United States, *New to the Road: Reducing the Risks*

for Young Motorists, *Proceedings of the First Annual International Symposium of the Youth Enhancement Service* (ed. HM Simpson), pp. 19-25, University of California, Los Angeles, CA.

Williams AF, Ferguson SA, Leaf WA, Preusser DF. (1996) *Views of Parent of Teenagers about Graduated Licensing Systems*, *J. Safety Res.*, Vol. 29, pp. 1-7.

Williams AF, Karpf RS, Zador PL. (1983) Variations in Minimum Licensing Ages and Fatal Motor Vehicle Crashes, *Am. J. Public Health*, Vol. 73, pp. 1401-1402.

Williams AF, Lund AK. (1986) Adults' Views of Laws that Limit Teenagers' Driving and Access to Alcohol, *J. Public Health Policy*, Vol. 17, 190-197.

Willingham AK. (2005) Slow Down; At Age 17, Maybe I'm Too Young to Drive, *The Washington Post*, January 9.

(from page 13)

of definitive research and evaluation on many of these issues, it is possible the panel will not be able to clearly identify one best approach. In this case, NHTSA will assess the feasibility of moving forward with research to test alternative approaches to driver education to see if one approach produces safer novice drivers."

We welcome this study and it is about time. The studies that have preceded this are so out of touch from what is currently being done that they only serve to perpetuate the myth that DE doesn't work.

"NHTSA also is exploring the development of consensus national guidelines for driver education program content, delivery and quality control." We can say without equivocating that we fully support this goal. We would add that we would also like to see consensus on national standards for teacher preparation and certification.

We don't want reports that rely upon old data, old concepts of driver education, and assumptions that are based upon old ideas of what driver education is and how it is conducted in America.

Fall 2008

## What's new in the world of adolescent brain development?

Erin Floyd-Bann, Ed.D. HRB Solutions, Inc.

There are some interesting research strands out there right now that I believe are very exciting, both to someone with risk-taking backgrounds and to driver educators. I hope to bring you an in-depth look at some of it in the near future but for now I am going to mention something that I believe will also be of great interest to you as driver educators.

There is a book that I ran across by Daniel Romer and Elaine Walker called *Adolescent Psychopathology and the Developing Brain*. Oxford University Press published it in 2007. The authors took the proceedings from a symposium in 2005 convened at the University of Pennsylvania Annenberg Public Policy Center. There, professionals from research

and neurosciences came together to hold a discussion from their various perspectives about how combining brain development research and preventive research might work.

Wow. Seems like that should be a no-brainer to all of us, but considering the vast range of interests and professional associations and accrediting organizations and the ever-shrinking pool of federal and state research funds as well as the growing private sector competition into formally academic realms, maybe not. Despite my propensity for run-on sentences, this idea is simple. Take basic research, for example adolescent brain development, and combine it with research into disease prevention, such as

adolescent risk-taking. Then voila! Out of this synergy should come some great ideas about how to revamp, modify, throw out, start over, go back, go forward and do whatever it takes to create the most positive, most effective, most relevant curriculum and programming for our teenagers in whatever area of health we might be studying, for example, driver safety and education.

The participants at the 2005 meeting were not driver educators of course. But the idea is sound. Wouldn't it be a wonderful thing to bring together brain development researchers and driver educators? I think it would. Imagine what could come out of such a cooperative attempt to focus specifically on driver education!

### ADTSEA State Affiliates

- California
- Connecticut
- Delaware
- Georgia
- Hawaii
- Idaho
- Illinois
- Iowa
- Kansas
- Kentucky
- Michigan
- Minnesota
- Montana
- New Hampshire
- North Carolina
- North Dakota
- Oregon
- Pennsylvania
- South Carolina
- Texas
- Vermont
- Virginia
- Washington
- West Virginia
- Wisconsin

### Roadway Departure Safety

Of the 41,059 people killed on our nation's highways in 2007, over 24,000 died when their vehicle left their lane and crashed. In some cases the vehicle crossed the centerline and was involved in a head-on crash or opposite direction sideswipe. In others, the vehicle encroached onto the shoulder and beyond to rollover or impact one or more natural or man-made objects, such as utility poles, bridge walls, embankments, guardrails, parked vehicles, or trees.

This web site provides highway designers, decision makers, and practitioners with information and guidance that will lead to safer roads and roadsides. Our first priority, of course, is to keep drivers on the road. This is done in part by giving drivers the information they need to safely control their vehicles. Retroreflective signs and pavement markings can help the driver stay in the proper lane. Rumble strips can alert a distracted or drowsy driver that they are starting to drift.

If the car veers off the traveled way, we then must make every effort to make sure that a severe crash will not occur. Wide shoulders and flat, traversable roadsides will let the driver recover and safely return the vehicle to the roadway. Properly designed breakaway sign and light supports, roadside barriers, and bridge railings will help keep motorists from encountering greater harm. Median barriers can help prevent a high-speed head-on crash. Visit this website at: [http://safety.fhwa.dot.gov/roadway\\_dept/](http://safety.fhwa.dot.gov/roadway_dept/)

### The 2008 Kaywood Award Recipient Micky Johnson



# Two New Driving Programs From Doron Precision Systems, Inc.

*Coming  
Soon To A  
Classroom  
Near You!*

\* Doron's two new driving programs will help develop critical "threat recognition" skills and enhance peripheral vision capability for both the novice and experienced driver.

