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Graduated Licensing: Past Experiences and Future Status

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GRADUATED LICENSING: PAST EXPERIENCES AND FUTURE STATUS

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FOREWORD

The Graduated Licensing Workshop was sponsored by the Transportation Research Board Committee on Operator Education and Regulation (A3B02) and held October 2-3, 1995, in Washington, D.C. The workshop addressed experiences and issues related to graduated licensing, an emerging approach for administering driving privileges to young drivers. This TRB Circular is intended to provide background information for states that are considering or will be considering graduated licensing systems in the future.

The committee extends a most sincere thank you to Allan Williams, JoAnn Wells, Susan Ferguson, and the other staff of the Insurance Institute for Highway Safety for organizing the workshop and this Circular. Similarly, we thank the authors for presenting and preparing the papers found herein. We appreciate those attending the workshop for the invaluable comments and the stimulating discussion.

A. James McKnight, Chair
Committee on Operator Education and Regulation

INTRODUCTION

Allan F. Williams
Insurance Institute for Highway Safety

In every motorized society, young drivers stand out as a problem group. The reasons for their overinvolvement in motor vehicle crashes are well understood — they are primarily a result of the combination of immaturity and inexperience. In the United States, the seriousness of the young driver problem has been acknowledged for decades, yet surprisingly little has been done that has been effective in reducing the problem. Traditional approaches include education and training programs to teach young people how to drive, and special penalty systems to deal with those who incur traffic citations or get into crashes. Both of these approaches have serious limitations in reducing the young driver problem.

Licensing policies have important potential for moderating the young driver problem. All youthful drivers must go through the licensing process, which can be designed to ensure that a certain level of competence has been reached before full, unsupervised driving privileges are allowed. There is great variation in licensing policies both in the United States and around the world, and some policies have been shown to be much more effective than others at reducing the problem.

Graduated licensing is one such policy for dealing with beginning drivers and is currently a subject of intense interest in the United States. Under graduated licensing, full driving privileges are phased in, with the beginner encouraged to accumulate on-the-road driving experience outside of high risk situations. Graduated licensing is not a new concept; it has been discussed in the United States since the early 1970s. However, the world's first bona fide graduated licensing system was introduced in New Zealand in 1987. In the 1990s graduated licensing systems have been adopted in some Canadian provinces, and many states in the United States are considering such systems.

Nearly all the major highway safety organizations in the United States have endorsed graduated licensing, and it appears to be an idea whose time has come. Yet, there are some questions and confusion about graduated licensing in terms of what it really is, what distinguishes it from other licensing systems that involve restrictions, and what the essential elements of graduated licensing are. There are also questions about the acceptability of graduated licensing, inasmuch as it introduces limitations on mobility.

Thus, the publication of the proceedings of the TRB workshop on graduated licensing comes at a propitious time. The papers prepared for this workshop address these issues and others, as well as tracing the early experience of Canadian provinces with graduated licensing. It is intended that these proceedings serve as a sourcebook to states that are or will be considering adoption of graduated licensing systems.

The papers, in the order in which they appear in this report:

1. Introduce an overview of the young driver problem (Williams), emphasizing the exaggerated crash risk of 16-year-olds (three times higher than that of 18-19 year-olds) and crash features—speeding, high nighttime risk, low seat belt use, other young people in the car — that can assist in identifying ways to deal with this problem.
2. Identify the elements of graduated licensing and the functions they are expected to serve: reducing exposure, improving proficiency, or enhancing motivation (McKnight).
3. Review the types of licensing systems used throughout the world and the distinctions among them, an outline of a model graduated licensing system, and a description of New Zealand's system (Mayhew).
4. Review and assess current licensing policies in the United States: learners permit periods (Ferguson) and initial licenses (Preusser). Generally, the path to full driving privileges is quick and relatively easy. In the few states that have restrictions typical of graduated licensing, such as night driving curfews for beginning license holders, the motor vehicle injury problem is lessened.
5. Review the National Highway Traffic Safety Administration's efforts to encourage states to adopt graduated licensing, first in the 1970s and now again in the 1990s (Hedlund and Miller).
6. Describe the early experience in Ontario and Nova Scotia, where graduated licensing systems went into effect in 1994 (Walker; Vance).
7. Assess how driver education and graduated licensing might best fit together (Lonero) and discuss the pros and cons of graduated licensing (Foss), including consideration of factors related to its political viability.

OVERVIEW OF THE YOUNG DRIVER PROBLEM IN THE UNITED STATES

Allan F. Williams
Insurance Institute for Highway Safety

INTRODUCTION

Around the world there is great diversity in policies and practices regarding young, beginning drivers. Despite these differences, crashes and injuries involving young drivers are acknowledged to be a major health problem in every motorized society.

In the United States, young driver safety is a particular problem. Each state sets its own licensing regulations, but generally licenses are allowed one or two years earlier than in most other countries. Most states allow quick and easy access to a full-privilege driver's license, licenses are inexpensive and the costs of driving relatively low, and there is widespread and easy access to passenger vehicles.

Young drivers ages 16-19 have greatly elevated crash rates in comparison with older drivers, and motor vehicle crashes involving both drivers and passengers are a major contributor to the deaths in this age group. The crashes of young drivers are patterned differently than those of older drivers, and their crash characteristics can provide guidance in addressing the young driver problem. This paper provides an overview of the extent of the motor vehicle crash problem in this age group and its main features.

CRASH RATES

The young driver problem in the United States is illustrated in Table 1. These data are drawn from several sources: the Nationwide Personal Transportation Survey (NPTS); the General Estimates System, a national probability based sample of police reported crashes; the Fatal Accident Reporting System (FARS), a national census of fatal crashes occurring on public roads; and the Bureau of the Census. The most recent NPTS data are from a 1990 survey, so all the data are based on 1990 figures.

In terms of crash involvement per miles driven (a measure of driving risk) 16-19 year-old drivers have the highest involvement rate when crashes of all levels of severity are considered: 20 crashes per million miles compared with 5 for all other ages combined. Within this age group, however, 16 year-olds (43 crashes per million miles) and 17 year-olds (30 per million) stand out with much higher crash rates than older teenagers (15 per million for 18-19 year-olds). The experience of 16 and 17 year-olds is of special interest because people of these ages are most likely to be affected by licensing policies pertaining to beginning drivers.

There are similar age relationships when the subset of crashes involving fatalities is considered, although the rate for 16-19 year-olds is exceeded by the age 75 and older group. This is largely due to the fragility of older people; once involved in a crash they are more likely than younger people to die.

Table 1 also presents population-based crash rates for drivers, which are useful in comparing the extent to which motor vehicle crashes are a problem in an age group and in assessing the relative contribution of different age groups to the overall problem. Drivers 16-19 years old have the highest per capita rates of all age groups, for both fatal crashes and all crashes. However, in this case, 16 year-olds have the lowest rates within the teenage group, reflecting their lower licensing rates (slightly less than half are licensed) and their lower number of miles driven per licensed driver compared with older teenagers (Williams, 1995). These factors moderate the problem generated by the extremely high crash risk of 16 year-olds when they drive. It is notable, however, that despite their limited exposure, 16 year-olds have higher per capita crash rates than any age group outside the teen years.

DEMOGRAPHIC TRENDS

The injury problem of teenagers will likely worsen in coming years, due to demographic trends. In 1980, there were more than 17 million 16-19 year-olds. The population of this age group dropped during the 1980s and early 1990s, reaching a low of 13,650,000 in 1992. This trend has reversed and the population of 16-19 year-olds is increasing (to 14,136,000 in 1995) and is expected to reach 15,947,000 in 2000 and 16,628,000 in 2005.

In addition to their elevated crash likelihood, the injury problem for young people is affected by the fact that they drive older and smaller cars that are less protective and because they are less likely to wear seat belts (Williams et al., 1987; Preusser, Williams, and Lund, 1987).

TABLE 1 CRASH INVOLVEMENT RATES BY DRIVER AGE, 1990

Age	All Crashes Per Million Miles	Fatal Crashes Per 100 Million Miles	All Crashes Per 1,000 Population	Fatal Crashes Per 100,000 Population
16	43	17	84	33
17	30	13	101	42
18	16	8	103	52
19	14	7	95	48
16-19	20	9	96	44
20-24	10	5	81	41
25-29	6	3	64	33
30-34	5	2	51	26
35-39	4	2	47	23
40-44	4	2	42	20
45-49	4	2	39	18
50-54	4	2	34	18
55-59	4	2	31	16
60-64	4	3	27	16
65-69	7	4	27	16
70-74	8	5	25	17
75+	12	12	18	17

CAUSES OF DEATH AMONG YOUNG PEOPLE

Deaths from motor vehicle crashes represent the largest health problem for 16-19 year-olds, accounting for 34 percent of all their deaths in 1992, down from 42 percent in 1982. The decrease is due to a rise in teenage deaths from homicide, particularly among males and blacks. Homicides accounted for 24 percent of teenage deaths in 1992.

There are substantial gender and racial differences in the extent to which motor vehicle crashes contribute to the deaths of 16-19 year-olds. In 1992, the percentage of all deaths accounted for by motor vehicles was 31 percent for males and 44 percent for females; it was 42 percent among whites and 13 percent among blacks. In 1992 more than half of the deaths of black 16-19 year-olds were from homicides.

CRASH CHARACTERISTICS

Driving at Night

Per mile driven, nighttime driving is much riskier than daytime driving for people of all ages. In 1990, 18 percent of the miles driven by 16-19 year-olds took place between 9:00 p.m. and 5:59 a.m., but 45 percent of their fatal crash involvement's happened then. For 16 and 17 year-olds combined, 14 percent of their miles and 39 percent of their fatal involvement's occurred at night. The nighttime fatal crashes of 16 year-olds (and to a lesser extent 17 year-olds) are patterned differently than those of older teenagers, occurring earlier. In fact, 16 year-olds' nighttime crashes occur more often between 10:00 p.m. and midnight than after midnight and are concentrated on Friday and Saturday evenings (Williams et al., 1995).

Other Crash Characteristics

Compared with older drivers, 16-19 year-olds are more likely to be in single-vehicle crashes, to be said by the investigating officer to have made one or more driver errors, to be speeding (driving in excess of the speed limit or too fast for conditions), and to have three or more occupants in the vehicle; they are less likely to have high blood alcohol concentrations (Williams et al., 1995). These crash characteristics are most typical of 16 year-olds. The chief characteristics of young driver

crashes (single-vehicle involvement, speeding, other young people in the car) have been reported throughout the world for this age group (Catchpole, Cairney, and MacDonald, 1993; Laapotti, 1994; Twisk, 1994).

