

ALASKA LEGISLATURE COMMITTEE FILES, 2003-2004 8672

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Medical Community-

The medical community sees firsthand the results of motor vehicle crashes. Most physicians, nurses, emergency medical service professionals and others will tell you that the hardest part of their job is telling a family about the loss of a child or other family member. Although implementation of a graduated driver licensing process does not directly involve the medical community, these individuals (as well as their state and national professional organizations) are likely to be strong allies and partners in the process.

Driving is
a skill
that
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Law Enforcement -

Nearly every national law enforcement group has endorsed graduated driver licensing because police officers-like the medical community-are the ones who see the results of poor driving every day. Law enforcement has an active role to play in the implementation of a new system, and keeping traffic officers informed about changes in laws is a vital step. Law enforcement officers are also highly effective speakers at high school assemblies, Scout meetings, and other youth group gatherings.

Questions and Answers On Graduated Driver Licensing

Does graduated licensing discriminate against teenagers?

No. On the contrary, graduated driver licensing protects teenagers by introducing beginning drivers to the driving process under controlled circumstances in a low-risk manner. Just as teens are not allowed to conduct certain work, legal or financial transactions without direct parental involvement, they should not be allowed to drive until they have learned how to do it safely.

How can teens get around to school, jobs and extracurricular activities?

There is no question that, for safety's sake, graduated driver licensing limits mobility for younger teens. This is true especially at night (the most dangerous time), but most states allow exceptions in the case of driving to school or work or for farm-related activities.

Delaying full licensure does not significantly hinder extracurricular and social activities, however. A survey by the Insurance Institute for Highway Safety of more than 50,000 high school students in seven states found that the social life and work patterns of

16-year-olds were generally unaffected by the beginning driving age in their state.

Is driver education the best way to learn to drive?

A good program that combines both classroom learning and behind-the-wheel training is an effective way to learn basic driving skills. But most driver education programs do not allow for significant hours of practice driving, and that is what new drivers need. Driving is a skill that improves with time and maturity. A 1994 Report to Congress by the National Highway Traffic Safety Administration concluded that "current novice driver education is not doing a very good job in motivating youngsters to drive safely." A graduated driver licensing system rewards good driving by allowing the safe novice driver to move ahead to the next step.

Aren't parents anxious for their teens to drive so they don't have to be the "chauffeur"?

Parents face a real dilemma when it comes to teen driving. On the one hand, most are quite anxious to give up the "chauffeur" duties and let their teens handle their own transportation. On the other hand, they are fearful of the increased risks this brings. Parents strongly support

graduated driver licensing, despite some minor inconveniences to themselves. More importantly, graduated driver licensing gets parents more involved by asking them to ensure their children get enough supervised driving practice. The longer period of supervised driving gives parents and teens plenty of opportunity not only to practice but also to discuss driving skills, attitudes and behaviors. Parents also may feel more secure once their teens are fully licensed because they have more experience and maturity to handle difficult situations on the road.

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**Graduated Licensing:
A Blueprint for North America**

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Many jurisdictions in the United States and Canada have adopted graduated licensing, an increasingly popular approach to reducing new drivers' risk of collisions, and many more are considering it. Such an approach is needed because of the extremely high crash rates among new drivers, especially young ones. In the United States, 16 year-olds have almost 10 times the crash risk of drivers ages 30-59 and almost 3 times the risk of older teenagers.¹

Jurisdictions traditionally have allowed quick and easy paths to full-privilege licensure at an early age, which contributes to the high crash rate of young drivers. Graduated licensing offers a more sensible and less risky way for new drivers to begin. Although many North American systems are too new for formal evaluation, impressive crash and injury reductions have been reported thus far in California, Florida, Kentucky, Michigan, North Carolina, Nova Scotia, Ontario, and Quebec.²⁻⁹ Fifty-five jurisdictions (District of Columbia, 44 U.S. states, 9 Canadian provinces, and 1 Canadian territory) have enacted one or more elements of graduated licensing, all but a few of which were enacted since 1994. There is tremendous variation in the programs that have been introduced. To assist other jurisdictions where graduated licensing is being contemplated or where further changes are being considered, this document provides recommendations for the structure and characteristics of such systems. Recommendations are based on scientific research where available and on what graduated systems are intended to accomplish.

WHAT IS GRADUATED LICENSING?

Graduated licensing is a system for phasing in on-road driving, allowing beginners to get their initial experience under conditions that involve lower risk and introducing them in stages to more complex driving situations. Essentially an apprentice system, graduated licensing involves three stages. The first is a supervised learner's period, lasting a minimum of 6 months in optimal systems, then an intermediate licensing phase that permits unsupervised driving only in less risky situations, and finally a full-privilege license becomes available when conditions of the first two stages have been met.

Within this framework, substantial variation is possible in terms of the provisions of the stages and their duration. This variation often has created difficulty for jurisdictions that are constructing a graduated system. Policymakers need to know what features their system should include and what the characteristics should be.

GENERAL FEATURES

Who should be covered? A graduated system is designed to address driving inexperience, so there is some justification for applying it to beginners of all ages. This is the approach taken in Canada, where a significant number of new drivers are not young.¹⁰ In contrast, the graduated systems in all U.S.

states except Maryland and New Jersey apply only to young drivers — specifically those younger than 18, the legal age of adulthood in the United States. If a driver is 18 or older when first licensed, graduated licensing does not apply; if 18 is reached while in the system, graduation is automatic.

Young drivers have been the focus of U.S. systems primarily because they constitute the largest group of beginners and have the highest crash risk.¹ Regardless of driver age, inexperience increases crash risk, and inexperience combined with immaturity magnifies this risk. It is possible that some states have significant numbers of older beginners, although this has not been adequately determined

Recommendation: Consider the age distribution of the beginning driver population in deciding whether to apply graduated licensing to all beginners or only young beginners, who are the primary targets.

How many stages? A complete graduated licensing system includes all three stages — the supervised learner's period, the intermediate license that permits some unsupervised driving, and full-privilege licensure. It is important to include both of the first two stages, but 16 of the 55 jurisdictions with elements of graduated licensing have not done so. Nine programs include only the learner's stage, and three include only a night driving prohibition in the intermediate licensing stage; sacrificing either of these elements likely limits program effectiveness.

Recommendation: Implement three-stage licensing systems.

LEARNER'S PHASE: KEY FEATURES

Under traditional licensing systems, most jurisdictions allow for a learning period prior to full licensure. However, in many cases a learner's permit is optional; when it is required, its minimum holding period either is not specified or is short, typically 30 days. In a graduated system, an extended learner's period is essential to provide the opportunity for extensive supervised on-road practice in a variety of conditions. Research shows that supervised driving is a relatively safe activity.¹¹

When should the licensing process start? Jurisdictions that recently have adopted graduated licensing or components of it generally have maintained the starting ages in effect under their prior licensing systems, which range from 14 to 16 years. There are six exceptions. Colorado's minimum permit age went from 15, 3 months to 15; Idaho's from 15 to 14, 6 months; Newfoundland from 17 to 16; Ohio lowered the permit age from 16 to 15, 6 months but allows driving only while supervised by a parent or driving instructor before age 16. Virginia initially lowered the permit age from 15, 8 months to 15 and has subsequently raised it to 15, 6 months. Michigan's permit age was moved back from 15 to 14,

9 months. Hawaii raised the permit age from 15 to 15, 6 months. The rationale for lowering the starting age is to allow more time for supervised driving before continuing to the intermediate license. However, because this allows driving at an even younger age, it may encourage younger people to drive unsupervised as well as supervised, and may also result in more 16 year-olds being licensed at an earlier age. A study of fatal crashes of 15 year-olds in states where permits are allowed at this age found that three of four beginners were driving illegally.¹¹ The effect of a younger permit age has not been established yet, but policymakers should consider that lowering the permit age might increase rather than decrease risk. Raising the starting age to 16 would have safety benefits. In a few systems the starting age is 16, but no jurisdiction has raised the minimum permit age as graduated licensing has been introduced.

Recommendation: Maintain the starting age at 16, or raise it to 16.

What driving restrictions should be imposed? A critical aspect of the learner's phase is to require adult supervision of all driving — i.e., supervision by a fully licensed driver at least age 21. Some jurisdictions leave the kind of driving to the discretion of the supervisor, some impose restrictions such as barring nighttime driving, and other jurisdictions require some practice driving at night. North Carolina phases in driving during the 12-month learner's stage, disallowing nighttime driving during the first 6 months.

Recommendation: Require adult supervision and restrict driving at the discretion of the supervisor. It is acceptable to phase in more difficult driving, as in North Carolina.

Should a minimum amount of practice driving be required? Requiring parents to certify that a certain number of hours have been driven under supervision facilitates the goal of the learner's stage. It also protects against the possibility that beginners will stay off the roads to avoid crashes or traffic violations that may delay graduation to the next stage. Twenty-nine of the 55 jurisdictions with elements of graduated licensing impose this requirement; 14 require driving 50 hours, and the others require 12-40 hours. In some of these, a portion of the driving hours has to be accumulated at night.

Recommendation: Require 30-50 hours of certified driving, some of which should be allocated to nighttime driving.

At a minimum, how long should permits be held? Under the licensing systems that preceded graduated licensing, a few jurisdictions specified a minimum stay in the learner's phase. In other

jurisdictions, required holding periods did not exist, or they were determined by the age at which a permit was obtained if the jurisdiction allowed a permit at a younger age (e.g., 15, 6 months) than the minimum age for licensure (e.g., 16). No research has addressed the appropriate amount of time for a learner's phase. The range among the 55 jurisdictions with elements of graduated licensing is broad, from 30 days to a year. The developing consensus is that a minimum of 6 months is reasonable (32 jurisdictions require 6 months, and 8 require 1 year).

Recommendation: Establish a minimum 6-month learner's phase.

INTERMEDIATE STAGE: KEY FEATURES

The highest risk for beginning drivers is when they first get their licenses and can drive unsupervised, with the first few months being particularly risky.¹² Thus key features of graduated licensing include establishing an appropriate minimum age for unsupervised driving and initially restricting some kinds of unsupervised driving. Some jurisdictions do impose a stage after the learner's period during which beginners are subject to tougher penalties on an accelerated schedule; but this is not the same as the intermediate stage under graduated licensing, which restricts when and where beginners are allowed to drive. The goal is to keep initial license holders out of high-risk situations as they continue to accumulate driving experience.

What should the starting age be? If the learner's phase starts at the recommended age of 16 and lasts for at least 6 months, the earliest age at which the intermediate stage would begin is 16, 6 months. However, in most jurisdictions the starting ages for learners and/or the minimum holding periods allow advancement at an earlier age.

Recommendation: Do not permit any unsupervised driving before age 16, 6 months.

How should nighttime driving be limited? For drivers of all ages, crash risk is higher at night than during the day. Night driving is especially risky for young beginners,¹³ which is why unsupervised nighttime driving has been restricted in a few states for many years. Research has established that such restrictions are effective in reducing crashes and strongly endorsed by parents. Young people also adapt to night driving restrictions.¹³⁻¹⁸

Licensure laws in 38 jurisdictions include night driving restrictions, but starting times vary widely. One jurisdiction specifies a 6 p.m. start, one at sunset, one at 8 p.m., three at 9 p.m., one at 10 p.m., eight at 11 p.m., seventeen at midnight, one at 12:30 a.m., and five at 1 a.m. Among the states with 11 p.m. starting times, two start later on weekend nights, and one has a later starting time for 17

year-olds. In the United States, about three-quarters of the nighttime crashes of 16 and 17 year-olds occur before midnight (9-11:59 p.m.). Night driving restrictions that begin both early and late effectively reduce crashes during the restricted hours, but those restrictions that start earlier reduce a greater number of crashes because more drivers are affected.¹⁴ Also, parents prefer an early start.¹⁵

Night driving is allowed under adult supervision, and jurisdictions typically allow some unsupervised driving during restricted hours. Work-related driving generally is allowed, and many jurisdictions allow driving to and from school-related activities. A variety of other exemptions also may apply — e.g., for religious events or volunteer fireman duties. The intention is not to deny essential driving at night but to limit high-risk recreational driving.

Recommendation: Restrict unsupervised night driving by newly licensed drivers. Examine the pattern of nighttime crashes in the age group to which graduated licensing will apply to decide when this restriction should begin; optimal starting times are 9 or 10 p.m. Exempt appropriate activities from the night driving restriction.

Should teenage passengers be restricted? Research shows that unsupervised driving with teenage passengers increases crash risk compared with driving alone; the more passengers the greater the risk.¹⁹⁻²¹ The presence of teenage passengers increases crash risk both day and night,¹⁹ so night driving restrictions alone do not adequately address this problem.

California was the first North American jurisdiction to ban teenage passengers. The ban applies during the first 6 months of a 12-month intermediate licensing phase unless an adult is present in the car. Early research indicates that this measure has reduced the number of teenage passengers injured when riding with 16-year-old drivers.² Twenty other jurisdictions also limit passengers. Requirements vary as to whether this restriction applies to all passengers or to teenagers only, how many passengers are allowed, and whether family members are exempt. A few jurisdictions specify no more passengers than there are seat belts, but this is not effective because it allows four or more teenage passengers.

Research indicates that New Zealand's passenger restriction is effective, although more young people were found to violate this rule than the one that restricts driving at night.^{22,23} Many parents support teenage passenger restrictions, but the support is less than for nighttime restrictions.¹⁵

Recommendation: Limit teenage passengers to none or just one during some or all of the intermediate phase, absent adult supervision.

How long should the intermediate phase last? When should full privileges be allowed? The specified minimum length of time is 1 year in Newfoundland; 1 year, 3 months in Manitoba; 1 year, 6 months in the Yukon; and 2 years in Nova Scotia. In Canada, the age of graduation from the system is not an issue because this is not linked to driver age.

In the United States, 37 systems allow full-privilege driving before age 18. Only 8 states hold young people in the system until age 18; this can be accomplished by raising the starting age, setting the duration of the stages so it is impossible to graduate before age 18, or requiring beginners to remain in the intermediate stage until age 18 even though they may have completed the time requirements at a younger age.

The actual time spent in the intermediate stage can vary widely from state to state, depending on the age a young driver enters the system. For those who obtain an intermediate license at the earliest possible age, the time ranges from 6 months to 2 years. But teenagers who start the process later and reach age 18 before or soon after they start the intermediate phase spend less time in this stage. Such situations could be avoided by applying graduated licensing to all beginners regardless of age, but then policymakers would have to revisit the wisdom of night driving and passenger restrictions. Maryland, for example, drops the night driving restriction for beginners who are older than 18. New Jersey waives night and passenger restrictions for all new drivers 21 and older.

Recommendation: Hold beginning drivers in the intermediate stage until at least age 18. Both inexperience and immaturity contribute to the high crash rate of young drivers, and graduated systems can address both by delaying the age of full-privilege driving until 18.

Should a test be required before full-privilege licensure? Requiring drivers to pass an exit test that is more difficult than the initial on-road licensing test in order to graduate to full-privilege driving could motivate beginners to develop their skills and weed out drivers who have not practiced enough to become proficient. Such tests have been introduced in Ontario and British Columbia but are not part of any U.S. system.

Recommendation: Consider an exit test to ensure competence prior to full-privilege licensure.

OTHER ISSUES

Should driver education be required? Traditional driver education has not reduced crashes,²⁴ although it can be a superior way to learn basic driving skills. The on-road training it involves also can

contribute to a beginner's driving experience. How to integrate driver education with a graduated licensing system has been the subject of much general discussion and extensive consideration in a recent report.²⁵ With a few exceptions, jurisdictions merely have carried over the driver education requirements of prior licensing systems. The driver education requirement in Maine now applies to drivers younger than age 18, rather than 17. New Jersey and South Carolina added a driver education requirement. Michigan changed its driver education format to a two-phase system, as recommended by the National Highway Traffic Safety Administration, to correspond to the phases of graduated licensing.²⁴ In Canada, six provinces grant a "time discount" to beginners who take driver education, allowing them to graduate sooner. This has been found to be counterproductive.⁸

Recommendation: Graduated licensing works with or without driver education. In jurisdictions that do not already require driver education, the graduated system need not include any such provisions. In jurisdictions that do require driver education, the training should be integrated to complement graduated licensing. Ways should be explored to harmonize the delivery of driver education lessons with multistage graduated licensing requirements.²⁵ However, there is no justification for time discounts.

What about penalty provisions? In practice, graduated systems are largely self-enforcing, with parents playing a major role. All jurisdictions penalize drivers in graduated systems who do not comply with driving restrictions or who are involved in traffic violations or at-fault crashes. Almost all jurisdictions delay or prohibit graduation from the system if there is evidence of a poor driving record. In Nova Scotia, for example, sufficient violations incurred during the two-year intermediate stage start the clock over so that drivers with such records who entered the system at age 16 could remain under a midnight driving restriction until well beyond age 18. The threat of such a penalty can provide strong motivation for safe driving.

Recommendation: Include penalty provisions that delay graduation for beginners with poor driving records.

OVERALL ASSESSMENT

In the 55 North American jurisdictions where versions of graduated licensing have been enacted, significant reductions in collisions and injuries are anticipated. However, even more substantial reductions would be possible if jurisdictions met all the recommendations for a graduated system. In an optimal

system, young beginners would not start until age 16, spend at least 6 months in a learner's stage with parents having to certify at least 30-50 hours of practice, enter an initial license stage with restrictions on unsupervised nighttime driving starting at 9 or 10 p.m. and transporting teenage passengers, both lasting for at least 6 months, and graduation to an unrestricted license should not be permitted until at least age 18.

To assist jurisdictions that are considering changes in their licensing systems, all novice driver licensing programs in North America are rated according to the degree to which they meet these optimal requirements. No jurisdiction approaches this ideal although some have elements of it. The jurisdictions are rated below as good, acceptable, marginal, or poor. These ratings are intended to reflect the strength and likely effectiveness of the systems in reducing injuries. The most important component of a graduated system is restricting high-risk driving once an initial license is obtained. This is when crash rates are the highest and when the biggest effects can be seen. The tougher the restrictions and the longer they last beyond the 16th birthday, the higher the rating. A lengthy learner's period of supervised driving is also important and is taken into account in the ratings. The criteria are indicated below, and in the rating of jurisdictions, the licensing system elements that produced the rating are indicated. Full details of the licensing system components for North American jurisdictions can be found at the Institute's website, www.highwaysafety.org.

Good: minimum 6-month learner's phase for young beginners; once licensed, beginners are subject to nighttime restrictions, beginning at 10 p.m. or earlier and extending to 5 a.m. and/or a restriction that allows no more than one passenger when driving unsupervised; and beginners must wait until age 17 for their unrestricted licenses

Acceptable: law includes the late evening/night driving or passenger restriction listed above, and beginners must wait until 17 for their unrestricted licenses; or law includes a minimum learner's phase (any length) plus some restrictions on driving hours and/or passengers, and beginners must wait until age 16, 6 months for their unrestricted licenses

Marginal: law includes a minimum learner's phase (any length) plus some restrictions on driving hours and/or passengers when initially licensed, or law includes only a learner's phase lasting a minimum of 6 months; or law includes only restrictions on driving hours and/or passengers once a beginner is licensed

Poor: no minimum learner's phase and no nighttime or passenger restrictions; or minimum learner's phase shorter than 6 months

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**Teenage Passengers in Motor
Vehicle Crashes: A Summary
of Current Research**

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Most studies of motor vehicle crashes involving young people focus on drivers. However, much of the problem involves young people traveling as passengers. This report summarizes the current state of knowledge concerning teenage passengers and motor vehicle crashes. Topics covered are the contribution of teenage passengers to the overall problem, the heightened risk when teenage passengers are transported by teenage drivers, characteristics of crashes involving teenage drivers and passengers, and the effects of passenger restrictions in graduated licensing systems.

Contribution to the Problem

Table 1 lists the numbers of young drivers and passengers killed when traveling in passenger vehicles in 1999. These data are based on the Fatality Analysis Reporting System (FARS), a census of fatal motor vehicle crashes on U.S. public roads. Considering all the teenage years 13-19, 54 percent of the deaths were drivers, 46 percent were passengers. Based only on the driving-age population 16-19, 60 percent were drivers, 40 percent were passengers. At ages 13-15, more young people were killed as passengers than as drivers. At age 16 — the highest risk age for drivers — 48 percent of the deaths were passengers, and slightly more 16-year-old females were killed as passengers than as drivers.

Table 1
Numbers of Fatally Injured Drivers and Passengers, United States 1999

Age	Drivers			Passengers		
	Male	Female	Total	Male	Female	Total
13	8	3	11	65	48	113
14	9	3	12	95	90	185
15	50	21	71	160	139	299
16	267	176	443	223	190	413
17	407	241	648	257	182	439
18	511	226	737	284	187	471
19	594	186	780	239	153	392
Total	1,846	856	2,702	1,323	989	2,312

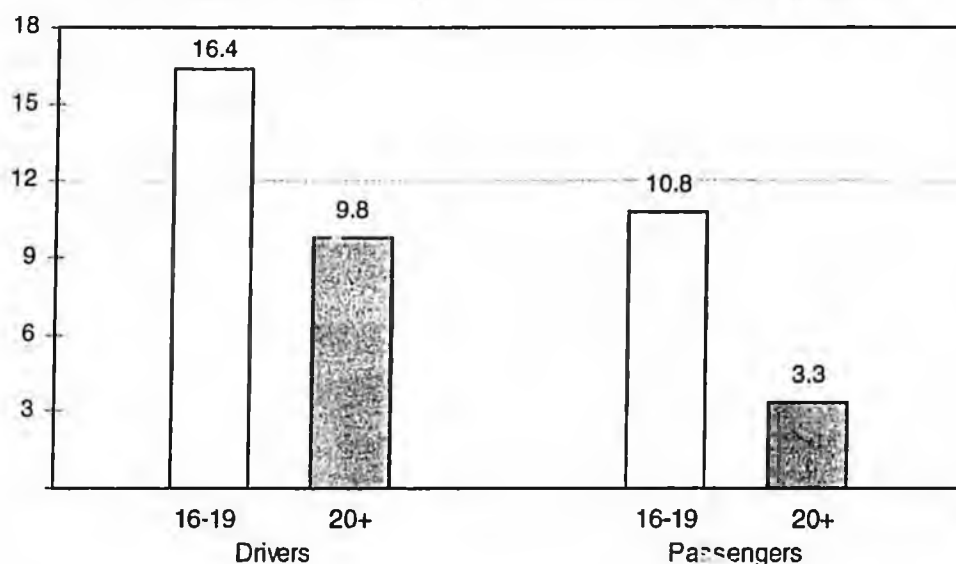
As shown in Figure 1, the relative increase in death rates for 16-19-year-old occupants compared with those ages 20 and older is much greater for passengers (10.8 vs. 3.3 per 100,000 population) than for drivers (16.4 vs. 9.8)

Reasons for the Problem

One important factor elevating the death rate of teenage passengers is their frequent travel with teenage drivers. This situation increases the already high crash risk of teenage drivers.

FARS data indicated that in 1999 64 percent of the deaths of 13-19-year-old passengers (66 percent for males, 61 percent for females) occurred when other teenagers were driving. The highest proportions of teenage passengers killed in vehicles with teenage drivers were at ages 16 (78 percent), 17 (68 percent), and 15 (70 percent).

Figure 1
Death Rates per 100,000 Population, Drivers and Passengers by Age, 1999

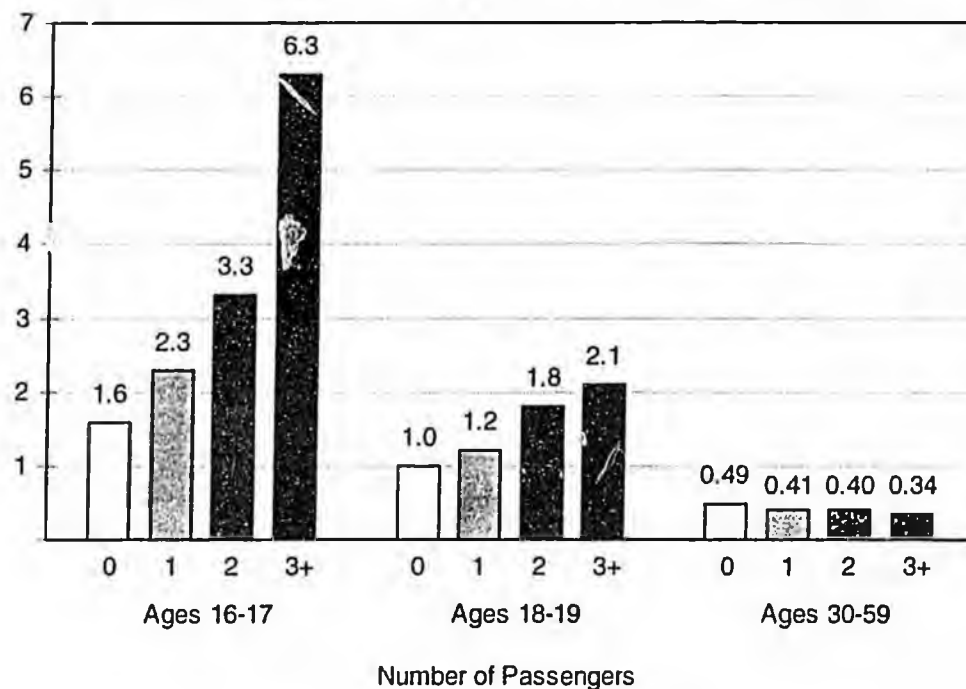


Four recent North American studies have quantified the crash risk associated with teenage drivers transporting teenage passengers (Aldridge et al., 1999; Chen et al., 2000; Doherty et al., 1998; Preusser et al., 1998). Collectively, findings from these studies indicate that the presence of passengers strongly increases crash risk for teenage drivers; the more passengers the greater the risk. For example, in one study the presence of one passenger almost doubled the fatal crash risk compared with driving alone. With two or more passengers, the fatal crash risk was five times as high as driving alone (Doherty et al., 1998). Results were similar for male and female teenage drivers. There is excess risk for young drivers with passengers both day and night. For older drivers, on the other hand, passengers either have no effect on crash risk or a beneficial effect, with drivers less likely to crash if there are passengers in the vehicle.

Part of the increased injury risk with passengers present could be because higher vehicle occupancy by itself increases the opportunity for injury in a crash. However, there is increased risk for young drivers with passengers present in studies that are based on involvement in crashes (Doherty et al., 1998) or deaths to drivers per million trips (Chen et al., 2000), where the influence of high vehicle occupancy on the likelihood of injury is not a factor.

Figure 2 presents data from the 1990 Nationwide Personal Transportation Survey and from the 1988-94 General Estimates System, a probability sample of police-reported crashes on public roads that result in property damage, injury, or death. Figure 2 indicates the high rate of crash involvement for teenage drivers when alone relative to older drivers, the increasing risk as passengers are added — especially for 16-17-year-old drivers — and the beneficial effect of passengers for older drivers.

