STRATEGIES TO IMPROVE TEEN DRIVER SAFETY: LESSONS LEARNED

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STRATEGIES TO IMPROVE TEEN DRIVER SAFETY: LESSONS LEARNED

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INTRODUCTION

Driver education has been very prominent as a teen driver safety measure in the United States over the past decade at state and national levels. This is in marked contrast to previous decades when these programs were widely adopted but received little support or attention, particularly at a national level. This was largely due to early evaluations of traditional programs that suggested these programs failed to reduce teen driver crashes (Christie 2011; Engstrom et al. 2003; Lonero & Mayhew 2010; Mayhew & Simpson 2002; Mayhew & Simpson 1998; Roberts et al. 2002; Simpson 2003; Thomas et al. 2012a; Vernick et al. 1999; Williams et al. 2009; Woolley 2000). While some recent evaluations have reported more positive results on the safety value of driver education (Mayhew et al. 2014a; Shell et al., 2015), as was the case with most previous studies, they suffered from design limitations, principle of which was the lack of random assignment of teen subjects to take or not take driver education which resulted in self-selection bias. Although efforts were taken to statistically control for such biases, it is still possible that this accounted for some, and possibly all, of the positive effects that have been attributed to driver education.

The recent rejuvenation of interest in driver education has largely emerged from efforts by the leadership of national driver education associations and road safety agencies with the support of the National Highway Traffic Administration (NHTSA). Work was undertaken to develop national, voluntary standards for state driver education programs and to establish the Association of National Stakeholders for Traffic Safety Education to review, update and promote these standards (ANSTSE; NHTSA 2016). Despite these recent efforts, most driver education programs have remained relatively unchanged since their inception (i.e., 30 hours of in-class education and six to eight hours behind-the-wheel training). While, some modest improvements in driver education programs have been achieved, reductions in teen driver crashes have been less substantial. As such, this issue continues to be a significant road safety and public health concern (NHTSA 2016).

New, non-traditional, teaching technologies and approaches are also emerging but their evidence-base from independent, well-designed studies is lacking or inconclusive (Mayhew et al. 2014b; Mayhew et al. 2016; Thomas et al. 2016). More robust and comprehensive evaluations are needed to determine whether non-traditional training techniques, as well as improved driver education programs, have a positive influence on teen driving performance. In this regard, a review of the current context of driver education and teen driver safety programs can provide important insight into opportunities for advancements, and help build on existing strengths or activities to gain momentum.

The objective of this work is to increase understanding of the context of government decision-making about driver education and teen driver safety programs, and to gain insight into real-world factors that influence such processes. Experiences and lessons learned from states that have different regulatory authority for driver education, variable driver license requirements, and that have pursued a range of improvements to their respective programs can provide important insight to stimulate action in more jurisdictions.

This report is designed to explore key factors that influence state decisions regarding teen driver safety programs, generally, and driver education programs specifically, to provide guidance for jurisdictions that are seeking strategies to improve teen driver safety.

METHODS

A small cross-section of states that are representative of various regions of the country, diverse regulatory approaches, quality and accessible crash data, different mechanisms to deliver driver education (i.e., public/commercial, classroom/online, varying degrees of parental involvement and use of technologies), and whom have undertaken efforts to strengthen driver education practices in the past few years were the primary focus for this study.

Ten states were identified and profiled including Connecticut, Idaho, Minnesota, Montana, New Jersey, New York, Oregon, Vermont, Virginia, and Washington. Among these 10 states, just five were selected to conduct key informant interviews with representatives of state agencies responsible for driver education and teen driver safety. The five states were selected to represent a cross-section of administrative structures, program features, and delivery mechanisms for driver education programs. A discussion guide was used to help structure interviews, and was designed to explore the current program context and decision-making processes within the respective jurisdictions. The five states that were selected for further exploration were Idaho, Minnesota, New York, Oregon, and Virginia. A more detailed description of the diverse features of the driver education programs in the five states is briefly summarized below.

> **Idaho** mandates driver education for anyone under age 17 and the public program is managed by the Idaho State Department of Education (DOE). The Department of Occupational Licensing (DOL) is responsible for private/commercial driver education. Online driver education courses are approved by the DOE and must meet or exceed the iNACOL[1] standards for online learning.

> **Minnesota** requires that anyone aged 17 years or younger that applies for a provisional license must have completed classroom and behind-the-wheel driver education. The Minnesota Driver and Vehicle Services (DVS), located within the Department of Public Safety (DPS), is responsible for this program. Parents that home school children are permitted to teach the classroom portion of the driver education curriculum. There is strong interest in parental involvement in driver education in this state. However, online driver education programs are not approved for use by the state agency.

> **New York** requires learner permit holders to take a five-hour pre-licensing course before they take their road test. A driver education course may be taken in place of the pre-licensing course, but it is not required. The pre-licensing course is approved by the Department of Motor Vehicles (DMV) and comprises four to five hours of standardized classroom instruction. The Driver and Traffic Safety Education program administered by the New York Department of Education includes 24 hours of classroom (theory) and 24 hours

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1 iNACOL is the International Association for K-12 Online Learning and its missions is to catalyze the transformation of K-12 education policy and practice to advance powerful, personalized, learner-] centered experiences through competency-based, blended and online learning. See: http://www.inacol.org/about/

of in-vehicle (laboratory); students must operate the vehicle for at least six of the 24 hours of in-vehicle training. It is offered only through high schools and colleges. In 2008, the Driver Education Research and Innovation Center (DERIC) was established as a multi-agency collaboration between the New York State Education Department (NYSED), the NYS DMV, the NYS Department of Health (DOH), the Governor's Traffic Safety Committee (GTSC) and Health Research Inc. (HRI). The main goal of DERIC is to develop a driver education program that includes a standardized driver education curriculum that increases safe driving behaviors and is sought after by parents, students and instructors.