Teenage Passengers

The high vehicle occupancy rate of young drivers in crashes deserves special mention, because the occupants are primarily other teenagers. Most of the discussion in this paper has focused on drivers, but injuries to young people as passengers contribute substantially to the overall problem, accounting for 41 percent of all passenger vehicle occupant deaths for 16-19 year olds in 1993, compared with 27 percent for older people (Williams and Wells, 1995). Two-thirds of all teenage passenger deaths (77 percent of passenger deaths of 16 and 17 year-olds) took place when they were traveling in vehicles driven by other teenagers. More than half (54 percent) of the 1993 fatal crashes of 16 year-olds occurred when they were transporting other teens, without an adult in the car.

Alcohol

Alcohol-impaired driving is still a significant problem among young drivers, but its contribution has markedly decreased in recent years. In 1994, 13 percent of fatally injured drivers ages 16 or 17 had high blood alcohol concentrations (BACs) of 0.10 percent or greater and 21 percent were alcohol positive, whereas in the early 1980s, about 40 percent had high BACs and more than half had been drinking (Insurance Institute for Highway Safety, 1995). Twenty-nine percent of 18-19 year-olds had high BACs in 1994, compared with 49 percent of drivers ages 21-30.

CONCLUSION

In conclusion, the combination of youth and inexperience creates a serious young driver problem. Its size is such that additional efforts to control it are needed. Features of young driver crashes identified in this paper (speeding, high nighttime risk, low seat belt use, otherteenagers in the car) can assist in identifying ways to deal with this problem.

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ELEMENTS OF GRADUATED LICENSING

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State administrators and legislators tend to view graduated licensing structurally, as a set of rules governing operation of motor vehicles by young and new drivers. The rules set conditions under which driving may occur, including the tests that must be taken, limitations on time of day, penalties for traffic violations. While the ultimate objective of the various rules is to reduce the risk of motor vehicle accidents within the target population, the manner in which the rules are expected to achieve the objective is not always clear. The purpose of this paper is to delineate the *functions* that the various elements of graduated licensing are expected to serve.

While graduated license systems may vary in the number of levels according to which licensing is "graduated," most involve three levels:

- *Learner's permit* — the first level of licensing, at which a vehicle can be operated only under the supervision of a fully licensed driver.
- *Intermediate license* — the second level of licensing, at which the vehicle can be operated without supervision but subject to certain conditions or restrictions.
- *Full license* — the final level of licensing, the regular driver's license.

The targets of graduated licensing are new drivers. Some jurisdictions limit the system to young new drivers, allowing adult new drivers to bypass the intermediate license. Yet, although not all new drivers are subject to graduated licensing, all those subject to graduated licensing are new drivers.

Graduated licensing can be expected to reduce the likelihood and severity of motor vehicle accidents among new drivers three ways: by *reducing exposure* to the risks that lead to accidents, by *improving proficiency* so that drivers can better cope with the risks to which they are exposed, and by *enhancing motivation* to avoid risk.

REDUCING EXPOSURE

Elements that serve primarily to reduce the extent to which licensees are exposed to the risk of accident include delayed licensing, night restrictions, passenger limitations, reduced speed limits, retesting delays, lowered license sanction thresholds, visible license status.

Delayed Licensure

Introducing a delay between the start of driving and full licensure extends the period during which licensees are operating under the restrictions. The introduction of graduated licensing usually brings with it the addition of intermediate phase. Within existing graduated licensing systems, the duration of the learner's and intermediate phases varies from one system to another, or may be changed within the same system over time. To the extent that elements of the learner's permit or the intermediate license reduce exposure, increasing the duration of the license extends the period of exposure reduction.

Night Restriction

Late night hours are the most dangerous at any age, in part because of their association with alcohol impaired driving. Among youth they are also associated with various form of irresponsible behavior that often accompany night activities.. Finally, among new drivers, the reduced visibility that characterizes night driving compounds the effects of inexperience and lack of skill. Graduated licensing restrictions postpone exposure to the rigors of night driving until new drivers have learned to drive during the day.

Passenger Limitations

The presence of passengers in a vehicle operated by a new driver poses two potential risks: (1) the extent of injury in any accident is multiplied by the number of people in the vehicle, and (2) youthful passengers create a group influence that may lead to dangerous driving. Passenger limitations may be contrived so as to prevent the greatest danger while imposing the least restriction on legitimate travel, e.g. no passengers at certain hours.

Speed Limits

Speed is correlated with the incidence and severity of accidents, particularly among youthful drivers, who both have a tendency to speed and lack the skills to handle higher speeds. However, the value of attempts to impose

lower speed limits upon new drivers can be questioned. Requiring lower speeds than other drivers on any given road introduces a speed differential that may be a greater hazard than uniformly higher speed; prohibiting travel on high speed roads such as expressways prevents access to what are the safest highways per vehicle mile.

Restraint Use

Making restraint use mandatory uniquely among new drivers has been defended as warranted by (1) their greater risk of accident, (2) the greater number of productive years at risk, and (3) their lower existing restraint use rate. While the great majority of States require restraint use by all drivers, most treat violations as a secondary offense. Under a graduated licensing system elevating restraint violations to a primary offense may be possible for young and new drivers where such is not possible for all drivers.

Delayed Retest

Delaying the period of time that applicants who fail a test must wait before being allowed a retest provides a means of limiting exposure of unqualified applicants while they seek improvement. The greater accident risk of new drivers has been used to justify increasing waiting periods for drivers being licensed under a graduated licensing system.

License Sanctions

Drivers who evidence unsafe driving after licensing, through the accumulation of traffic citations are subject to exposure reduction through license suspension or revocation. Introducing these sanctions at a lower violation threshold for new drivers reduces risk exposure for a subgroup that appears to be inclined toward unsafe driving and distinctly underqualified to cope with the risk it generates. Under some programs a single violation can result in suspension or revocation for up to the duration of the intermediate phase.

Visible Identifier

Most exposure reducing elements of graduated licensing attempt to alter the behavior of those operating under the system. Some jurisdictions also attempt to enlist the cooperation of other drivers in reducing the exposure of the new driver by making their license status visible in the form of a distinctive registration plate or insignia on the vehicle they drive. The hope is that the experienced driver will make allowances for the ineptitude of the new drivers, thus reducing their exposure. The fear is that the identifier will encourage other drivers to take advantage of the new driver, perhaps increasing risk exposure.

IMPROVING PROFICIENCY

Some of the exposure reduction measures that have been described improve safety only at the sacrifice of some mobility. One set of graduated licensing elements attempts to raise the proficiency of intermediate licensees so they can better contend with the risks to which they are exposed, thus allowing them to improve their safety while still driving. These elements include multi-level instruction, multi-level testing, parental guidance, and delayed retesting.

Multi-level Instruction

It might seem reasonable to believe that drivers should be given all possible instruction before being allowed to drive at all, in order that they might enjoy the full benefits of instruction at the time when its fruits are most needed. However, much of driving ability appears to be hierarchical in that (1) certain elemental abilities must be acquired before higher level abilities can be acquired and (2) some degree of exposure to driving risks helps make students more receptive to certain forms of risk-reduction instruction. A hierarchical structure argues for multi-level instruction. Since the primary impetus for seeking instruction comes from licensing requirements, multi-tiered licensing provides a means of bringing about multi-level instruction.

Multi-level Testing

The hierarchical nature of driving abilities suggests that the assessment of driving ability be carried out in phases just like its development. It is widely acknowledged that the skill test that serves as the basis of initial licensing can only certify the minimum level of ability needed to enter the traffic stream and that the level of ability needed to reach what might be considered normal "safe" driving can require extensive period of experience. While multi-level instruction and multi-level testing obviously go together, the testing can serve as an element of graduated licensing regardless of whether instruction is provided under the system.

Parent Guidance

Given the limitations in resources available to support instruction, public or private, parents (or other responsible adults) can play an important role in developing the proficiency needed for safe driving. Parents are not expected to provide instruction, but rather to guide practice in driving in a way that will yield maximum benefit. Graduated licensing affords an opportunity to introduce various forms of parental guidance at the points where each is most appropriate. The greatest obstacle to be overcome is a way of encouraging parents to participate without penalizing those whose parents will not or cannot do so.

Improvement Courses

Courses of driver improvement given to traffic violators include instruction intended to acquaint drivers with laws, rules, procedures and principles of safe driving, both to reinforce and add to instruction received before licensing. Under most state driver improvement systems it takes a series of violations, such as three in one or two years, to furnish evidence of a problem requiring remedial instruction. However, in a graduated licensing system, the threshold for assignment to such courses may be lowered such that a single violation triggers action. Early intervention with new drivers has been justified on the basis of the new drivers' marginal qualifications and conditional licensing.

Delayed Retest

A delay in retesting after test failure, in addition to reducing exposure, provides a period of time for the acquisition of information and the development of skill before a license is issued. Since the length of delay in most jurisdictions is brief relative to the total span of driving, the benefits of additional instruction during the interim may outweigh those of reduced exposure.

ENHANCING MOTIVATION

In addition to enabling new drivers to better cope with driving risks, graduated licensing systems can enhance the motivation of individuals to avoid circumstances giving rise to those risks. Such enhancement takes the form of making relief from various restrictions contingent upon a good driving record, imposing sanctions upon violators and instituting courses designed to modify attitudes toward risky driving.

Contingent Restrictions

While the imposition of the various exposure-reducing restrictions described earlier provides a means of reducing accidents, tying the lifting of restrictions to violation-free driving record can serve as an incentive to lawful, safe driving. If the removal of restrictions truly functions to motivate safe driving, any resulting increase in exposure may be offset by safer driving, while at the same time allowing new drivers greater mobility in the freedom to operate at night, with passengers, and on expressways.

License Sanctions

The ability to introduce license sanctions such as suspension and revocation at a lower threshold under a graduated license system, in addition to reducing accident exposure, can also motivate safer driving. Fear of sanction is expected to have a *general* deterrent effect upon the population of new drivers, while the experience of license sanction is expected to have a *specific* deterrent effect upon those new drivers already convicted of an offense. It appears that much of the specific deterrent effect of license suspension is confined to the period of the sanction, i.e. people driving on suspended or revoked licenses tend to be more cautious than they would otherwise be. However, there is evidence of a residual effect beyond the period of sanction.

Improvement Courses

In addition to its role in the development of proficiency, driver improvement seeks to modify attitudes in a way that will motivate safer driving. While attitudes are deemed to play a major role in unsafe driving, they are almost totally responsible for the traffic violations that result in assignment to driver improvement courses. Reducing assignment thresholds under graduated licensing offers a means of enhancing motivation to operate within the law.

SUMMARY

The prospective elements of graduated licensing are many and varied, as are the ways in which they can contribute to the safety of new drivers. Integrating the various elements into effective graduated licensing system requires a design process that takes full account of the way in which the elements relate to driving safety

as well as their relationship with one another. It is evident that existing graduated licensing systems have not benefitted from any such process. Elements of demonstrated effectiveness, such as night driving restrictions have been passed over in favor of elements that have not as yet evidenced a beneficial effect, such as special license plates or lowered speed limits. The function of some graduated licensing provisions seems to be primarily to discourage licensing, something that could be equally well accomplished by raising the licensing age. In the absence of valid guidance as to what works, jurisdictions seem to have instituted programs on the basis of political expediency rather than proven effectiveness.