Figure 2
Crash Rates by Driver Age and Passenger Presence per 10,000 Trips



The increased risk with passengers present is thought to be largely the result of distraction and risk-taking factors. In vehicles with several young occupants, there is often considerable verbal interaction, music playing, and sometimes physical interactions. Young people are in the beginning stages of driving, and inattentiveness to the task can have serious consequences. There is much anecdotal evidence of inducements to risk taking or showing off in multiple-occupancy crashes involving young people. In police reports of fatal crashes in which two or more teenagers were in the vehicle, there is in some cases evidence of distraction (e.g., turning around to talk to someone in the rear seat), physical interference (e.g., passenger grabbing the steering wheel), or inducements to risk taking (e.g., trying to get the driver to overtake another vehicle) (Williams, Preusser, et al., 1998). In a survey of teenagers asked to describe all the dangerous driving situations in which they had participated during the past 6 months, 85 percent of the reported incidents involved one or more peers as passengers in the vehicle (Farrow, 1987).

As further evidence of increased risk taking when passengers are present, a study of on-road driving behavior in England found that young drivers with young male passengers drove more dangerously than drivers without passengers — that is, they drove faster and accepted smaller gaps at intersections (McKenna et al., 1998).

Are Some Driver-Passenger Combinations More Dangerous?

In both the study of on-road driving (McKenna et al., 1998) and the study of driver fatality rates per trip with and without passengers (Chen et al., 2000), certain combinations of occupants had extra high risks while others did not increase risk or reduced it. In both studies, the high-risk combinations were male or female drivers with male passengers. In the study based on driver death rates (Chen et al., 2000), the presence of one male passenger almost doubled the death rate per 1,000 crashes for both male and female drivers, and two or more male passengers more than doubled it.

The lower risk situation involves a male driver and a female passenger. In the study of on-road driving (McKenna et al., 1998), males with a female passenger drove slower and did not follow vehicles as closely as did males driving alone. In the study based on driver death rates (Chen et al., 2000), there was no increased risk with one female passenger, but there was with two or more. The driver death rates study found some increased risk when young females transported other young females, although the on-road study indicated no difference in driving risk compared with driving alone.

Crash Characteristics

The crashes of youthful drivers are more likely to involve a single vehicle, driver error, and speeding (Williams et al., 1995). Analysis of 1999 FARS data indicated that the crashes involving multiple passengers were even more likely to have these characteristics (Table 2). For example, 56 percent of the fatal crashes of 16-17-year-old drivers with three or more passengers were single vehicle compared with 32 percent of fatal crashes where the driver was alone; 90 vs. 75 percent involved driver error, and 48 vs. 27 percent involved speeding. A higher proportion of crashes with multiple occupants involved alcohol, although crashes involving alcohol are a rare feature of 16-17-year-old driver crashes in general.

Table 2
Percent of Fatal Crashes of 16-17-Year-Old Drivers with Certain
Characteristics by Number of Passengers, United States 1999

Crash Characteristics	Driver Alone	Driver and 1 Teenage Passenger	Driver and 2 Teenage Passengers	Driver and 3+ Teenage Passengers
Single vehicle	32	40	44	56
Driver error	75	79	84	90
Speeding	27	37	44	48
Driver with positive blood alcohol concentration	11	12	13	20

Passenger Restrictions

New Zealand's graduated licensing system, adopted in 1987, includes a passenger restriction for initial license holders. Some U.S. states are now including passenger restrictions in their graduated licensing systems. As of November 2000, 15 states had passenger restrictions in the initial licensing phase. The restrictions vary in terms of number and ages of passengers allowed, whether or not family members are exempted, and the duration of the restriction. All 15 jurisdictions with passenger restrictions allow such travel if there is an adult in the vehicle. Licensing laws for all 50 states and the District of Columbia, including detailed information on passenger restrictions, can be found at the Insurance Institute for Highway Safety's website (www.highwaysafety.org).

Passenger restrictions have great potential to reduce crashes and injuries. For example, FARS data showed that in 1995 (prior to the graduated licensing movement) 53 percent of the deaths in crashes of 16-17-year-old drivers occurred when they were transporting other teenagers without an adult present, and 68 percent of these deaths happened during the daytime hours 5 a.m.–9 p.m. Passenger restrictions potentially prevent many more deaths than night driving restrictions, especially nighttime restrictions that start late, and add to the effect of nighttime restrictions. Table 3 indicates the numbers of deaths potentially prevented by passenger and night driving restrictions, by themselves and in combination.

Table 3
Deaths Potentially Prevented by Nighttime and Teenage
Passenger Restrictions, United States, 1995

Nighttime Restriction	Teenage Passenger Restriction	
	No	Yes
No	0	1,691
Midnight–5 a.m.	347	1,807
9 p.m.–5 a.m.	856	1,998

Effects of Passenger Restrictions

It is too early to tell what the effect of passenger restrictions will be in the United States. However, New Zealand's restriction was found to reduce crashes involving passengers among newly licensed drivers (Begg et al., 1999). Survey data from New Zealand also suggest that compliance will be more of an issue with passenger restrictions than in the case of night driving restrictions. For example, in one survey, 65 percent of males and 70 percent of females reported violating the passenger restriction at least sometimes, compared with 52 percent of males and 45 percent of females who said they at least sometimes violated the nighttime restriction (Harre et al., 1996).

Concern has been expressed that many young people will not comply with the passenger restriction, or that compliance will result in more young drivers on the road, increasing crash risk. Although the actual effects of passenger restrictions are yet to be established, the crash risk for alternative

forms of travel is known, and a recent study estimated the effect of 12-month passenger restrictions under varying degrees and types of compliance (Chen et al., 1999). Under a high-compliance scenario (10 percent violate the restriction and continue to travel with young drivers, 10 percent drive themselves, 20 percent forgo the trip, 60 percent go with older drivers) an estimated 345 of the 1,180 yearly deaths associated with young drivers traveling with passengers would be prevented. Because the risk of traveling with passengers is so high, even under a low-compliance scenario (80 percent continue to travel with young drivers, 10 percent drive themselves, 10 percent go with older drivers) about 60 deaths would be averted. There is such a major increase in crash risk when young drivers transport teenage passengers that even if all passengers ages 16-19 were to comply by driving themselves, an estimated 290 yearly deaths would be prevented. Thus although the magnitude of the effect of passenger restrictions is not presently known, it is expected to be strongly positive.

Various other concerns have been expressed about passenger restrictions, including personal safety if young women are forced to travel alone and that activities such as double-dating and having a designated driver would be prohibited.

Parents support passenger restrictions but not as strongly as they support night driving restrictions. In a 1995 national survey of U.S. parents, 74 percent supported a nighttime restriction compared with 43 percent who supported a passenger restriction (Ferguson and Williams, 1996). In most surveys, however, the majority support passenger restrictions. In four states in which parents of graduating seniors were interviewed, 54 percent in Connecticut, 72 percent in Delaware, 54 percent in New Jersey, and 63 percent in New York supported passenger restrictions (Williams, Ferguson, et al., 1998). In Connecticut and Florida, where the same parents were interviewed before and after their teenagers were licensed, support for a passenger restriction increased from 56 to 69 percent in Florida and from 58 to 72 percent in Connecticut, even though neither state has one (Ferguson et al., 2000).

Initial reports on the effects of passenger restrictions in graduated licensing systems are expected to be available in late 2001 and will be added to this paper. California had the first meaningful passenger restriction, not allowing passengers younger than 20 to be transported without an adult present for the first 6 months of licensure. Preliminary results indicate that in 1999 teenage passenger deaths and injuries when traveling with 16-year-old drivers declined by 23 percent compared with the 5 prior years (Automobile Club of Southern California, 2000).

A major study on how young people accommodate to passenger restrictions was conducted in California (Williams et al., 2001). In this study, young people and their parents, before and after graduated licensing, were interviewed multiple times about passenger restrictions and other aspects of the graduated system. Most parents approved of the passenger restriction, but the majority of teenagers did not. However, transportation of teenage passenger decreased. Prior to graduated licensing, few parents

were restricting who their children transported, but there was a substantial increase in restricting teenage passengers when the graduated system was introduced, even though compliance was by no means universal.

Teenagers said the passenger restriction impacted their social activities, but most (89 percent) said they could find ways to do their activities anyway, and 74 percent said the restriction did not affect them very much. The majority of parents said there was no inconvenience caused by the passenger and night driving restrictions. Only 8 percent said there was inconvenience that was frequent or major. Thus, the strong California restrictions on transporting young passengers appears to be well tolerated by teenagers and their parents and should produce reductions in crashes and injuries.

For the full report of this study, "Responses of teenagers and their parents to California's graduated licensing system" by Williams et al., e-mail awilliams@iihs.org or write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington, VA 22201.

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U.S. LICENSING SYSTEMS FOR YOUNG DRIVERS

Jurisdiction/ Evaluation	Learner Stage			Intermediate Stage			Minimum Age at Which Restrictions May Be Lifted	
	Minimum Entry Age	Mandatory Holding Period	Minimum Amount of Supervised Driving	Minimum Age	Unsupervised Driving Prohibited	Passenger Restriction	Nighttime Restriction	Passenger Restriction
Optimal provisions	16	6 mo.	30-50 hr.	16, 6 mo.	9/10 p.m.-5 a.m.	No more than 1 teenage passenger*	Until age 18	
Alabama / P	15 ¹	None	None	There is no intermediate stage. The minimum license age is 15.			—	—
Alaska / M (eff. 1/1/1999)	14	6 mo.	None	There is no intermediate stage. The minimum license age is 16.			—	—
Arizona / P (eff. 12/31/1999)	15, 7 mo. ²	5 mo. (eff. 7/18/2000)	25 hr., 5 of which must be at night ²	There is no intermediate stage. The minimum license age is 16.			—	—
Arkansas / M (eff. 5/8/1999)	14	6 mo. ³	None	Intermediate stage has no passenger or night driving restriction. ³ (eff. 8/13/2001)			—	—
California / G (eff. 7/1/1998)	15 ⁴	6 mo.	50 hr., 10 of which must be at night	16	Midnight-5 a.m. S	First 6 mo.: No passengers younger than 20 unless supervised by 25-year-old driver S	17	16, 6 mo.
Colorado / A (eff. 7/1/1999)	15 ⁵	6 mo.	50 hr., 10 of which must be at night	16	Midnight-5 a.m.	None	17	—
Connecticut / M (eff. 1/1/1997)	16	6 mo. (4 mo. with driver education)	None	There is no intermediate stage. The minimum license age is 16, 4 mo. ⁶			—	—
Delaware / A (eff. 7/1/1999)	15, 10 mo.	6 mo. ⁷	None	16, 4 mo. ⁷	9 p.m.-6 a.m. ⁷	No more than 2 passengers ⁷	16, 10 mo.	16, 10 mo.
District of Columbia / G (eff. 9/1/2000)	16	6 mo. ⁸	40 hr. in learner's stage; 10 hr. at night in intermediate stage	16, 6 mo.	Sept.-June: 11 p.m.-6 a.m. Su-Th, Midnight-6 a.m. F-Sa; July-Aug.: Midnight-6 a.m. ⁸	First 6 mo.: No passengers except one licensed driver 21 or older (family members excepted); Thereafter, no more than 2 passengers younger than 21 (family members excepted)	18 ⁸	17
Florida / A (eff. 7/1/1996)	15	12 mo. (eff. 10/1/2000)	50 hr., 10 of which must be at night (eff. 10/1/2000)	16	11 p.m.-6 a.m. (age 16), 1 a.m.-5 a.m. (age 17)	None	18	—
Georgia / G (eff. 7/1/1997)	15	12 mo.	40 hr., 6 of which must be at night (20 hr., 6 of which must be at night, with driver education) (eff. 1/1/2002)	16	Midnight-6 a.m. (eff. 1/1/2002)	First 6 mo.: No passengers (family members excepted); Thereafter, no more than 3 passengers younger than 21 (family members excepted) (eff. 1/1/2002) S	18	18
Hawaii / P (eff. 1/1/2001)	15, 6 mo.	3 mo.	None	There is no intermediate stage. The minimum license age is 16 ⁹ .			—	—

Key: G=good, A=acceptable, M=marginal, P=poor; S=secondary enforcement

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U.S. LICENSING SYSTEMS FOR YOUNG DRIVERS

Jurisdiction/ Evaluation	Learner Stage			Intermediate Stage			Minimum Age at Which Restrictions May Be Lifted	
	Minimum Entry Age	Mandatory Holding Period	Minimum Amount of Supervised Driving	Minimum Age	Unsupervised Driving Prohibited	Passenger Restriction	Nighttime Restriction	Passenger Restriction
Optimal provisions	16	6 mo.	30-50 hr.	16, 6 mo.	9/10 p.m.-5 a.m.	No more than 1 teenage passenger*	Until age 18	
Idaho / M (eff. 1/1/2001)	14, 6 mo.	4 mo.	50 hr., 10 of which must be at night	15 ¹⁰	Sunset to sunrise	None	16 ¹⁰	—
Illinois / A (eff. 1/1/1998)	15 ¹¹	3 mo.	25 hr.	16 ¹¹	11 p.m.-6 a.m. Su-Th, Midnight-6 a.m. F-Sa	None	17 ¹¹	—
Indiana / A (eff. 1/1/1999)	15 ¹²	2 mo.	None	16, 1 mo. ¹²	11 p.m.-5 a.m. Su-F, 1 a.m.-5 a.m. Sa-Su,	First 90 days: No passengers unless supervised by 21-year-old driver	18	16, 4 mo.
Iowa / A (eff. 1/1/1999)	14	6 mo.	20 hr., 2 of which must be at night	16 ¹³	12:30 a.m.-5 a.m.	None	17 ¹³	—
Kansas / P (eff. 7/1/1999)	14	None	50 hr., 10 of which must be at night	There is no intermediate stage. The minimum license age is 16.			—	—
Kentucky / M (eff. 10/1/1996)	16	6 mo.	None	There is no intermediate stage. The minimum license age is 16, 6 mo. ¹⁴			—	—
Louisiana / A (eff. 1/1/1998)	15 ¹⁵	3 mo.	None	16 ¹⁵	11 p.m.-5 a.m. ¹⁵	None from 5 am - 11 pm ¹⁵	17 ¹⁵	—
Maine / M (eff. 8/1/1998)	15 ¹⁶	3 mo. ¹⁶	35 hr., 5 of which ¹⁶ must be at night	16 ¹⁶	No night driving restriction.	First 90 days: No passengers unless supervised by 20-year-old driver (family members excepted)	—	16, 3 mo. ¹⁶
Maryland / A (eff. 7/1/1999)	15, 9 mo.	4 mo.	40 hr.	16, 1 mo.	Midnight-5 a.m. ¹⁷	None	17, 7 mo.	—
Massachusetts / G (eff. 11/4/1998)	16	6 mo.	12 hr.	16, 6 mo.	Midnight-5 a.m. ¹⁸ S	First 6 mo.: No passengers younger than 18 unless supervised by 21-year-old driver (family members excepted)	18	17
Michigan / A (eff. 4/1/1997)	14, 9 mo. ¹⁹	6 mo.	50 hr., 10 of which must be at night	16 ¹⁹	Midnight-5 a.m.	None	17 ¹⁹	—
Minnesota / M (eff. 1/1/1999)	15 ²⁰	6 mo. ²⁰	30 hr., 10 of which must be at night	There is no intermediate stage. The minimum license age is 17. ²⁰			—	—
Mississippi / M (eff. 7/1/2000)	15	6 mo. ²¹	None	15, 6 mo. ²¹	10 p.m.-6 a.m. ²¹	None	16	—
Missouri / A (eff. 1/1/2001)	15, 6 mo.	6 mo.	20 hr.	16	1 a.m.-5 a.m.	None	18	—

Key: G=good, A=acceptable, M=marginal, P=poor; S=secondary enforcement

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U.S. LICENSING SYSTEMS FOR YOUNG DRIVERS

Jurisdiction/ Evaluation	Learner Stage			Intermediate Stage			Minimum Age at Which Restrictions May Be Lifted	
	Minimum Entry Age	Mandatory Holding Period	Minimum Amount of Supervised Driving	Minimum Age	Unsupervised Driving Prohibited	Passenger Restriction	Nighttime Restriction	Passenger Restriction
Optimal provisions	16	6 mo.	30-50 hr.	16, 6 mo.	9/10 p.m.-5 a.m.	No more than 1 teenage passenger*	Until age 18	
Montana / P	14, 6 mo.	None	None	There is no intermediate stage. The minimum license age is 15. ²²			—	—
Nebraska / M (eff. 1/1/1999)	15 ²³	None	50 hr. (none with driver education)	16	Midnight-6 a.m.	None	17	—
Nevada / P (eff. 10/1/1997)	15, 6 mo.	None	50 hr.	There is no intermediate license stage. The minimum license age is 16. ²⁴			—	—
New Hampshire / A (eff. 1/1/1998)	15, 6 mo. ²⁵	3 mo.	20 hr.	16, 3 mo.	1 a.m.-5 a.m.	None	18	—
New Jersey / G (eff. 1/1/2001)	16 ²⁸	6 mo. ²⁶	None	17 ²⁶	Midnight-5 a.m.	No more than 1 passenger unless supervised by 21-year-old driver (except members of household)	17, 6 mo.	17, 6 mo.
New Mexico / A (eff. 1/1/2000)	15	6 mo.	50 hr., 10 of which must be at night	15, 6 mo.	Midnight-5 a.m.	No more than 1 passenger younger than 21 (family members excepted)	16, 6 mo. ²⁷	16, 6 mo. ²⁷
New York / A (eff. before 1965)	16 ²⁸	None	None	16 ²⁸	9 p.m.-5 a.m.	None	17 (18 without driver education) ²⁸	—
North Carolina / A (eff. 12/1/1997)	15	12 mo.	None	16	9 p.m.-5 a.m. ²⁹	None	16, 6 mo.	—
North Dakota / M (eff. 8/1/1999)	14	6 mo.	None	There is no intermediate stage. The minimum license age is 16.			—	—
Ohio / A (eff. 1/1/1999)	15, 6 mo.	6 mo.	50 hr., 10 of which must be at night	16 ³⁰	1 a.m.-5 a.m. S	None	17 ³⁰	—
Oklahoma / P	15, 6 mo. ³¹	None	None	There is no intermediate stage. The minimum license age is 16. ³¹			—	—
Oregon / G (eff. 3/1/2000)	15	6 mo.	50 hr. ³⁰ (100 hr. without driver education)	16	Midnight-5 a.m.	First 6 mo.: No passengers younger than 20 (family members excepted); Second 6 mo.: No more than 3 passengers younger than 20 (family members excepted)	17	17
Pennsylvania / A (eff. 12/22/1999)	16	6 mo.	50 hr.	16, 6 mo.	11 p.m.-5 a.m.	None	17 (18 without driver education)	—

Key: G=good, A=acceptable, M=marginal, P=poor; S=secondary enforcement

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U.S. LICENSING SYSTEMS FOR YOUNG DRIVERS

Jurisdiction/ Evaluation	Learner Stage			Intermediate Stage			Minimum Age at Which Restrictions May Be Lifted	
	Minimum Entry Age	Mandatory Holding Period	Minimum Amount of Supervised Driving	Minimum Age	Unsupervised Driving Prohibited	Passenger Restriction	Nighttime Restriction	Passenger Restriction
Optimal provisions	16	6 mo.	30-50 hr.	16, 6 mo.	9/10 p.m.-5 a.m.	No more than 1 teenage passenger*	Until age 18	
Rhode Island / A (eff. 1/1/1999)	16 ³²	6 mo.	None	16, 6 mo.	1 a.m.-5 a.m.	None	17, 6 mo. ³²	—
South Carolina / M (eff. 7/1/1998)	15	3 mo.	None	15, 3 mo.	6 p.m.-6 a.m. EST, ³³ 8 p.m.-6 a.m. EDT	None	16, 3 mo.	—
South Dakota / M (eff. 1/1/1999)	14	6 mo. (3 mo. with driver education)	None	14, 6 mo. (14, 3 mo. with driver education)	8 p.m.-6 a.m.	None	16	—
Tennessee / G (eff. 7/1/2001)	15	6 mo. ³⁴	50 hr., 10 of which must be at night	16	11 p.m.-6 a.m. ³⁴	No more than 1 passenger unless supervised by 21-year-old driver (family members excepted)	17	—
Texas / A (eff. 1/1/2002)	15 ³⁵	6 mo.	None	16	Midnight-5 a.m. S	No more than 1 passenger younger than 21 (family members excepted) S	16, 6 mo.	16, 6 mo.
Utah / A (eff. 7/1/2001)	15, 9 mo. ³⁶	None	30 hr., 10 of which must be at night	16 ³⁶	Midnight-5 a.m.	First 6 mo.: No passengers younger than 21 (family members excepted) S	17	16, 6 mo. ³⁶
Vermont / A (eff. 7/1/2000)	15	1 yr.	40 hr., 10 of which must be at night	16	No night driving restriction.	First 3 mo.: No passengers unless supervised by a licensed parent/ guardian, driving instructor, or licensed driver 25 or older; Second 3 mo.: Same as first 3 mo. except family members may be transported without a supervising driver S	—	16, 6 mo. ³⁷
Virginia / G (eff. 7/1/2001)	15, 6 mo.	9 mo.	40 hr., 10 of which must be at night	16, 3 mo.	Midnight-4 a.m. ³⁸ S	Until age 17: No more than 1 passenger younger than 18; Age 17 until 18: No more than 3 passengers younger than 18 (family members excepted) ³⁸ S	18	18

Key: G=good, A=acceptable, M=marginal, P=poor; S=secondary enforcement

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U.S. LICENSING SYSTEMS FOR YOUNG DRIVERS

Jurisdiction/ Evaluation	Learner Stage			Intermediate Stage			Minimum Age at Which Restrictions May Be Lifted	
	Minimum Entry Age	Mandatory Holding Period	Minimum Amount of Supervised Driving	Minimum Age	Unsupervised Driving Prohibited	Passenger Restriction	Nighttime Restriction	Passenger Restriction
Optimal provisions	16	6 mo.	30-50 hr.	16, 6 mo.	9/10 p.m.-5 a.m.	No more than 1 teenage passenger*	Until age 18	
Washington / G (eff. 7/1/2001)	15 ³⁹	6 mo.	50 hr., 10 of which must be at night	16	1 a.m.-5 a.m. S	First 6 mo.: No passengers younger than 20 (family members excepted); Second 6 mo.: No more than 3 passengers younger than 20 S	17 ³⁹	17 ³⁹
West Virginia / A (eff. 1/1/2001)	15	6 mo.	30 hr.; none if driver education course completed	16	11 p.m.-5 a.m. ⁴⁰	No more than 3 passengers younger than 19 (family members excepted) ⁴⁰	17	17
Wisconsin / A (eff. 7/1/2000)	15, 6 mo. ⁴¹	6 mo.	30 hr., 10 of which must be at night	16	Midnight-5 a.m.	No more than 1 passenger (family members exempt)	16, 9 mo. ⁴¹	16, 9 mo. ⁴¹
Wyoming / P	15	10 days	None	There is no intermediate stage. The minimum license age is 16.			—	—

Key: G=good, A=acceptable, M=marginal, P=poor; S=secondary enforcement

* Passenger restrictions vary with regard to their durations, the ages of passengers to whom they apply, and the availability of exceptions. Most states have exceptions for passengers who are related to the driver or are members of the driver's household, and there are exceptions when a supervising driver is in the vehicle.

¹ The supervising driver in Alabama must be a parent, guardian, or driving instructor. At age 16, permit holders may drive while supervised by any licensed driver.

² A driver education instructor in Arizona can authorize a student enrolled in driver education who is age 15 to drive only while supervised by the authorizing instructor. Certification waived for applicants who have completed driver education.

³ In Arkansas, people age 14 can drive with an instruction permit after passing a written test; after 30 days and after passing a road test, they are eligible for a restricted license that must be held for 6 months. Unsupervised driving is not permitted by holders of either the instruction permit or restricted license. The combined holding period for the permit and restricted license is 6 months. An intermediate phase for licensees younger than 18 prohibits drivers from transporting passengers who are unrestrained. Applicants for an intermediate license must be 16 and must be crash/violation free for 6 months.

⁴ Students enrolled in driver education in California may drive while supervised by an instructor. License applicants who do not take driver education must wait until age 18 for a license. They are not required to go through an intermediate license stage.

⁵ In Colorado, the supervising driver must be a parent, guardian, or driving instructor, and the permit holder must be enrolled in driver education. At age 15, 6 months, permit holders may drive supervised by a licensed driver 21 or older and are not required to have taken driver education.

⁶ Either driver education or home training is required for license applicants younger than 18 in Connecticut. Applicants who have not completed driver education have a 6-month learners holding period.

⁷ In Delaware, a driver education student does not need a permit to drive with a driver education instructor. After completing the on-road requirements of driver education, a driver education student who is at least age 15 years, 10 months may apply for a Driver Education Learner's Permit, which allows the student to drive while supervised by an experienced driver. Upon completion of driver education, and if the student passes both the road and written tests, the student receives a Level 1 permit that for the first 6 months allows driving only while supervised. There also is a passenger restriction during the first 6 months of the Level 1 permit. No more than 2 passengers are permitted in addition to the supervising driver. The Level 1 permit for the second 6 months is the equivalent of an intermediate license. During that period, holders may drive unsupervised between 6 a.m. and 9 p.m. and may only carry 2 passengers. Applicants for a driver's license who are younger than 18 must have held a Driver Education Learner's Permit and/or a Level 1 permit for at least 12 months. Driver education is required for all license applicants younger than 18.