\* Accident free driving is directly related to a driver's ability to recognize threatening actions of other highway users.

*Crash Avoidance III*

*Threat Recognition II  
(a Driver Analyzer Program)*

Call now to order  
your programs!



Doron Precision Systems, Inc.  
Audiovisual Department  
P.O. Box 400 • Binghamton, NY 13902

Tel: 607.772.1610 ext. 392  
Fax: 607.772.6760  
Email: [doronav@doronprecision.com](mailto:doronav@doronprecision.com)  
Web: [www.doronprecision.com](http://www.doronprecision.com)

# Prepare Your Students for the Road Ahead

Join the thousands of instructors that count on AAA's  
*How To Drive* to help them make a difference in driver safety.



A recommended resource for  
instructors using the ADTSEA curriculum.

**To order:**

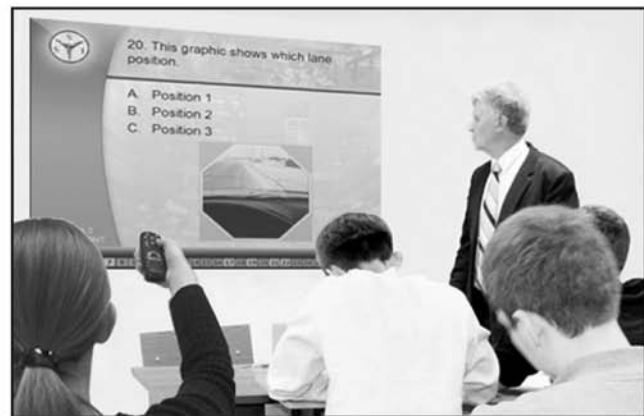
***How To Drive* - 13th Edition**

Contact your local AAA club, or go to  
**AAA.biz/trafficsafety**

# Introducing...A Better IDEA for Driver Education

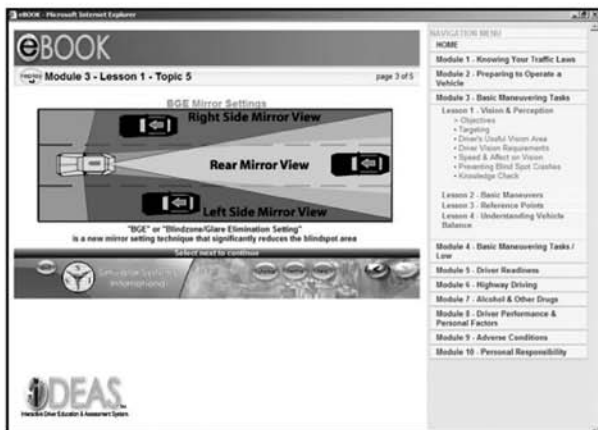


**NO MORE:  
Taking Roll.  
Grading Tests.  
Sorting Papers.**

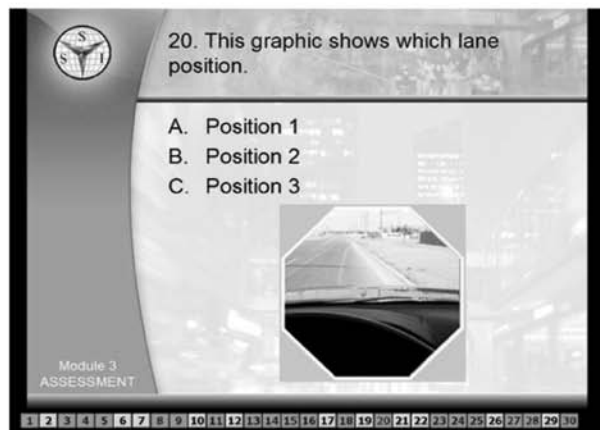


Intergrated Wireless Student Response System

- ✓ Fully Electronic Textbook
- ✓ Interactive & Engaging Lessons
- ✓ Wireless Student Response System
- ✓ Automatic Attendance, Scoring & Record Management
- ✓ Study Sheets, Worksheets, Tests & Final Exam Included



42 Lessons With A Full 32 Hours Of Material



Paperless Test-Taking with Automatic Grading

1-800-843-4764

**SIMULATOR SYSTEMS INTERNATIONAL**

11130 E. 56th Street ♦ Tulsa, OK 74146 ♦ [www.simulatorsystems.com](http://www.simulatorsystems.com) ♦ 918-250-4500



**2009 ADTSEA CONFERENCE**  
**Charlotte, North Carolina**  
**Hilton Hotel**  
**University Place**



**July 25**  
**to**  
**July 30, 2009**

AMERICAN DRIVER AND TRAFFIC  
SAFETY EDUCATION ASSOCIATION  
c/o **Highway Safety Center**  
Indiana University of Pennsylvania  
R & P Building  
629 Fisher Avenue  
Indiana, PA 15705-1092

PRESORTED STD  
U.S. POSTAGE  
Paid  
St. Cloud, MN  
Permit No. 2135