Two decades ago the National Highway Traffic Safety Administration funded design of a graduated licensing system. That effort was as successful as any could be in the absence of any experience with graduated licensing. While the intervening years have failed to produce an optimal design, they have furnished experience — good and bad — that can provide valid and useful guidance to administrators and legislatures. Now, when interest in graduated license systems is greater than ever, it is the obligation of the scientific community to make the best possible use of what experience has been gained.

TYPES OF LICENSING SYSTEMS

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The paper by A. James McKnight describes the functions that the various elements of graduated licensing are expected to serve. These include reducing the novices exposure to the risk of collision, improving the proficiency or skill of novices so they can better contend with the risks to which they are exposed, and enhancing the motivation of novices to avoid circumstances giving rise to driving risks. While these three functions are characteristic of graduated licensing, they are not found to the same extent in more traditional licensing systems. This paper describes several of these licensing systems and considers how graduated licensing differs from them. These systems include conventional, probational and provisional licensing. The review of various licensing systems also provides the basis to examine the rationale for graduated licensing, to describe how a graduated licensing system might be structured, and to illustrate how graduated licensing actually works in practice.

Conventional Licensing

Licensing systems were originally introduced as a form of driver control serving three functions: revenue generation; driver identification; and selection and education (Mayhew and Simpson 1990). The collection of revenue has come to be a less important function with conventional driver's licenses being used more as a means to ensure that novices meet certain minimal requirements deemed necessary to operate a motor vehicle safely in traffic. In this context, the issuance of a driver's license serves an identification role, specifically the identification of those persons who have reached some standard of proficiency.

In most conventional licensing systems all new drivers are treated the same as other drivers. Once the novice passes the vision, knowledge and on-road test, he or she has unrestricted driving privileges. The governments response to "driver failures" (that is, violations and accidents) is typically warnings, meetings, and, ultimately, as a last resort, prohibiting driving and taking the license away. These same treatments are applied to novice drivers with only a few weeks driving experience and to drivers who have had many years of driving experience.

Probationary Licensing

Recognition that new drivers have high rates of collisions and offenses has resulted in several jurisdictions introducing probationary licenses. As the name implies drivers with a probationary license are subject to a trial period, during which their license can be suspended or other actions taken for less cause than normally applies to regularly licensed drivers. In this way, probationary schemes use the threat of punishment to encourage new drivers to drive safely and punishment itself for those who do not.

Thus, the only distinction made between a new driver, with a probationary license, and another driver is that it takes fewer demerit points to result in license suspension during the probationary period.

The probationary scheme is based on the belief that the threat of punishment in the form of loosing your license will encourage safe driving habits in the initial years of experience and this will carry over to later years. As such, the approach is oriented towards the identification and punishment of the "errant" or "problem" driver, rather than all new drivers, since no restrictions are imposed if a violation- and accident- free record are maintained. It is this feature of the system that often makes it attractive, because it is perceived as "fair" — it does not punish or restrict all new operators, only those who fail to comply with traffic laws.

Such systems have potential for influencing how beginners choose to drive (e.g., they can discourage risk-taking) but not how these novices are capable of driving — nothing about the system is designed to improve skills or experience.

If new drivers do encounter problems during their first few years of driving, they can quite easily be placed on probation or be prohibited from driving. This can, in fact, be counterproductive in some cases. Given that driving experience plays a role in reducing the risk of collision among newly-licensed drivers, prohibiting driving effectively eliminates the opportunity to obtain critical on road experience.

It is also important to recognize that while many jurisdictions have probationary licensing systems — e.g., several provinces in Canada (e.g., British Columbia); several states in the U.S. (e.g., Michigan); several

countries in Europe (e.g., Germany) — the few evaluations that have been conducted of these systems have found no or minimal impact (Gorys et al., 1983; Rosenbaum et al., 1985; Eavy et al. 1986; Lynam and Twisk, 1995). This was certainly the case with the probationary licensing systems in New Zealand as well as in Ontario. As a consequence, New Zealand introduced a graduated licensing system in 1987 and Ontario did so in 1994.

Provisional Licenses

Several jurisdictions have adopted special features for young drivers that have come to be known as provisional licensing. This type of licensing, in practice, is primarily a form of probationary licensing, typically applied to young newly licensed drivers not older ones. Its principal intent is to encourage young drivers to operate their vehicles within the law by subjecting them to tighter license suspension rules than older new drivers and more experienced drivers. Thus, like probationary systems, provisional ones, in practice, rely heavily on threat of punishment. Unfortunately, there is no evidence that threats and punishment overcome inexperience. Certainly, a license suspension means that the novice cannot practice to gain much needed experience.

In some jurisdictions, provisional systems for young drivers include certain restrictions, for example, a night curfew. Importantly, some of these restrictions in provisional licensing systems have proven effective. A night curfew is a good example of a safety measure that has proven effective (Preusser et al., 1984; Preusser et al., 1990; McKnight et al., 1983; McKnight et al., 1990; McKnight 1986; Williams et al., 1985).

The major drawback of provisional licensing schemes is that they only address the problems facing young, newly-licensed drivers and make no provisions for older, newly-licensed drivers. Moreover, the provisional system tends to be "one-shot". It imposes a set of restrictions for a fixed period of time, or until the novice turns 18 years of age, at which point the restrictions are all removed and full driving privileges are granted. A progressive entry into unrestricted driving, which is logically a more promising approach given the difficult learning curve facing novices, is not achieved.

Provisional license schemes have been introduced in several U.S. states — i.e., Maryland, California, Oregon — and in a few European countries — e.g., France. In the French apprentissage system, the minimum age for a full license is 18, however, 16 and 17 year olds can drive earlier through a combination of both private and formal instruction in driving.

Does a provisional licensing system produce safety benefits? The provisional license schemes in the United States have been showed to be associated with some safety gains (McKnight et al., 1983; McKnight et al., 1990; Hagge and Marsh 1986; Hagge and Marsh 1988; Jones 1994). These reductions, however, have not been great and not consistently found across all measures examined. The evaluations of the apprentissage system of early accompanied driving in France are so far inconclusive (Lynam and Twisk 1995).

Graduated Licensing

Graduated licensing systems are distinguished from probationary and provisional systems by their systematic, step-wise approach to full licensing status. Limitations are initially placed on the new driver in terms of such things as when they can drive, where they can drive, with whom, and how. These limitations could include, for example, restrictions from operating on certain high speed highways, being accompanied by a licensed adult at all times, driving during daylight hours only, and prohibiting drinking any alcohol and driving. As new drivers pass predetermined milestones — such as post-licensing tests, years of experience, and clean driving records — the restrictions placed on their driving privileges are gradually removed and they earn the privilege of full unrestricted driving. In this manner, graduated licensing provides a protective way for new drivers to gain experience.

Thus, graduated licensing systems are intended to provide new drivers with the opportunity to gain **driving experience** under conditions that minimize the exposure to risk. As such, it is the most promising of systems because it recognizes that increases in experience result in decreases in the risk of collision (Mayhew and Simpson 1990; Mayhew and Simpson 1995). Somewhat like an apprenticeship program, it is intended to ease the novice into the full range of traffic conditions.

Such a system recognizes that beginning drivers will make more errors in the early stages when learning a new skill, particularly a complex, dynamic psychomotor skill like driving. Fewer critical mistakes occur as proficiency or mastery in the skill is gained; but proficiency requires extended practice over a considerable length of time. Unfortunately, novice drivers are usually launched into difficult driving conditions without this proficiency, so the results are inevitable and predictable.

What is needed is a method by which the novice can gain experience and proficiency but under less demanding (risky) conditions, so that errors and their

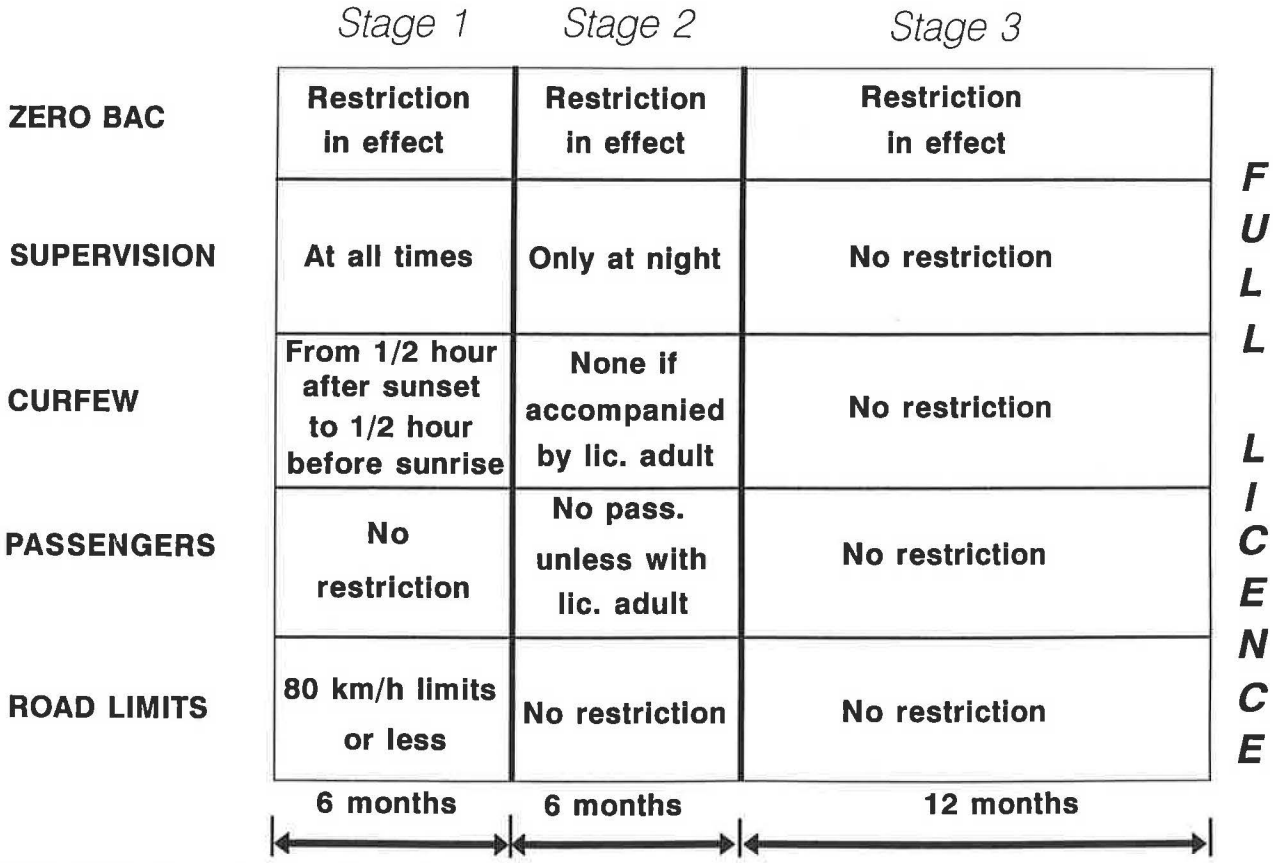

FIGURE 1 Graduated licensing system.

consequences are reduced. This is the purpose of graduated licensing. The principal objective is to provide opportunities to gain experience under conditions of minimal risk. As experience and competence are gained, exposure to more demanding driving conditions is gradually phased-in.