- ⁸ The learner's stage in the District of Columbia is mandatory for all license applicants, regardless of age. A nighttime restriction (9 p.m.-6 a.m.) applies in the learner stage. License applicants younger than 21 must go through the intermediate stage until they have completed it or until age 21.
- ⁹ License applicants younger than 18 must have completed driver education in Hawaii.
- ¹⁰ In Idaho, license applicants younger than 17 must have completed driver education. There are three classes of learner's permits: a training instruction permit for persons 14, 6 months taking driver education; a supervised instruction permit for practice driving with a nonprofessional supervisor; and an instruction permit for persons younger than 17 who have completed driver education and supervised driving or for persons 17 and older without either driver education or supervised driving.
- ¹¹ Enrollment in driver education is required for permit applicants age 15 in Illinois; without driver education, a permit applicant must be age 17, 9 months. License applicants 18 and older are not required to have driver education or to go through an intermediate license stage.
- ¹² Driver education determines the minimum age for permits and the intermediate license in Indiana. People enrolled in or who have completed driver education must be age 15 to have a permit; otherwise, they must be age 16. The minimum age for an intermediate license is 16, 1 month with driver education; age 16, 6 months, without.
- ¹³ In addition to the certification in the learner stage, Iowa requires a certification of 10 hours of supervised driving, 2 of which must be at night during the intermediate stage. Driver education is required for an intermediate license and for an unrestricted license if applicant is younger than 18.
- ¹⁴ The Kentucky law prohibits learner's permit holders from driving between midnight and 6 a.m. There is no nighttime driving restriction for other license holders. License holders younger than 18 must complete a 4-hour course on safe driving within 1 year of receiving a license.
- ¹⁵ Driver education is required in Louisiana for a permit and an intermediate license if the applicant is younger than 17. People 17 and older must have completed an educational program that does not require a behind-the-wheel component. In Louisiana, intermediate license holders may only drive from 11 pm to 5 am if accompanied by a supervising driver and may only carry passengers who are members of their immediate family.
- ¹⁶ In Maine, driver education is required for a permit and a license if the applicant is younger than 18. The learner's permit holding period and the certification of practice driving applies to license applicants younger than 21.
- ¹⁷ In Maryland, 15 year-olds may drive without a permit if supervised by a driver education instructor. Driver education and the certification of practice driving applies to all initial license applicants. The nighttime driving restriction, however, only applies to intermediate license holders younger than 18.
- ¹⁸ The night driving restriction in Massachusetts also applies to permit holders younger than 18, unless accompanied by a licensed parent or guardian. Driver education is required of license applicants younger than 18.
- ¹⁹ Permit applicants younger than 18 in Michigan must have completed the first segment of driver education; license applicants younger than 18 must have completed the second segment of driver education. Neither driver education nor an intermediate license is required for license applicants 18 and older. The nighttime restriction is for 6 months or until age 17.
- ²⁰ In Minnesota, permit applicants younger than 18 must be enrolled in driver education; license applicants younger than 18 must have completed driver education. The permit holding period applies to license applicants 18 and older unless they have completed driver education. License applicants younger than 18 must certify 10 hours of driving during a 12-month provisional stage. Provisional license holders must be crash free to qualify for a full license.
- ²¹ In Mississippi, license applicants 17 and older are exempt from the 6-month learner's permit holding period and the requirement to get an intermediate license.
- ²² Enrollment in or completion of driver education is required for permit applicants younger than 15 in Montana; license applicants younger than 16 must have completed driver education.
- ²³ In Nebraska, 14 year-olds who live 1.5 miles or more from school and who either live outside or attend school outside a metropolitan area may be issued a learner's permit (called an "LPE permit") and a limited license (called a "school permit"). The LPL permit authorizes supervised driving for the purpose of preparing for the school permit, which allows driving to and from school or anyplace while supervised by a parent or guardian.
- ²⁴ License applicants younger than 18 must have completed driver education if it is available in the public school in Nevada or, if it is unavailable, must complete 50 hours of supervised driving in addition to that required in the learner stage.
- ²⁵ New Hampshire does not issue learner's permits. At age 15, 6 months, a person can drive while supervised by a licensed driver 25 or older. The initial license for 16 and 17 year-olds is like a permit for the first 90 days. It does not allow unsupervised driving at any time.
- ²⁶ In New Jersey, the permit becomes an intermediate license after 6 months. The graduated licensing law applies to adults, except that the night driving and passenger restrictions are waived for new drivers 21 and older. If the applicant has not completed driver education, the minimum permit age is 17 and the minimum intermediate license age is 17, 6 months.
- ²⁷ Permit applicants younger than 18 must be enrolled in driver education in New Mexico; license applicants younger than 18 must have completed driver education.
- ²⁸ New York's licensing law prohibits all 16-year-old licensees and 17 year-olds without driver education from driving in New York City.

- ²⁹ In North Carolina, learner's permit holders may not drive between 9 p.m. and 5 a.m. for the first 6 months. Driver education is required for permit and license applicants younger than 18.
- ³⁰ Driver education is required of license applicants younger than 18 in Ohio and Oregon. However, it is waived in Oregon for applicants who certify an additional 50 hours of supervised driving.
- ³¹ Fifteen year-olds may drive in Oklahoma, but only while supervised by an instructor. Driver education is required for a license at age 16 if it is offered in the applicant's school district. A restricted license is available to 16 year-olds that allows daytime driving only, but it is not a required stage.
- ³² Driver education is required of permit and license applicants younger than 18 in Rhode Island.
- ³³ In South Carolina, the nighttime restriction applies in the learner stage as well as in the intermediate stage. Fifteen year-olds who are enrolled in driver education do not need a permit to drive with an instructor. License applicants younger than 17 who have not completed driver education may not get a license to drive unsupervised after daylight.
- ³⁴ Learner's permit holders in Tennessee may not drive from 10 p.m. to 6 a.m.
- ³⁵ In Texas, the minimum permit age is 15 for applicants who are enrolled in driver education. The minimum license age is 18 for applicants who have not completed driver education.
- ³⁶ Regardless of age, permit applicants in Utah must be enrolled in driver education, and license applicants must have completed driver education. Passenger restrictions in Utah end when a driver has been licensed for 6 months or when the driver turns 18, whichever occurs first.
- ³⁷ Driver education is required for license applicants younger than 18 in Vermont.
- ³⁸ In Virginia, driver education is required for license applicants younger than 18. Initial license applicants 19 and older must either complete driver education or hold a learner's permit at least 30 days. The night driving restriction and passenger restriction (no more than 1 passenger younger than 18) apply to learner's permit holders.
- ³⁹ Permit applicants in Washington must be enrolled in driver education; otherwise the minimum permit age is 15, 6 months. Driver education is required for license applicants younger than 18. Intermediate license holders with a crash or violation history are ineligible for an unrestricted license until age 18.
- ⁴⁰ In West Virginia, learner's permit holders younger than 18 may not drive 11 p.m.-5 a.m. and may not carry more than 2 passengers in addition to the supervising driver.
- ⁴¹ Enrollment in driver education is required in Wisconsin for permit applicants younger than 18. Driver education is required for license applicants younger than 18.

CANADIAN LICENSING SYSTEMS FOR YOUNG DRIVERS

Jurisdiction/ Evaluation	Learner Stage			Intermediate Stage			Minimum Age at Which Restrictions May Be Lifted	
	Minimum Entry Age	Mandatory Holding Period	Minimum Amount of Supervised Driving	Minimum Age	Unsupervised Driving Prohibited	Passenger Restriction	Nighttime Restriction	Passenger Restriction
Optimal provisions	16	6 mo.	30-50 hr.	16, 6 mo.	9/10 p.m.-5 a.m.	No more than 1 teenage passenger*	Until age 18	
Alberta / P	14	None	None	There is no intermediate stage. The minimum license age is 16.				
British Columbia / M	16	6 mo. (3 mo. if driver education)	None ¹	There is no intermediate stage. A probationary license may be issued at 16, 3 mo. The only restrictions on a probationary license is that the driver must display an "N" in window and maintain a zero percent blood alcohol concentration while driving. After 18 mo., the driver may take an advanced road test for full licensure.				
Manitoba / A	15, 6 mo. ²	9 mo. (effective date: 4/1/2002)	None	16, 3 mo. ²	None	Between midnight and 5 a.m.: 1 passenger unless supervised, then as many in back as there are belts. (effective date: TBA)		17, 6 mo. ²
New Brunswick / M	16	12 mo. (4 mo. if driver education)	None ³	There is no intermediate stage. A probationary license may be issued at age 16, 4 mo. The only restriction on a probationary license is a zero percent blood alcohol concentration while driving. A full license may be issued after 12 mo. or age 18, whichever is later.				
Newfoundland and Labrador / A	16	12 mo. (8 mo. with driver education) ⁴	None	16, 8 mo.	Midnight-5 a.m.	None	17, 8 mo.	17, 8 mo.
Northwest Territories / P	15	30 day ⁵	None	There is no intermediate stage. The minimum license age is 16.				
Nova Scotia / A	16 ⁶	6 mo. (3 mo. if driver education)	None ⁶	16, 3 mo. ⁶	Midnight-5 a.m. ⁶	None	18, 3 mo.	
Nunavut / P	15	None	None	There is no intermediate stage. The minimum license age is 16.				
Ontario / M	16	12 mo. (8 mo. if driver education)	None ⁷	There is no intermediate stage. A probationary license may be issued at age 16, 8 mo. The only restriction on a probationary license is zero percent blood alcohol concentration while driving. After 12 mo. the driver may take an advanced road test for full licensure.				
Prince Edward Island / A	15, 6 mo.	180 days	None	16	None	3 passengers		17
Quebec / M	16	12 mo. (8 mo. if driver education)	None (must always be supervised)	There is no intermediate stage. A probationary license may be issued at age 16, 8 mo. The only restrictions on probationary license are lower points and zero percent blood alcohol concentration while driving. A full license may be issued at age 18, 8 mo.				
Saskatchewan / M	15	6 mo.	None ⁸	There is no intermediate stage. The minimum license age is 16, 6 mo.				

Key: G=good, A=acceptable, M=marginal, P=poor

cont'd

CANADIAN LICENSING SYSTEMS FOR YOUNG DRIVERS

Jurisdiction/ Evaluation	Learner Stage			Intermediate Stage			Minimum Age at Which Restrictions May Be Lifted	
	Minimum Entry Age	Mandatory Holding Period	Minimum Amount of Supervised Driving	Minimum Age	Unsupervised Driving Prohibited	Passenger Restriction	Nighttime Restriction	Passenger Restriction
Optimal provisions	16	6 mo.	30-50 hr.	16, 6 mo.	9/10 p.m.-5 a.m.	No more than 1 teenage passenger ¹	Until age 18	
Yukon / A	15 ²	6 mo.	50 hr., including at least 10 hr. in darkness and 10 hr. in winter conditions ³	16 ⁴	Midnight-5 a.m. (unless supervised) ⁵	No more than 1 passenger younger than 13 No more than 1 passenger younger than 13 and 1 passenger who is older than 12 but younger than 20, unless there is a supervisor older than 20 who is not impaired and is able to supervise the younger passengers. ⁶	17, 6 mo.	17, 6 mo.

Key: G=good, A=acceptable, M=marginal, P=poor

- ¹ A driver in the learner stage may only carry 2 passengers, including the supervisor. Also, a driver in the learner stage may not drive between midnight and 5 a.m. During all times, a driver in the learner stage must have a sign with an "L" on the vehicle.
- ² A driver in the learner stage, intermediate stage, and first year of full licensure must maintain a zero percent blood alcohol concentration while driving.
- ³ A driver in the learner stage may carry no passengers other than a supervisor.
- ⁴ A driver in the learner stage may not drive between midnight and 5 a.m. A driver in the learner and intermediate stage must maintain a zero percent blood alcohol concentration while driving. Also the accompanying supervisor must maintain a blood alcohol concentration of no more than 0.05 percent while supervising a driver in the learner or intermediate stage.
- ⁵ The 30 day holding period is not by statute; it is only policy.
- ⁶ A driver in the learner stage may carry no passengers other than a supervisor. A driver in the learner and intermediate stage must maintain a zero percent blood alcohol concentration while driving.
- ⁷ A driver in the learner stage is subject to a nighttime driving restriction of midnight to 5 a.m. After attaining a full license, there is a probationary period of 12 months when the driver can have no more passengers than seat belts and the driver must maintain a zero percent blood alcohol concentration while driving.
- ⁸ To graduate from the learner stage, a driver must have either a driver education certificate or 4 hours with licensed driving instructor.
- ⁹ A driver in the learner stage is subject to a nighttime driving restriction of midnight to 5 a.m. and is restricted to 1 passenger other than a supervisor. A driver and the driver's supervisor in the learner and intermediate stage must maintain a zero percent blood alcohol concentration and be drug free while driving.



Speech by the Hon. Carol J. Carmody

Thank you, Chuck. I appreciate being invited here today to speak to the individuals who are responsible for nothing less than a revolution in the way we license young novice drivers in the United States. Congratulations to the National Safety Council, and especially Chuck Hurley, for having the vision to convene this meeting of the world's major researchers on licensing young drivers.

I also want to recognize the great work done in this area by many of you here today—many of whom the Safety Board has worked closely with over the years—including the American Automobile Association, Advocates for Highway and Auto Safety, the Insurance Institute for Highway Safety, the Governors' Highway Safety Representatives, Mothers Against Drunk Driving, and the dedicated legislators who stepped up to the plate to fight for the laws that are now on the books in their states.

I would like to acknowledge our Canadian, Australian and New Zealand colleagues in attendance and the progress they have made on this issue in their countries.

Let me recognize the Safety Board staff who are here for the symposium—Elaine Weinstein, the Board's Director of Safety Recommendations and Accomplishments, Kevin Quinlan, who heads our Safety Advocacy Division, and Steve Blackistone, who is our state and local liaison.

Allan Williams has already discussed the patterns of risk for teenage drivers, but let me restate a few of the national statistics that demonstrate why this is such an important gathering:

- Traffic crashes are the leading cause of death for 15- to 20-year-olds in the United States.
- Teenage drivers are overrepresented in fatal crashes. According to statistics from the National Highway Traffic Safety Administration (NHTSA), in 2000, 6.8% of the driving population was age 20 or younger, but they were involved in 14% of the fatal crashes.
- Half of the crashes involving young, novice drivers occur in the hours of darkness.
- Over two-thirds (67%) of passengers killed in crashes involving drivers between the ages of 14 and 17 are also teenagers between 15 and 19 years of age.
- The more teenage passengers there are in the car, the higher the accident risk.

The Safety Board first became involved in this issue in a 1993 safety recommendation letter to the states. The Board asked the states to implement measures to address underage drinking and to make changes in novice driver licensing requirements. Specifically, we asked the states to enact laws to:

- provide for a provisional license system for young novice drivers; and
- prohibit driving by such drivers between certain hours, especially midnight to 5 a.m.

Implicit in the Board's recommendation for a provisional licensing system was a three-stage graduated licensing system with a learner's permit, a provisional or intermediate license, and, finally, full unrestricted license. The use of a three-stage system is important because it allows for the incremental introduction of the driving privilege. The provisional license can be suspended or revoked or the unrestricted license can be deferred if certain conditions that encourage safe driving have not been met—and this is quite an incentive for most teenagers.

To date, 36 states and the District of Columbia have a three-stage graduated driver license (GDL) system and 33 states and the District of Columbia have a nighttime driving restriction. We are seeing the success of these systems as Dr. Simpson discussed this morning. For example:

- Colorado just recently reported a 45% reduction in fatalities involving 16-year-old drivers.
- Florida has reported a 9% reduction in fatality and injury crash involvement for 15- to 17-year-olds.
- Preliminary results of North Carolina's law show a 29% reduction in fatal and injury crashes involving 16-year-old drivers and a 49% reduction in nighttime crashes.

Everyone at this symposium should be gratified about the success we have achieved so far. But, we are not finished. State enactment of GDL legislation remains on the Board's list of most wanted safety recommendations. We look forward to working with all of you to ensure that all of the states have an effective GDL system in place.

Recent research indicates that the presence of teenage passengers increases the crash risk of teenage drivers, especially at night, and that the risk increases as the number of passengers increases. We believe this requires our attention.

The Safety Board reexamined the status of graduated licensing regulations in the states, including recent legislation related to teenage passenger restrictions. We found some very interesting results. We found that there is no uniformity among the states.

Some of the variations are the following:

- nighttime driving restrictions, which range from a short 4-hour period, such as 1–5 a.m. to an 8- or 9-hour period, such as 9 p.m. to 6 a.m.;
- minimum holding periods for learner permits do not exist in some states; others have a short period such as Indiana's 2 months; or Florida, Georgia, North Carolina and Vermont, with a 12-month minimum period;
- holding periods for the provisional or intermediate license range from 3 months in Maine to 2 years in Georgia. Some states specify that the restrictions end at age 18, while others end before age 18;
- the number of passengers permitted in the novice driver's vehicle differs from state to state. Eight states allow no or one passenger until the driver receives an unrestricted license. Nine states and the District of Columbia have a similar restriction that extends into part of the intermediate licensing period;
- the age of the passengers allowed to travel with the teen driver also varies. In four states, the age of the passengers depends on the age of the driver;
- 10 states with a passenger restriction specify the age of the supervising driver. In nine states and the District of Columbia, the supervising driver could conceivably be another teen who was recently licensed; and
- the length of time the passenger restriction is in effect varies and in some states does not last throughout the full intermediate licensing period.

The Safety Board was only able to identify seven states (California, Massachusetts, New Jersey, North Carolina, Tennessee, Vermont, and Wisconsin) that have provisions that include a

- three-stage graduated license system;
- passenger limitation of none or one;
- passenger restriction of at least 6 months; and
- requirement that the supervising driver be age 21 or older in both the learner's and provisional stages.

Accordingly, I am pleased to announce that today the Safety Board is issuing two new safety recommendations to the states that we hope will contribute to strengthening the graduated licensing laws in the states.

The first recommendation asks that all states restrict young, novice drivers with provisional licenses from carrying more than one passenger under the age of 20, unless the driver is accompanied by a supervising adult at least 21 years old. This restriction would be in effect until they

receive an unrestricted license or for at least 6 months (whichever is longer).

The second recommendation asks that all states require that the adult supervising driver in the learner's permit stage be age 21 or older.

Copies of these new recommendations will be distributed to you after lunch and are available on our website—

The Board's safety recommendations are its most important product and we have recently implemented a program to put more resources into our state advocacy effort to ensure their implementation. Each of the Safety Board Members has agreed to spearhead our efforts in 10 states. They will meet with state officials and legislators to promote the implementation of our recommendations. They will also speak at public events; target print, radio, and television media; and establish contacts with important state advocacy groups and coalitions. Board Members have already visited Massachusetts and Hawaii to discuss important safety issues. If your organization believes that we can help with testimony or by participating in an event or in meetings with grass roots organizations, please contact Elaine, Kevin, or Steve—either here or back in Washington.

So, where do we go from here?

We need to continue to make a compelling case for graduated licensing laws when we talk to legislators and community leaders. We have learned what Tip O'Neill knew—that "All politics is local." Legislators respond to what they hear from their constituents. We need to be able to tell them about crashes in their state that can highlight and personalize the problem. We also need to be able to counter parents' perceptions and concerns that graduated licensing is an inconvenience.

Legislators like to know what neighboring states in their region have done and how effective those efforts have been. We should have that information available for them. Although research is helpful in framing the problem, it is not persuasive by itself. Legislators respond to the human toll, the economic costs, the direct medical costs, and the number of families affected. They are also concerned about administrative costs and burdens and seem to prefer increased penalties and education rather than revisions to the existing licensing system.

Coalitions are important, but not always essential to success. Committed legislators and leadership support in each house are what counts. To ensure that we can make the most compelling arguments when we meet with legislators and others, we must review what works and what does not in enacting GDL legislation, what components make up a comprehensive GDL law, what best practices have been developed to implement and enforce existing GDL laws, what gaps exist in our knowledge and research, and what should our priorities be. I hope that by the end of the symposium you will have either the answers or a plan about how to get them.

I will close with a story that demonstrates the challenge we face and why this meeting is so important. Last July 31st, at about 2:00 p.m., a recently licensed 15-year-old, driving a sport utility vehicle (SUV) with five teenage passengers between the ages of 15 and 18, crashed while traveling on a highway near Columbus, Montana. The posted highway speed was 70 mph; the vehicle's speed was estimated to be between 70 and 76 mph. Weather and road conditions were clear and dry. As the driver negotiated "S" curves on a 5% uphill grade, she was turning around and talking to passengers in the backseat. When the vehicle went off the road, the driver overcorrected in an effort to return to the roadway, causing the SUV to go into a broadside skid and flip three times.

The driver and one passenger were ejected through the front of the vehicle, two other passengers were ejected from the side of the vehicle, and two remained inside. The driver died on scene. The passengers were transported to area hospitals—one was treated and released, two were in serious condition, and two were in critical condition. Not one of the six teenagers was wearing a seatbelt. No alcohol or drugs were involved. The driver had received her license on April 20th, providing her with just over 100 days of (potential) licensed driving experience at the time of the accident.

Montana still does not have a three-stage graduated licensing system, an intermediate license stage, a nighttime driving restriction, or a passenger restriction. And, the supervising adult driver can be less than 21 years old.

All of us share a common goal—saving the lives of young people. We know that strong, enforced graduated licensing laws will prevent countless deaths of teen drivers on America's highways. The case for graduated licensing laws is compelling. But we need to document the successes, learn from the failures, and organize our arguments to be sure our case is so strong that it cannot be ignored or negotiated away during the legislative process. By continuing to work together to affect public policy and encourage safe behavior—we will save countless lives. That is why this meeting—and the work you do every day—is so important.

Thank you for your tireless efforts on behalf of America's youth. And, thank you, again for inviting me to be here today.

Honourable Carol J. Carmody
*Acting Chairman
National Transportation Safety Board
Keynote Address to the National Safety Council's
Graduated Driver License Symposium
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Teenage drivers: patterns of risk

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Abstract

Problem: To determine patterns of risk among teenage drivers. **Method:** Review and synthesis of the literature. **Results:** On most measures, crash rates during the teenage years are higher than at any other age, for both males and females. Risk among teenagers varies greatly by driving situation; it is particularly low in some situations (e.g., the learner period) and particularly high in others (e.g., right after licensure, late at night, with passengers present). In some of these high-risk driving situations, risk is elevated for drivers of all ages (e.g., late night driving), in others risk is elevated more for teens than adults (e.g., driving after consuming alcohol), and in others the risk is unique to teen drivers (e.g., having passengers). **Impact on Research, Practice, and Policy:** These varying patterns of risk form the basis for graduated licensing systems, which are designed to promote low-risk and discourage high-risk driving.

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Keywords: Teenage drivers; Crash rates; Risk

1. Introduction

The elevated crash risk of teenage drivers is well known. In this article, the overall crash risk of teenage drivers in comparison with older drivers will be described, taking gender differences into account. The patterns of driving risk for teenagers will also be indicated, emphasizing the times and driving situations associated with especially high risk. These will be sorted into situations in which risk is elevated for drivers of all ages, situations in which risk is elevated more for teenagers than for older drivers, and risk situations unique to teenagers. Teen drivers ages 16–19 are the target group, but 16 and 17-year-olds will be featured because these are the ages that graduated licensing generally encompasses in the United States.

2. Overall risk

The shape of the distribution of crash rates by age varies, depending on how ages are categorized and what numerators (fatal crashes, all crashes) and denominators (total population of that age, licensed drivers, mileage) are used. For example, because crash rates are highest at the extremes of the age spectrum, crash rate comparisons of

younger versus older drivers and younger and older versus other drivers are considerably affected by how drivers are grouped. It makes a big difference whether young drivers are grouped as 16- to 19-year-olds or separately as 16-, 17-, 18-, and 19-year-olds, and whether the oldest group is classified as 65+, 75+, or 85+. As another example, crash rates for elderly drivers are relatively higher when based on fatal crashes rather than all crashes, due to their fragility. In addition, different denominators yield different crash rate distributions by age because of age differences in licensure rates and miles driven per license holder. Mileage data allow comparisons of crash risk while controlling for amount of exposure, licensure data yield information on per person rates, and population data provide a means of assessing overall effects on an age group.

Tables 1–6 and Figs. 1–6 indicate crash rates by age and gender using different combinations of numerators and denominators. In the tabulations, age categorizations begin at 16 and end at 85+. Data on crashes, presented in this article, are based on the Fatality Analysis Reporting System (FARS), a census of all fatal crashes occurring on public roads in the United States, and from the National Automotive Sampling System/General Estimates System (NASS/GES), a national probability sample of police-reported crashes. Mileage data are taken from the Nationwide Personal Transportation Survey (NPTS), licensing data come from annual tabulations published by the Federal Highway Administration, and population data are from the U.S.

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Table 1
Driver crash involvements per million miles traveled, 1995

Age	Males	Females	All
16	42	29	35
17	18	23	20
18	14	13	14
19	12	14	13
16-19	17	18	17
20-24	10	9	9
25-29	6	7	6
30-34	4	5	4
35-39	4	5	5
40-44	4	4	4
45-49	3	4	4
50-54	3	4	4
55-59	3	4	4
60-64	3	4	4
65-69	3	4	4
70-74	4	6	5
75-79	7	7	7
80-84	11	12	12
85+	16	11	14

Table 3
Driver crash involvements per 1,000 licensed drivers, 2000

Age	Males	Females	All
16	210	175	193
17	176	144	160
18	172	114	144
19	136	103	120
16-19	167	127	148
20-24	100	78	89
25-29	75	58	67
30-34	60	49	55
35-39	58	46	52
40-44	50	40	45
45-49	47	37	42
50-54	43	32	37
55-59	41	29	35
60-64	37	24	31
65-69	34	23	29
70-74	35	23	29
75-79	37	24	30
80-84	35	25	30
85+	35	22	28

Bureau of the Census. All but the mileage data are from year 2000. The most recent national mileage data are from 1995, so mileage-based rates can only be updated to that year.

There are many age and gender differences in these data, and attention will be given only to those most pertinent to teenagers. Figs. 1-4 indicate that most of the curves are U-shaped, with young and old drivers having the highest rates. Generally, young drivers have higher crash rates than older drivers, and men have higher rates than women, but there are exceptions. For example, fatal crashes per mile driven are highest for the oldest drivers, and—based on all crashes—women have slightly higher rates of crash involvement per mile driven than men, overall and at most ages, including 16- to 19-year-olds combined.

Crashes per mile driven measures crash risk given comparable amounts of exposure. By that measure the very youngest drivers, particularly 16-year-olds, stand out. When rates per mile are based only on fatal crash involvements, 16-year-olds again stand out among teenagers, but drivers ages 80 and older have higher rates than 16- to 19-year-olds. Note, however, that the number of fatal crash involvements for those 80 and older is 1,587 compared with 6,008 for 16- to 19-year-olds, so from a public health standpoint the youngest group is of most concern. Jenks (1991) has noted that interpreting mileage-based rates as a measure of risk exaggerates the risk of low-mileage groups such as teenagers and the elderly when crashes of all types are considered, because more of their mileage is accumulated on congested

Table 2
Driver fatal crash involvements per million miles traveled, 1995

Age	Males	Females	All
16	19	8	13
17	9	6	8
18	8	4	6
19	6	4	6
16-19	8	5	7
20-24	5	3	4
25-29	3	2	3
30-34	2	1	2
35-39	2	1	2
40-44	2	1	1
45-49	2	1	1
50-54	2	1	2
55-59	2	2	2
60-64	2	2	2
65-69	2	2	2
70-74	3	3	3
75-79	6	5	5
80-84	12	9	11
85+	20	10	16

Table 4
Driver fatal crash involvements per 100,000 licensed drivers, 2000

Age	Males	Females	All
16	86	55	71
17	77	40	59
18	87	38	63
19	80	33	57
16-19	82	40	62
20-24	62	23	43
25-29	39	17	28
30-34	32	14	23
35-39	29	14	22
40-44	26	12	19
45-49	24	11	18
50-54	23	10	16
55-59	22	10	16
60-64	24	10	17
65-69	22	11	16
70-74	26	13	20
75-79	33	15	23
80-84	38	19	28
85+	51	20	34

Table 5
Driver crash involvements per 1,000 population, 2000

Age	Males	Females	All
16	78	65	71
17	101	83	92
18	122	79	101
19	103	76	90
16-19	101	76	89
20-24	84	66	75
25-29	69	52	61
30-34	57	45	51
35-39	54	42	48
40-44	48	37	42
45-49	46	35	40
50-54	42	30	36
55-59	40	26	33
60-64	36	21	28
65-69	33	19	25
70-74	32	18	24
75-79	35	17	24
80-84	32	15	21
85+	27	8	13

two-way city streets than on freeways. Young people also tend to accumulate a higher proportion of their mileage at night, when fatal crash risk is higher (Williams, 2005). Thus, some of the extra risk for teenage drivers is due to the quality of their exposure in terms of where and when they drive.