> **Oregon** has a well-managed and statewide Oregon Department of Transportation (ODOT)-approved driver education program that includes both public and commercial sector providers. The driver education program is voluntary in that 16- and 17-year olds can choose to certify 100 hours of supervised driving practice or 50 hours of supervised driving practice combined with a driver education program to obtain a provisional license. There is also a strong interest in driver education at ODOT and in the state, and Oregon has a history of continuous improvements and leadership in this area.

> **Virginia** mandates that Virginia residents under age 18 complete the state-approved driver education program to obtain a driver license. The Department of Education (DOE) provides the standardized curricula and provides oversight for public and commercial school instructional programs. All students can also use online driver education programs approved by the DOE. The DMV approves and provides oversight for commercial driving schools.

The driver education programs in these five study states clearly differ in important ways. Idaho, for example, provides a very different administrative and operational environment for driver education as compared to Oregon (e.g., administered by two agencies rather than one; mandated for anyone under 17 years of age and not voluntary; online driver education is officially approved which is not the case in Oregon). Virginia also has a different administrative/operational environment than is the case in Oregon and Idaho (e.g., mandatory driver education applies to older teens than is the case in the other two states; online driver education is approved for all students, which is not the case in Oregon). Differences in the ways that driver education is delivered also exist between these three study states and New York as well as Minnesota.

A discussion guide was developed to help structure the interviews which took place by conference call between March and June 2016. Specific topics for discussion with driver education and teen driver safety administrators in each jurisdiction included:

> current level of program participation;

> level of political and public interest in driver education, and recent initiatives (if any) in this area;

> criteria that are considered during the decision-making process (e.g., types of evidence that are most influential, average knowledge about research evidence, costs and financial considerations, and implementation issues);

> influential agencies, leaders or politicians who champion improvements; and,

> steps needed to implement a change to teen driver safety programs (e.g., steps in the approval process, funding approval if needed, timelines for implementation).

Some states also provided additional program documentation or information following the calls. Interview participants also reviewed a draft of this report for accuracy, and to ensure the information provided did not misrepresent current practices in their respective states. The opinions, findings, and conclusions expressed in this report, however, are those of the authors.

INTERVIEW RESULTS

The results from the key informant interviews in the five jurisdictions are summarized and synthesized below in order to highlight the program structures, contextual factors, measures of progress, and processes that help to shape decision-making in relation to the pursuit of improvements to driver education or other teen driver safety programs. Results are organized according to the following six topics:

> trends in participation in teen driver safety programs;

> key program features;

> environmental context of program delivery;

> program indicators;

> common processes to adopt and implement improvements; and,

> common barriers that impede the adoption and implementation of improvements.

Trends in participation in teen driver safety programs

Participation rates vary across study states depending on whether completion of driver education is required to obtain a driver's license under a certain age. In Oregon, teens under age 18 can choose to certify 100 hours of supervised driving practice or 50 hours of supervised driving practice combined with a driver education program to obtain a provisional license. It is estimated that on average 30% to 35% of licensed teens age 16-17 complete the ODOT-approved driver education program. In New York, where learner permit holders are required to take a pre-licensing course or a driver education course before they attempt their road test, most complete the pre-licensing course (83%) rather than driver education (340,000 versus 70,000 per year, respectively). In Virginia, although all teens in public schools complete in-class education, only about 88% take behind-the-wheel training; 40% receive the training through public schools and the rest at commercial driving schools. Experiences in Virginia suggest that those teens that do not complete behind-the-wheel training are unable to do so because declines in state funding have meant the costs of training are relatively high. As a consequence, teens increasingly delay licensing until they are age 18 or older when they are no longer required to take training as a condition of licensing.

Idaho has experienced participation growth in driver education programs during recent years and this has largely been attributed to population growth. The proportion of teens enrolling in driver education has also grown. At present, it is estimated that approximately 20% of teens that are eligible for a license enroll in driver education, and about 98% are estimated to complete it. Whereas in Oregon, although the absolute numbers of course graduates have increased, the participation rate has remained about the same. Similarly, program participation in Minnesota has remained fairly stable and it is believed that parents strongly encourage teens to obtain their driving license when they are eligible in order to reduce demands resulting from the transportation of their teens to school, work and social activities. This is slightly less consistent in Virginia who reported

stability with some more recent and steady declines in the past five years. New York also reported that the number of students taking driver education has likely decreased in recent years, and this was largely attributed to limited availability of programs across the state and the high cost of these programs.

More generally, the recent declines in program growth in some of the study states can be attributed to a steady decline in teens wanting, or needing to have, a driver's license. This has been supported by recent studies showing that teens are delaying licensure to a later age (Mayhew et al. 2016; Tefft et al. 2014). Economic factors (e.g., high cost of in-car training; costs associated with operating a car and driving it such as vehicle maintenance, insurance and fuel costs), account for some of this trend. Teens also have less need to drive because of their growing reliance on electronic devices to connect socially, and the greater availability and convenience of other modes of transportation. Those teens that are delaying licensure are aging out of driver education, which is primarily offered to, or required of, younger teens. Moreover, these teens are also bypassing state graduated licensing programs so there is a limited safety net, and an emerging need to address the elevated crash risk of older teen beginner drivers.

Key program features

Across the United States, driver education programs are diverse. However, there are some key program features that can substantially influence decision-making processes, and that have important implications for the ease and efficiency with which program improvements are introduced and, ultimately, achieved. These key program features are briefly described below to provide operational insights into decision-making processes, and also to underscore the impact of these features on the successful adoption of program improvements.