Figure 1 illustrates how a graduated system might be structured (Simpson and Mayhew 1992). As can be seen, this system would involve three stages before graduation to a full license with unrestricted driving privileges. Each of these stages are described briefly below.

• *Stage One* (six-month duration). The entry requirement would be passing the current knowledge test and meeting the medical and vision standards. If these conditions were met, the beginner would be issued a "GL" driver permit as well as removable "GL" plate or sticker for the vehicle(s) they operate. During the learner stage, their driving would be subject to the following restrictions:

- A zero BAC;
- Accompanied, at all times, by a fully licensed adult (aged 19 or over), who occupies the front-seat, passenger position;
- No driving at night from one-half hour after sunset to one-half hour before sunrise;
- No driving on roads with a posted maximum speed of over 80 km/h.

These restrictions would be in place for a period of six months. If the driver remains violation and accident-free, he or she can graduate to the second stage of the system upon meeting certain other conditions described below.

• *Stage Two* (six months). After the first six-month stage has been completed, the driver can advance to Stage Two if they pass a road test. If successful, they are issued a graduated driver's license. In this stage, the driving privileges are more extensive, since some of the restrictions have been removed. If nighttime driving

occurs, or if passengers are being transported, supervision is still required, however the novice driver can now drive but only during daylight hours. Also, the novice can now drive on roads with a posted maximum speed of over 80 km/h. Thus, the novice would be subject to the following restrictions:

- Zero BAC;
- Must be accompanied by a licensed adult when driving at night; and
- Can drive solo during daylight hours but cannot carry passengers (unless of course, such passengers are licensed adults aged 19 or over).

This set of restrictions would be in place for six months. Given an accident and violation-free record, the novice could progress to the next and final stage.

- *Stage Three* (12 months). Following the second six-month stage, the beginning driver would progress to a 12-month Stage Three. In this stage, all the restrictions are removed with the exception of the zero BAC provision. Although the novice is granted virtually unrestricted driving privileges during this phase, violations or accidents can result in a return to the beginning of the system. There is a strong incentive to drive safely.

Following this stage the novice qualifies for graduation to a license with full driving privileges. To do so, he or she may be required to pass a hazard perception test and/or an advanced on-road test.

The rather complex graduated licensing scheme shown in Figure 1 does not exist in any jurisdiction. A more simplified version of this system, however, had been proposed in the United States by the National Highway Traffic Safety Administration (NHTSA) as early as the late 1970s. At that time, NHTSA developed a model for provisional (graduated) licensing of young novice drivers that was incorporated into a work statement for a demonstration project (Croke and Wilson 1977) awarded to the State of Maryland in 1977. Maryland's State Motor Vehicle Administration implemented the program (which is more provisional than graduated in nature) in 1979 and amended it in 1985 after evaluation. The Maryland system contains elements of graduated licensing — e.g., night curfew — but falls short of being a full blown graduated licensing system.

Simplified versions of graduated licensing have been implemented in a few jurisdictions outside the United States, including New Zealand, several Australian States — e.g., Victoria — and two Canadian provinces — Ontario and Nova Scotia. The graduated licensing schemes in Australia have recently been reviewed in a study by the Accident Research Centre at Monash University and found not to conform to the concept of graduated licensing (Haworth 1994). At best, the current system in Victoria can be described as a very weak version of graduated licensing. Much stronger schemes are in place in Ontario and Nova Scotia and these are described in companion papers. The New Zealand graduated licensing system is described briefly below.

The graduated licensing system in New Zealand was introduced in August 1987 and it applies only to drivers age 15 through 25 with the exception of motorcyclists. All motorcycle riders, no matter what age must pass through the graduated license system.

The New Zealand scheme has three Phases.

- Phase I is a Learner's period.
  - This Learner's license must be held for a minimum of six months.
  - The six month requirement can be reduced to three months if the learner completes an accredited driver training course.
  - During this initial phase the learner must drive under adult supervision at all times.
- Phase II is a Restricted period.
  - It is 18 months in duration but can be reduced to nine months if an Advanced Driving Course is completed.
  - No passengers are allowed unless the front seat occupant is over 20 and has had an unrestricted license for over 2 years.
  - There is a low BAC limit of 30 mg%.
  - There is also a night curfew from 10 p.m. to 5 a.m.

The third phase of the system is graduating to full driving privileges.

The graduated licensing scheme in New Zealand differs considerably from systems adopted elsewhere — e.g., Victoria, Australia; Ontario and Nova Scotia. In Ontario and Nova Scotia, for example, graduated licensing applies to all new drivers not just to those age 15 through 25 as is the case in New Zealand. Moreover, the Ontario and Nova Scotia graduated licensing schemes also differ from one another in important ways and these differences will become apparent in reading the relevant papers in this Circular. The point is that graduated licensing has proven to be flexible and adaptable to social, economic, geographic and political conditions within a jurisdiction.

Does a graduated licensing system produce safety benefits? The only evidence so far on the effects of graduated licensing on traffic accidents comes from New

Zealand. A report released by the Ministry of Transport in that country found initially a substantial drop in casualties — i.e., about 25% — coincidental with the introduction of graduated licensing that lasted for two years before partially dissipating. The study found that there is still an 8% reduction in the proportion of crash-involved drivers who are 15-19 years old (Frith and Perkins 1992).

Summary

Graduated licensing is potentially more constructive than probationary and provisional approaches because it provides direct remedial action for the problems encountered by new drivers, especially young ones. Such a system provides the opportunity for beginning drivers to gain experience and proficiency under less hazardous conditions than does probationary and provisional license systems. The graduated licensing approach does not seek to limit the quantity (number and distance of trips) of a new driver's experience, rather it seeks to influence the quality (conditions and circumstances) under which that experience is gained.

Graduated licensing also minimizes the opportunities for young beginners to engage in risky behaviors or encounter risky situations — it often carries restrictions that are directed more at age-related factors (e.g., zero BAC; number or age of passengers). For example, it should potentially reduce the incidence of drinking and driving at night when many of the social functions and youth-oriented drinking occasions take place. Such elements may be vital for young newly licensed drivers. Graduated licensing also covers several years allowing the developmental process to unfold before granting full driving privileges.

Graduated licensing systems can also vary substantially in their operational features. Jurisdictions considering introducing a graduated licensing system, for example, need to consider several key design, operational and other features including:

- Who is covered by the system (e.g., should it apply to new drivers of all ages or only those who are young?)
- Restrictions (e.g., should it include night curfews, passengers restrictions, speed and/or highway restrictions);
- Exemptions (e.g., who should be exempted from which restrictions?);
- Enforcement (e.g., how can compliance with the restrictions be regulated and ensured?);
- Sanctions (e.g., what sanctions should be applied for violations?);
- Rewards and incentives (e.g., should incentives be introduced to foster compliance?);
- Education and training (e.g., how do training and education interface with the system?);
- Testing (e.g., should new licensing tests be introduced?); and
- Duration (e.g., how long do the various phases last?).

Thus, a graduated licensing system can take many forms depending on the restrictions selected, how they are applied and to whom, over what period of time, what sanctions are applied to violators, and so on. In designing a graduated licensing system, however, it is critical to ensure that its features are true to the basic prevention principle of providing opportunities to obtain driving experience under conditions that minimize exposure to risk. In addition, the elements of the system should be based, to the extent possible, on scientific evidence and proven effectiveness.

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HOW WE LICENSE IN THE UNITED STATES — PATHS TO LICENSURE

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The concept of graduated licensing is grounded in the knowledge that learning to drive is a long-term undertaking, the complexities of which cannot be learned overnight. It is well established that many beginning drivers, particularly young drivers, have neither the skill nor the maturity to handle driving under the more hazardous conditions, such as driving at night and driving with teenage passengers in the car (Williams et al., 1995a, Williams and Wells, 1995). Thus it makes no sense to bestow on a beginning driver a full-privilege license to drive under all conditions. Graduated licensing systems, which are already used in Australia, New Zealand, and Canada, phase in full licensing privileges for the new driver with a progression from lower to higher risk driving situations as driving experience is gained. In a graduated licensing system, the driver progresses through an initial learner's period of several months in which driving is supervised, a restricted license stage in which unsupervised driving may be allowed under some circumstances and not others, and finally an unrestricted license that is granted only if the driver remains free of crashes and violations during the restricted stage.

Given the heightened interest in the United States in graduated licensing systems for young, beginning drivers, a first step is to look at the licensing requirements that are currently in place and how these practices differ from a typical graduated licensing system. In most states, newly licensed drivers have few restrictions governing where, when, and with whom they can drive; thus, the learning period prior to licensing becomes particularly important.

LICENSING REGULATIONS IN THE UNITED STATES

Unlike many countries around the world, in the United States licensure is typically allowed at 16 years, compared with 17 or 18 elsewhere, although some states allow licensure even earlier. Not only does the age at which licensure is allowed vary, but the path to licensure also varies substantially from state to state.

To document state licensing requirements, the relevant portions of the licensing sections of the motor vehicle codes for the 50 states and the District of Columbia were reviewed and data were collected on the requirements for learner's permits and driver's licenses (Williams et al., 1995b). Representatives of the motor vehicle departments in each state were interviewed to confirm information contained in the laws and to discover other relevant information not available from the statutes. Each state's driver manual was also reviewed. Of particular interest were whether a learner's permit is required prior to licensure and if the permit is required, whether it had to be held for a minimum period before applying for a license, and if so for how long. Also of interest were the prerequisites for obtaining a permit, the earliest age at which a permit could be obtained, and the term for which the permit is valid. Prerequisites for licensure and the earliest age at which a license could be obtained were also noted. The following discussion is based on state requirements as they apply to the minimum age at which a learner's permit can be obtained.

In all states teenagers can obtain licenses before age 18, but parental permission is required. Without parental permission the minimum licensing age is 18. New Jersey is the only state that delays licensing until age 17. Massachusetts allows licensure at age 16 years, 6 months, and Indiana at 16 years, 1 month. But the majority of states license at age 16 (40 states and the District of Columbia), and six states allow licensure at age 15, one at age 14.

All states administer vision and written tests as a prerequisite to obtaining a driver's license, and all states require that prelicensure driving be supervised. However, states differ in who they allow to supervise. For the most part learning drivers must be accompanied by someone older than the learner, but there are six jurisdictions (Arizona, Hawaii, Kentucky, Ohio, New Mexico, and Washington, D.C.) in which any licensed driver is allowed to supervise and this could include another 16 year-old driver. At the minimum permit age, nine states require that a learner be accompanied by a parent or guardian. Other states specify the age of the supervisor and/or the number of years of licensure, for example, any driver age 18 or older, with one year experience.