In regard to crashes per license holder, 16-year-olds have the highest rate of any age group, and 16- to 19-year-old drivers exceed drivers of any older ages for both fatal crashes and all crashes. Young males have higher crash rates than young females, but these differences are not large: for 16-year-olds about one in five crash, both males (21%) and females (18%).

Based on per capita rates, the ordering among the youngest drivers changes. Less than 50% of 16-year-olds are licensed (37% in 2000), and license holders average fewer miles than older teens. Thus, per capita rates for 16-year-olds are the lowest in the 16-19 age group. Note, however, that for total crashes per capita, both male and female 16-year-olds—despite their limited exposure—are higher than any nonteenage group, except those 20-24. In terms of fatal crashes per capita, 16-year-old females have a higher rate than any nonteenage females, and 16-year-old males are exceeded only by males 20-29 and 80 and older.

3. Teenage passenger crash rates

The focus of this article is drivers, but many teens also die as passengers in motor vehicles (Williams & Wertz, 2005). In 2000, 40% of the deaths of 16- to 19-year-olds traveling in passenger vehicles were sustained by passengers, and for 16-year-olds, there was close to a 50-50 split (54% drivers, 46% passengers). A major contributor to this high death rate is their frequent travel with teenage drivers, a high-risk scenario that will be discussed later. Fig. 7 dis-

plays crash rates per 100,000 population by age for 2000, indicating clearly that crash risk for passengers peaks at ages 16-19.

3.1. Times of highest risk

When we talk about high-risk driving situations for teenagers, most of the attention is given to types of driving that elevate crash risk. However, crash risk varies greatly by what stage of the licensing process teens are in, and this variation provides useful information for establishing licensing policies.

The learner stage is a period of low crash risk. This is quite understandable because driving during this stage is generally under the supervision of a parent, driving instructor, or other adult, exposure is relatively low, and higher risk conditions are generally avoided. Data from Nova Scotia indicate that crash rates are very low during this period, and they do not increase during the course of the learning period (Mayhew, Simpson, & Pak, in press). That is, those who have held learner's permits for several months do not have a higher crash rate than those in the first month of holding permits.

Another study analyzed fatal crashes of 15-year-olds in states that license at age 16 but allow permits to be obtained earlier. It found very few crashes involving learner permit holders driving under supervision (Williams, Preusser, Ferguson, & Elmer, 1997). Most 15-year-olds involved in fatal crashes either did not hold learner's permits (57%) or were not operating vehicles under the required supervision (16%).

Although supervised driving in the learner stage is low risk, driving once licensed is not. Fig. 8 shows Nova Scotia data, collected before its graduated licensing program went into effect, illustrating both the very low crash rate in the learner period and the much higher crash rate when licensed

Table 6
Driver fatal crash involvements per 100,000 population, 2000

Age	Males	Females	All
16	32	20	26
17	44	23	34
18	61	27	44
19	60	24	43
16-19	50	24	37
20-24	52	19	36
25-29	36	15	26
30-34	30	13	22
35-39	27	13	20
40-44	25	11	18
45-49	23	11	17
50-54	22	9	16
55-59	21	10	15
60-64	23	9	16
65-69	20	9	14
70-74	25	10	17
75-79	30	10	19
80-84	35	11	20
85+	39	7	17

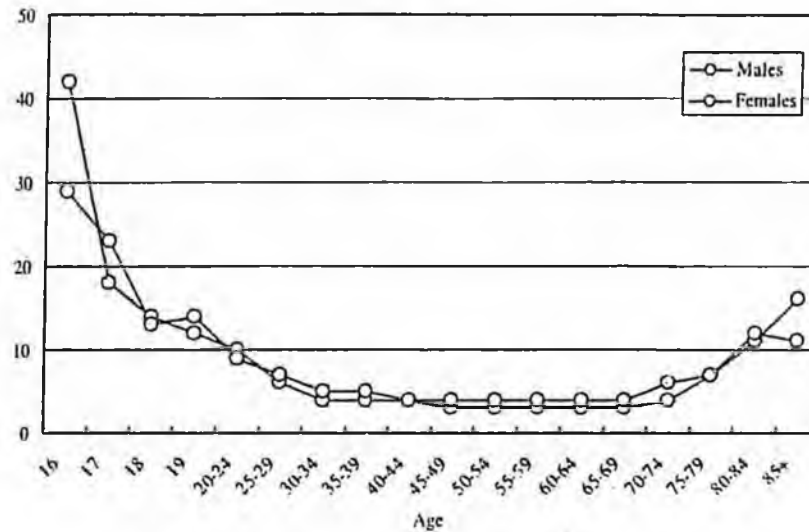


Fig. 1. Driver crash involvements per million miles traveled, 1995.

(Mayhew et al. in press). The crash rate was highest in the first month of licensure, dropped sharply during the next few months, and showed a slower decline during the next year and a half. A study based on self-reported data from four U.S. states, McClure, Stepanov, and Loui (in press) found that the likelihood of a first crash or first citation was higher during the first month than during any of the next 11 months.

Virtually the same pattern of crash rates when first licensed has been reported in Quebec (Laperle-Macdonald, 1998), which, like Nova Scotia, allowed full licensure at age 16, and in Victoria, Australia, Norway, and Sweden, where the licensing age is 18 (Drummond, 2000; Gregerson et al., 2000; Sagberg, 1999). It has not been established how the imposition of curbs on high-risk unsupervised driving—a central feature of graduated systems—may change this pattern.

4. High risk situations for all drivers

4.1. Nighttime driving

The risk factor that has drawn the most attention in the young driver population is driving late at night. Late-night driving increases crash risk among young drivers for a variety of reasons: the driving task is more difficult in darkness; many newly licensed drivers will have had less driving practice at night than during the day; fatigue—thought to be a problem for teenagers at all times of the day—may be more of a factor at night (National Sleep Foundation, 2000); and recreational driving that is considered to be high risk, sometimes involving alcohol use, is more likely to take place at night. In a survey asking teenagers to describe their dangerous driving incidents

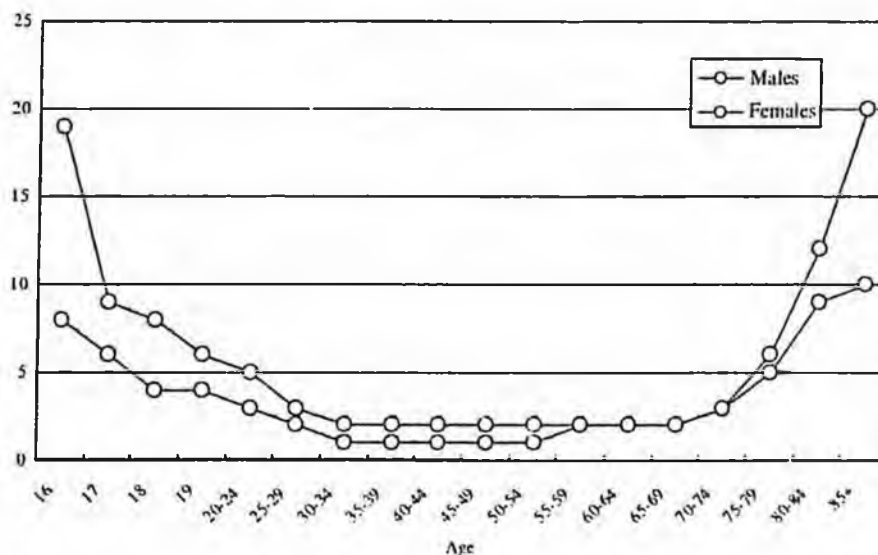


Fig. 2. Driver fatal crash involvements per million miles traveled, 1995.

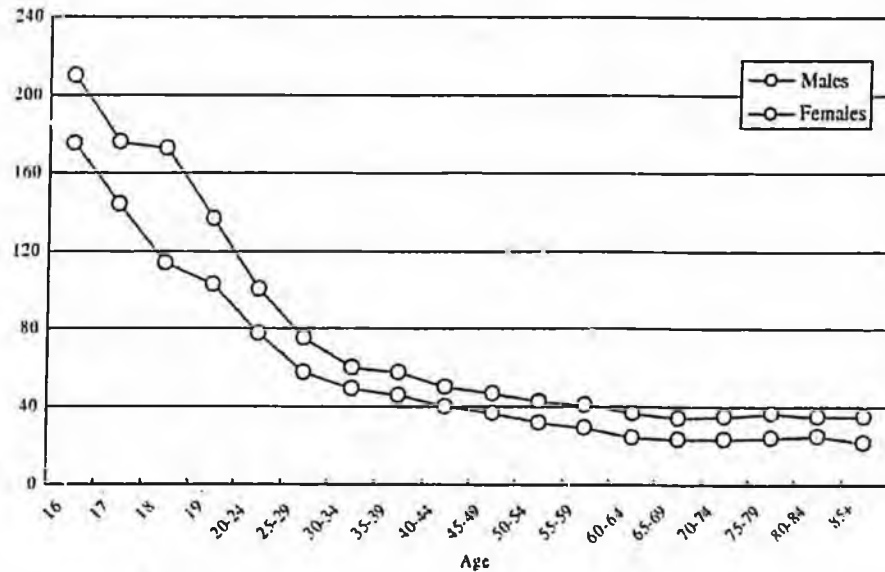


Fig. 3. Driver crash involvements per 1,000 licensed drivers, 2000.

during the past 6 months ("If a cop had been there, you probably would have been stopped"), teens reported that the majority of such incidents took place after 10 p.m. (Patterson, 2007).

Late-night driving increases crash risk, but only for serious crashes. Figs. 4 and 10 show crash rates per mile driven, by age, for fatal crashes and for all crashes. Fig. 4 shows that the nighttime (9 p.m. to 5:59 a.m.) fatal crash risk for 16-year-old drivers is particularly high, about three times the daytime risk. Fatal crash risk is elevated for teen drivers in general during nighttime hours. In fact, fatal crash risk at night is higher than daytime risk for drivers of all ages. Although nighttime risk for the youngest drivers is substantially higher than for older drivers, the differences

between nighttime and daytime fatal crash risks are proportionately greater for drivers ages 20-44. For this older age group, fatal crash risk at night is more than four times the daytime risk. In part, this reflects the major contribution of alcohol impairment to nighttime fatal crashes among 20- to 44-year-olds.

For crashes of all types (Fig. 10), nighttime crash risk is only slightly higher overall than daytime risk (6.6 vs. 5.5 crashes per million miles) and there is no particular pattern by age.

Fatal crash risk is higher at night than during the day, but presumably not all nighttime driving is high risk, and some nighttime driving may have very low risk. Most states with nighttime restrictions exempt certain types of unsupervised

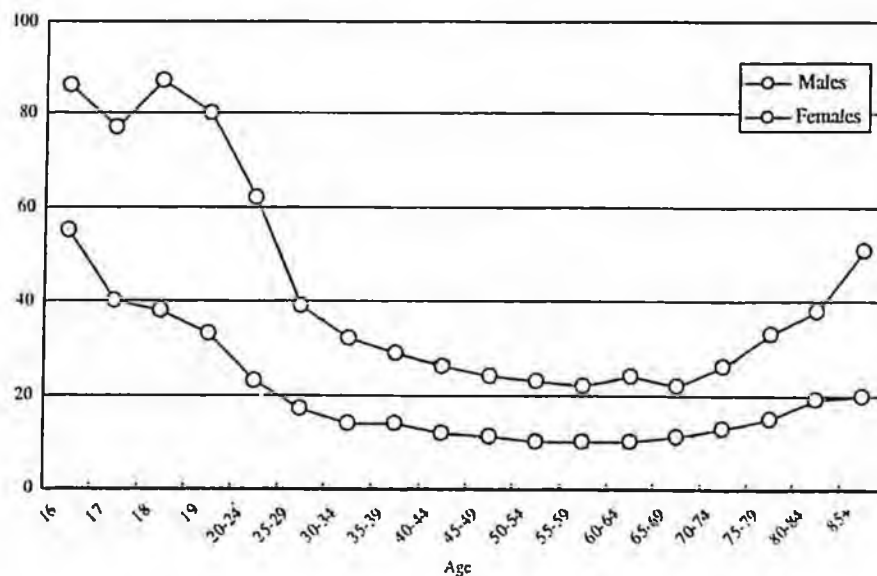


Fig. 4. Driver fatal crash involvements per 100,000 licensed drivers, 2000.

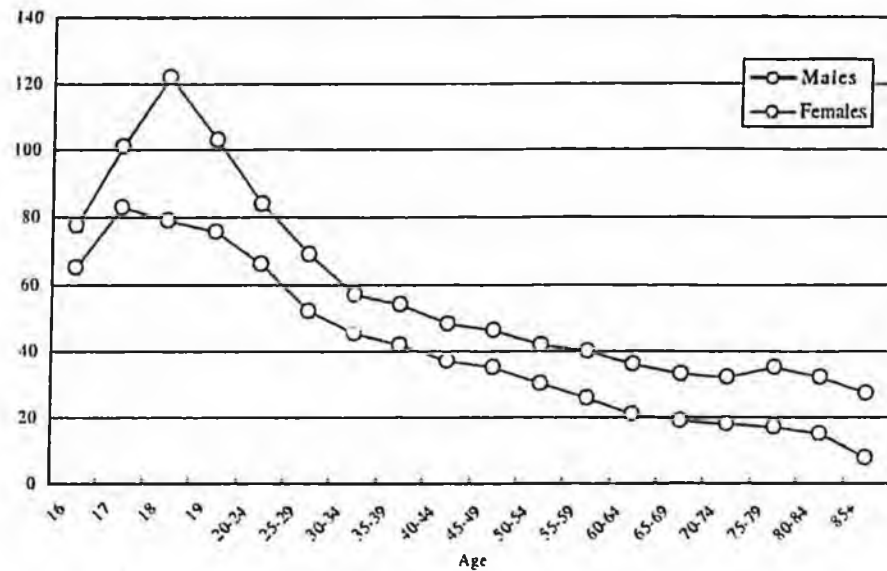


Fig. 5. Driver crash involvements per 1,000 population, 2000.

driving, for example, to and from work and school-related activities in some cases. The premise is that these are essential activities that should be allowed, but also that crash risk is not elevated during these events. Unfortunately, there are no data that can provide guidance on what types of nighttime driving carry lower risk.

Although fatal crash risk is higher at night, nighttime exposure is lower than during the day. In 1995, before the modern graduated licensing movement began, 14% of the mileage and 32% of the fatal crash involvements of 16- to 17-year-olds were between 9 p.m. and 5:59 a.m. Thus, the vast majority of fatal crash involvements occur during the lower risk high-exposure daytime hours. Figs. 11 and 12 show fatal crash involvements and all crash involvements

by single hours throughout the day. In both data sets there are peaks just before and after school, suggesting that school transportation is a topic that needs addressing. These are also high mileage hours for 16- to 17-year-olds (3-4 p.m. is their highest mileage hour during the day, and 7-8 a.m. is the fifth highest, after 4-7 p.m.), and the high exposure results in many crashes. School transportation issues are currently under discussion in the United States and Australia (Queensland School Transport Safety Task Force, 2000; Transportation Research Board, 2002). The Transportation Research Board report indicated that death rates per trip during school hours were highest in passenger vehicles when a student was driving or being driven by a teenager. On a per-trip basis, students were about 44 times more likely

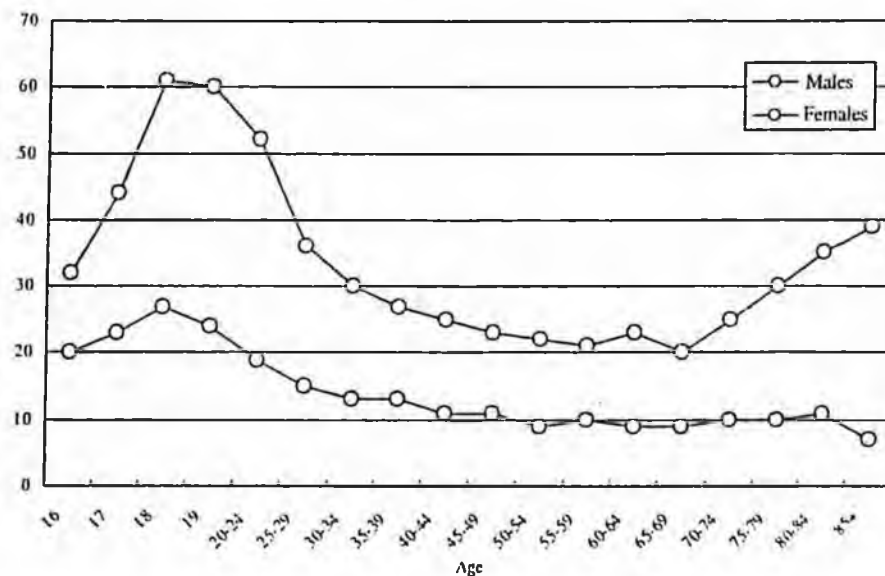


Fig. 6. Driver fatal crash involvements per 100,000 population, 2000.

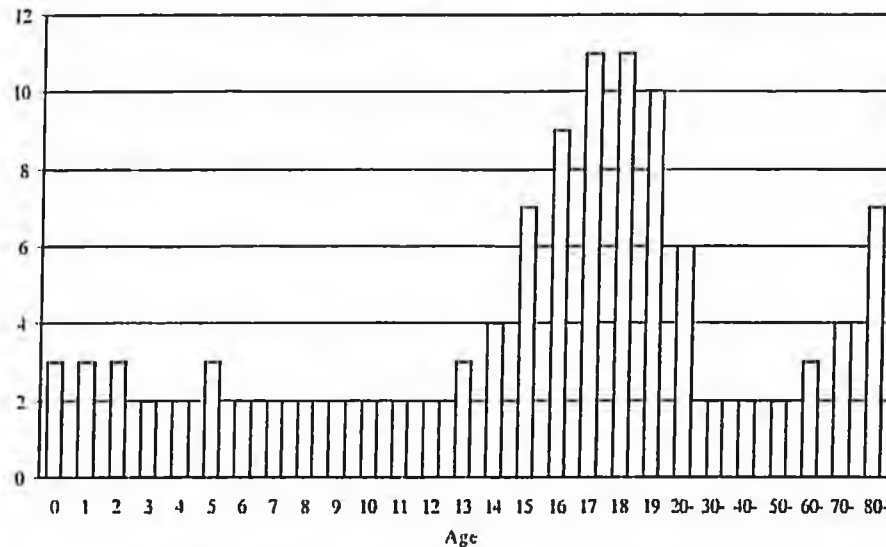


Fig. 7. Deaths of passengers in passenger vehicles per 100,000 population, United States, 2000.

to be killed in a vehicle with a teen driver than while riding on a school bus.

Fig. 1 indicates that attention also needs to be given to the hours 9 p.m. to midnight, which have both high crash risk and high frequencies of fatal crashes. Most states do not begin late-night restrictions until midnight or 1 a.m.

4.2. Alcohol-impaired driving

Alcohol impairs driving behavior for people of all ages. Teenagers drink and drive less often than adults, but their crash risks are higher when they do drink (Maynard, Donohue, Burgess, & Simpson, 1986; Voss, Wolfis, Lestina, Anderson, & Green, 1998; Zador, Schwebel, & Voss, 2000). In a summary of the literature, it was noted that data from roadside surveys confirm that young people drive after drinking. They also show that the percentage of drinking drivers is less among people under the age of 20 than older

age groups under the age of 50. Moreover, on average, young drinking drivers consume less alcohol than older drinking drivers. Nevertheless, those young people who drive after drinking have a higher relative risk of crash involvement than older drinking drivers in all BAC ranges (Martens, et al., 1986). This is probably due to young people's relative inexperience with drinking, with driving, and with combining these two activities.

Thus, the alcohol-impaired driving problem among teens is limited in that they drink and drive less and with lower consumption levels than adults, but exacerbated by the fact that alcohol renders them more crash-prone than adults. For 16- to 17-year-olds during 1995-2001, 18% of those fatally injured had consumed alcohol and 12% had BACs of 0.10% or greater (78% of the deaths of teen drivers with BACs of 0.10 or greater occurred during 9 p.m. to 5:59 a.m.). This compares to much higher levels in earlier years. For example, in 1982, 43% of fatally injured 16- to 17-year-

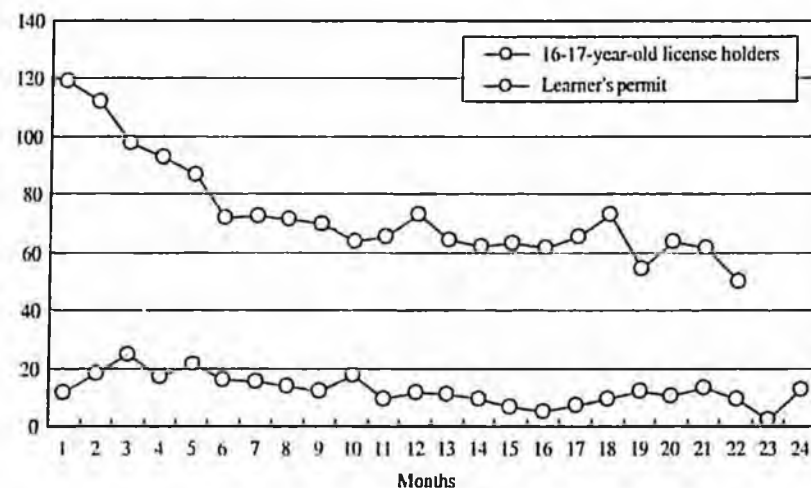


Fig. 8. Crashes per 10,000 drivers, by months of permit or licensure, Nova Scotia.

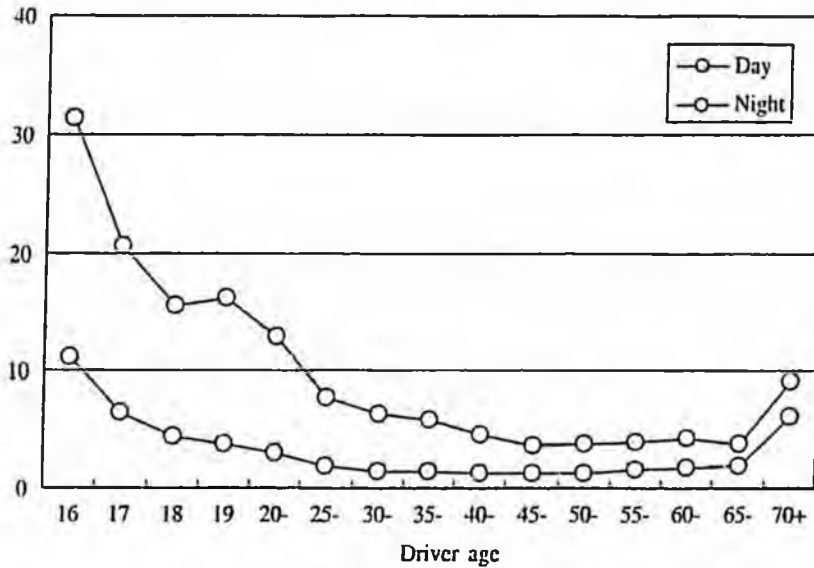


Fig. 9. Fatal crashes per 100 million miles, day versus night, by driver age, 1995.

olds had been drinking and 31% had BACs of 0.10% or greater. Thus, the contribution of this risk factor has greatly decreased, although there has been little change in recent years in the extent to which alcohol is present in the fatal crashes of teens.

There may be other driving situations that entail greater risk for teens than for adults, but empirical evidence is either absent or insufficient. For example, it has been speculated that driving in bad weather conditions would carry more risk for teens, because of their inexperience. Existing data do not support this, either for fatal crashes or all crashes. For example, 16–17% of the crashes of drivers ages 16–60 occurred in adverse weather conditions in 1987–2001. This does not answer the risk question, although, because exposure information is not available. It is conceivable that

young beginners are less likely than adults to drive in adverse weather conditions but have greater risk when they do so.

4.3. Crash risks unique to teens

The potential effects of passengers on crash involvement has long been recognized. Having passengers in the vehicle creates a social system that can affect driving behavior. Recent research has brought increasing recognition that the presence of passengers can powerfully affect the likelihood of a crash, and that the effects can be positive or negative. Earlier research suggested that young drivers were more likely to crash if passengers were present (Ferdinand, 1994; 1995), and more recent research has confirmed and elabo-

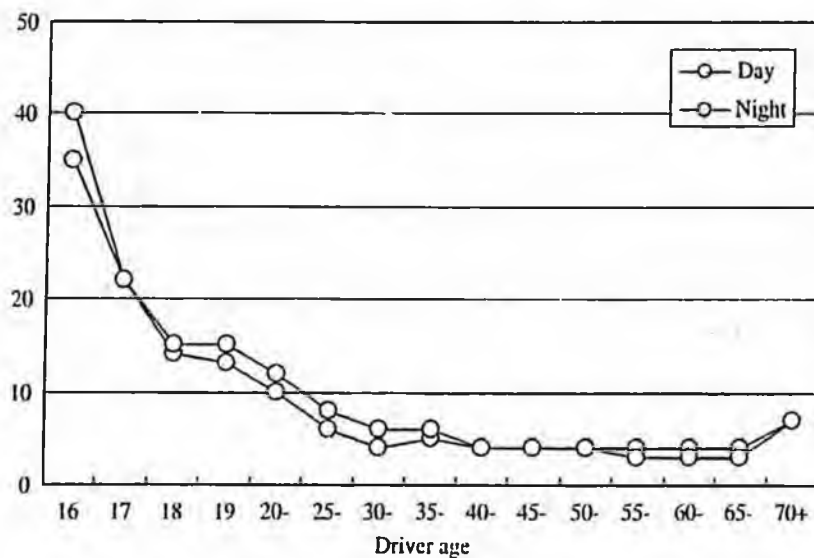


Fig. 10. All crashes per million miles, day versus night, by driver age, 1995.