Designated program authority. Generally speaking, the agency that is the designated program authority for driver education programs varies across study states, and the agency authority within a state may be different for public versus commercial driver education programs. For example, in Oregon, since 2000, the Oregon Transportation Safety Division (TSD) of ODOT has had responsibility for the approved driver education program in both public and commercial sectors. Similarly, the Minnesota DVS (within DPS) is responsible for both public and commercial programs. By contrast, in Virginia, Idaho, and New York, program authority resides in two different state agencies in each of these jurisdictions. The Virginia DOE is responsible for the approved driver education and traffic safety program of instruction for public and commercial school programs. Commercial driver training schools, however, are approved and licensed by the Virginia DMV but they adhere to the same course content as public and commercial school driver education programs. As such, there is a strong relationship and consistency between public and commercial driving schools, however, their respective program authorities are distinct. In Idaho, the DOE is also responsible for the in-class driver education program but the DOL is responsible for commercial driver education. Responsibilities are also divided in New York between the Department of Motor Vehicles and the New York State Education Department who handles course approvals in the public sector. Commercial driving schools in New York cannot offer driver education but can contract with public providers to deliver in-vehicle instruction.

In addition, the designated authority may be either similar or different for other types of teen driver safety programs. The Oregon Transportation Safety Committee, for example, advises the ODOT TSD and the Governor's Highway Safety Representative (GR) on safety issues. In Minnesota, the Office of Traffic Safety (OTS) designs and implements public education and traffic law enforcement programs. Of note, in some instances, approval to make available a new safety program or tool may be granted, but this approval may not result in broad usage. Such enhancements may only be offered as an option as opposed to becoming a mandatory component of a statewide program. This means that while instructors may be provided with another "tool in the toolbox," the actual uptake and use of that tool must be highly incentivized to encourage implementation due to the time, resource and content demands that instructors already face. In other words, often for instructors to include something new in their respective programs, a component of the existing program must be compressed or removed entirely.

In summary, the actual approval and adoption of program enhancements can in some instances involve a fairly small number of decision-makers and a single process such that the incorporation of new tools, materials, or program content or delivery mechanisms can be quite efficient and at the same time achieved statewide. Conversely, in jurisdictions where multiple state agencies have different types of authority, or committees, boards or panels comprised of independent representatives of organizations that play a role in decision-making, considerable time and effort may be required to access the forum of decision-makers from whom approval is needed, present relevant information, and obtain permissions for testing and statewide use. This is even more pronounced in relation to other teen driver safety programs and tools, and further, this may not result in widespread use even if approval is granted.

Although state agencies have administrative authority in relation to the implementation of statewide driver education programs, it is notable that school districts and instructors possess some autonomy in relation to innovation and the introduction of program enhancements, tools, and implementation strategies. While this approach has the benefit of facilitating the development and testing of new applications, content or features in the real-world to ensure they are well-designed and efficiently applied, it does rely on the identification of instructors who are willing and motivated to invest time, resources and energy to apply innovations to an existing program, and collect data on outcomes as part of a pilot study. Moreover, any program modifications must still adhere to the curriculum standards required by the state. In this regard, state agencies generally conduct a review of such improvements in consultation with instructors and in advance of implementation to ensure innovations are indeed consistent with program standards.

Program standards. All five study states have curriculum (i.e., content) standards that are used by the designated state authority to evaluate and approve the new course offerings of commercial providers as well as changes to the existing approved-driver education program. Virginia, for example, uses the Standards of Learning (SOL) for Driver Education which prescribe the content and administrative requirements of a state-approved driver education program (see: http://www.doe.virginia.gov/testing/sol/standards_docs/driver_education/index.shtml). The Virginia SOL has recently been updated and adopted in 2015.

The administrative and curriculum standards applied in other states differ from those in Virginia, and in some cases, may be far less detailed and more dated. In the case of New York, recognition about the inconsistencies between individual programs and the need for curriculum enhancements and standardization to benefit students resulted in the establishment of DERIC in 2008, which is a multi-agency collaboration between the New York State ED, DMV, DOH, the GTSC and HRI. The main goal of DERIC is to develop a driver education program that includes a standardized driver education curriculum that increases safe driving behaviors and is sought after by parents, students and instructors.

There have also been recent national efforts to enhance the quality of driver education programs across the United States. The National Highway Traffic Safety Administration (NHTSA) funded a series of projects designed to improve the quality, consistency and delivery of driver education programs and to create appropriate tools to inform and guide state initiatives to improve such programs. An association of major stakeholders, known as the Association of National Stakeholders in Traffic Safety Education (ANSTSE), was also established in 2010. The Association, with the support of NHTSA, has developed the National Driver Education Standards (NDES), which combines the outputs from the various projects to create this single resource for jurisdictions.

The NDES, however, are recommendations and states can choose to adopt them or not. The process for updating/modifying standards, improving curriculum, and approving new programs are also relatively easy in some states but rather onerous in others. In Minnesota, for example, all DE improvements require legislative approval and it takes one to two years to pass legislation. In sharp contrast, in Virginia improvements are through regulation and the DOE can improve standards. The New York DOE can also improve standards, and as mentioned previously, DERIC, a multi-agency collaboration, is currently developing enhanced curriculum content and standards. The DERIC project, however, is a multi-year effort and the expected release date of the final curriculum modules being developed is the spring of 2019. In Oregon, legislative change can take as little as six months or as much as three years depending on the complexity of the issue. ODOT, however, has been granted administrative rule-making authority in legislation and can adopt improvements to driver education program standards fairly efficiently. In Idaho, changes to curriculum standards do not require legislation and can be implemented by DOE rather quickly but must undergo a committee review process. To this end, all curricula must undergo the review process at least once every three years.

Coalescence of public and commercial school sectors. As mentioned previously, the designated program authority varies from a single agency (e.g., such as the Oregon TSD of ODOT), to multiple agencies (e.g., typically DOEs and DMVs), as is the case in a few other study states. In states with a single agency in charge of program administration, delivery and accountability, there is better coordination and coalescence of public and commercial school sectors. This facilitates achieving program improvements and/or implementing new tools and resources on a statewide basis, or at least achieving a critical mass in implementation rather than on a small scale or in a piecemeal fashion. Such may not always be the case in states that have multiple agencies involved where, although there are often existing linkages and partnerships, there is also the tendency to operate independently and in "silos." In states with clearly separated and independent sectors, more work

is needed to ensure improvements are implemented statewide in an efficient and effective manner, especially if changes impact both public and commercial driver education schools.