Most states require a learner's permit in order to drive legally before licensure. Connecticut and New Hampshire do not issue learner's permits but allow any young person who has attained a specified age to drive if they are accompanied by a parent or guardian.

Although learner's permits are available in other states, some do not require that a learner's permit be obtained prior to licensure. Thirty jurisdictions require a permit prior to licensure, but in 19 jurisdictions, upon reaching the minimum licensing age, young people can obtain a driver's license without having ever had a permit to drive. Of the 30 states that require permits prior to licensure, 11 require that they be held for a minimum period, ranging from 14 to 90 days before the person can apply for a license.

The minimum age at which a permit can be obtained also varies. Among the states that license at age 16, the minimum learner's permit age is 14 in 5 states, 15 in 19 states, 15 years 6 months in 5 states, 15 years 9 months in 2 states and 16 years in 6 states and the District of Columbia. The remaining states allow a permit at 15 years 3 months, 15 years 7 months, and 15 years 10 months.

The period between the age at which a permit can be obtained and the minimum licensing age may be important because there is evidence that these relationships can affect the time spent in the learner's stage and the age at which a license is obtained (Ferguson et al., 1995; Ferguson and Williams, 1995). As shown in Table 1, there are 13 states in which the minimum learner's permit age is the same as the minimum licensing age, four in which the period is less than six months, seven states with a period of six months exactly, and one state where the period is between 6 and 12 months. Another twenty states set the permit age at one year younger than the licensing age, and in six states the period is more than one year. If drivers can obtain a permit to drive well before the minimum licensing age more time can be spent in the learner's stage. And if this period is used by parents to provide supervised practice driving, longer permit periods should result in beginner drivers with more driving experience (Ferguson and Williams, 1995).

Data were collected as part of a national survey of parents of 17 year-olds. Parents were asked, among other things, the age at which their 17 year-old child obtained their learner's permit and their driver's license. These data were analyzed for 16 year-old licensure states and grouped according to the minimum age at which the permit could be obtained, for example, whether permits could be obtained at the same age or at a younger age than the minimum licensing age (see Table 2). For states in which the permit could not be obtained until age 16, the average holding period was only about four months. This compares with a six month holding period for states which allow a learner's permit at 15 years, 6 months, and an 11 month holding period for states that allowed a permit to be obtained a year or more prior to licensure. However, there is a trade-off, because in states that allow an earlier period of supervised driving, teenagers typically obtained their licenses earlier. There is also concern that with more opportunity for driving prior to licensure, teenagers, who may feel more confident in their driving skills will be more likely to drive illegally during the learner's stage. In Virginia, a 16 year-old licensure state, the minimum learner's permit age was recently reduced from 15 years, 8 months to 15 years. For teenagers who obtain their license close to their 16th birthday, this would allow at least a year of supervised driving compared with a four month period previously. It will be interesting to see how this affects permit holding periods and age of licensure.

States also vary in their regulations governing the period for which a permit is valid, ranging from 60 days to indefinite.. Five jurisdictions have permit terms of three months or less and in 27 states permits are valid for one year or more. States with very short permit periods or where permits expire shortly after the minimum licensing age may hasten the progression to licensure because, although permits can be renewed, this often involves a trip to the licensing agency and/or a fee. In Delaware, for example, a 16 year-old licensure state, the minimum permit age of 15 years 10 months, combined with a two-month permit period, results in nearly half of the young people obtaining their license within the first month after turning 16 (Ferguson et al., 1995).

CONCLUSIONS

The graduated licensing systems that are currently in place in New Zealand, Australia, and Canada all stipulate a minimum period of supervised driving ranging from 6 months in Nova Scotia (3 months with driver education) to 12 months in Victoria. By comparison, in the United States, only 11 states have a minimum required permit period, only 3 of which last for 90 days. In fact, 19 states do not require a learner's permit, and 14 states require no permit, no driver education, and have virtually no prerequisites to getting a driver's license other than a vision and a written test.

In Ontario and Nova Scotia, Canada, as well as Victoria, Australia, it is not possible to get a learner's permit until age 16 years, and permits must be held anywhere from 3 months with driver's education in Nova Scotia to 12 months in Victoria (but drivers must be age 18 in order to get a license). In the United States, the only state that does not allow a permit until age 16 years, and has a required holding period, albeit

TABLE 1 RELATIONSHIP BETWEEN MINIMUM PERMIT AGE AND MINIMUM LICENSING AGE

Permit Age	Number of States
Same as licensing age	13*
1-6 months prior to licensing age	11
6-12 months prior to licensing age	1
1 year prior to licensing age	20
More than 1 year prior to licensing age	6

TABLE 2 AVERAGE AGE WHEN PERMIT AND LICENSES WERE OBTAINED IN 16-YEAR-OLD LICENSURE STATES WITH VARYING MINIMUM PERMIT AGES

License age/Permit age	Average Permit Age	Average License Age	Permit Duration
16/16	16 years 1 month	16 years 5 months	4 months
16/15 years 6 months	15 years 8 months	16 years 2 months	6 months
16/15 years or younger	15 years 3 months	16 years 2 months	11 months

of only 30 days, is Kentucky. However, in this state any licensed driver may accompany the learner.

Although this analysis indicates that many states allow a quick and easy route through the learning phase, this does not necessarily mean that in these states beginning drivers have little or no experience prior to licensure. Except in the two states that have no learner's permits, learner's permits are available and are required for prelicensure driving to be done. Basically, states leave it up to parents to regulate their children's driving and there is evidence that many do require more than the state does. In a recent survey (Ferguson and Williams, 1995) parents reported that more than 90 percent of their licensed 17-year-olds had obtained a learner's permit and the average permit duration was 8 months. Parents were overwhelmingly in favor of a minimum period of supervised driving, with 79 percent preferring a period of at least 3 months; 60 percent preferred a period of at least 6 months. Most parents reported that they place their own restrictions on where, when and with whom their teenagers could driver when first licensed, and many would like licensing to be more difficult in their own state.

The goal of the learner's phase is to provide beginning drivers with supervised experience prior to letting them drive on the road alone. Presumably, the longer the permit term, the more opportunity there will be to accrue the necessary skills. Of course, merely holding a permit for a long period of time does not guarantee that a lot of time is actually spent driving. Neither does it mean that in states where permits are actually held for a longer period that more supervised driving is actually taking place. Clearly, more research is needed to understand what factors contribute to the amount of supervised driving a beginning driver actually accumulates, for example, the rules of parental involvement or socioeconomic status and the relationship of actual practice time and state law requirements.

There are a few relatively easy ways in which the learner's permit phase could be changed to allow more

supervised driving and to bring the prelicensure requirements more in line with graduated licensing systems. States could increase the term for which a permit is valid. A permit that is valid for a short period may encourage learning drivers to trade a permit in for a license earlier than they otherwise would. A minimum period of supervised driving prior to licensure, preferably a period of at least 3 months should also be mandatory. Reducing the age at which permits can be obtained, while permitting a longer learning period, may lead to earlier licensure than currently is the case. Research is needed to disentangle the relationship between these factors. It may be that the best solution is for states to mandate a minimum period of supervised driving not to start before age 16, as is currently the case in Ontario, Canada and Victoria, Australia.

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INITIAL LICENSES FOR YOUNG DRIVERS

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Teenagers have higher per mile crash rates than older drivers. They have much higher crash rates at night (Williams, 1985). These high crash rates for teenagers have been shown to be associated with both young age, or perhaps immaturity, and lack of driving experience (see e.g., Mayhew and Simpson, 1990).

Graduated licensing may provide an opportunity to deal with both the young age and lack of experience issues. It can accomplish these goals by delaying full privilege, drive anywhere drive anytime, licensure until the young person is somewhat older. And, during the delay, it can allow for extended supervised practice driving and unsupervised driving during the less hazardous daylight hours. There may also be additional opportunities for post-licensing control within a total Graduated Licensing system.

The process of integrating a young person into the traffic stream can typically be segmented into four critical time periods which begin with the following four critical events: first drive on a public road (typically one year before the state's minimum age for a learners permit; Ferguson et al., 1994); obtain a learners permit and/or enroll in drivers education; obtain a license; and gain access to one's own car. The mileage driven by young persons, and thus the highway risk they incur, increases exponentially with each of these events (Williams et al., 1985a). The present paper will focus on the middle of this sequence. That is, getting a license and the initial period of having a license.

GETTING A LICENSE

Most young people want to become licensed as soon as they possibly can (Preusser, 1988). Licensing is seen as a goal. Individual teenagers achieve this goal at different rates depending on who they are, their family backgrounds and the state in which they live.

Comparisons between teenagers living in the same state, and thus subject to the same licensing law, indicate that licensure at a younger age is more common among those teenagers from two parent family units, greater parental educational level, fewer siblings and higher school grades (Preusser, 1988; Ferguson et al., 1994). Such characteristics describe teenagers who are "advantaged." They use these advantages to achieve licensure at a younger age.

Comparisons between teenagers living in different states indicate that the rate at which teenagers become licensed is greatly influenced by state licensing law. One important element of state law is the age at which a learners permit may be obtained. Younger permit ages promote early learning leading to early licensure. A second important element is the length of time for which the permit is valid. Permits that expire quickly, say within a few months, may create a sense of urgency to learn how to drive and become licensed before the permit expires. Alternatively, permits that are valid for a year or more do not create this urgency. A third element is the age at which a license may be obtained. Obviously, a state which licenses fifteen year olds will have younger teens licensed whereas a state which does not license until age seventeen will have substantial delays in teenage licensure (Williams et al., 1985b).

While based on less evidence, the fourth element in state law which appears to affect the age at which teens become licensed is the attractiveness of the license that can be obtained. Full privilege licenses are very attractive and well worth pursuing. Restricted licenses are less valuable. The primary license restriction that can be found in the United States is a driving curfew which affects recreational driving, but not driving to or from work or school, at night. The state with the strongest night curfew, 9pm to 5am, is New York. There is substantial evidence from New York and elsewhere that night curfews reduce crash involvements during the curfew hours (Preusser et al., 1984; 1990; 1993; Ferguson et al., in press). There is also evidence that the New York curfew, and possibly the curfews in Pennsylvania and Louisiana, have the added effect of delaying teen licensure (Preusser et al., 1984; Preusser, 1988; Ferguson et al., 1994). In fact, in New York, the evidence suggests that the overall or general crash reduction effect of delayed licensure exceeds the specific effect of crash reduction during the affected curfew hours.

Recently, high school students were surveyed in Delaware and upstate New York (Ferguson et al., 1994; upstate is north of New York City). Delaware learners permits, which expire in two months, are issued beginning at age 15 years, 10 months. New York learners permits, which are valid for one year, are not issued until age 16. Both states issue licenses to sixteen year olds but only New York has a night driving curfew.