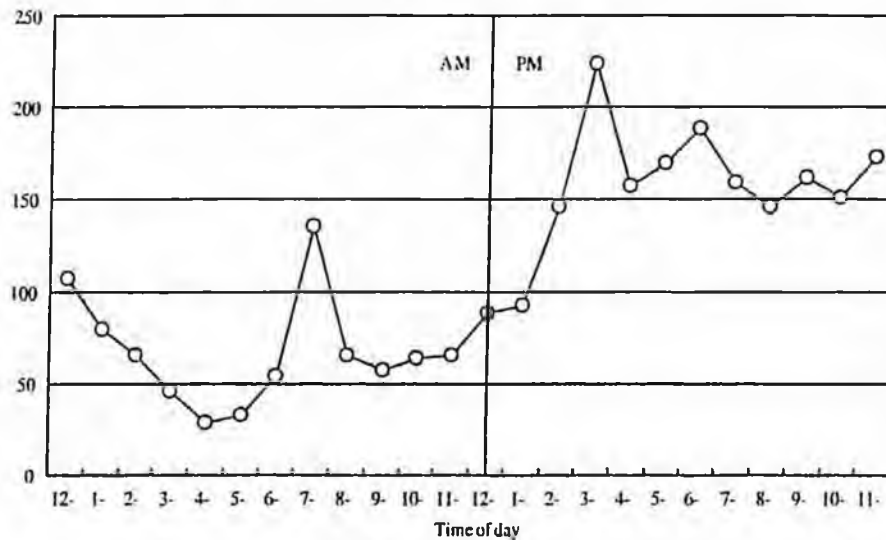


Fig. 11. Sixteen- to 17-year-old drivers in fatal crashes, hour by hour, 1995.

rated that finding (Aldridge, Himmel, Aultman-Hall, & Sismantada, 1999; Chen, Bruken, Broven, & Li, 2000; Gregory, Murray, & MacFarlane, 1998; Proulx, Ferguson, & Williams, 1998). In short, it is a very high-risk situation for teenage drivers to have passengers present, particularly teenage and multiple passengers. Passengers increase the risk for property damage, nonfatal injury, and fatal crashes, and teenage drivers transporting teen passengers is a high-exposure activity and a major contributor to the overall problem. More than half of all deaths in the crashes of 16- to 17-year-old drivers occur when passengers younger than 20 are being transported and there is no adult in the vehicle (Aldridge & Ferguson, 2002).

Fig. 12 shows typical findings, based on data from NPTS and NASS/GES. This figure illustrates a central feature of the heightened crash risk associated with passenger pres-

ence: it increases risk only for teenagers, especially the youngest teenagers. For adult drivers, having passengers is associated with slightly decreased risk. Fig. 13 also shows that crash risk for teenage drivers increases exponentially with one, two, or three or more passengers. With three or more passengers, crash risk is about four times greater than when driving alone.

Part of the increased injury risk with passengers could be because higher vehicle occupancy by itself increases the opportunity for injury in a crash. However, there is increased risk for young drivers with passengers in studies based on involvement in crashes, including property damage crashes, or deaths to drivers per million trips by number of passengers (Chen et al., 2000; Delaney et al., 1998). In neither of these cases is the increased exposure due to high vehicle occupancy a factor.

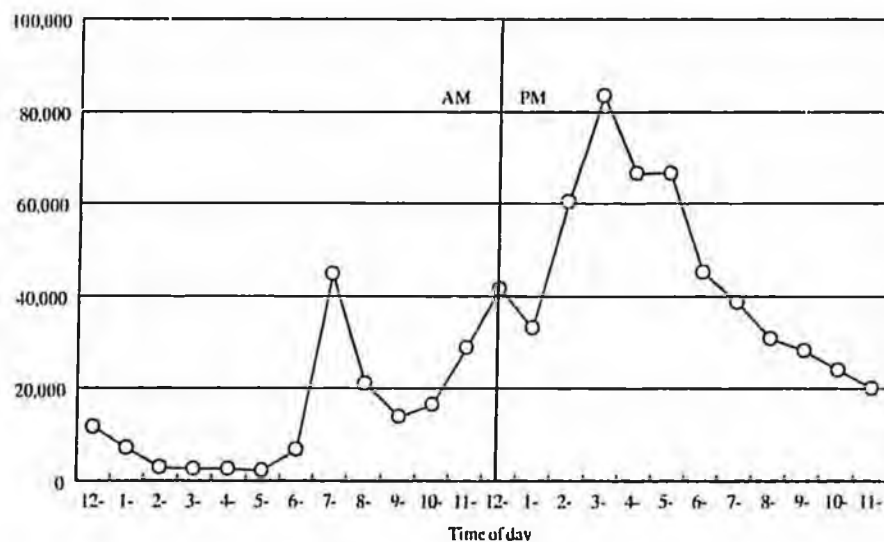


Fig. 12. Sixteen- to 17-year-old drivers in all crashes, hour by hour, 1995.

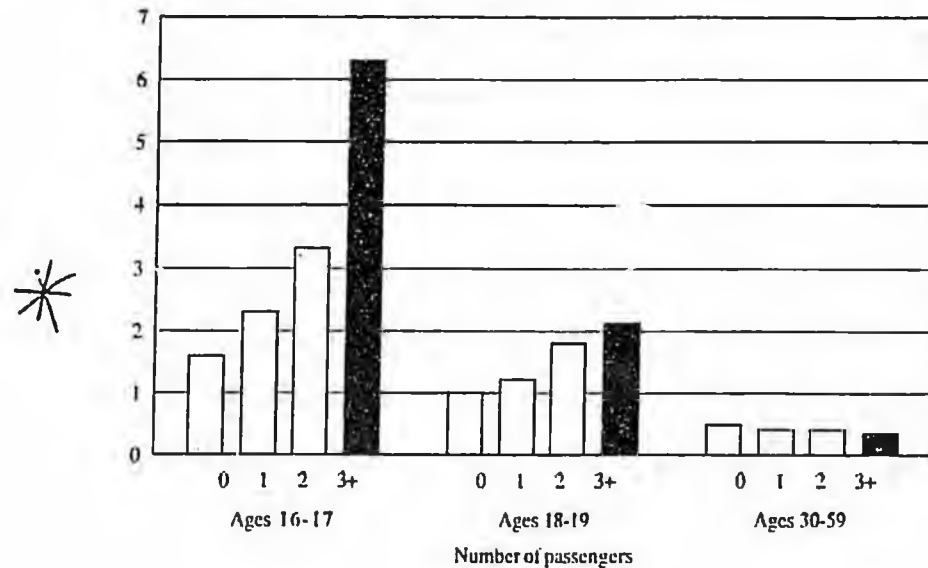


Fig. 13. Crash rates by driver age and passenger presence per 10,000 trips.

Studies have shown that both male and female drivers have increased risks with passengers present, and the increased crash risk exists for both daytime and nighttime hours in about the same proportions, although overall crash risks are much higher at night. In one study, driver death rates from 10 p.m. to 6 a.m. were 1.74 times higher with passengers present than without passengers; during the day the rates were 1.77 times higher (Chen et al., 2000).

Crash risk with passengers can be expected to differ by the nature of the relationship among vehicle occupants, trip purpose, and other factors. Although having passengers increases the overall crash risk for teenage drivers, it does not do so in all cases. In fact, some combinations are associated with reduced risk, whereas others produce extra high risk. Young males readily acknowledge that their driving is adversely affected by having friends in the car, whereas having women or parents present positively affects their driving (Rolls & Ingham, 1992). Other studies confirm these survey findings. The highest risk situation appears to be male or female drivers with male passengers. A situation that reduces risk is when young male teens transport female passengers. These results are based on statistical studies and a study of on-road driving. For example, in a study based on driver death rates, the presence of one male passenger almost doubled the death rate for both male and female drivers; two or more male passengers more than doubled it (Chen et al., 2000). In a study of on-road driving, young drivers with young male passengers drove more dangerously than drivers without passengers; that is, they drove faster and accepted smaller gaps at intersections (McKenney, Weston, & Burkes, 1998). However, males with a female passenger drove slower and did not follow vehicles as closely as did males driving alone (Moster et al., 1998).

have also shown that the presence of young male passengers is associated with unsafe driving practices.

The mechanisms by which passenger presence increases or decreases crash risk are not well understood, nor is there sufficient knowledge about precipitating incidents in these vehicles that lead to crashes or crashes being averted. Aiken (2002) discusses the social function of the vehicle as a place where adolescent friends can be together independently of their parents. He notes that "We have, so far, virtually no information about the phenomenology of this situation, of high school friends riding around in a car together, and this is a crucial gap in our knowledge." Presumably, passengers can help drivers avoid crashes by such actions as providing navigational information, warning drivers of hazards, and keeping drivers alert (Roagan & Mitsopoulos, 2001). Passengers can also distract drivers, which may be a particular problem for young beginners. The presence or actions of passengers (plus other factors such as loud music) cannot only distract but can influence more risky (or less risky) driving as indicated in the on-road study referred to earlier. Case studies of young driver crashes with multiple occupants have also found evidence of risk inducements (Williams, Preusser, & Ferguson, 1998).

5. Conclusions and impact on research, practice, and policy

Overall, teenagers have crash rates that exceed those of drivers of any age, 16- to 17-year-olds being particularly risky. Yet risk among teenagers varies greatly by driving situations, being particularly low in some situations and particularly high in others. These varying patterns of risk form the basis for graduated licensing systems which are

designed to promote low-risk driving and discourage high-risk driving.

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The genesis of GDL

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Abstract

This paper discusses the early research that led to graduated driver licensing, some of the educational principals on which it is based, obstacles to its acceptance, and some of the early efforts in the U.S. and elsewhere. *Early research:* The research underlying the concept of graduated driver licensing was a 1971 North Carolina study that identified the overrepresentation of young drivers in crashes at night and when another young person was the right front passenger. *Educational principals:* Efforts to reduce the risk to young novice drivers applied what was known about learning. The concepts included distributed learning (i.e., over time) and progressing from simple to complex skills. *A proposal:* The proposed graduated licensing system based on learning principals included (a) initial experience under low risk conditions, (b) extended supervised practice, (c) gradual move to more complex conditions, and (d) harsher penalties for deliberate risk-taking. *Obstacles:* There were several most common objections raised against graduated licensing. Raising the licensing age decreased mobility. Some young drivers were “good” drivers. Enforcement is difficult. Fear of parental objections. Parents are not driver educators and some young people do not have an available parent. Administrative costs are too high. *Acceptance:* Driver educators were the first to see the benefits of a graduated system in the 1970s and 1980s. Toronto nearly adopted a graduated system in 1976. New Zealand was the first to adopt a graduated licensing system in 1984. Michigan in 1997 was the first state to require parental certification of extended supervised driving practice.

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Keywords: O&D; GDL; North Carolina

1. An origin and destination study, North Carolina, 1971

The basis for originally proposing a graduated licensing system for young beginning drivers grew out of two studies conducted in North Carolina in the early 1970s. One involved linking enhanced origin and destination (O&D) data to crash data from the same time and area, and the other linked data on passengers derived from supplemental data collected on state crash report forms. There were major limitations to these early studies and many more comprehensive studies have been conducted since then confirming what was gleaned from these early efforts. Nevertheless, the findings of these early studies provided the basis for developing a proposal for a graduated licensing system to introduce young beginning drivers into the driving population.

In June of 1971, the North Carolina Highway Commission conducted an O&D survey in the area of Marion, NC. It had been determined that traffic counts at this time of year approximated the year round averages for the area. Information obtained included, among other things, number of

vehicle occupants, purpose of the trip, day of week, time of day, and route designation. For a special study requested by the University of North Carolina Highway Safety Research Center, additional information was obtained on North Carolina passenger cars, including driver race, sex, and age (exact age requested if the interviewer judged the driver to be under 25; estimated age if the driver was judged to be 25 or over); the race, sex, and estimated age group of the right front-seat passenger, if any; and the license plate of the vehicle. This information was collected on 1,736 North Carolina passenger cars in the O&D survey.

Crash data were also obtained for the summer months for the survey county and surrounding counties. Crash data were limited to North Carolina passenger cars in crashes occurring on the same day of week and time of day during which the survey occurred. There were 1,710 crashes that met these criteria. In addition, in the general area of interest, supplemental data were collected on crash reports, including age, sex, and seating position of all passengers. All together, O&D interviews came from five different stations, each one manned for 24 hours on a different weekday. No weekend survey data were available, so analyses were based on weekday data only. The supplemental data on passengers were collected on almost 14,000 North Carolina passenger cars.

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1.1. Higher risk for young drivers

Analyses of the data showed the usual U-shaped curve, with younger and older drivers overrepresented in crashes in relation to their presence on the road, and middle-aged drivers underrepresented.

1.2. Overrepresentation at night

Young drivers, primarily young males (fewer young females were licensed in 1971), were particularly overrepresented in crashes between midnight and 6 a.m.

1.3. Effect of passengers

Analyses of data on right front-seat passengers showed that, for young drivers, there was a marked difference in crash risk depending on the age of the front-seat passenger. Drivers under 16, who should have held a permit and been driving with a responsible adult, represented only 0.1% of the at-risk population but 4.1% of the crash population, more than a 40-fold risk. For trips in which the front-seat passenger was under 21, these drivers again represented 0.1% of the at-risk drivers but 11.1% of crash drivers, more than a 100-fold difference. When the right front-seat passenger was 21-44, the difference was less than threefold, with similar results for front-seat passengers age 45 and older.

The findings from these early studies were the initial basis for proposing that the driver licensing program be used to ensure that young drivers are introduced gradually into the driving population, with certain restrictions based on their initial skill acquisition (Waller & Reinherz, 1977).

2. North Carolina's system of introducing young drivers into the driving population

2.1. Thirty and six

In North Carolina, driver education was much the same as elsewhere, with 30 hours of classroom instruction and 6 hours of practice behind the wheel. The actual driving practice was often less than the official 6 hours.

2.2. Harsher penalties for young driver infractions

Like many other states, North Carolina imposed harsher penalties on young drivers in the event of a violation, although it was well known that these young drivers were more prone to driving errors.

2.3. Limitations on resources

Driver education instructors probably knew better than others that 6 hours behind the wheel was woefully inad-

equately preparation. Yet, they also knew how limited resources were, although at that time car dealers provided vehicles for the driver education course. There was no way that publicly supported driver education could meaningfully increase behind-the-wheel practice.

In the 1960s, *Education* (1960) defined two general goals for driver education. First, it should provide basic instruction in driving techniques, a knowledge of how to handle a car in special circumstances, and a knowledge of motor vehicle traffic laws and ordinances; and, second, it should turn out a far more knowledgeable breed of citizens who will know enough about highway safety to demand and support higher (safety) standards. Given the time and money constraints under which driver educators labor, I would argue that the course can provide basic instruction on how to handle a car, knowledge of vehicle traffic laws and ordinances, and something about safe driving practices, including the effectiveness of occupant restraints and the effects of alcohol on crash risk. Only very basic instruction can be provided in the behind-the-wheel portion of driver education. Realistically, driver education in its present form and with its limited resources can do little more. *Driver education in its present form cannot produce a proficient driver.*

3. What is known about learning and how it applies to driving

3.1. Mass versus distributed learning

It is well established that practice that occurs over time, that is, distributed practice, results in better learning than practice that occurs all at once. Consequently, driving practice over time should be better than mass practice. Early acquisition of driving skill should occur over an extended period.

3.2. From simple to complex

In teaching almost any other complex psychomotor skill, instruction begins with relatively simple exercises, with task demands gradually increasing. Yet historically, in young driver preparation, we have provided only rudimentary preparation, after which young drivers were allowed into the traffic stream. Although it was known they were more likely to make errors, we punished them more harshly when errors occurred.

3.3. All beginners are at higher risk

It is often suggested that limiting early driving experience "punished" the good drivers who would not have crashes. Although it is true that students with good grades are less likely to have crashes, it is also true that straight-A students who are model citizens may go out and kill themselves behind the wheel. Simply because a student

has good grades and is well behaved does not mean that they can acquire a complex psychomotor skill with minimal preparation. We would not expect such students to automatically acquire athletic skill or be able to play a musical instrument with minimal instruction because of their stellar personal attributes.

Anyone beginning to learn a complex skill, including beginning drivers of any age, will make more errors in the early stages of skill acquisition. Beginning drivers of any age go through a learning curve in which more errors are made in the early stages than later. Whether these errors translate into crashes is a function of other factors that have nothing to do with the beginning driver. For example, almost all beginning drivers at some time will run off the right side of the road and in returning to the road will overcompensate, going into the left lane or even off the left side of the road. If there is no oncoming traffic and no ditch or obstacle on the left side of the road, the driver may recover and continue driving. However, if there is oncoming traffic or a ditch, utility pole, large rock, or sign, the driving error may turn into a crash. The outcome does not define the driver as good or bad. *All beginning drivers are inexperienced and are more likely to make driving errors.*

3.4. Demonstration of skill is not a substitute for extended practice

It has been proposed that demonstration of adequate skill should be sufficient for licensure. However, it has been shown that high levels of skill do not necessarily translate into good performance on the road. On the whole, those who score best on tests of skill, for other reasons, have some of the worst driving records (Williams & ...).

Ideally, all beginning drivers at any age should go through a graduated licensing system. In the United States, however, it is highly unlikely that we could obtain such a system, at least any time soon. Nevertheless, because all beginners are at higher risk, it would make sense to implement licensure gradually, with extended required supervised practice and adequate performance.

4. Inexperience versus deliberate risk taking

Although much of the problem of young drivers is attributable to inexperience, it is also true that young drivers may be more prone to deliberate risk taking. When this occurs (e.g., driving after drinking, not using seat belts, driving at exorbitant speeds), it is entirely appropriate to invoke harsher penalties. When inexperience is combined with risk taking, crashes are more likely to occur.

Graduated licensing is not designed to address deliberate risk taking behavior. Rather, it is aimed at the inexperience component of young drivers' crash risk. However, not all risky behavior on the part of young drivers is deliberate.

They may engage in high-risk behavior and be completely unaware that they are doing so. Extended supervised practice should help this kind of risk taking.

Data from England (Hogson, Loomond, & ...), where it is not unusual to obtain first licensure at a later age, indicate that delaying licensure from age 17 (the earliest licensure may occur in the UK) to age 18 results in about a 6% reduction in crash risk. However, at whatever age licensure occurs, the first year of experience results in about a 30% reduction in crash risk. In Sweden, changes in the age at which initial supervised driving experience may occur, from age 17 1/2 to 16, resulted in a marked increase in supervised practice and a marked decrease in crash risk (about 35%) after licensure at age 18. No corresponding increase in crash risk during the practice period was observed (Mongersson et al., 2000). These studies suggest that the higher risk for young beginning drivers may be more attributable to inexperience than to age.

5. A proposal based on what is known about learning

5.1. Initial experience should occur under low-risk conditions

Based on what is known about young driver risk, it was proposed that the initial stage of driving practice should be limited to daylight hours, with strict passenger restrictions. Because young drivers are at higher risk of crash, belt use requirements are especially important. Furthermore, because the higher crash risk does not level out until around age 25, alcohol restrictions should be extended to age 25, with zero alcohol below age 21 and no more than 0.05% BAC through age 25.

5.2. Extended supervised practice

The initial stages of driving should occur with a responsible adult in the right front seat, preferably a parent. As driving practice is acquired, the presence of the adult can be reduced, but as more complex conditions are added, the supervising adult should be included.

5.3. Gradual move to more complex conditions

As more experience is acquired at one stage, the driver should be allowed to move to more difficult driving (e.g., driving at night). However, it is also important that there be extended time spent at each level of practice, that is, it is not sufficient to accumulate extended practice in a short period and then move on to the next level of licensure.

5.4. Harsher penalties for deliberate risk taking

When beginning drivers deliberately engage in dangerous driving behavior, it is entirely appropriate to punish

Proposed Graduated License System

Time	Restriction	Driver Age						
		14	15	16	17	18	19-20	21-25
Day	Parent required	0.00 BAC	0.00 BAC					
	No parent required ≤ 1 passenger			0.00 BAC				
	No parent required ≥ 0 passengers				0.00 BAC	0.00 BAC	0.00 BAC	≤ 0.05 BAC
Night	Parent required		0.00 BAC	0.00 BAC				
	No parent required ≤ 1 passenger				0.00 BAC			
	No parent required ≥ 0 passengers					0.00 BAC	0.00 BAC	≤ 0.05 BAC

Fig. 1. Proposed Graduated License System.

such behavior more harshly. Examples of such behavior include very high speed, driving after drinking, and nonuse of safety belts.

It takes years to become a good driver. Realistically, learning to drive requires extended practice, practice that cannot be provided at public expense. Utilizing the resources that are available through parental involvement provides an opportunity to introduce young drivers into the driving population much more gradually, with much less risk, and at minimal cost to the tax payer.

Many states had some version of what has been called provisional licensure, that has focused primarily on increasing threat of punishment when infractions occurred, and, based on infractions, delaying movement to the next licensure level. However, there is no requirement for practice to occur. Theoretically, one could move through the system successfully without acquiring any driving practice. Simply requiring the passage of time is not enough. If no practice occurs, there can be no learning. Graduated licensing attempts to address inexperience by providing extended supervised practice, over time, initially under relatively low-risk conditions with the task demands increasing as experience is acquired and extended successful experience is demonstrated (Waller, 1975, 1976a, 1976b, 1976c, 1977, 1980a, 1980b, 1988, 1989, 1993a, 1993b).

Fig. 1 illustrates the type of program that was proposed, with the added requirement for parental certification of a specified amount of supervised practice.

6. Obstacles to acceptance

When a proposal for such a graduated licensing system for young beginning drivers was made in the early 1970s, the response was interesting. Objections to it fell primarily into the following categories.

6.1. The age factor

There was considerable discussion about the age at which licensure should occur. Because crash risk is somewhat lower when the age of licensure is increased, it was proposed that raising the age of licensure would be the most appropriate measure to take. However, the mere passage of time is not a substitute for practice.

Raising the age of licensure may be fine theoretically, but by age 18 many young people are leaving home for college or work, and the opportunity for parental supervision of driving practice is lost. Furthermore, young people want their wheels and parents are usually eager to give up chauffeuring.

Lowering the age at which learning to drive is initiated (but *not* lowering the age of full licensure) means that whenever the young driver begins to drive solo, it is with more practice under his belt.

6.2. Why penalize all young drivers when only some of them will have crashes?

The objection here was that many young people are "good" drivers and will not have crashes. We should be concerned about the "bad" drivers who will have crashes. As indicated earlier, all beginning drivers are at higher risk, and whether a driving error translates into a crash is a function of other factors.

6.3. There is no way to enforce the graduated licensing requirements

The concern was that parents will lie about the amount of supervised practice that has occurred, and there will be no way to validate what they report. It is true that parents can misrepresent the supervision provided, but it is also true that many, if not most, parents will not. Even if they report 50 hours of practice when only 40 have occurred, that is still an improvement over the previous system. There should not be a major effort to enforce what is reported. However, the requirement for extended supervised practice communicates to the parent the importance of monitored experience. The aim is to modify crash rates, not to eliminate all young driver crashes.

6.4. Fear of parental objections

There was concern on the part of legislators that imposing a requirement for parents to provide supervised practice would result in strong objection. Legislators are often very reluctant to place requirements on adults who may vote. Interestingly, the preliminary evidence indicates that parents are strongly supportive of the program. In Michigan, a survey of parents found that the average reported hours of supervised practice was far more than that required, and parents described how the experience brought home to them how much the young driver needed even more practice.

at the time and continue to place restrictions on driver licensing. The state allowed unsupervised driving.

6.5. Parental role and driver educators

It was often argued by legislators, although, curiously, it was usually heard from driver educators. It was also occasionally heard from parents who worried about their children. There was often confusion about the primary role of the parent in the skill acquisition process. Parents do not need to be driver educators, although there remains much room for improvement in collaboration between driver education and parents. The primary role of the parent is to provide psychological control. Young drivers simply will not try things with the parent in the front seat that they may try if their passengers are fellow teenagers.

6.6. Not all young people have a parent available to provide supervision

Some legislators raised this objection, saying that it would be unfair to young people with no available parent to help. Not all parents hold a driver license, and not all households have a motor vehicle available.

It is true that not all youngsters have someone who could provide supervision. However, that does not mean we should not take advantage of the parental help that is available. To help those young people without such resources, arrangements might be made through Big Brother–Big Sister organizations or other civic groups.

6.7. Cost

Instituting any new program requires revamping current procedures, programming of data systems, developing new forms, training personnel to function under the new system, and many other costs. State legislatures are experiencing major shortfalls already, and no matter how worthy a program, if it costs money, it is likely to meet with opposition.

The major problem with the cost objection is that the old system of licensing young drivers was extremely costly. The Federal Highway Administration estimates the average societal cost of a motor vehicle fatality to be around \$3 million. It could be argued that the loss of a young life might be even more costly. Even a modest reduction in teenage deaths would more than offset whatever costs may be associated with graduated licensing.

7. Was driver education the culprit?

In the 1970s and 1980s, there was a concerted attack on driver education. It was stated that, because licensure could not occur prior to age 18 unless one had completed an approved driver education course, driver education was the

problem and that if we eliminated driver education, we would be better off. Indeed, there were headlines that read “Driver education kills 2,000 young people a year,” attributing all young driver-related fatalities to driver education.

Driver education was never the basis for lowering age of licensure. Driver licensing was first implemented for purposes of identification and revenue. Testing applicants came later. It was possible in some states to pay \$2 for oneself and every family member age 12 and older and receive licenses for all of them. It is still possible to obtain licensure at age 14 in some states under certain circumstances. Driver education was added at a later time but was not the basis for establishing age of licensure.

It was never realistic to expect that a program consisting of 30 hours classroom instruction and 6 hours behind the wheel could transform a non-driver into a proficient driver. We make no such demands on any other course of study. For example, English is taught from elementary school through high school. However, when students use the language poorly, we do not propose eliminating English from the school curriculum.

Whether or not we have driver education, the fact is that young people will learn how to drive, and the question remains, how can we introduce them into the driving population with less lethal consequences?

8. Early efforts

8.1. Driver educators

In presentations to state and national meetings of driver educators, in the 1970s and 1980s, the response was almost unanimously positive and often enthusiastic. Driver educators are keenly aware of the unrealistic expectations that are placed on them in light of the limited time and resources available.