Environmental context of program delivery

There are a variety of contextual features of the driver education environment that can have important implications for the ease with which teen driver education or new teen driver safety improvements are implemented. There are four key contextual areas that are briefly described below. These include:

> the relative priority and knowledge base regarding the driver education issue among politicians, policymakers and the public;

> the level of opposition to improvements that may be encountered;

> the types of evidence that have the greatest weight to influence decision-making; and,

> funding mechanisms and program costs.

Priority of driver education. Driver education is considered an implicit or explicit political priority in all study sites since programs are well-established and processes have been ingrained over decades. In some respects, driver education programs are considered to be a "right of passage" to obtain a driver's license. The value and importance of teens learning to drive before being eligible for a driver's license is intuitive and acceptance levels are high. To illustrate, in Oregon, driver education has been considered a priority at the political level since 1999 when the State Legislature re-organized the driver education program and transitioned it from the DOE to the DOT Safety Division. At the same time, ODOT established several task forces that conducted public forums and resulted in a concrete action plan to improve the program. Similarly, in Virginia, driver education is valued by a wide range of stakeholders, including politicians, policymakers, communities and parents who consistently report high approval ratings in surveys on this issue. In Idaho, driver education is viewed as a priority because it has been a consistent requirement in the state to obtain a driver's license, and the state also subsidizes it. In New York, the fact that DERIC was established as a multi-agency partnership to enhance curriculum standards suggests that improving the quality of driver education is a priority that deserves special attention. A slightly different perspective is taken in Minnesota, where driver education is viewed as "standard practice" since younger teens must complete the program as a condition of driver licensing and this practice has been in place for decades.

As such, driver education is, to some extent, a "non-issue" due to high levels of consensus, and widespread and long-standing acceptance of driver education program requirements; such programs are therefore not typically perceived as a current priority in terms of other social or road safety issues among politicians and policymakers (e.g., health care, crime, or distracted driving, motorcycle and pedestrian safety, impaired drivers). In some respects, this may make it more challenging to garner attention or support for driver education improvements. However, the attention to and priority of driver education and teen driver safety programs becomes more pronounced as a priority following a tragic crash involving teen drivers, or a spike in teen driver deaths.

In the case of Minnesota, "Toward Zero Deaths" is a top road safety priority relative to driver education or other specific road safety problems. While driver education instructors are encouraged to become part of this broader discussion and take part in regional committees, generally speaking participation among instructors is low. In the other study sites, few social or other road safety issues would be considered a higher priority than driver education, with the possible recent exception of distracted driving. New York reported that they do not prioritize any safety issue since they are all important in their own way. Although motorcycle and pedestrian safety as well as impaired drivers are currently considered priorities this has not detracted from work on driver education issues. The types of information that are often focal points of any discussion about driver education include enforcement of graduated driver licensing (GDL) requirements, the high costs of programs, and in a few states, the lack of dedicated funds for driver education that could be applied to subsidize programs and reduce the costs.

The most vocal and influential leaders that dominate discussions related to driver education include: teachers and their associations; safety councils; and non-profit safety organizations. For example, Drive Smart Virginia was founded by insurance companies and creates educational campaigns and distributes educational materials; Minnesotans for Safe Driving also engage in public education focused on the dangers of impaired and distracted driving. In New York, DERIC provides the most impetus for issues related to driver education.

Level of opposition. Generally speaking, opposition to driver education programs is limited or non-existent. More often, public dialogue underscores the need for program resources, and increased investment in programs to make them more robust and accessible to a larger proportion of teen drivers. In Oregon, driver education is voluntary, and some communities express concern regarding the limited availability of driving schools in more rural areas. In all study states, more often commercial driving schools generate some criticism in relation to their profit-oriented nature with a perceived lesser focus on driver safety, although this is regulated to some extent by state authorities. In this regard, it should be underscored that although some commercial driving schools are robust and adopt evidence-based approaches, there are also some commercial schools that are less compliant with standards and effective strategies.

In some study states, when improvements to young driver legislation or driver education programs are introduced, there are two common objections that are often raised. First, depending on the nature of the law that is introduced, teens themselves may raise some protest since new laws are often specifically applied to teen drivers on the basis of age, as opposed to all new drivers. Second, some driver instructors may also resist change which can be perceived as more restrictive or challenging to implement with inherent cost implications as compared to current practices. As such, it is important to be prepared to counteract such criticisms when raised to avoid misperceptions that can be a substantial impediment to improvements.

Types of evidence. A few key types of evidence are often prioritized in decisions about driver education, including crash data, driving violations, and parent surveys. From an agency perspective, evidence in the form of data is often considered essential to demonstrate the need for operational changes and particularly to motivate decision-makers as well as instructors. State data are typically given the greatest weight, although evidence from elsewhere will be used if it is relevant to the

state. In addition, comparisons to practices or outcomes in other jurisdictions are sometimes undertaken (e.g., use of online training) to better illustrate the need for changes. Finally, the use of pilot programs and their outcome measures may be relied upon to provide additional information to decision-makers, as was the case with the implementation of the Point of Impact program in Minnesota. In New York, DERIC is pilot-testing module content with driver education programs across the state to measure short-term changes in their knowledge and attitudes and determine whether the information is understandable and effectively presented by instructors.

The accessibility of data may also be an issue, and to this end, it is essential that state agencies are able to access driver record and violation data, as in the case of Virginia, when these data sources are not housed within the program authority. In Virginia, the DMV has given the DOE remote access to driver records and the traffic records electronic data system (TREDS).