The results indicated that the average Delaware student "first drove on a public road" at age 14 years, 10 months which was six months earlier than the New York average of 15 years, 4 months. Similarly, the Delaware students typically obtained their learners permits two months earlier than in New York (16 years, 0 months versus 16 years, 2 months) and their licenses four months earlier (16 years, 3 months versus 16 years, 7 months).

In another study (Leaf et al., 1994) teen crash rates were compared between Delaware and Connecticut, two states without night driving curfews, versus upstate New York and Pennsylvania, two states with night driving curfews that apply to 16 year olds and some 17 year olds. The results indicated lower crash rates in Pennsylvania with a midnight to 5 am curfew and much lower crash rates in New York with a 9 pm to 5 am curfew. These differences were partly due to crash reductions during the affected curfew hours and partly due to crash reductions during all other hours of the day. Both the New York and the Pennsylvania curfews are designed to limit unsupervised night "recreational" driving. Neither curfew applies when driving to or from work or school or when accompanied by a parent.

Fatal crash rates for drivers ages 16 and younger vary substantially across states. On average, states with the lowest crash rates do not allow learning driving until age 16 with licensing at ages 16 to 17 (Preusser, 1995).

HAVING A LICENSE

Currently in the U.S., licenses are available to seventeen year olds (New Jersey plus New York City and Long Island), sixteen year olds (43 states including: the District of Columbia; Massachusetts at 16 years, 6 months; and Indiana at 16 years, 1 month), fifteen year olds (6 states) and fourteen year olds (South Dakota). In the majority of states, these young driver licenses are subject to restrictions, controls or monitoring which exceed the conditions for adult drivers and/or experienced drivers.

It is felt that the most notable restriction is the night driving curfew discussed above. Currently, some form of night driving restriction can be found in nine states (IIHS, 1995). These restrictions variously affect drivers ages 14 through 17.

Another restriction, receiving much current interest, is lower allowable blood alcohol levels for young drivers. Often referred to as Zero Tolerance, some form of lower young driver alcohol limit may be found in 34 states (NHTSA, 1995). These lower alcohol limits have been shown to be effective in reducing young driver alcohol related crashes (Hingson et al., in press).

Several states have laws and regulations dealing with license control and monitoring. The most familiar of these is license suspension following a drug and/or alcohol conviction which, except in Massachusetts, need not be transportation related. Such laws, referred to as Use and Lose, may be found in some form in 32 states (NHTSA, 1991). Similarly, 20 states have established special penalties for impaired driving convictions of youthful offenders (NHTSA, 1991). Also, there are eleven states that specifically allow for driver improvement actions to be taken against young drivers, "provisional" drivers and/or new drivers based on fewer "points" on the drivers license (NHTSA, 1994). Such actions may include license suspension.

Many of these post-license restrictions and controls are based on age. That is, when a driver reaches a certain age the curfew is lifted, or the lower blood alcohol limit does not apply, or the special penalties for an impaired driving conviction are no longer available. Some are based on time. For instance, a driver may move from a "provisional" license to a regular license following one, two or three years with a good driving record. There is also precedence for lifting a restriction following the completion of some education requirement. For instance, the night driving curfew in New York and Pennsylvania is lifted for those seventeen year olds who have completed drivers education.

RECOMMENDATIONS

Young driver licensing law has undergone surprisingly little change in the United States during the last 30 years despite the large body of evidence documenting the extent and characteristics of the young driver crash problem. The current emphasis on Graduated Licensing offers an opportunity to incorporate much of what we have learned into these newly developing systems each of which must deal effectively with the problem of young age and lack of driving experience.

It is felt that "young age" is an issue primarily when a teenage driver is engaged in recreational types of activities. Young age appears to be less of an issue in learning driving situations or when engaged in a purposeful driving activity (Preusser, 1995). It is felt that the young age issue can best be solved by limiting "recreational" driving until the young person is somewhat older. In effect, this means delaying the time at which a young person will obtain a full privilege, drive anywhere drive anytime, license.

Delayed full privilege licensure can be achieved by delaying the time when learning driving can begin. And,

once begun, the learning period should be allowed to extend for a long period of time. There would seem to be no rationale for a learners permit that expires in a few months. Rather, the young person should be allowed, and even encouraged, to hold the learners permit for a year, two years, or longer if the young person so desires. Our laws should never create a sense of urgency or a sense of expectancy for immediate licensure.

Delayed full privilege licensure can also be achieved by establishing a night driving curfew. A night curfew for 16 and perhaps 17 year old drivers may encourage some teenagers to remain in the learner status knowing that the license they would obtain at these ages would be curfew restricted. Others may decide to obtain a license and gain driving experience during daylight and while driving to or from work or school at any hour of the day. Either way, the most hazardous night recreational driving would not be allowed. And, young persons would be gaining driving experience either as a learning driver or as a "daylight" licensed driver.

Graduated licensing systems can address both the young age and driving experience issues. By delaying full privilege licensure, graduated licensing can delay recreational types of driving until the young person is somewhat older. By encouraging supervised practice driving, graduated licensing can begin the process of accumulating driving experience. Then, the young driver can be integrated into the system step by step with increasing age and increasing driving experience.

A complete Graduated Licensing system should also maintain control and monitoring following full privilege licensure. This might include Zero Tolerance for alcohol and, for the first few years of licensure, quicker driver improvement actions based on fewer "points."

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GRADUATED DRIVER LICENSING FOR YOUNG NOVICE DRIVERS UNITED STATES EXPERIENCE

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Motor vehicle crashes remain the leading cause of death for young people between the ages of 15 and 20. High crash rates among this age group are attributed to driving inexperience, lack of adequate driving skills, poor driving judgment and decision-making, risk taking behavior and immature personalities. The National Highway Traffic Safety Administration (NHTSA) has long advocated that beginning young drivers not receive full driving privileges immediately. Under a graduated licensing system, beginning drivers improve their driving skills and acquire on-road experience under less risky conditions by being exposed to more difficult driving experiences gradually through three stages of licensing. Current usage calls the system "graduated" which includes a middle "provisional" license before full licensure. NHTSA believes that graduated licensing is a key component in addressing the over-representation of youths in traffic crashes and will continue to encourage states to implement such a system.

THE EARLY NHTSA GRADUATED LICENSING MODEL

Almost 20 years ago, NHTSA developed a model graduated licensing system to address the over-involvement of young drivers in traffic crashes. The NHTSA Report, *Development of a Model System for Provisional Licensing of Novice Drivers: Final Report (1977)*, recommended that beginning drivers, under the age of 18, proceed through a three stage licensing process, over a 24 month period, prior to obtaining an unrestricted license. The three stages involved a six month learner phase, a six month restricted phase and a 12 month provisional license phase before the unrestricted license. Under the learner's permit, adult supervision was required at all times, driver education was required and voluntary parent-supervised driving practice was recommended. The second, restricted stage recommended voluntary parent-supervised driving practice, allowed unsupervised driving during certain hours and included a youthful driver improvement program (e.g., group counseling, individual hearing, or additional restrictions on driving). The third, provisional stage required the driver to demonstrate six months of crash and conviction free driving before receiving the unrestricted license. The youthful driver improvement program and certification of parent practice were also recommended under the third stage.

Maryland

In 1979, Maryland became the first state to implement and evaluate several features of the model graduated licensing system.

Under Maryland's system, at age 15 years 9 months a young person was eligible for a learner's permit. The learner's permit was issued upon successful completion of a written knowledge test and passing a vision test. The new driver was given the first of two parent participation handbooks designed to assist parents in continued training in basic driving skills. The permit holder could drive only when accompanied by a licensed driver 21 years of age or older. At age 16, having held a permit for a minimum of 14 days and having completed driver education, the new driver was eligible to take the road test for a provisional license. Under the provisional license the driver was subject to the following:

- No driving between 1:00 a.m. and 6:00 a.m., unless accompanied by a licensed driver at least 21.
- Parent-supervised driving practice — a parent reported the number of hours of supervised practice they had provided the new driver. A second parent handbook was issued providing guidance in the training of more complex driving skills such as night driving, driving on freeways and inclement weather.
- Youthful driver improvement program — for a first offense, a driver was sent a safety pamphlet and had to report for a test on its contents.
- To be eligible for a regular license, a driver had to be at least 18 years old or accumulate six consecutive months of conviction-free driving.

Maryland's system reduced crashes by five percent and convictions by 10 percent for all 16 and 17 year old drivers *(Youth License Control Demonstration Project,* 1983).

In 1985, Maryland extended the period of conviction-free driving from six months to one year and

the nighttime restriction from midnight to 6:00 a.m. A follow up evaluation reported that the system was still producing a five percent reduction in daytime crashes and a 10 percent reduction in violations (*Provisional Driver License System for Follow-up Evaluation of Maryland Youth License Control Demonstration Project*, October 1990).

California and Oregon

California and Oregon also implemented and evaluated components of the model program graduated driver licensing system.

California's system became operational in October, 1983 and applied to drivers under 18 years of age. Major components of California's program included:

- Parent-teen driver handbook addressing driving problems and the use of safety belts both as drivers and passengers, and encouraging parent participation.
- Instruction permit period of at least one month.
- One week waiting period after failing the knowledge test. Two week waiting period after failure of the driving test.
- Parent's certification that the student received a minimum of 30 hours of additional driving practice supervised by a licensed adult at least age 25.
- Youthful driver improvement program (e.g., warning letter after first traffic conviction and a one-month license revocation allowing supervised driving after second conviction).

The California Department of Motor Vehicles reported that the licensing system reduced by 5.3 percent the rate of crashes involving 15-17 year old drivers (*The Traffic Safety Impact of Provisional Licensing*, 1988).

Oregon's graduated licensing program was implemented in October, 1989 and applied to all drivers younger than 18. Oregon's system included the following major components:

- Zero tolerance (.00) for under age 21.
- Pass a second level knowledge test on safe driving practices and a road test. If an applicant failed the road test, they had to wait 28 days before attempting again.
- Learner's permit was not required prior to initial road test, but was required, for at least a month, if an applicant failed the initial road test.
- Accelerated driver improvement actions on fewer convictions than for adults (warning letter for first traffic conviction, meeting with driver improvement counselor for second conviction, suspension for third conviction).

Oregon reported a 16 percent reduction in crashes for male drivers age 16-17. No significant differences were found for females *(The Effectiveness of Provisional Licensing in Oregon: An analysis of Traffic Safety Benefits, 1991).*

CURRENT NHTSA RECOMMENDATIONS FOR GRADUATED LICENSING

Based on information gained from the studies on graduated licensing and other traffic safety research, additional components have been added to the original model and the restricted and provisional stages have been combined to be known as the intermediate license stage. NHTSA recommends that beginning drivers, under the age of 18, proceed through a three-stage licensing process, over a minimum 18 month period, prior to obtaining an unrestricted license. The three stages are a six month learner's phase, a 12 month intermediate phase, and a unrestricted license. Recommended components within each stage are:

Stage 1: Learner's Permit

- Minimum age recommended by state.
- Pass vision and knowledge test.
- Licensed adult (at least age 21) required in vehicle at all times.
- All vehicle occupants must wear safety belts.
- All drivers under age 21 subject to lower blood alcohol concentration (i.e. zero tolerance < 0.02 BAC).
- Visually distinct license.
- Must remain crash-and conviction-free for six consecutive months to move to the next stage.