8.2. Toronto Blue Ribbon Panel

In 1976, I was invited to testify before a Blue Ribbon Panel of the Toronto legislature about this proposal for a graduated driver licensing system for young beginning drivers. They asked many questions, raising the points about the young driver's age, concern about imposing on parents, the fact that parents are not driving instructors, and doubts about ability to enforce. At the end, they fell one vote short of endorsing and recommending such a system.

8.3. North Carolina Legislature

Again, it was concern about lowering the age at which practice is initiated that was the major objection. However, it was possible to get the legislature to lower the age at which a driving permit may be obtained from 15 1/2 to 15. In North Carolina, driver education may be initiated at

age 14 1/2, although it is often not possible to get into the courses in public school until close to age 16. Nevertheless, the lower age at which a permit may be obtained lengthens the period during which practice may occur.

8.4. New Zealand

In 1984, I was invited to New Zealand to discuss several proposals for modifying the driver licensing system, including graduated licensing. Three years later, they implemented the first such program in the world.

8.5. British Columbia

In 1990, I was invited to present this concept to a traffic safety meeting in British Columbia. They expressed interest, but nothing happened subsequently.

8.6. Michigan Legislature

In Michigan, as in many other states, interest in doing something about young drivers was precipitated by an especially horrific crash, killing several young people, that occurred near the home of a legislator, Dan Gustafson. He was very serious about doing something but was not sure what could be done. We met with him and outlined what we considered an ideal program. It included a nighttime restriction and restricting passengers to no more than one. It also included a requirement that the parent or other responsible adult certify that at least 50 hours of supervised practice had occurred, at least 10 hours of which were at night.

Mr. Gustafson succeeded in getting most of what he sought, but the nighttime restriction was shortened to midnight to 5:00 a.m. In addition, we lost the passenger restriction. Some of the objections to this requirement were interesting and raised legitimate questions. If teenage passengers are prohibited, it could result in more teenage drivers on the road, as each took separate cars, thus increasing overall exposure to risk.

In addition, parents wanted their young driver to be able to chauffeur younger siblings to school and after-school activities. Parents also said they would much prefer that their teenagers double date than single date, suggesting that eliminating the presence of the other couple might raise the risk of other kinds of "accidents."

In the end, we were able to retain the requirement for parental certification of extended supervised practice, becoming the first state to do so. It is hoped that as data become available from other states with the other restrictions, it may be possible to add them in Michigan.

9. Why now?

The system we have historically imposed on young beginning drivers violates almost everything we know about

learning. We have given them minimal training and then let them drive with essentially no constraints. Although we knew they were more likely to make mistakes, when they did so, they were in more trouble than the rest of us would be. There is no evidence in the literature on learning that increasing threat helps inexperience.

Suppose you are given 30 hours of classroom instruction on the game of tennis, including the history of the game, the dimensions of the court, the various kinds of court surfaces and how to play them, the scoring rules, etc., and then given 6 hours of actual practice on a tennis court with a coach. After this minimal preparation, you are told that the next morning you are going to play a match against the recent winners at Wimbledon, and if you do not win, you will be severely punished. The threat of punishment probably will not appreciably improve your serve. Yet this is essentially the approach we have been using with young beginning drivers. We know they are at higher risk of error, and so we increase the threat of the potential consequences should an error occur.

In the acquisition of virtually every other complex psychomotor task, the initial acquisition of skill occurs under relatively simple and risk-free conditions. Yet in the one skill that affects all young people and is related to the leading cause of their death and disability, we were ignoring everything that we routinely practice elsewhere.

We cannot meaningfully extend behind-the-wheel practice at public expense. Graduated licensing offers a way to provide extended practice under relatively safe conditions and at minimal cost to the taxpayer. Parents and youngsters give up little, and young drivers are better prepared.

In the last few years, most states have begun to implement at least some elements of a graduated licensing system. All this has occurred over a relatively short period. Why? It is hard to know why. Baby boomers who are now the parents of teenagers are much more aware of the risks associated with driving. Motor vehicle safety, as well as safety in general, is a much more popular concept than it was 20 or 30 years ago. But why there was so much reluctance in the 1970s to consider seriously modifying how we taught young people to drive and why there is now so much support for modifying the system remains unclear to me.

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What we know, what we don't know, and what we need to know about graduated driver licensing

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Abstract

On November 5–7, 2002, the Symposium on Graduated Driver Licensing in Chatham, MA, brought together 75 researchers and practitioners from the United States, Canada, Australia, and New Zealand to document the current science of graduated driver licensing (GDL) and to outline research needs. Participants reviewed 12 background papers and discussed the papers in depth. The symposium's background papers are published in this issue of the *Journal of Safety Research*.

This paper summarizes and provides a quick reference to information from the symposium papers and participant discussions. It cites the 12 symposium papers, which in turn provide more information and cite original sources. Issues and recommendations not followed by a citation were raised in the symposium discussions.

This paper is divided into seven sections. The first six sections summarize information from the symposium papers and discussions. The sections are: (1) The need for graduated driver licensing; (2) Effectiveness of GDL as implemented; (3) The learner's permit phase; (4) The provisional license phase; (5) The roles of teens, parents, and public agencies; and (6) Enacting and implementing GDL. In each of these six sections, research needs are classified as either *high priority* (important for designing and implementing effective GDL programs) or *lower priority* (useful but not critical for GDL at this time).

The final section summarizes the discussion of research issues and priorities from the symposium's closing session. This section has three topics: general research, issues involving parents, and issues involving graduated licensing legislation and implementation. It presents participants' collective views on both broad priorities and specific issues.

In providing a concise summary of presentations and discussions from the symposium, this paper necessarily omits some information and points of discussion. The views and judgments expressed are the authors' best attempt to capture the symposium's consensus, but they do not necessarily represent the views of the authors, their organizations, or any other individual symposium participant. In particular, they are not necessarily endorsed by the symposium's sponsors: General Motors, the National Highway Traffic Safety Administration, the National Safety Council, and Nationwide.

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1. The need for graduated driver licensing

Motor-vehicle crashes are the leading cause of death and injury among teenagers. As beginning drivers, teenagers lack driving skills and also lack experience in recognizing risky situations. They also are more willing than adults to take risks behind the wheel, such as speeding and not buckling up. This combination of immaturity, inexperience, and risk-taking behavior produces high crash risks for teenage drivers. Graduated driver licensing (GDL) addresses these factors

by phasing in on-road driving, allowing beginners to get their initial driving experience under lower-risk conditions.

GDL is a three-phase licensing system for beginning drivers consisting of a learner's permit, a provisional license, and a full license. The essential features of GDL are that a learner's permit allows driving only while supervised by a fully licensed person, a provisional license allows unsupervised driving under certain restrictions, and both the learner's permit and the provisional license must be held for a specified minimum period of time. This paper describes GDL, discusses key provisions, and summarizes beginning driver requirements in all states and provinces in the United States and Canada. The paper provides a model GDL law.

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1.1. Teenage crash risk is high

- **Teenage drivers have the highest crash risk.**
Crash rates per mile of travel, per licensed driver, and per population all are higher for teenage drivers than for any other age group. Fatal crash rates per licensed driver and per population also are higher. Teenage fatal crash rates per mile of travel are higher than those of all other ages except the very elderly (Ferguson, 2002).
- **Teenage driver risk perception is worse and risky driving behavior is more frequent than for older drivers.**
Compared to older drivers, teenagers are less able to assess driving hazards, drive in a more risky fashion, and think that their crash risk is lower (Ferguson, 2002). Teenage drivers have higher crash risks because of their immaturity and inexperience with driving (Ferguson, 2002; Stevens & Harton, 2003).
- **Teenage driver crash risk is greatest in the first few months after full licensure.**
The highest crash rate occurs in the first month after licensure. The rate drops quickly for the first few months of licensure and then drops more slowly (Ferguson, 2002; Stevens & Harton, 2003). Crash risk is low for teenage drivers with a learner's permit (Ferguson, 2002; Stevens & Harton, 2003).
- **Teenage driver crash risk is greatest at night.**
Late night driving increases the risk of fatal crashes per mile of travel for teenage drivers (Ferguson, 2002; Stevens & Harton, 2003). The risk of nonfatal crashes, on the other hand, is only slightly higher at night than during the day. Since teenagers drive many more miles during the day than at night, most fatal crashes occur during the day, even though the risk per mile is higher at night. The hours of 9 p.m. to midnight have both high fatal crash risk and high miles of teenage driving (Ferguson, 2002).
- **Teenage driver crash risk is higher with other teenage passengers in the car.**
Passengers, especially teenage passengers, increase crash rates substantially for 16- to 17-year-old drivers, and the risk increases as the number of passengers increases (Ferguson, 2002; Stevens & Harton, 2003). The highest risk situation appears to be male passengers with either male or female drivers. The limited current research suggests that teenage passengers may increase driver distractions and risk taking (Ferguson, 2002).

1.2. Teenage driver crash risk may be higher in circumstances not typically addressed by GDL

- **Alcohol.**
Teenage drinking drivers have a higher crash risk than older drinking drivers. Because teenagers in all

states are prohibited from buying alcohol by minimum-drinking-age-21 laws and from driving after drinking by zero tolerance [blood alcohol concentration (BAC) ≤ 0.02] laws, GDL laws in the United States typically do not address drinking and driving. Canadian GDL laws include a zero BAC restriction. The number of teenage drinking drivers in fatal crashes has decreased substantially over the past 20 years (Ferguson, 2002).

- **Safety belt use.**
Teenagers wear safety belts less frequently than older drivers (Ferguson, 2002). All states except New Hampshire require all drivers to wear safety belts, and no United States GDL law except North Carolina's addresses belt use.
- **Vehicle choice.**
A few studies suggest that teenagers drive older and smaller vehicles than do older drivers (Ferguson, 2002).
- **Fatigue.**
Many teenagers do not get enough sleep, but there is no evidence of the effects of fatigue on teenage crashes (Ferguson, 2002).
- **In-vehicle distractions.**
While there is growing evidence that cell phone use increases crash risk, there is no information specific to teenage drivers. The effects of other distractions such as radios and CD players are also unknown (Ferguson, 2002).
- **High-speed roads.**
Some jurisdictions restrict beginning drivers to lower-speed roads, or to lower-powered vehicles, but there is little evidence of effectiveness (Ferguson, 2002). No state in the United States includes such restrictions in its GDL requirements. Ontario restricts learner's permit drivers from driving on freeways and urban expressways.

1.3. Other methods have not been successful in reducing teenage driver crash risk

- **Driver education.**
In its current form, driver education does not reduce teenage driver crashes (Ferguson, 2002; Stevens & Harton, 2003; Weimer, 2003).
- **Probationary licenses.**
A probationary license for beginning drivers differs from a full license only by allowing the license to be suspended, or other actions taken, for less cause than for regularly licensed drivers. The few evaluations do not show substantial benefits (Ferguson, 2002).

1.4. High-priority research needs

No additional research is needed to justify the need for GDL.

1.5. Lower-priority research needs: Research in several areas could add to existing knowledge of teenage driving, which in turn may make GDL programs more effective:

- Study the situations in which passengers increase crash risk, the reasons for the increased risk, and methods to reduce this risk (Ferguson, 2002).
- Study the role of fatigue in teenage crashes (Ferguson, 2002).
- Study the effects of specific in-vehicle distractions such as cell phones and the potential effects of cell phone laws or cell phone GDL restrictions (Ferguson, 2002).
- Study the effects of the North Carolina safety belt GDL provision.
- Study the potential effects of parental education on teenage drivers' vehicle choice.

2. Effectiveness of GDL as implemented

Many GDL programs in the United States and abroad have been evaluated and all evaluations show positive results. Some evaluations also provide information on why and how GDL works.

2.1. Evaluations consistently show that GDL reduces teen driver crashes

Ferguson and Noyes (2002) summarize studies of six states: California, Florida, Michigan, North Carolina, Ohio, and Pennsylvania. Anderson (2002) summarizes studies of seven states: California, Connecticut, Florida, Kentucky, Michigan, North Carolina, and Ohio, and of three Canadian provinces: Nova Scotia, Ontario, and Quebec. Egg and Ferguson (2002) summarize three studies of GDL effects in New Zealand. Anderson (2002) and Ferguson and Noyes (2002) describe results in Maryland, and Anderson (2002) summarizes results in Oregon.

GDL programs differ substantially across jurisdictions and the evaluation methods also differ from study to study. The evaluation results thus far show that these GDL programs are effective regardless of their specific details. Because of the differences in GDL programs and their evaluation methods, it is not possible to combine these results into a single numerical measure of GDL effectiveness.

2.2. GDL may be effective beyond the teenage years

Research shows that all beginning drivers, regardless of age, have higher crash rates. Maryland, New Jersey, and some jurisdictions outside the United States apply GDL to all beginning drivers (IIHS and TRF, 2003; Anderson, 2002). Evaluations have found that GDL reduces crashes among beginning drivers of all ages (New Zealand: Egg and Ferguson, 2002; Nova Scotia and Ontario: Anderson, 2002).

New Zealand results also suggest that drivers who began driving under GDL have lower crash rates in later years than similar-aged non-GDL drivers (Anderson, 2002).

2.3. Why does GDL work? While much remains to be learned (Anderson, 2002), research to date suggests two reasons

- *GDL reduces teen driving.*

GDL programs that require a learner's permit to be held for some minimum period of time may delay the age at which a young driver obtains a license to drive without supervision (Egg & Ferguson, 2002; Anderson & Fearn, 2003). GDL programs with a nighttime driving restriction reduce nighttime driving, as shown by a substantial reduction in nighttime crashes (Anderson & Fearn, 2003; Peterson & Lind, 2000; Sharp & Noyes, 2002).

- *GDL improves driving knowledge and behavior.*

Extended learning of the type produced by GDL can lead to crash reductions (Anderson, 2002).

2.4. High-priority research needs

- *Continued evaluations of additional GDL programs, especially in United States.*

Up-to-date information on the effectiveness of GDL is vital when GDL laws are considered in states that do not yet have them.

- *Effects of specific GDL components and provisions.*

These are discussed in the Learner's Permit Phase section and the Provisional License Phase section.

2.5. Lower-priority research needs

- Additional information on GDL's effects on licensing age, driving knowledge, skill, and behavior. Why does GDL work? With whom does it work best (Simpson, 2002)?
- Further understanding of why GDL effects vary across jurisdictions. Separate the effects of differences in the GDL programs themselves, differences in the jurisdictions, and differences in the evaluation methods (Simpson, 2002).
- Study the effects of GDL on different cultural, gender, and ethnic groups (Anderson & Noyes, 2002).
- Additional information on long-term GDL effects on drivers after they receive an unrestricted full license.

3. The learner's permit phase

Under GDL, beginning teenage drivers first must obtain a learner's permit, which allows them to drive only while supervised by a fully licensed person. All states and prov-

inces in the United States and Canada issue learner's permits to beginning drivers who have reached a specified minimum age and have passed vision and knowledge tests. Under GDL, the learner's permit must be held for a specified minimum amount of time to allow the beginning driver to acquire on-the-road experience. Some GDL jurisdictions also require a minimum amount of supervised driving during the learner's permit phase, typically 20–50 h (Mayhew, 2003).

3.1. The learner's permit allows beginning teenage drivers to gain experience under low-risk conditions

- *Teenagers with a learner's permit drive regularly under supervision.*

Several surveys of both parents and teenagers in GDL jurisdictions document substantial supervised driving practice (Mayhew, 2003). In particular, in California and Michigan, where 50 h of supervised driving is required, most teenagers and parents report exceeding these requirements (Mayhew, 2003).

- *Learner's permit driving is safe.*

Crash rates for beginning drivers with learner's permits are much lower than for newly licensed drivers (Mayhew, 2003). Crashes typically occur when drivers violate the requirements of their permit and drive unsupervised (Mayhew, 2003).

- *The learner's permit phase contributes substantially to the safety benefits of GDL.*

(Mayhew, 2003)

3.2. Additional information on learner's permit requirements and driving would be useful

- *Starting age and other entrance requirements.*

The minimum age for a learner's permit ranges from 14 to 16 years across the states and provinces of the United States and Canada (HHS and TIRF, 2002). There is no information on the effects of these starting age differences or on other entrance requirements.

- *Minimum holding period.*

The typical minimum holding period is 6 months, although it ranges from 10 days to 1 year (HHS and TIRF, 2002). A few states have no minimum holding period for the learner's permit. While the length of the holding period affects the amount of supervised driving, there is little direct evidence on how long the holding period should be. Surveys in states and provinces with a 6-month holding period report strong support from both parents and teenagers (Mayhew, 2003). Evaluations in states and provinces that lengthened their holding period requirements show mixed results: some reported crash reductions while others did not (Mayhew, 2003).

- *Supervised driving amount, type, and structure.*

Surveys of parents and teenagers document substantial supervised driving practice during the learner's permit phase (Mayhew, 2003). Some states require a minimum number of hours of supervised driving, typically 20–50 h, and some of these additionally require a minimum number of supervised driving hours at night. In those states where surveys have been conducted, parents and teenagers report that they approve of these requirements and in fact exceed them (Mayhew, 2003). But there is no direct research on how a minimum supervised driving requirement affects the amount of supervised driving, how it helps or hinders parents in supervising their teenagers' driving, or on how much supervised driving should be required.

- *Role of driver education.*

Some jurisdictions reduce the mandatory learner's permit holding period for beginning drivers who successfully complete an approved driver education course (IIHS and TIRF, 2003). Two studies suggest that this holding period reduction may in fact increase crashes (Mayhew, 2003).

- *Restrictions other than supervision.*

Some jurisdictions require the supervising driver to be at least 21 years old or to be a parent, guardian, or driving instructor. Some jurisdictions restrict nighttime driving during the initial months with a learner's permit, or restrict the number of passengers that can be carried, or require that learner's permit drivers and supervisors be sober and drug-free. These restrictions have not been evaluated.

3.3. High-priority research needs

- *Study how to structure supervised driving practice.*

Research may help improve the knowledge and skills gained during supervised driving practice. Topics include how to motivate and inform parents and teens, the appropriate amount and type of supervised driving, how to monitor compliance, and how to evaluate its impact (Mayhew, 2003).

3.4. Lower-priority research needs

- Study the comparative benefits of different starting ages and minimum lengths for the learner's permit (Mayhew, 2003).
- Develop more effective tests for graduation to a provisional license (Mayhew, 2003).
- Evaluate the contribution of the learner's permit phase to overall GDL effects (Mayhew, 2003).
- Evaluate the contribution of the learner's permit phase to developing driving skills and judgment. What is learned—knowledge, skills, judgment—and how is it learned?

- Investigate methods to discourage illegal unsupervised driving.
- Study the effects of the “driver education discount”—reducing learner’s permit minimum holding length for persons who have completed driver education—on driving skills and on crash risk. Investigate methods to integrate driver education more effectively into the learner’s permit phase.
- Study the effects of learner’s permit license plates—special ‘L’ plates to identify a car driven by a learner’s permit driver that are required in New Zealand and other foreign jurisdictions.

4. The provisional license phase

Under GDL, teenage drivers must successfully complete their learner’s permit requirements, reach the minimum age required in their jurisdiction, and pass a road test to receive a provisional license. This license allows unsupervised driving under certain conditions. Provisional licenses typically prohibit unsupervised driving at night, may limit the number or type of passengers, and may have other restrictions.

4.1. Nighttime driving restrictions are effective

Nighttime driving restrictions are the most common, widely accepted, and best understood provisional license requirement. Research has established conclusive evidence that nighttime driving restrictions reduce crashes (Flegg & GORDON, 2002; SHORE & ALLEN, 2002; SHORE & ALLEN, 2003).

The hours of nighttime restrictions vary considerably from short (1 a.m.–5 a.m.) to long (6 p.m.–6 a.m.; FLEGG & GORDON, 2002). Research suggests that GDL reduces driving and crashes much more during restricted nighttime hours than other hours (FLEGG & GORDON, 2002).

Many GDL jurisdictions allow unsupervised nighttime driving during restricted hours for certain purposes, such as to and from school-related activities, work, and religious events (IIHS and TIRF, 2003). The effects of these restrictions on overall compliance with nighttime driving restrictions and on crashes are not known.

4.2. Passenger restrictions may be effective

Teenage passengers increase crash risks for teenage drivers. Consequently, some GDL jurisdictions restrict the number of teenage passengers in a provisional license driver’s vehicle (FLEGG & GORDON, 2002). Current research suggests that these restrictions are violated more frequently than nighttime driving restrictions (FLEGG & GORDON, 2002; FLEGG & GORDON, 2003). Passenger restrictions may have contributed to the overall GDL effects, but research to date cannot separate the effects of passenger restrictions from other GDL requirements.

4.3. Additional information on other provisional license requirements would be useful

• Starting age and length.

The minimum age for a provisional license ranges from 15.5 to 17 years. A later minimum age clearly reduces driving and crashes by teenagers below the minimum age, but no current research addresses the tradeoffs of teenage mobility, convenience, and crash risk posed by different starting ages. Similarly, the minimum age and minimum holding period required for a full license vary, but no current research addresses the costs and benefits of these different provisions.

• Penalties for violations.

Drivers who violate provisional license restrictions or who violate other traffic laws may be required to participate in a driver improvement program or may have the length of their provisional license phase extended. The limited current research suggests that these measures may reduce violations and crashes (McKAY, 2002).

• Second-level driver education.

One state and some foreign jurisdictions incorporate second-level driver education instruction into their GDL programs (FLEGG & GORDON, 2002). Second-level driver education occurs after the beginning driver has experience with basic driving skills. It teaches more advanced skills such as hazard recognition and how to respond to emergency situations. These second-level education programs have not yet been evaluated.

• Additional provisional license requirements.

Safety belt use is required and alcohol use is prohibited by other laws, so these concerns typically have not been addressed in GDL programs. It is possible that a closer connection would be useful. For example, if safety belt or alcohol use violations led to a licensing action, such as an extended period of nighttime driving restriction, then compliance might be improved (FLEGG & GORDON, 2002). Jurisdictions outside the United States have restricted provisionally licensed drivers to certain roads, vehicles, or speeds. There is little information on compliance with or effects of these provisions (FLEGG & GORDON, 2002).

4.4. High-priority research needs

• Additional information on passenger restrictions.

Study compliance, effectiveness in reducing crashes, and methods to increase compliance.

4.5. Lower-priority research needs

- Study the relative benefits of different nighttime driving restriction hours. Issues include the effects on

- parents and teenagers, compliance with the restrictions, and crashes.
- Study the effects of nighttime driving restriction exemptions for school, work, and other purposes
- Evaluate the effects of second-level driver education to improve risk perception skills.
- Study methods to increase GDL enforcement by police, including methods to integrate GDL enforcement into other traffic enforcement activities such as checkpoints.
- Study the potential effects of speed, road type, and vehicle-type GDL restrictions.
- Study crashes that occur while young drivers are violating conditions of their provisional license.
- Study the potential benefits of advanced driving and knowledge tests to graduate to a full license.

5. The roles of teens, parents, and public agencies

With or without GDL, most parents are involved in managing their teenage drivers by teaching driving skills, supervising their driving while under a learner's permit, and restricting their driving in various ways when they are first licensed to driver without supervision. GDL can codify and support parents in these activities. Parents also are in the best position to enforce GDL requirements for their beginning drivers. Law enforcement and motor vehicle departments also have important roles and responsibilities for beginning teenage drivers.

5.1. Young drivers support GDL

- *Young drivers generally support GDL programs and restrictions.*
Survey data in several jurisdictions show strong support
- *Young drivers report that they generally comply with GDL restrictions.*
Passenger restrictions are violated more frequently than nighttime driving restrictions. Little is known about the circumstances when provisional drivers violate the driving restrictions or how compliance could be improved.

5.2. Parents support GDL but could use help

- *Parents do not understand teenage driving risks well.*
While parents know that teenage driving is risky, they do not understand the dangers of specific situations such as driving at night or with other teenage passengers

- *Parents strongly support GDL.*
Surveys in several jurisdictions show that parents support GDL

- *Parents could use help in managing their teenage drivers.*

GDL establishes norms for and supports many restrictions on their teenage drivers that parents will impose themselves. Few materials have been developed to encourage and to teach parents how to teach and manage their teenage drivers. One promising program, Checkpoints, is currently being tested. Parents also could use guidance as they supervise driving by teenagers with learner's permits

- *Parents are critical to enforcing compliance with GDL provisions.*

In surveys, parents and teenagers report that GDL nighttime restrictions are violated on occasion and passenger restrictions are violated more frequently. Not surprisingly, teenagers report more violations than do parents. Little is known about how parents enforce GDL provisions or how they could be encouraged and supported

5.3. Law enforcement's role in GDL is largely unknown

- *GDL appears to be a low priority for law enforcement.*
Some GDL provisions such as a nighttime driving restriction are inherently difficult to enforce, since violations are hard to detect. However, law enforcement could check on possible GDL violations when they stop a teenage driver's vehicle for some other reason, such as speeding.
- *A stronger connection between GDL and other traffic laws could make GDL enforcement easier.*
Safety belt use and zero BAC laws appear to be especially relevant.

5.4. Motor vehicle department roles in GDL also are largely unknown

- *Motor vehicle departments issue licenses and enforce license penalties.*
But virtually nothing is known about how motor vehicle departments administer GDL programs and enforce compliance with GDL provisions.

5.5. High-priority research needs

- *Effective methods to encourage and help parents manage their teen's driving.*
Develop a better understanding of how parents teach and manage teen driving; study how GDL programs and specific requirements affect parental management; develop, implement, and evaluate strategies for



House Transportation Committee
State Capitol, Room 17
465-4858



Rep Jim Holm
Rep Beverly Masek
Co-Chairs

Members:

Rep Hugh Fate, Rep Mary Kapsner, Rep Vic Kohring, Rep Albert Kookesh, Rep. Dan Ogg

DATE: May 20, 2003

TO: House Transportation Committee Members and Staff

FROM: Barbara Cotting, Committee Aide. *embe*

RE: HB 213, "Provisional Driver's License"

In an attempt to address some of the objections to this bill, attached is a proposed draft committee substitute for HB 213, "Provisional Driver's License," for your consideration during the Interim.

It contains the following changes:

1. Page 2, line 10: Changed "one year" to "six months."
2. Page 2, line 19: Added "sibling" to the list of allowed passengers.
3. Page 2, line 21: Changed "midnight" to "1:00 a.m."
4. Page 2, Deleted lines 25-26 which read, "(B) driving to or from the person's place of employment...."