With regard to evidence more generally, the level of specific knowledge about driver education and other teen driver safety programs among legislators is generally low; this may be due to the ingrained nature of driver education programs, and the fact that teen drivers are not considered a current political or traffic safety issue. As such, legislators may often rely on responsible state agencies for key information when issues arise, and legislators often ask essential questions that are relevant to decision-making. While there may be few knowledgeable champions for teen driver safety legislation, this has provided an opportunity for state agencies to set the agenda for driver education within the legislative process. More importantly, there appears to be a high level of trust between political leaders and state agencies, and a willingness among leaders to be informed by evidence and recommendations provided by state agencies.

The presentation of such recommendations to political leaders is increasingly strengthened by strong coalitions and partnerships among relevant agencies to demonstrate broad consensus for recommended improvements. Examples of such practices are available in Minnesota, New York, Oregon and Virginia.

At the same time, studies about initiatives that do not work are also useful in the decision process because they can address, and be used to overcome, proposed initiatives that are unsupported by evidence. For example, in Virginia, town hall meetings provide a forum for instructors to provide feedback, to raise and address questions and discuss with the community what needs to change about driver education, as well as underscore the importance of evidence-based approaches.

Funding mechanisms and program costs. In several study states, funds for driver education are primarily derived from driver license application and renewal fees. These funds are earmarked for transportation and road safety purposes only, including supporting approved driver education programs. In Oregon, for example, the student reimbursement fund continues to receive $6.00 from every license and renewal fee. These funds are used in Oregon to subsidize both public and commercial providers of the ODOT-approved driver education program, which reduces the program cost for each student. Besides student reimbursements, transportation funds in Oregon are used for program administration, including teacher training and conferences. In Idaho, funding is for program administration, reimbursements, teacher training, and standardized curriculum materials. DOE does purchase equipment if it is related to the curriculum or administrative processes.

Examples would be fatal vision goggles for lessons on driver impairment or an iPad for a district to collect data, register students, and track routes. More recently, some jurisdictions have expressed concern about the funding sources available to them being re-allocated for economic reasons, and it is imperative that states are able to protect such funds to support improvements to driver education programs.

The size of the student reimbursement, however, varies across study states from $40 in Virginia to $125 in Idaho to $210 in Oregon. An administrative rule in Oregon also allows larger subsidies for disadvantaged and lower income families, which is a recent program improvement that was pursued based on data suggesting that this was a concern. In contrast, commercial providers in Virginia do not receive any state funding support, and in Minnesota, there is no funding by state agencies for driver education. This is also the case in New York, where costs are always an issue associated with decisions about improvements to driver education. Moreover, in study states such as Virginia, the public driver education providers cannot make a profit from the program. However, in Oregon, commercial providers of the ODOT-approved program are allowed a 12% profit if they can justify this in their program delivery costs.

Program indicators

Study sites place a high value on data and indicators to continuously assess driver education programs and teen driver safety initiatives. The quality, usefulness and accessibility of data systems, however, vary across jurisdictions. For example, in Virginia, the DOE is able to identify teens that have completed driver education and link this information to driver records so that crash patterns can be examined at a state level, a regional level, and at the level of school districts and individual schools. As a result, the DOE can pinpoint areas within the state that have higher crash rates and examine the factors involved in these collisions. This information about problem areas is also shared with school administrators, teachers and communities to inform decisions and encourage continual improvement and enhancements to driver education programs (e.g., a stronger emphasis on distracted driving or seatbelt use in specific locations). Standardized test banks have also been developed as indicators so that teachers can test both knowledge and understanding among students and augment instruction accordingly. These test banks enable teachers to assess how teens are doing in relation to the driver education program, and places where revisions to curricula are needed.

As a consequence, the DOE has been successful in positively influencing change at the level of driver education schools by sharing data that provides evidence to prioritize and support the recommended improvements. The results from crash data analyses that are undertaken by DOE are also shared with the DMV and DOT so that targeted assistance can be provided in relevant areas (e.g., the need for signage near a school, or a campaign to curb distractions among teen drivers in a community or statewide).

In Idaho, some driver education program indicators are collected and used to provide insight into program operations and outcomes. For example, it can be determined which drivers complete driver education, and whether the program was delivered by the public or commercial sector. In addition, analyses involving traffic crashes and violations are possible but are undertaken less

frequently, and some limited surveys of parents have been conducted. However, it is currently not possible to more precisely determine how specific program features influence outcomes, or determine what types of driving factors are more significant contributors to crashes. In this regard, work is underway to implement a more modern and flexible driver record system to facilitate such queries.

Conversely, in Minnesota, indicators of program outcomes are not readily available largely due to legacy data systems. At present, a major initiative is underway in Minnesota to implement more modern driver licensing and driver record systems that will facilitate the examination of driver education program outcomes. This means that while enhancements to driver education programs can and do occur, often the foundation for initiatives is more intuitive and driven by research from other jurisdictions combined with strong public support in lieu of clear state data to demonstrate identified gaps. In other words, a different approach to indicators to successfully implement such improvements is pursued to overcome current program limitations.

In Oregon, some key indicators are routinely used to monitor progress and the DMV has recently added a new identifier to the driver record so that the completion of the ODOT-approved driver education program can be tracked. This indicator is currently being used by the Traffic Safety Division to monitor trends in collisions involving teens who completed the approved driver education program versus those that did not. The availability and use of state indicators in Oregon has added much value to policy discussions, and helped to build a compelling case for proposed initiatives. This has resulted in stakeholder and legislative discussions that often focus less on developing consensus around what action is needed, and focus more on how best to implement improvements.

In New York, DERIC is conducting pilot-tests to measure knowledge and attitudes after exposure to the curriculum modules. The longer-term plan is to use collision and conviction data to evaluate the safety effects of the new curriculum on driver performance. While in other study states, crash and other data indicators are either currently collected, or a plan is underway to begin to collect data to assess the performance of the driver education programs, there have been few formal, independent, evaluations of driver education programs, with Oregon being the notable exception. The ODOT-approved driver education program has been included in two previous independent evaluation studies, both of which produced promising but not conclusive results on the positive safety effects of the program (Mayhew et al. 2014a; Raymond et al. 2007).