Stage 2: Intermediate License

- Successfully complete stage 1.
- Minimum age recommended by state.
- Pass second level knowledge test, including safe driving practices and an on-road driving test.
- Restricted hours of driving unless supervised by a parent/guardian or licensed adult at least 21 years of age.
- All occupants must wear safety belts.
- All drivers under age 21 subject to lower blood alcohol concentration (i.e. zero tolerance < 0.02 BAC).
- Youth-oriented and more rapid driver improvement actions are taken in the event of violations or at-fault crashes.

	License Stages		Components							
	Learner's Permit Required	Intermediate License	Night Restriction	Parent Participation	Driver Education	Crash/ Conviction Free Period	Youth Driver Improvement Action	Visually Distinct License	Lower BAC	Mandatory Safety Belt
California	X	X		X	X			X	X	X
Colorado	X	X			X			X		X
Idaho *			X		X			X	X	X
Illinois *	X		X		X			X	X	X
Louisiana *			X		X		X	X	X	X
Maryland	X	X	X		X	X		X	X	X
Massachusetts	X	X	X		X		X	X	X	X
New Jersey	X		X		X		X		X	X
New York	X	X	X		X		X	X		X
Oregon		X					X	X	X	X
Pennsylvania	X	X	X		X	X		X		X
South Carolina *	X		X		X			X		X
South Dakota *			X					X		X
Vermont		X			X		X	X	X	X
West Virginia	X	X			X		X	X	X	X
Wisconsin	X	X			X		X	X	X	X

** Restrictions are attached to full license (no intermediate license issued).*

FIGURE 1 Graduated driver licensing system components (states with licensing stages and/or nighttime restriction).

- Intermediate license is visually distinct from learner's permit and regular license.
- Must remain crash-and conviction-free for 12 consecutive months to move to the next stage.
- Parent participation in driving process — certifying that the novice driver had a minimum number of supervised hours of driving.

Stage 3: Full License

- Successfully complete the intermediate license stage.

GRADUATED LICENSING IN THE STATES

Although licensing practices vary from state to state, several states have components of a graduated licensing system. California, Colorado, Maryland, Massachusetts, New York, Pennsylvania, West Virginia, and Wisconsin require a three-tiered licensing system for young drivers. Of these states, Maryland, Massachusetts, New York and Pennsylvania have nighttime driving restrictions. California, Maryland, Massachusetts, and West Virginia have zero tolerance laws for under age 21. Wisconsin has zero tolerance for under age 19. In California, Maryland, Massachusetts, and Wisconsin, the new driver must have completed driver education to be eligible for an intermediate license. California is the only state requiring certification of driving practice by a supervising adult to be eligible for an intermediate license. In Pennsylvania and Maryland the driver must have one year of conviction-free driving to be eligible for an unrestricted license. All of these states have a visually distinct license.

Other states, such as Illinois, New Jersey, Oregon, and Vermont, require a two-tiered licensing system having several components of graduated licensing. Other states such as Idaho, Louisiana, South Carolina, and South Dakota may not require a permit prior to being licensed but they all have a nighttime driving restriction attached to their full license. The attached chart shows which states have stages of licensing or a minimum of five components of graduated licensing or a nighttime driving restriction.

NHTSA'S INITIATIVES IN GRADUATED LICENSING

To encourage states to adopt graduated licensing, NHTSA has awarded $1.2 million in grants to five states (Alaska, North Carolina, Florida, Tennessee and Vermont) to implement and evaluate components of a graduated driver licensing system. NHTSA also has convened a graduated driver licensing task force of leaders from eight national organizations to develop a plan of action to encourage states to implement graduated driver licensing systems.

Of the five states awarded grants, Florida, Tennessee and Vermont have just been awarded

funding, therefore initiatives in those states are just beginning. The status of Alaska and North Carolina's actions are as follows:

Alaska — A graduated licensing bill was introduced in the House of Representatives in 1995. The bill is pending before the full House. Included in the bill are a nighttime driving restriction, a parental participation requirement, more rapid driver improvement actions, zero tolerance for all drivers under age 21, and a requirement for violation free driving for one year. The proposed nighttime driving restriction between the hours of 1:00 a.m. and 5:00 a.m. has been controversial..

Alaska passed, effective July 1, 1994, a "use it-lose it" law which provides that youth between the ages of 14 and 21 who use or possess alcohol or illegal drugs will lose their license or privilege to obtain a license for a specified period of time.

North Carolina — A graduated driver licensing bill was passed by the Senate but has not been acted on by the House. The bill is eligible for action during the 1996 legislative session. If passed, North Carolina drivers under the age of 18 will be required to obtain a learner's permit for six months, and to complete six months without a moving violation before being allowed to drive unsupervised. All occupants of a vehicle driven by a person under the age of 18 must wear safety belts. The bill also tightens up a loophole in the existing driver education requirement, mandating the six hour 'on-the-road' component to involve six hours of actual driving experience, not merely riding in the vehicle for that period of time. In separate legislation, a zero tolerance (0.02 BAC) provision was enacted for drivers under the age of 21.

NHTSA recently convened a graduated driver licensing task force made up of leaders from eight national organizations to establish common goals, to combine resources, and to establish a plan of action for encouraging states to implement graduated licensing. The task force includes leaders from the American Automobile Association (AAA) and the AAA Foundation for Traffic Safety, the Insurance Institute for Highway Safety (IIHS), Advocates for Highway and Auto Safety (AHAS), the National Transportation Safety Board (NTSB), the National Association for Independent Insurers (NAII), the National Association of Governor's Highway Safety Representatives (NAGHSR), and the National Committee on Uniform Traffic Laws and Ordinances (NCUTLO). The task force agreed to a common definition and critical components of a graduated driver licensing system. Several states have already requested assistance and organizations have made their resources available to support efforts to encourage implementation of graduated licensing in these states.

NHTSA encourages all states to consider a three staged graduated driver licensing system for novice drivers under the age of 18. NHTSA will continue to support task force efforts, provide resources to states, provide guidance and consultation on the implementation of graduated licensing components, and provide testimony before state legislatures.

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THE ONTARIO EXPERIENCE WITH GRADUATED LICENSING

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INTRODUCTION

Before discussing the development of graduated licensing in Ontario it may be helpful to have an overview of the evolution of driver licensing in Ontario. The primary focus will be on the process of new driver licensing at the time graduated licensing came under consideration.

HISTORY

The licensing of drivers in Ontario has a lengthy and varied history. It began in 1903 with the requirement that motor vehicles be registered. By 1905, the traffic safety situation was such that withdrawal of motor vehicle licenses from drivers with frequent traffic law violations was considered necessary.

As time passed and motor vehicle use became more and more popular, more stringent highway safety measures were needed. In 1927, a road examination for all driver's license applicants became mandatory.

Continued concerns over traffic safety led, in 1930, to the establishment of a demerit rating system, which linked the number of violations to driver improvement actions and insurance rates. That same year, the Department of Highways (as the Ministry of Transportation was then called) began keeping official collision records.

In 1956, written tests were introduced for new drivers and three years later, the demerit point system was introduced as a driver control measure. In 1960, the new Department of Transportation's Highway Safety Branch took over driver examination in Ontario from the private sector. In 1961, mandatory vision tests were introduced for new drivers.

Following the introduction of these measures, little was done in Ontario with respect to new driver licensing until 1977. That year the license classification system was introduced. This established the current system of driver licensing by size and type of vehicle being driven. Drivers under certain ages were now prohibited from operating certain types of vehicles.

Unfortunately, young drivers were significantly over-represented in traffic collisions and fatalities. Consequently, after considering alternatives, the ministry brought forward a new driver licensing system which was labelled probationary driver licensing.

PROBATIONARY DRIVER LICENSING

The driver control system known as the demerit point system, which was introduced in 1959 and is still in effect, originally treated all drivers equally.

Under this system, demerit points of varying levels are assigned to the driver convicted of certain motor vehicle driving offences. Points are assigned ranging from two to seven points, depending on the perceived severity of the offence.

The associated driver control and improvement system as introduced in 1959 provides for a warning letter to be sent upon accumulation of six demerit points. At nine demerit points, the driver may be required to attend an interview to demonstrate why the driver's license should not be suspended. Suspension of the driving privilege for 30 days is mandatory upon an accumulation of 15 or more demerit points.

While this system appears to work reasonably well for licensed drivers, it is a punitive system and one which reacts to driving behaviour only after, in most cases, at least two convictions have been recorded.

It was suggested that young drivers and new drivers should be subject to a more stringent system, one which would react earlier to poor driving behaviour. In theory, this would make them more aware of the need to obey the traffic laws and would encourage a commitment to safe and lawful driving.

After considering alternatives, including graduated licensing, Ontario introduced probationary driver licensing in 1981 for all new drivers in Ontario.

The principal goal of the probationary system was to identify and deal with new drivers who commited traffic law violations before their improper driving behaviour became ingrained.

Every probationary driver was required to complete two one-year periods of suspension-free driving in order to reach non-probationary status.

A probationary driver was sent a warning letter upon first accumulation of demerit points. Suspension of the driving privilege for 30 days is mandatory for any probationary driver who accumulates six or more demerit points. Points are reduced to zero upon reinstatement, and the driver must restart the suspension-free period.

Preliminary statistical analysis of the first year of the program found that there were nine per cent fewer

collisions and fourteen per cent fewer convictions for the probationary drivers. It also found the collision rate was down by seven per cent and the conviction rate was down by 11 per cent for male drivers under 20 years of age.

However, it must be noted that subsequent analysis did not replicate these findings. It appears the collision and conviction rate effects attributed to the introduction of the probationary system were not necessarily the result of the system. Similar effects on collision and conviction rates of other drivers were also found to have occurred at that time. The net result is that a statistically significant benefit of probationary licensing in Ontario cannot be demonstrated.

It was found some drivers remained at probationary status for several years due to repeat convictions and suspensions suggesting that the system was ineffective in altering driver behaviour or attitude.

The alarming trends in the driving records of new drivers in Ontario provided further proof that probationary licensing had not proven to be as effective as was hoped. New drivers remained a significant road safety problem.

POSSIBLE SOLUTIONS

Recognizing in 1988 that there was a safety problem with new drivers in Ontario as well as a public concern over rising auto insurance rates for all drivers, the government of the day introduced a package of highway safety initiatives. One of the intiatives was a committment to consider graduated licensing as well as other alternatives which had a potential to improve highway safety.