23-LS0786VH
Ford
5/19/03

CS FOR HOUSE BILL NO. 213(TRA)
IN THE LEGISLATURE OF THE STATE OF ALASKA
TWENTY-THIRD LEGISLATURE - FIRST SESSION

BY THE HOUSE TRANSPORTATION COMMITTEE

Offered:
Referred:

Sponsor(s): REPRESENTATIVE WEYHRAUCH

A BILL

FOR AN ACT ENTITLED

1 **"An Act relating to a provisional driver's license and to issuance of a driver's license;**
2 **and providing for an effective date."**

3 **BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:**

4 *** Section 1. AS 28.15.055 is amended to read:**

5 **Sec. 28.15.055. Provisional driver's license.** Upon application, the
6 department may issue a provisional driver's license to a person who is at least 16 years
7 of age but not yet 18 years of age if the

8 **(1) person has been licensed under an instruction permit issued under**
9 **AS 28.15.051 or under the law of another state with substantially similar requirements**
10 **for at least six months;**

11 **(2) person's parent, legal guardian, or employer provides proof**
12 **satisfactory to the department that the applicant has at least 50 hours of driving**
13 **experience, including at least 10 hours of night driving; and**

14 **(3) person has not received a citation for a traffic offense or been**

1 convicted of a traffic offense within the six months before the application is filed.

2 * Sec. 2. AS 28.15.057 is amended to read:

3 Sec. 28.15.057. Restrictions on driver's license issued to a person under
4 18. Except as provided under AS 28.15.051, a person who is at least 16 years of age
5 but not yet 18 years of age may not be issued a driver's license unless the person has

6 (1) been licensed under an instruction permit issued under
7 AS 28.15.051 or under the law of another state with substantially similar
8 requirements for at least six months;

9 (2) [AND HAS] held a valid provisional driver's license issued under
10 AS 28.15.055 for at least six months; and

11 (3) not received a citation for a traffic offense or been convicted of
12 a traffic offense during the six months before applying for a driver's license [ONE
13 YEAR].

14 * Sec. 3. AS 28.15.057 is amended by adding new subsections to read:

15 (b) A person authorized to drive a motor vehicle under a provisional driver's
16 license issued under AS 28.15.055 may not

17 (1) for the first six months after receiving a provisional driver's license,
18 operate a motor vehicle that is carrying any passengers except a passenger who is a
19 parent, legal guardian, sibling, or a person at least 25 years of age who is licensed to
20 drive the type or class of vehicle being used; or

21 (2) operate a motor vehicle between the hours of 1:00 a.m. and 5:00
22 a.m., except when the person is accompanied by a parent, legal guardian, or a person
23 at least 25 years of age who is licensed to drive the type or class of vehicle being used.

24 (c) A person who violates this section is guilty of an infraction.

25 * Sec. 4. This Act takes effect January 1, 2004.

Legislative Research Services

Alaska State Legislature
Legislative Affairs Agency
Division of Legal and Research Services


State Capitol
Juneau, AK 99801
Phone: 907-465-3991
Fax: 907-465-3908

May 9, 2003

Memorandum

TO: Representative Jim Holm

FROM: Patricia Young
Manager



RE: Traffic Fatalities Among Teenager Drivers and Graduated Licensing

You asked for information we could quickly gather on the annual rate of fatalities among teenage drivers. You also asked for background information on graduated licensing programs. The attached documents, as listed below, should provide you with the information you need.

- U.S. Department of Transportation, National Highway Traffic Safety Administration, "Young Drivers," *Traffic Safety Facts 2000*, available at www-fars.nhtsa.dot.gov/pubs/15.pdf.
- National Highway Traffic Safety Administration and Insurance Institute for Highway Safety, "Graduated Driver Licensing: Questions and Answers," available at www.highwaysafety.org/safety_facts/qanda/images/grad_lic.pdf.
- Insurance Institute for Highway Safety and the Traffic Injury Research Foundation, "Graduated Licensing: A Blueprint for North America," available at www.highwaysafety.org/safety_facts/teens/blueprint.pdf.
- Insurance Institute for Highway Safety and Highway Loss Data Institute, "Fatality Facts: Teenagers as of November 2002," available at www.highwaysafety.org/safety_facts/fatality_facts/teens.htm.
- Insurance Institute for Highway Safety and Highway Loss Data Institute, "[U.S.] Licensing Systems for Young Drivers, April 2003," available at www.highwaysafety.org/safety_facts/state_laws/us_licensing_systems.pdf.
- Insurance Institute for Highway Safety and Highway Loss Data Institute, "How State Laws Measure Up," January 2003, available at www.highwaysafety.org/safety_facts/state_laws/measure_up.htm.
- Allan F. Williams, "Teenage Passengers in Motor Vehicle Crashes: A Summary of Current Research," (Arlington, Virginia: Insurance Institute for Highway Safety, December 2001); available at www.highwaysafety.org/safety_facts/teens/teen_passengers.pdf.

I hope these documents are helpful. If you have questions or need additional information, please let me know.



Traffic Safety Facts 2000

Young Drivers



There were 187.2 million licensed drivers in the United States in 1999 (2000 data not available). Young drivers, between 15 and 20 years old, accounted for 6.8 percent (12.7 million) of the total, a 1.2 percent decrease from the 12.8 million young drivers in 1989.

In 2000, 8,155 15- to 20-year-old drivers were involved in fatal crashes — a 10 percent decrease from the 9,052 involved in 1990. Driver fatalities for this age group decreased by 11 percent between 1990 and 2000. For young males, driver fatalities dropped by 16 percent, compared with a 4 percent increase for young females (Table 3).

Motor vehicle crashes are the leading cause of death for 15 to 20 year olds (based on 1998 figures, which are the latest mortality data currently available from the National Center for Health Statistics). In 2000, 3,594 drivers 15 to 20 years old were killed, and an additional 348,000 were injured, in motor vehicle crashes.

In 2000, 14 percent (8,155) of all the drivers involved in fatal crashes (57,090) were young drivers 15 to 20 years old, and 17 percent (1,885,000) of all the drivers involved in police-reported crashes (11,322,000) were young drivers.

“Motor vehicle crashes are the leading cause of death for people from 15 to 20 years old.”

Figure 1. Driver Fatalities and Drivers Involved in Fatal Crashes Among Drivers 15 to 20 Years Old, 1990-2000

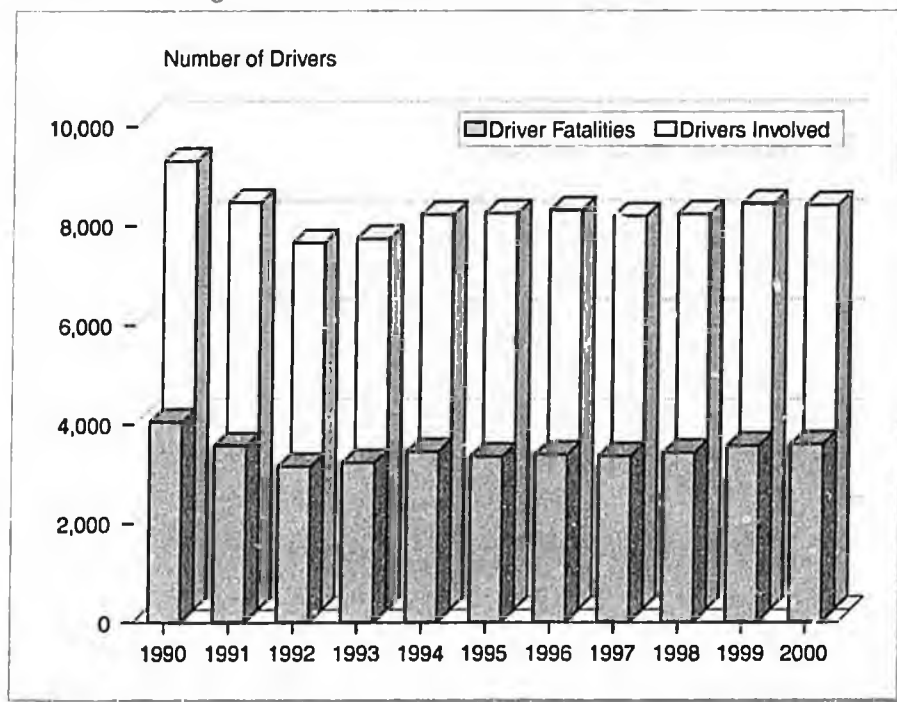


Table 1. Drivers Involved in Fatal Crashes and Driver Involvement Rates by Age Group, 2000

	Age Group (Years)							
	15-20	21-24	25-34	35-44	45-54	55-64	65-69	70+
2000 Population (Percent)	8.7	5.2	13.6	16.3	13.5	8.7	3.4	9.2
Drivers Involved in 2000 Fatal Crashes (Percent)								
Single-Vehicle	18.5	12.9	21.5	18.9	12.6	7.1	2.2	5.9
Multi-Vehicle	12.3	9.2	20.4	20.2	15.6	9.2	3.0	9.8
All Fatal Crashes	14.6	10.5	20.8	19.7	14.6	8.4	2.7	8.4
1999 Licensed Drivers* (Percent)	6.8	6.7	19.6	22.3	18.6	11.8	4.5	9.9
Drivers Involved in 1999 Fatal Crashes per 100,000 Licensed Drivers	64.7	45.2	32.1	26.4	22.2	20.9	19.7	26.8

* 2000 data not available.

"In 2000, 14 percent of all the drivers involved in fatal crashes were between 15 and 20 years old."

More than one-third (381) of the 15- to 20-year-old drivers involved in fatal crashes who had an invalid operator's license at the time of the crash also had a previous license suspension or revocation. For the same age group, 30 percent of the drivers who were killed in motor vehicle crashes during 2000 had been drinking (Table 4).

Table 2. Drivers 15 to 20 Years Old Involved in Fatal Crashes by Previous Driving Record and License Status, 2000

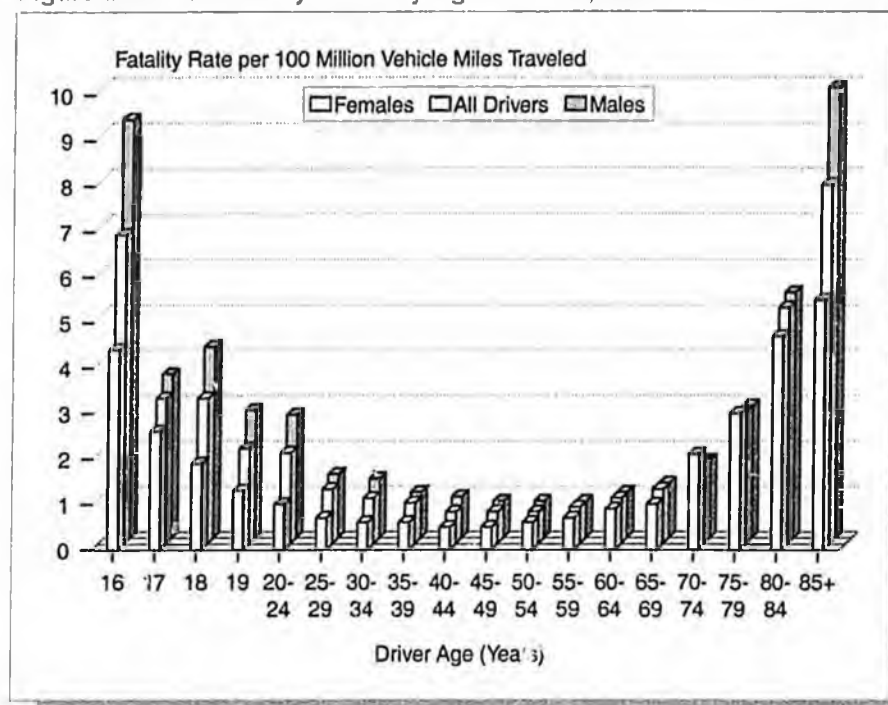
Driving Record	License Status					
	Valid (6,895)		Invalid (1,180)		Total (8,155)*	
	Number	Percent	Number	Percent	Number	Percent
Previous Recorded Crashes	1,166	17.8	133	13.3	1,299	17.2
Previous Recorded Suspensions or Revocations	569	8.3	381	36.1	950	12.0
Previous DWI Convictions	79	1.1	82	7.8	161	2.0
Previous Speeding Convictions	1,718	25.0	188	17.8	1,906	24.0
Previous Other Harmful or Moving Conviction	1,357	19.7	239	22.7	1,596	20.1

*Includes 80 drivers with unknown license status.

In 2000, the estimated economic cost of police-reported crashes involving drivers between 15 and 20 years old was \$32.8 billion.

When driver fatality rates are calculated on the basis of estimated annual travel, the highest rates are found among the youngest and oldest drivers. Compared with the fatality rate for drivers 25 through 69 years old, the rate for teenage drivers (16 to 19 years old) is about 4 times as high, and the rate for drivers in the oldest group is 9 times as high.

Figure 2. Driver Fatality Rates by Age and Sex, 1996



“The fatality rate for teenage drivers, based on estimated annual travel, is about 4 times as high as the rate for drivers 25 through 69 years old.”

Female drivers under age 50 have a lower fatality rate than their male counterparts, on a per mile driven basis, while the rate is essentially the same for both male and female drivers over 50 years of age, with the exception of the oldest group (Figure 2).

Table 3. Involvement of Drivers 15 to 20 Years Old in Fatal Crashes, 1990 and 2000

	1990			2000			Percentage Change, 1990-2000		
	Total	Age 15-20	Percentage of Total	Total	Age 15-20	Percentage of Total	Number		Percentage Age 15-20
							Total	Age 15-20	
<i>Drivers Involved in Fatal Crashes</i>									
Total	58,893	9,050	15.4	57,090	8,155	14.3	-3%	-10%	-7%
Male	44,281	6,831	15.4	41,407	5,822	14.1	-6%	-15%	-8%
Female	13,726	2,219	16.2	14,654	2,333	15.9	+7%	+5%	-2%
<i>Driver Fatalities</i>									
Total	25,750	4,052	15.7	25,492	3,594	14.1	-1%	-11%	-10%
Male	19,610	3,111	15.9	18,762	2,620	14.0	-4%	-16%	-12%
Female	6,137	941	15.3	6,566	974	14.8	+7%	+4%	-3%

Motorcycles

During 2000, 219 young motorcycle drivers (15-20 years old) were killed and an additional 5,000 were injured.

Helmets are estimated to be 29 percent effective in preventing fatalities among motorcyclists. NHTSA estimates that helmets saved the lives of 631 motorcyclists of all ages in 2000, and that if all motorcyclists had worn helmets, an additional 382 lives could have been saved.

During 2000, 49 percent of the motorcycle drivers between 15 and 20 years old who were fatally injured in crashes were not wearing helmets.

Of the young motorcycle drivers involved in fatal crashes in 2000, more than one-fourth (28 percent) were either unlicensed or driving with an invalid license.

Alcohol

NHTSA defines a fatal traffic crash as being *alcohol-related* if either a driver or a nonoccupant (e.g., pedestrian) had a blood alcohol concentration (BAC) of 0.01 grams per deciliter (g/dl) or greater in a police-reported traffic crash. Persons with a BAC of 0.10 g/dl or greater involved in fatal crashes are considered to be *intoxicated*. This is the legal limit of intoxication in most states.

In 2000, 21 percent of the young drivers 15 to 20 years old who were killed in crashes were intoxicated.

"In 2000, 21 percent of the young drivers who were killed in crashes were intoxicated."

Table 4. Alcohol Involvement Among Drivers 15 to 20 Years Old Involved in Fatal Crashes, 2000

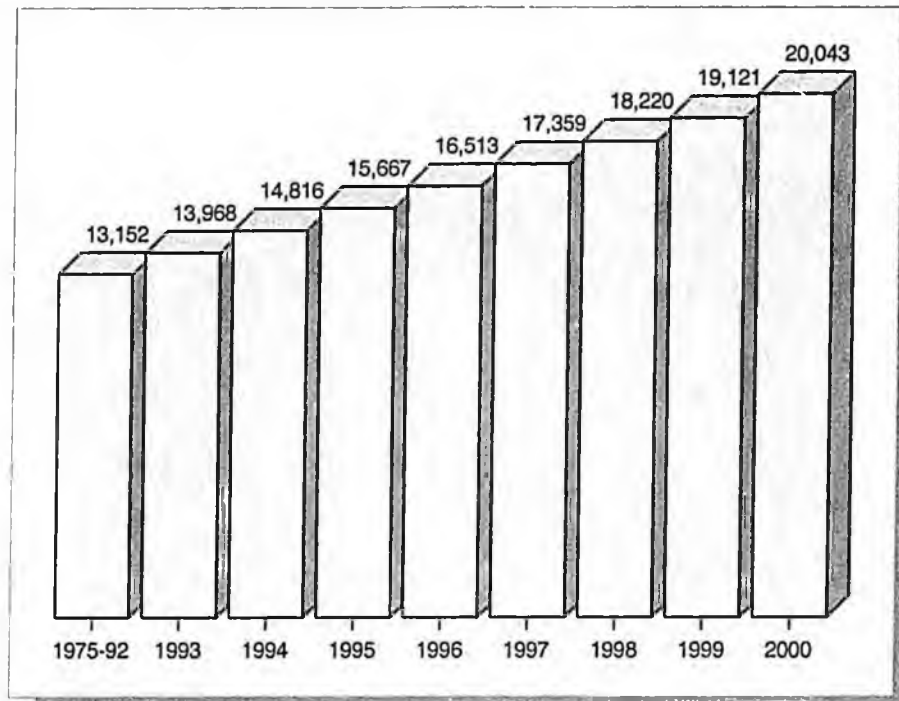
Driver Status	Number of Drivers	Percentage with BAC Levels		
		0.00 g/dl	0.01-0.09 g/dl	≥0.10 g/dl
Surviving	4,561	84	8	9
Fatally Injured	3,594	70	8	21
Total	8,155	78	8	14

The severity of a crash increases with alcohol involvement. In 2000, 3 percent of the 15- to 20-year-old drivers involved in property-damage-only crashes had been drinking, 5 percent of those involved in crashes resulting in injury had been drinking, and 22 percent of those involved in fatal crashes had been drinking.

The numbers of drivers 15 to 20 years old involved in fatal crashes who were intoxicated dropped by 38 percent between 1990 and 2000.

All states and the District of Columbia now have 21-year-old minimum drinking age laws. NHTSA estimates that these laws have reduced traffic fatalities involving drivers 18 to 20 years old by 13 percent and have saved an estimated 20,043 lives since 1975. In 2000, an estimated 922 lives were saved by minimum drinking age laws. Nineteen states and the District of Columbia have set 0.08 g/dl as the legal intoxication limit, and all states plus the District of Columbia have zero tolerance laws for drivers under the age of 21 (it is illegal for drivers under 21 to drive with BAC levels of 0.02 g/dl or greater).

Figure 3. Cumulative Estimated Number of Lives Saved by Minimum Drinking Age Laws, 1975-2000



“NHTSA estimates that minimum drinking age laws have saved 20,043 lives since 1975.”

For young drivers 15 to 20 years old, alcohol involvement is higher among males than among females. In 2000, 26 percent of the young male drivers involved in fatal crashes had been drinking at the time of the crash, compared with 13 percent of the young female drivers involved in fatal crashes.

Drivers are less likely to use restraints when they have been drinking. In 2000, 69 percent of the young drivers of passenger vehicles involved in fatal crashes who had been drinking were unrestrained. Of the young drivers who had been drinking and were killed in crashes, 80 percent were unrestrained.

For more information:

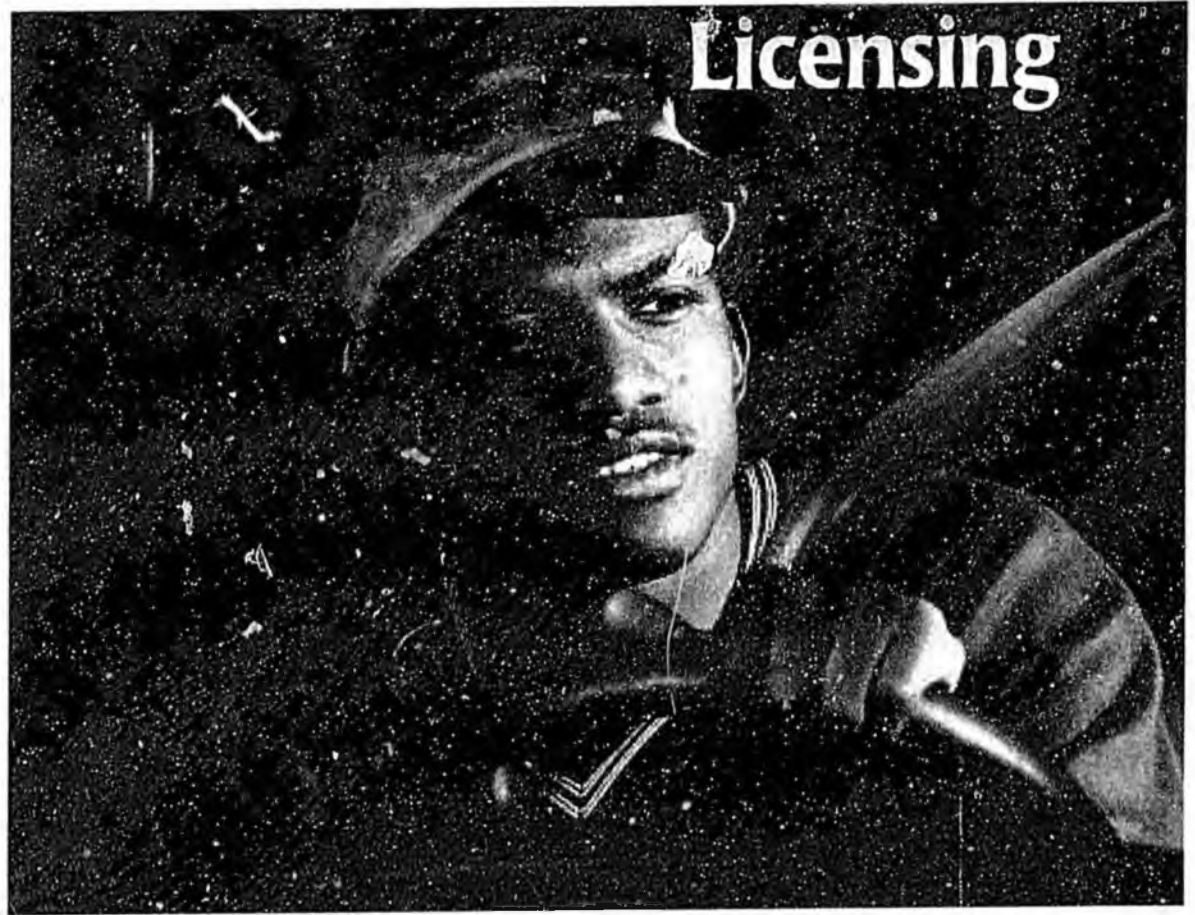
Information on young drivers is available from the National Center for Statistics and Analysis, NRD-31, 400 Seventh Street, S.W., Washington, D.C. 20590. NCSA information can also be obtained by telephone or by fax-on-demand at 1-800-934-8517. FAX messages should be sent to (202) 366-7078. General information on highway traffic safety can be accessed by Internet users at <http://www.nhtsa.dot.gov/people/nrsa>. To report a safety-related problem or to inquire about motor vehicle safety information, contact the Auto Safety Hotline at 1-800-424-9393.

Graduated Driver Licensing

Information from:



INSURANCE INSTITUTE
FOR HIGHWAY SAFETY
<http://www.highwaysafety.org>



Q Questions
& Answers

Q What is graduated driver licensing?

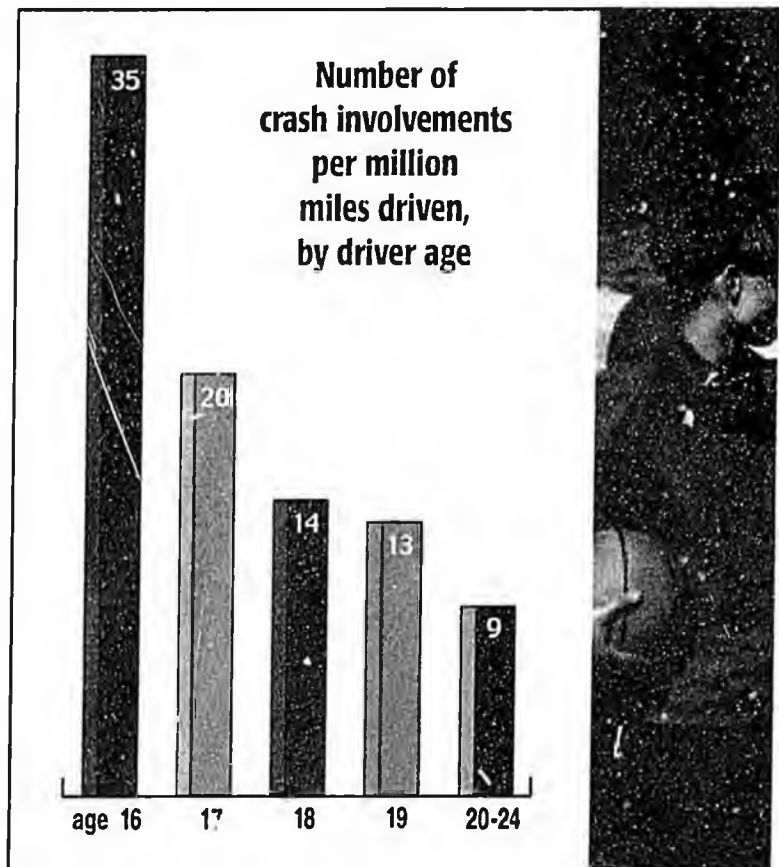
It's a system designed to phase in young beginners to full driving privileges as they mature and develop their driving skills. Versions of graduated licensing exist in New Zealand; Victoria, Australia; and several Canadian provinces. More recently, graduated licensing has been introduced in some U.S. states. There are three stages to a graduated system, and beginners must remain in each of the first two stages for set minimum time periods: supervised learner's period; intermediate license (after the driver test is passed) limiting unsupervised driving in high-risk situations; and then a license with full privileges, available after completing the first two stages. The National Committee on Uniform Traffic Laws and Ordinances has developed a model graduated licensing law using recommendations from the Insurance Institute for Highway Safety, National Highway Traffic Safety Administration, and other national organizations. The model law calls for a minimum of six months in the learner's stage and a minimum of six months in the intermediate stage with night driving restrictions. Key elements of the intermediate stage include limits on late-night unsupervised driving and transporting teenage passengers. Certification that a learner's permit holder has driven a minimum number of supervised hours also is important.

Some state laws meet or exceed these core requirements, while others have just some of them. Many states have augmented their graduated systems with additional features including driver education innovations, seat belt use provisions, and penalty systems in which violations result in license suspension or extension of the holding period.

Q Why target only young people? Why not target all novice drivers?

The rationale for special policies for young beginning drivers is that their crash risk is particularly high. Sixteen-year-old drivers have higher crash rates than drivers of any other age, including older teenagers.