With regard to the evaluation of online driver education programs specifically, generally speaking, study states have mixed perspectives regarding the use and benefits of these programs. On one hand, some study states are skeptical that online driver education programs provide an effective learning environment, and experiences suggest that incentives are often needed to encourage teens to enroll in and complete online driver education programs. At the same time, there may be an application for online driver education programs for special populations, for example, teens in remote and rural areas. This has been the case in Idaho where online education programs are offered in an effort to reach more students in rural areas. The main concern among some states, however, is equity and the need to make such options available to all potential participants within a jurisdiction, and not just special populations. In this regard, reluctance to introduce such programs

is linked to the requirement to make such options available statewide, as this may erode participation in traditional driver education programs, and open the door for lower standards for programs and inferior outcomes.

Other types of teen driver safety programs or tools that have recently been, or are being considered, in the study sites include:

> the inclusion of logbooks and/or apps to monitor the number of hours and quality of driving practice and behavior;

> parental involvement such as the Point of Impact program in Minnesota; an additional educational requirement for student/young adults in Virginia who fail the learner's permit test three times to take an eight-hour course, or re-take classroom driver education to be eligible to attempt the learner's permit test a fourth time;

> curricula for traffic offender schools that match the offense type;

> working with pre-teens who will become eligible for a driver's license;

> post-licensing programs such as skid training; programs at the community level such as mock crash events; and,

> reaching out to coaches and athletes in high schools to engage them in teen driver safety issues.

In summary, although study sites place a high value on data and indicators to evaluate and improve their driver education program, the quality, accessibility and usefulness of available state data varies considerably. The data collection features and efforts to upgrade data systems described above illustrate the continuing opportunities to collect and use program indicators to improve driver education and teen driver safety programs, and the desire for improvements. The challenge is being efficient in packaging and presenting these key data as evidence and information about improvements to decision-makers. It is critical to use program indicators effectively to provide a strong case for the need for improvements, as well as to build a large coalition that supports improvements that are evidence-based.

Common processes to adopt and implement improvements

Despite the considerable differences in each state regarding the delivery of driver education and teen driver safety programs, there are some common processes that play a role in decision-making and the ultimate adoption of new tools or program improvements. These processes are briefly described below.

Fostering political leadership. Often political leadership and buy-in to implement improvements in driver education has to be fostered, and also well-supported with program indictors and relevant data. At times, due to the ingrained nature of driver education, it can be challenging to motivate decision-makers to re-consider and review existing practices to ensure consistency with evidence-based approaches. In New York, however, concern about teen driver crashes by the Legislature resulted in the enactment of a law creating a Temporary Special Advisory Panel on Driver Education

Availability and Curriculum Enhancement that was instructed to assess and recommend to the Governor and the Legislature ways to improve driver education and make driver education instruction more available in New York. Panel recommendations led to DERIC being established to standardize driver education courses. In Oregon, the TSD of ODOT takes the lead in working with legislators to encourage the implementation of driver education program improvements. Such practices also exist in Minnesota and Virginia. In this regard, several study sites identified key legislators that have actively supported teen driver safety and are concerned about the young driver crash problem. In these same jurisdictions, legislators may also reach out to state agencies that may be affected by driver education program improvements, or initiate town hall meetings or similar approaches to encourage public discussion of issues. However, more often, the impetus for change is driven by state agencies. Of note, it was observed by TSD in Oregon that when there is consistency in program leadership and policy-makers have long-term ties to a program, the level of the overall driver education program tends to be better. This is not the case when there is a constant stream of changes in the leadership, which may result in declines in program support and visibility.

Implementing program improvements in standards and curricula. The primary requirement to introduce new safety products and programs is to measure their consistency with existing standards and curricula, or to implement changes to standards or curricula as necessary. Of note, all study states apply rigorous standards for program and curriculum approval. In Virginia and Idaho, the DOE is the approval authority as this state agency designs and oversees the curriculum. In Virginia, the Standards of Learning (SOL) describe the State's expectations for student learning and achievement in driver education. In Idaho, the DOE approval process often involves a committee comprising both public and commercial driver education instructors, and representatives from the public as well as safety and other agencies with an interest in driver education. The Board of the commercial schools and the Idaho Bureau of Occupational Licensing are also involved in the approval process. This approval process can take several weeks to complete. In New York, the Department of Education approves driver education courses, and as mentioned previously, DERIC, a multi-agency partnership, is currently developing a standard curriculum in a multi-year project that extends into 2019.

The approval process in Oregon works relatively quickly if it does not require a rule change because the TSD of ODOT, with input from a Driver Education Advisory Committee, makes decisions whether to implement an improvement to their program or for instructors to use a new safety resource or tool. In this regard, Oregon's Administrative Rules provide the Traffic Safety Division with statutory authority over the curriculum. If a rule change is required to implement improvements to the driver education program, the approval process in Oregon could take as much as nine months with public consultations. A comparable period of time would also be needed to introduce new safety programs or tools. By contrast, most improvements to the driver education program in Minnesota require legislative change and would involve committee hearings and debate on the floor of the Legislature before approval may be granted. Estimated timelines to achieve change is at least one year and possibly even two years. Similarly, in New York, legislative change to mandate a program would take more than a year.

Implementing other teen driver safety programs or tools outside of existing driver education programs. The process to adopt other types of teen driver safety programs or tools may either occur in the same way as improvements to driver education programs, or alternatively, require an entirely different process comprised of other decision-making bodies.

In many instances, it is only possible to offer these additional safety measures, and rarely can participation or usage be mandated by a jurisdictional authority. However, to mandate teens to participate in these programs may require legislative action and evidence that the program achieves its safety objectives. For example, in Virginia the DOE plays a role in adopting improvements for driver education programs as well as other teen driver safety programs and tools. Often this process involves a pilot-test in a limited number of schools, and adoption in the state standards. In this regard, the DOE has worked with a number of non-profit entities including the American Automobile Association Foundation for Traffic Safety (AAAFTS), the Insurance Institute of Highway Safety (IIHS) and the American Driver and Traffic Safety Education Association (ADTSEA).

In Idaho, the Office of Highway Safety has funded law enforcement agencies with grants and worked with not-for-profit entities. The Alive at 25 program is a non-profit through the Colorado State Patrol Foundation and the National Safety Council which provides supplemental program material in Idaho, as does a program through Michelin. While technically approval is granted through a separate agency (i.e., the DMV in the DOT) who ensures state requirements are met, a review of the curriculum is undertaken by DOE. With regard to for-profit entities, the American Automobile Association driver curriculum is utilized, and this selection was approved by a Board comprised of several commercial providers. To date, only the Digital Learning Academy has met the standard for online driver education set by the Idaho DOE.

In Minnesota, state agencies have worked with non-profits that conduct such events as a "mock crash" for high school students, and have equally worked with for-profit enterprises, with the caveat being that for-profit organizations must meet the same evidentiary standards for approval. Although the OTS is not permitted to promote tools specific to a for-profit business, they can promote the availability of such tools, and such tools are considered on a case-by-case basis. In contrast, in Oregon the role of the TSD is to ensure that any programs or tools are compliant with state standards, but they are unable to endorse or promote such products or programs, and this includes the ODOT-approved driver education program.

The main obstacle to implementation of improvements for traditional driver education programs, as well as other teen driver safety programs and tools, is cost. Even for voluntary programs, issues arise related to program costs and funding availability to deliver the program, as well as ways to convince communities to take on yet another program with no additional funding.

Pilot-tests and reported outcomes. Depending on the extent of the program improvement or the implementation of a new tool or program, in several states it is common to undertake a pilot-test and evaluate the outcomes prior to widespread implementation. For example, in Minnesota, Point of Impact (a teen driver parent awareness program) was developed and pilot-tested in a limited number of schools. This program and pilot emerged from concerns about the lack of parental awareness of teen driving risks, graduated driver licensing laws in Minnesota, the

important role parents play in reducing teen crashes, injuries and deaths, and the resources available to assist them in fulfilling this role. A key feature of the pilot program was to report outcomes to the Legislature, and positive results provided the basis for statewide implementation. Outcome measures for this initiative included pre- and post-teen and parent surveys and the short-term evaluation in conjunction with a planned, longer-term evaluation. After one and a half years of testing, a bill to require each driver education provider, statewide, to offer a supplemental parental curriculum was introduced and passed.

A similar approach is also utilized in Virginia; however, in sharp contrast, pilots may be initiated by the DOE based on requests from instructors or schools on a small scale, and legislative change is not required upfront. As a consequence, in Virginia, the program authority has considerable flexibility to initiate and/or respond to innovation and new evidence to improve programs. Successful pilot outcomes generally result in revisions to standards or curricula prior to new strategies being incorporated in all driver education programs. In addition, such improvements can be pursued at any point in time, although prior to the start of a new year is ideal.

Pilot-testing is also an integral part of curriculum development undertaken by DERIC in New York. Students are completing pre- and post-tests to measure changes in knowledge and attitudes related to module contents and instructors are also given the opportunity to provide their feedback on the modules.

Adoption by driver education schools and instructors. It must be underscored that in almost all instances, improvements to driver education are an unfunded mandate for all parties. In other words, the program authority will often absorb the costs of developing, pilot-testing, and providing program materials to driving schools. In addition, instructors will also typically absorb the cost of implementing improvements. In the case of New York, however, DERIC is funded by a small grant from the Governor's Traffic Safety Committee.

Of importance, the integration of new material into an existing curriculum is frequently challenging due to the immense pressure to cover specific material as part of the curriculum in the allotted time. In most instances, the inclusion of new content requires that existing content be streamlined or discarded and this challenge is amplified due to the competitive nature of the market. In essence, instructors are tasked with creating more efficiency without any additional resources. For this reason, new content and tools, or additional programs must meet incredibly high standards to motivate instructors to undertake this process.

Common barriers to the adoption and implementation of improvements

There are a variety of common barriers to improvements in driver education and to implementing new teen driver safety programs. The cost of driver education, especially behind-the-wheel instruction, is a common barrier that is raised in relation to teen driver program participation versus delaying licensure at an older age when completion of driver education is no longer a licensing requirement. However, the costs associated with obtaining, maintaining and insuring a vehicle are often not considered in relation to the cost of driver education, although these costs are substantially more than the upfront program costs. In this regard, perceptions about cost among parents are quite challenging to influence, regardless of the cost of the program. The issue of cost

is also closely linked to reluctance by legislators to mandate driver education for all teen drivers, and concerns about affordability and equity, as well as more general concerns about the economy and unemployment. As such, in many states, the completion of driver education is voluntary, and participation rates are generally less than 50% (e.g., the participation rate in Oregon annually is from 30% to 35% of licensed teens aged 16-17; in Idaho, approximately 20% participate).

Another widespread barrier that is commonly identified is the extent of curriculum content and demands placed on instructors to deliver all of the content in a relatively short number of hours. In the past decade, a number of priority topics have emerged that have required modifications in curricula, including distracted driving, fatigued driving and drugged driving, to say nothing about increasingly sophisticated electronics and safety features in newer vehicles. As a consequence, demands associated with curricula content have increased, as has the workload of instructors. Frequently instructors report that it is increasingly difficult to cover content in the available time allotted, and new additions result in existing content being further compressed or discarded. In summary, this means that new content and resources are less likely to be adopted because there is no or limited capacity for instructors to use them.