The very youngest drivers are most likely to engage in risky behaviors such as speeding and tailgating. Because of their inexperience, beginners are least able to cope with hazardous situations. When this is combined with their aggressive driving style, a high crash



rate results. Graduated licensing introduces beginners into the driving population in a low-risk manner, protecting both them and others. Graduated licensing systems could apply to all first-time drivers as they do outside the United States. In this country, however, young people make up the majority of beginning drivers, and graduated systems now being considered in most states would focus on these drivers. It should be noted that young people are subject to legal restrictions in a variety of areas such as voting, purchasing alcohol, serving in the military, and assuming financial obligations.



Q Isn't it unfair to restrict all teenage drivers? Why not just penalize the problem drivers?

We know some characteristics of younger drivers who are more likely than others to be in crashes, but it's impossible to identify them adequately on an individual basis and intervene before they get into crashes. Many U.S. licensing systems impose greater and/or earlier penalties on young people for traffic infractions than they do on older drivers, but most fatally injured young drivers don't have prior traffic violations or crashes on their records. The logic of addressing all young people is that they all are beginners when they start driving. Every novice needs time to develop driving skills in low-risk settings.

Two factors in particular work against young drivers: inexperience and immaturity. Young drivers need time to develop driving skills and the judgment to counteract their lack of on-the-road experience. Young drivers tend to be immature and impulsive, overestimating their own physical and driving abilities and underestimating dangers in the driving environment. This leads them to risky driving behaviors such as speeding, passing inappropriately, following too closely, and driving without seat belts. Young drivers frequently drive during nighttime high-risk hours, often with peers in the vehicle. Passengers can cause distractions and create peer pressure to participate in risky behavior. Teen passengers increase the crash risk for teenage drivers both during the day and at night. Considerable driving experience is required, after initial licensing, before a young novice achieves the dependable skills, judgment, and performance that result in safe driving.

Q Can graduated licensing reduce crashes and save the lives of young people?

Yes. Graduated licensing programs have had a positive effect on the crash experience of young drivers in the United States and other countries, including Canada and New Zealand. In states that have adopted elements of graduated licensing, the safety benefits are evident. In Florida, which instituted a graduated system for drivers younger than 18 in July 1996, there was a 9 percent reduction in fatal and injury crash involvement for 15-17 year-olds in 1997, the first full year of graduated licensing, compared with 1995.

Q Is a nighttime driving restriction a critical component of graduated licensing?

Yes. Forty-one percent of teenage motor vehicle deaths in 1997 occurred between 9:00 p.m. and 6:00 a.m. Studies show nighttime driving restrictions are associated with crash reductions of up to 60 percent during restricted hours.

These are different from curfews, which are viewed as means to get young people off the streets and into their homes at a set time. Communities often adopt curfews to reduce criminal or mischievous behavior, but the purpose of night driving restrictions is to protect young beginners by keeping them from driving unsupervised during nighttime high-risk hours. As part of a graduated licensing system, young beginners are encouraged to gain nighttime driving experience, but with adult supervision rather than with peers. Driving at night with peers in the car can lead to distractions and result in risky behavior, thus creating a greater crash risk.



Q When should the nighttime driving restrictions begin? How early?

The majority of nighttime crashes occur in the hours before midnight. This is the time when more young people are out on the roads. Therefore, nighttime driving restrictions should begin several hours before midnight.



teenager dies in a crash

Q What guarantees more supervised driving will occur under graduated licensing?

There can be no guarantee. A young beginner can be encouraged to participate by requiring parents to attest to supervised training, by providing parents and teens with instructional materials, and by requiring successful passage of a more advanced performance test.

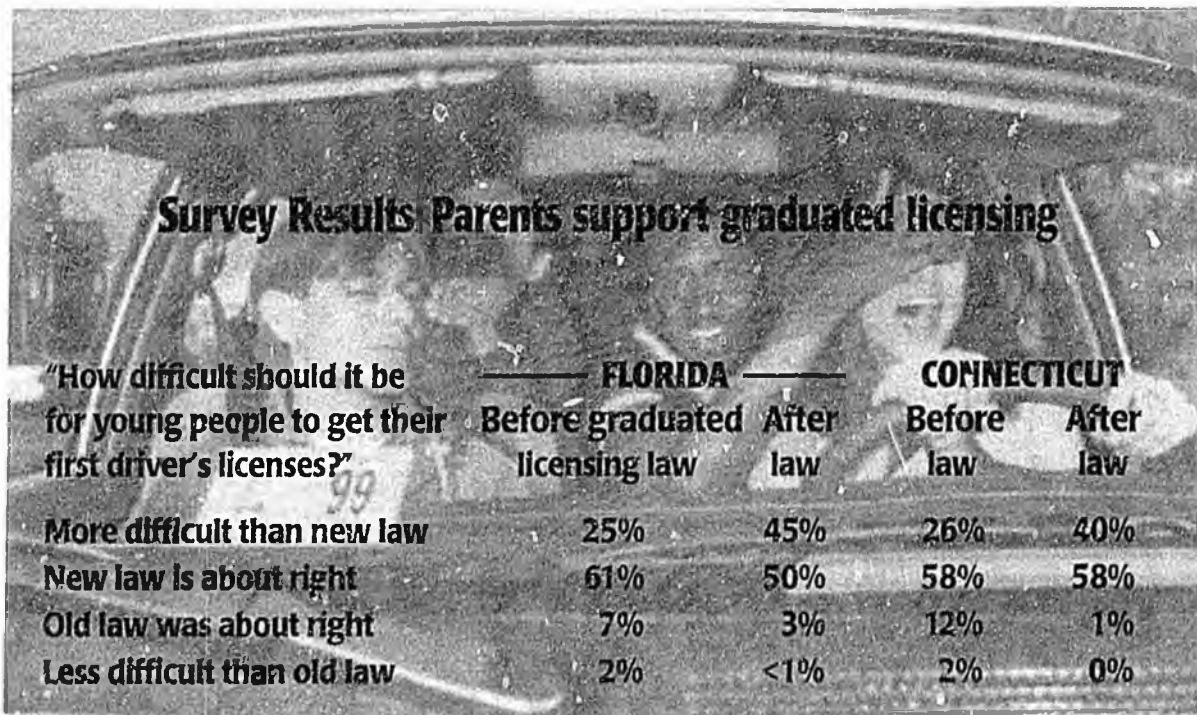
Q Do parents support graduated licensing programs?

Yes, parents strongly favor graduated licensing. A 1996 Insurance Institute for Highway Safety survey of parents of 15 year-olds in Florida who were about to enter a graduated licensing system found 95 percent of the parents supported a minimum period of supervised driving. Ninety percent favored night driving restrictions, 60 percent favored restricting teen passengers during the first few months of driving, and 74 percent of the parents favored a graduated licensing system that includes all of these components.

Also in 1996, parents of teenagers surveyed in Connecticut, Delaware, New Jersey, and New York said they strongly support graduated licensing requirements. Although many parents want their children to get licenses early so they no longer have to be taken to school, work, or social activities, these same parents worry about the risks their children will be taking as new young drivers.

Q How much does it cost a state to run a graduated licensing system?

States with such systems have found that the benefits far outweigh any costs. For example, in Oregon administrative costs were estimated at \$150,000 while the benefits were estimated at nearly \$11 million. This amounts to a benefit-to-cost ratio of better than 74 to 1. Both Maryland and California also report lifesaving and injury-reducing benefits well in excess of the administrative costs associated with implementing a graduated licensing program.



Q Who supports graduated licensing?

Advocates for Highway and Auto Safety, Allstate Insurance, American Academy of Family Physicians, American Association of Motor Vehicle Administrators, American Automobile Association, American Coalition for Traffic Safety, American College of Emergency Physicians, American Insurance Association, Brain Injury Association, The Centers for Disease Control, General Federation of Women's Clubs, Insurance Institute for Highway Safety, International Association of Chiefs of Police, and Mothers Against Drunk Driving.

Additional supporters include the National Association of Governor's Highway Safety Representatives, National Association of Independent Insurers, National Center for Education in Maternal and Child Health, National Commission Against Drunk Driving, National Committee on Uniform Traffic Laws and Ordinances, National Highway Traffic Safety Administration, National Safety Council, National Sheriffs' Association, National Transportation Safety Board, Police Executive Research Forum, USAA Insurance, The Distilled Spirits Council of the United States and its member companies, The Century Council, and The Beer Institute and its members.

Q Should graduated licensing legislation include language about insurance rates?

There's no need for such language because a law's effectiveness ultimately will be determined by public compliance, which depends on education, enforcement efforts, and other factors not known at the time of enactment. Specific insurance language also isn't necessary because the personal auto insurance market in every state is very competitive — rates will seek their appropriate levels.

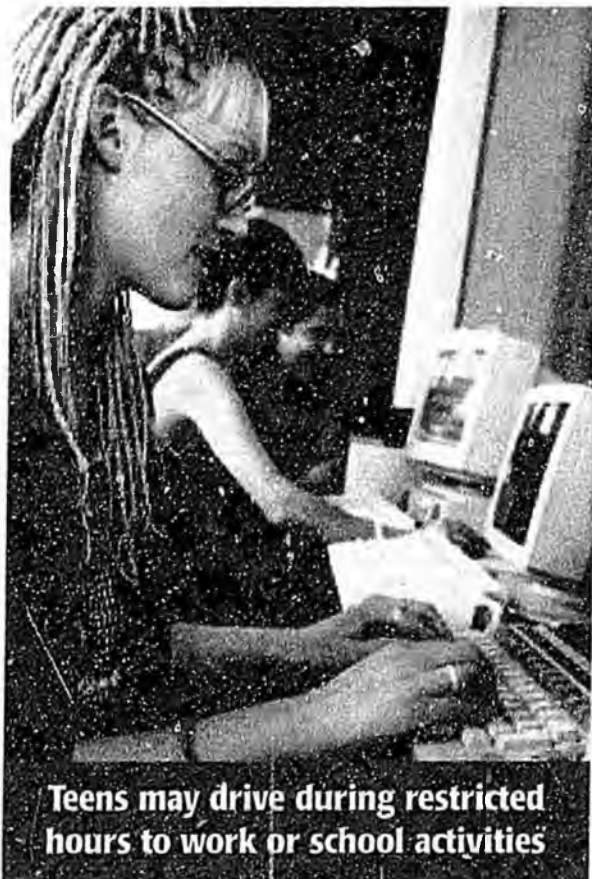
In addition, personal auto insurance rates must be approved by government regulators in the majority of states, and in virtually every state the rates may be challenged if they're found to be excessive. Because of private market forces, rate regulation, or both, any actual savings from the legislation in the form of reduced injury or property damage costs will be passed on to consumers.

Q Parents may be required to certify as many as 50 hours of daytime driving and 10 hours at night. Isn't this a bit much?

A graduated system requires a young driver to hold his or her permit for a minimum of six months. During this time a parent needs to familiarize the new driver with literally dozens of driving scenarios — for example rural, urban, suburban, freeways, rush hour, nighttime, dusk, and rain. The time required of the parent or guardian is less daunting when viewed over the entire six months. For example, 50 hours over 6 months equals just 8.3 hours per month, or a little more than 2 hours per week.

Q Shouldn't teenagers be allowed to drive to school, work, and their extracurricular activities?

Yes. States can and do allow waivers so a teenager may drive during restricted times to work or to attend school activities. These exemptions don't reduce the restrictions' effectiveness because the increased crash risk to teens at night is largely due to the combination of more difficult driving conditions and distractions caused by teenage passengers. Young people driving to work are unlikely to have teen passengers. Another



Teens may drive during restricted hours to work or school activities



concern is the administrative burden on states that have to issue many waivers. Maryland examined this when it implemented a nighttime driving restriction and found it wasn't a problem.

Graduated licensing does delay full licensure, but the evidence indicates it doesn't significantly hinder social activities. Studies indicate that 16 year-olds have largely similar lifestyles in terms of social, dating, and work patterns, whether they live in states where many, some, or few 16 year-olds are licensed.

Q Isn't driver education enough preparation for licensure?

A good driver education course, emphasizing on-the-road driving, is an effective way to learn basic vehicle control skills. Extensive research indicates that high school driver education doesn't lead to lower crash involvement compared with other ways of learning to drive. Attitudes, decision-making skills, risk-taking tendencies, and other factors contribute in an important way to crashes and may not be affected much by driver education.

As indicated in a 1994 Report to Congress by the National Highway Traffic Safety Administration, experts agree that current novice driver education programs aren't doing a very good job of motivating youngsters to drive safely. Any driver education program should be integrated with a graduated licensing system.

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FOR HIGHWAY SAFETY
<http://www.highwaysafety.org>

Q Questions
& Answers

**Graduated Licensing:
A Blueprint for North America**

April 2003

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Many jurisdictions in the United States and Canada have adopted graduated licensing, an increasingly popular approach to reducing new drivers' risk of collisions, and many more are considering it. Such an approach is needed because of the extremely high crash rates among new drivers, especially young ones. In the United States, 16 year-olds have almost 10 times the crash risk of drivers ages 30-59 and almost 3 times the risk of older teenagers.¹

Jurisdictions traditionally have allowed quick and easy paths to full-privilege licensure at an early age, which contributes to the high crash rate of young drivers. Graduated licensing offers a more sensible and less risky way for new drivers to begin. Although many North American systems are too new for formal evaluation, impressive crash and injury reductions have been reported thus far in California, Florida, Kentucky, Michigan, North Carolina, Nova Scotia, Ontario, and Quebec.²⁻⁹ Fifty-eight jurisdictions (District of Columbia, 47 U.S. states, 9 Canadian provinces, and 1 Canadian territory) have enacted one or more elements of graduated licensing, all but a few of which were enacted since 1994. There is tremendous variation in the programs that have been introduced. To assist other jurisdictions where graduated licensing is being contemplated or where further changes are being considered, this document provides recommendations for the structure and characteristics of such systems. Recommendations are based on scientific research where available and on what graduated systems are intended to accomplish.

WHAT IS GRADUATED LICENSING?

Graduated licensing is a system for phasing in on-road driving, allowing beginners to get their initial experience under conditions that involve lower risk and introducing them in stages to more complex driving situations. Essentially an apprentice system, graduated licensing involves three stages. The first is a supervised learner's period, lasting a minimum of 6 months in optimal systems, then an intermediate licensing phase that permits unsupervised driving only in less risky situations, and finally a full-privilege license becomes available when conditions of the first two stages have been met.

Within this framework, substantial variation is possible in terms of the provisions of the stages and their duration. This variation often has created difficulty for jurisdictions that are constructing a graduated system. Policymakers need to know what features their system should include and what the characteristics should be.

GENERAL FEATURES

Who should be covered? A graduated system is designed to address driving inexperience, so there is some justification for applying it to beginners of all ages. This is the approach taken in Canada, where a significant number of new drivers are not young.¹⁰ In contrast, the graduated systems in all U.S.

states except Maryland and New Jersey apply only to young drivers — specifically those younger than 18, the legal age of adulthood in the United States. If a driver is 18 or older when first licensed, graduated licensing does not apply; if 18 is reached while in the system, graduation is automatic.

Young drivers have been the focus of U.S. systems primarily because they constitute the largest group of beginners and have the highest crash risk.¹ Regardless of driver age, inexperience increases crash risk, and inexperience combined with immaturity magnifies this risk. It is possible that some states have significant numbers of older beginners, although this has not been adequately determined.

Recommendation: Consider the age distribution of the beginning driver population in deciding whether to apply graduated licensing to all beginners or only young beginners, who are the primary targets.

How many stages? A complete graduated licensing system includes all three stages — the supervised learner's period, the intermediate license that permits some unsupervised driving, and full-privilege licensure. It is important to include both of the first two stages, but 20 of the 58 jurisdictions with elements of graduated licensing have not done so. Nine programs include only the learner's stage, and three include only a night driving prohibition in the intermediate licensing stage; sacrificing either of these elements likely limits program effectiveness.

Recommendation: Implement three-stage licensing systems.

LEARNER'S PHASE: KEY FEATURES

Under traditional licensing systems, most jurisdictions allow for a learning period prior to full licensure. However, in many cases a learner's permit is optional; when it is required, its minimum holding period either is not specified or is short, typically 30 days. In a graduated system, an extended learner's period is essential to provide the opportunity for extensive supervised on-road practice in a variety of conditions. Research shows that supervised driving is a relatively safe activity.¹¹

When should the licensing process start? Jurisdictions that recently have adopted graduated licensing or components of it generally have maintained the starting ages in effect under their prior licensing systems, which range from 14 to 16 years. There are six exceptions. Colorado's minimum permit age went from 15, 3 months to 15; Idaho's from 15 to 14, 6 months; Newfoundland from 17 to 16; Ohio lowered the permit age from 16 to 15, 6 months but allows driving only while supervised by a parent or driving instructor before age 16. Virginia initially lowered the permit age from 15, 8 months to 15 and has subsequently raised it to 15, 6 months. Michigan's permit age was moved back from 15 to 14,

9 months. Hawaii raised the permit age from 15 to 15, 6 months. The rationale for lowering the starting age is to allow more time for supervised driving before continuing to the intermediate license. However, because this allows driving at an even younger age, it may encourage younger people to drive unsupervised as well as supervised, and may also result in more 16 year-olds being licensed at an earlier age. A study of fatal crashes of 15 year-olds in states where permits are allowed at this age found that three of four beginners were driving illegally.¹¹ The effect of a younger permit age has not been established yet, but policymakers should consider that lowering the permit age might increase rather than decrease risk. Raising the starting age to 16 would have safety benefits. In a few systems the starting age is 16, but no jurisdiction has raised the minimum permit age as graduated licensing has been introduced.

Recommendation: Maintain the starting age at 16, or raise it to 16.

What driving restrictions should be imposed? A critical aspect of the learner's phase is to require adult supervision of all driving — i.e., supervision by a fully licensed driver at least age 21. Some jurisdictions leave the kind of driving to the discretion of the supervisor, some impose restrictions such as barring nighttime driving, and other jurisdictions require some practice driving at night. North Carolina phases in driving during the 12-month learner's stage, disallowing nighttime driving during the first 6 months.

Recommendation: Require adult supervision and restrict driving at the discretion of the supervisor. It is acceptable to phase in more difficult driving, as in North Carolina.

Should a minimum amount of practice driving be required? Requiring parents to certify that a certain number of hours have been driven under supervision facilitates the goal of the learner's stage. It also protects against the possibility that beginners will stay off the roads to avoid crashes or traffic violations that may delay graduation to the next stage. Thirty-four of the 58 jurisdictions with elements of graduated licensing impose this requirement; 15 require driving 50 hours, and the others require 12-40 hours. In some of these, a portion of the driving hours has to be accumulated at night.

Recommendation: Require 30-50 hours of certified driving, some of which should be allocated to nighttime driving.

At a minimum, how long should permits be held? Under the licensing systems that preceded graduated licensing, a few jurisdictions specified a minimum stay in the learner's phase. In other

jurisdictions, required holding periods did not exist, or they were determined by the age at which a permit was obtained if the jurisdiction allowed a permit at a younger age (e.g., 15, 6 months) than the minimum age for licensure (e.g., 16). No research has addressed the appropriate amount of time for a learner's phase. The range among the 58 jurisdictions with elements of graduated licensing is broad, from 30 days to a year. The developing consensus is that a minimum of 6 months is reasonable (33 jurisdictions require 6 months, and 8 require 1 year).

Recommendation: Establish a minimum 6-month learner's phase.

INTERMEDIATE STAGE: KEY FEATURES

The highest risk for beginning drivers is when they first get their licenses and can drive unsupervised, with the first few months being particularly risky.¹² Thus key features of graduated licensing include establishing an appropriate minimum age for unsupervised driving and initially restricting some kinds of unsupervised driving. Some jurisdictions do impose a stage after the learner's period during which beginners are subject to tougher penalties on an accelerated schedule; but this is not the same as the intermediate stage under graduated licensing, which restricts when and where beginners are allowed to drive. The goal is to keep initial license holders out of high-risk situations as they continue to accumulate driving experience.

What should the starting age be? If the learner's phase starts at the recommended age of 16 and lasts for at least 6 months, the earliest age at which the intermediate stage would begin is 16, 6 months. However, in most jurisdictions the starting ages for learners and/or the minimum holding periods allow advancement at an earlier age.

Recommendation: Do not permit any unsupervised driving before age 16, 6 months.

How should nighttime driving be limited? For drivers of all ages, crash risk is higher at night than during the day. Night driving is especially risky for young beginners,¹³ which is why unsupervised nighttime driving has been restricted in a few states for many years. Research has established that such restrictions are effective in reducing crashes and strongly endorsed by parents. Young people also adapt to night driving restrictions.¹³⁻¹⁸

Licensure laws in 39 jurisdictions include night driving restrictions, but starting times vary widely. One jurisdiction specifies a 6 p.m. start, one at sunset, one at 8 p.m., three at 9 p.m., one at 10 p.m., eight at 11 p.m., eighteen at midnight, one at 12:30 a.m., and five at 1 a.m. Among the states with 11 p.m. starting times, three start later on weekend nights, and one has a later starting time for 17

year-olds. In the United States, about three-quarters of the nighttime crashes of 16 and 17 year-olds occur before midnight (9-11:59 p.m.). Night driving restrictions that begin both early and late effectively reduce crashes during the restricted hours, but those restrictions that start earlier reduce a greater number of crashes because more drivers are affected.¹⁴ Also, parents prefer an early start.¹⁵

Night driving is allowed under adult supervision, and jurisdictions typically allow some unsupervised driving during restricted hours. Work-related driving generally is allowed, and many jurisdictions allow driving to and from school-related activities. A variety of other exemptions also may apply — e.g., for religious events or volunteer fireman duties. The intention is not to deny essential driving at night but to limit high-risk recreational driving.

Recommendation: Restrict unsupervised night driving by newly licensed drivers. Examine the pattern of nighttime crashes in the age group to which graduated licensing will apply to decide when this restriction should begin; optimal starting times are 9 or 10 p.m. Exempt appropriate activities from the night driving restriction.

Should teenage passengers be restricted? Research shows that unsupervised driving with teenage passengers increases crash risk compared with driving alone; the more passengers the greater the risk.¹⁹⁻²¹ The presence of teenage passengers increases crash risk both day and night,¹⁹ so night driving restrictions alone do not adequately address this problem.

California was the first North American jurisdiction to ban teenage passengers. The ban applies during the first 6 months of a 12-month intermediate licensing phase unless an adult is present in the car. Early research indicates that this measure has reduced the number of teenage passengers injured when riding with 16-year-old drivers.² Twenty-five other jurisdictions also limit passengers. Requirements vary as to whether this restriction applies to all passengers or to teenagers only, how many passengers are allowed, and whether family members are exempt. A few jurisdictions specify no more passengers than there are seat belts, but this is not effective because it allows four or more teenage passengers.

Research indicates that New Zealand's passenger restriction is effective, although more young people were found to violate this rule than the one that restricts driving at night.^{22, 23} Many parents support teenage passenger restrictions, but the support is less than for nighttime restrictions.¹⁵

Recommendation: Limit teenage passengers to none or just one during some or all of the intermediate phase, absent adult supervision.

How long should the intermediate phase last? When should full privileges be allowed? The specified minimum length of time is 1 year in Newfoundliand; 1 year, 3 months in Manitoba; 1 year, 6 months in the Yukon; and 2 years in Nova Scotia. In Canada, the age of graduation from the system is not an issue because this is not linked to driver age.

In the United States, 42 systems allow full-privilege driving before age 18. Only 9 states hold young people in the system until age 18; this can be accomplished by raising the starting age, setting the duration of the stages so it is impossible to graduate before age 18, or requiring beginners to remain in the intermediate stage until age 18 even though they may have completed the time requirements at a younger age.

The actual time spent in the intermediate stage can vary widely from state to state, depending on the age a young driver enters the system. For those who obtain an intermediate license at the earliest possible age, the time ranges from 6 months to 2 years. But teenagers who start the process later and reach age 18 before or soon after they start the intermediate phase spend less time in this stage. Such situations could be avoided by applying graduated licensing to all beginners regardless of age, but then policymakers would have to revisit the wisdom of night driving and passenger restrictions. Maryland, for example, drops the night driving restriction for beginners who are older than 18. New Jersey waives night and passenger restrictions for all new drivers 21 and older.

Recommendation: Hold beginning drivers in the intermediate stage until at least age 18. Both inexperience and immaturity contribute to the high crash rate of young drivers, and graduated systems can address both by delaying the age of full-privilege driving until 18.

Should a test be required before full-privilege licensure? Requiring drivers to pass an exit test that is more difficult than the initial on-road licensing test in order to graduate to full-privilege driving could motivate beginners to develop their skills and weed out drivers who have not practiced enough to become proficient. Such tests have been introduced in Ontario and British Columbia but are not part of any U.S. system.

Recommendation: Consider an exit test to ensure competence prior to full-privilege licensure.

OTHER ISSUES

Should driver education be required? Traditional driver education has not reduced crashes,²⁴ although it can be a superior way to learn basic driving skills. The on-road training it involves also can

contribute to a beginner's driving experience. How to integrate driver education with a graduated licensing system has been the subject of much general discussion and extensive consideration in a recent report.²³ With a few exceptions, jurisdictions merely have carried over the driver education requirements of prior licensing systems. The driver education requirement in Maine now applies to drivers younger than age 18, rather than 17. New Jersey and South Carolina added a driver education requirement. Michigan changed its driver education format to a two-phase system, as recommended by the National Highway Traffic Safety Administration, to correspond to the phases of graduated licensing.²⁴ In Canada, six provinces grant a "time discount" to beginners who take driver education, allowing them to graduate sooner. This has been found to be counterproductive.⁸

Recommendation: Graduated licensing works with or without driver education. In jurisdictions that do not already require driver education, the graduated system need not include any such provisions. In jurisdictions that do require driver education, the training should be integrated to complement graduated licensing. Ways should be explored to harmonize the delivery of driver education lessons with multistage graduated licensing requirements.²⁵ However, there is no justification for time discounts.

What about penalty provisions? In practice, graduated systems are largely self-enforcing, with parents playing a major role. All jurisdictions penalize drivers in graduated systems who do not comply with driving restrictions or who are involved in traffic violations or at-fault crashes. Almost all jurisdictions delay or prohibit graduation from the system if there is evidence of a poor driving record. In Nova Scotia, for example, sufficient violations incurred during the two-year intermediate stage start the clock over so that drivers with such records who entered the system at age 16 could remain under a midnight driving restriction until well beyond age 18. The threat of such a penalty can provide strong motivation for safe driving.

Recommendation: Include penalty provisions that delay graduation for beginners with poor driving records.

OVERALL ASSESSMENT

In the 58 North American jurisdictions where versions of graduated licensing have been enacted, significant reductions in collisions and injuries are anticipated. However, even more substantial reductions would be possible if jurisdictions met all the recommendations for a graduated system. In an optimal