Another common barrier that is cited by both instructors and parents is the amount of time required for teens to complete a driver education program, although for very different reasons. Instructors report that they often lack sufficient time to instruct teens in all of the relevant issues that are necessary to shape safe driving habits. In sharp contrast, parents often report that the length of time that it takes for teens to complete driver education makes the program too onerous. Also, parents are often resistant to spending more time with their teen behind the wheel prior to independent driving privileges being obtained, although research clearly shows that more practice hours and parental involvement has positive benefits.

The availability and accessibility of driver education programs in rural areas is also cited as a barrier in relation to mandating participation for all teen drivers. Fewer programs or instructors may be available in rural areas, and in areas with smaller populations that lack urban centers teens may be forced to travel long distances in order to complete the program. The necessary infrastructure for program delivery may also be lacking. This may also result in higher program costs in rural areas. While some states, such as Oregon, have made progress by increasing access by providing a larger reimbursement of costs to students from low-income families in cooperation with Health and Human Services, this remains a critical gap in several states.

Finally, improvements that increase program costs raise issues related to interference in private rights since parents may object to increasing fees. Parents may also feel that their rights have been violated if their teens are required to take a new program or use a new resource unless the rationale for, and benefits of, these improvements have been well-established with them.

LESSONS LEARNED

Based on discussions with a small cross-section of five states that are representative of various regions of the country, it is possible to gain insight into more efficient ways to pursue improvements in driver education and teen driver safety. Specific actions that could be taken derived from lessons learned in this study are briefly described below.

> **Build knowledge base over time to educate leaders and cultivate champions who are well-positioned to lead and support legislation and initiatives to improve the delivery of driver education and the adoption of evidence-based practices.** Driver education and teen driver safety are seldom perceived as high priorities in the absence of a serious teen driver crash with multiple victims. Although such events can be used as the catalyst for action, increasing and sustaining the level of knowledge among decision-makers and safety advocates ensures a better informed and more receptive environment to achieve improvements in driver education and teen safety, when the need and opportunity to push for positive changes arise.

> **Understand key influencers related to decision-making, and identify key influencers to build coalitions of support where appropriate.** A starting point is to identify and work with key staff in state agencies responsible for driver education and teen driver safety who understand the decision-making process and can identify key influencers to approach and convince to join the coalition as active voices for the adoption and implementation of improvements. Such efforts are facilitated in states that have consistency in program leadership and policy-makers have long-term ties to a driver education program.

> **Identify the single state agency best-suited to be responsible for driver education and teen driver safety.** Oregon provides a solid example where the authority for driver education was moved legislatively from the DOE to the ODOT Safety Division, and thereby, consolidated into a single state agency. This provides a practical working model, especially for states where responsibility for public driver education, commercial driving schools and other teen driver safety programs reside in different agencies often with limited coordination, communication and cooperation.

> **Establish a standing or ad-hoc advisory committee of diverse agencies from the public and commercial sectors with an interest in improving driver education and teen driver safety.** Such a committee, comprising members from the state designated authority, public and commercial driver education providers along with their associations, non-profit safety agencies, enforcement, health, auto insurance, and the public (e.g., parents) provides a potentially effective and efficient avenue to pursue improvements in driver education and teen driver safety programs.

> **Create at least some reliable indicators of program outcomes that can be used to inform improvements.** For example, linking student driver education records with DMV

driver records/collision data to monitor safety performance and identify crash patterns/problems for program improvements and targeted actions.

> **Aim to establish an evidence-base that demonstrates improvements will achieve or are achieving safety objectives.** States place a high priority on data and are more apt to support changes to their approved-program and implement new ones that are evidence-based and shown to have positive effects on teen driver performance and collision involvement. In the absence of supporting evidence, pilot-testing on a limited basis provides the opportunity to demonstrate that improvements achieve their intended safety objectives in a specific jurisdiction. The DERIC approach in New York illustrates how pilot-testing and a long-term student evaluation of behavior change are integral components of curriculum development.

> **Inform instructors and their associations about improvements, new program resources, and tools that are evidence-based and encourage them to integrate these into their curriculum.** Motivated and informed instructors can provide an efficient and cost-effective means to pilot-test improvements on a small scale assuming that funds, time and resources are allocated or available for them to do this assessment properly. Results of pilot-testing by instructors along with other supportive data captured elsewhere (e.g., another state) that might be available would provide the designated state authority with the evidence-base to implement the improvements statewide either as a requirement or as a resource that is available to other instructors who can choose to use it.

> **Use standardized test banks to assess student performance and use results to inform teachers and improve curriculum.** Although this action may be more feasible in states where the DOE is responsible for administering driver education programs, in other states both public and commercial sector providers should routinely assess student performance and provide this information to the designated authority to use in program improvement efforts.

> **Protect existing funding from license applications/renewals, and explore other funding sources to help support strategic program improvements, and make possible reasonable investments in new teen driver safety programs, resources, and tools.** Costs of driver education and other teen driver safety programs are often a major impediment to the adoption and implementation of improvements. In the absence of public funding or insufficient funding levels to subsidize programs, it may be possible to pursue funding from the private sector in a cost-sharing initiative in support of teen driver safety.

> **Better educate parents about the purpose of improvements and their safety benefits to secure buy-in.** Use town hall forums and other means of public consultation to facilitate parental engagement and secure community input into, and support for, improvements. Parents are potentially the strongest advocates and partners for teen driver safety. Encouraging or requiring parents to complete a teen driver awareness program,

such as was done in Minnesota, is a potentially effective way to address and minimize the risks teen drivers face in traffic.

> **Focus on the safety needs of teens who delay licensure until they are older.** These older teens have by-passed driver education and GDL requirements, have a relatively easy passage to a drivers' license (i.e., pass basic knowledge and road tests), and have an elevated crash risk. States are now recognizing this emerging safety issue and are seeking effective, evidence-based, safety programs to address the problem

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