A large number of options were considered including: revising the demerit point system, maintaining the probationary system but adding restrictions to the learner level, increasing the minimum driver age, tougher driving tests, mandatory driver education, graduated licensing for those under 18, graduated licensing for all new drivers.

Following careful study and review by Ministry staff and the executive, staff were authorized to proceed with the development of a graduated licensing program applicable to all new drivers in Ontario.

CREATION OF THE ONTARIO GRADUATED LICENSING MODEL

A review was undertaken of existing and proposed graduated licensing systems from around the world with the goal of finding a system which would provide the desired combination of safety and mobility. It was also decided that it would be necessary to develop a graduated licensing system for motorcyclists as well.

Among the existing and model systems considered were; a system suggested by the Traffic Injury Research Foundation, three systems from the National Highway Traffic Safety Administration, several from Ontario sources including the Insurance Bureau of Canada, two Australian models, and the programmes in existence in Maryland, California, New Zealand and Victoria, Australia.

For various reasons none of these systems was deemed completely appropiate for Ontario. Systems based on age had to be rejected because of legislative provisions, other systems were felt too stringent or had conditions which were felt unacceptable to the new drivers. Therefore a list of potential conditions was drawn up for consideration by stakeholders and the Ministry of Transportation from which the components of a graduated licensing system could be taken.

Optional Restrictions and Components

The list of restrictions and components which could possibly be included in a graduated licensing system is extensive and may include elements unique to the state or province. In Ontario a partial list of the conditions considered included:

- Adult Accompaniment,
- Curfews,
- Passenger Limits,
- Certification of Practice,
- Vicinity Driving,
- Highway Prohibition,
- Low or Zero Blood Alcohol,
- Driver Education: Mandatory or Credit(s),
- Credit for Non-Ontario Driving,
- Maximum Speed Limit,
- Driver/Vehicle Identifier,
- Type of Vehicle,
- Specialized Testing,
- Specialized Problem Driver Treatments,
- Number of Levels of License, and
- Duration of Each Licensing Level

ONTARIO GRADUATED LICENSING MODEL — APPROVAL PROCESS

The graduated licensing model recommended for implementation in Ontario was generally felt to offer a reasonable balance between safety and mobility for new

drivers of all ages in Ontario. However, before proceeding with enabling legislation it was necessary to consult with the people of Ontario on the model.

There was a high level of public awareness of the concept of graduated licensing. This was due to some extent to an advertising campaign conducted by the Insurance Bureau of Canada (IBC) while the Ministry proposal was under development using their preferred system. Posters and pamphets were produced, mall and store displays set up, information booths staffed at fall fairs, auto shows and other events and a telephone poll established. The results of these activities were shared with the Ministry.

When the Ministry proposal was finalized it was first shared in discussions with interested stakeholders, such as law enforcement, highway safety groups and driver educators. Suggested revisions, (additions or deletions and adjustments to various conditions) were considered within the Ministry at all levels prior to a final version being sent to Cabinet for approval.

Following Cabinet approval, the Bill was put forward to the legislature for review. While none of the three political parties voiced objection to the concept the Bill was referred to Committee for public hearings on the model. Hearings were held in three locations around the province and were well attended. A number of groups and individuals appeared before the Committee to endorse the concept and comment on specific conditions. The hearings showed an extremely high level of acceptance by the general public for the concept and the model. An informal poll conducted by the Toronto Star, the highest circulation paper in the province, found 91 percent in favour of the model.

The Bill passed all levels of the legislative process and became law in December, 1994 with implementation beginning April 1, 1995.

ONTARIO GRADUATED LICENSING SYSTEM

Level One Class G

The new driver in Ontario must first obtain a Class G Level One (G1) license by successfully completing a knowledge test and passing a vision screening test. The driver is then issued a photo driver's license valid for five years and the driver record is created online at the time of application.

The G1 license period lasts a minimum of 12 months, however that period can be reduced by as much as 4 months through completion of an approved driver education course. While the holder of a G1 license the driver is subject to the following conditions:

- May operate a Class G vehicle only (car, minivan, small truck);
- May only drive when accompanied by a fully licensed driver with at least 4 years experience. The accompanying driver must have a blood alcohol content of less than .05;
- May carry only one front seat passenger, that being the accompanying driver;
- May carry only as many passengers as there are seat belts;
- Must maintain zero blood alcohol;
- May not drive between the hours of midnight and 5:00 a.m.;
- May not drive on '400' series highways and urban expressways unless accompanied by a licensed driver instructor (In Ontario all freeways and expressways under provinicial jurisdiction are identified by a number ranging from 400 to 499); and
- Subject to early improvement interventions.

Upon completion of the minimum time period the G1 driver becomes eligible to graduate to Class G Level Two. In order to do this the applicant must successfully complete a basic on-road examination of operating skill. This test is essentially the same as the previous Ontario road test. A new driver sign is provided to all G1 drivers but use of the sign is optional.

Level Two Class G

Upon entering this level the driver is issued a Class G Level Two license (G2). Class G2 lasts for a minimum of 12 months.

Because the driver has already demonstrated competency to the level of the previously licensed Class G driver there are fewer restrictions at this level. The driver will be able to experience situations of higher risk but will remain aware of the conditional status of the license.

While the holder of a G2 license the driver is subject to the following conditions:

- May operate a Class G vehicle only;
- May carry only as many passengers as there are seat belts;
- Must maintain zero blood alcoholj; and
- Subject to early improvement interventions.

Upon completion of the time period the G2 driver is eligible to attempt the G2 exit test, which is an advanced level road test. It is twice as long as the G1 exit test and requires a much higher level of driving competency to complete successfully.

GRADUATED LICENSING FOR CLASS M

Ontario implemented a graduated licensing system for motorcyclists in recognition that new motorcyclists were also a high risk group. A graduated licensing system for motorcyclists was created along with the possibility of a driver being a "hybrid" new driver, i.e. full license in one class while subject to graduated in another. Consultation with motorcycle clubs and organizations was conducted at the same time as the discussions on the Class G model.

Level One Class M

Ontario faces a dilemma similar to other jurisdictions. It is virtually impossible to require a motorcyclist to have an accompanying licensed driver to provide assistance and advice while learning to operate the vehicle. It is also very difficult for an applicant motorcyclist to have driving experience before licensing.

In Ontario a driver could obtain a learner motorcycle license by completing a knowledge test and a vision test, no skills test was required. A temporary permit valid for 60 days was issued. The permit restricted driving to daylight hours and roads with a maximum posted speed limit of 80km (50 miles per hour) or less. Unfortunately these provisions were poorly enforced and some motorcyclists avoided full licensing, content to drive seasonally on the temporary license. Also the temporary license holder was not recorded on the driver computer system.

The graduated licensing system devised for motorcyclists included administrative changes which address this concern and expanded on the restrictions previously faced by new motorcyclists. The restrictions faced by M1 drivers include:

- May not carry passengers;
- Must have zero blood alcohol content;
- May only drive motorcycle one-half hour before sunrise to one-half hour after susnset.
- May only drive on highways with speed limit of 80 km/hr or less;
- May only drive on designated sections of Highway's 11, 17, 61, 69, 71, 101, 102, 144 and 655. (The speed limit on these highways exceeds 80km/hr but there are no alternative routes available to residents residing along these highways); and
- Subject to early improvement interventions.

Applicants must spend a minimum of 60 days in Class M1 and a maximum of 90 days. If the applicant does not successfully complete the road test within that time period the license can be extended to be in effect for one additional day, the day of the test. Failure to complete the road test requires the applicant to reapply. However, unlike in the past, the applicant is now on the driver license system from the first application.

The road test required to exit Class M1 is essentially the same as the previous basic skills test used for motorcycle licensing.

Level Two Class M

Upon completion of Class M1 the new motorcyclist becomes a Class M2 license holder. As the graduated system for G lasts a total of two years or more so does the M. While the two levels in G each last 12 months, it was felt unwise to allow an untested motorcyclist to drive 12 months before driving skills are assessed. It was also felt that motorcyclists should be able to obtain some credit for completing motorcycle driver education so a 4 month credit is granted to motorcyclists but at the second level due to the brevity of level one. This 4 month credit reduces M2 to a minimum of 18 months.

Class M2 includes only one restriction - the Class M2 driver must have a zero blood alcohol level when driving.

DRIVER IMPROVEMENT INTERVENTIONS

The probationary system has been discontinued with the implementation of graduated licensing. Because of this an opportunity became available to revise the driver improvement actions taken for new drivers.

The amendments may seem minor however, closer inspection shows the changes to have been significant. As with probationary licensing, an advisory/warning letter is sent to the driver upon first accumulation of demerit points.

Upon an accumulation of six or more demerit points a probationary driver would be suspended for thirty days. Upon reinstatement the demerit points were reduced to zero and the driver was required to restart the probationary credit period. Under graduated, upon accumulating six to eight demerit points the new driver is required to attend a group interview to discuss proper driving behaviour. Should the new driver accumulate

nine of more demerit points the driver is suspended for sixty days. Upon reinstatement the graduated licensing period is extended by the length of the suspension.

ENFORCEMENT

Passing legislation to address a safety problem is only the first step in effecting change. The legislation must be seen as practical, non-intrusive, justified and enforceable. Legislation which cannot be enforced must be expected to have little likelihood of being obeyed.

Frequent consultations were held with the Ministry of the Solicitor General which has overall responsibility for police actions in Ontario, and direct jurisdiction over the Ontario Provincial Police. This resulted in the police being provided with the authority and the new equipment necessary to enforce the blood/alcohol provisions. Also together with the Ontario Police College new procedures were written and distributed to the police officers. As well a one-page information sheet explaining graduated licensing was developed to assist officers in dealing with the public.

CURRENT STATUS

Graduated licensing was implemented in two stages in Ontario.

In the first stage, which began April 1, 1994 any person applying for a new driver's license in Ontario was required to enter the graduated licensing system. In recognition that new drivers in Ontario may have driving experience elsewhere, Ontario established a policy on granting partial or full exemptions from the system depending on the nature of the experience.

In the second stage, which began June 6, 1994 any driver holding a learner license under the probationary system and who had not passed the required road test, became subject to the graduated licensing system with credit given for their time as a learner. The exemption policy has continued.

Implementation process and problems and resource concerns will be unique to any jurisdiction and therefore are not decribed here. However, one cannot emphasize too much the need to ensure enforcement support from the beginning of the process. It is also important to identify affected stakeholders as early as possible in the process. In particular the support of public and community safety groups can be a great benefit. A "champion" both within government and from the public, someone or organization committed to the concept, can keep the public aware of the new driver issue and lobby for the implementation.

From an operational/administrative perspective it is vitally important to identify as much of the changes needed as early as possible in the process. There may be some initial reluctance to commit resources to support a proposal which may not be implemented. Therefore, implementation may be delayed. However, obtaining a driver's license is a "rite of passage" for many young people, and highway safety and driving are subjects on which every driver feels an expert. The introduction of a graduated licensing system will be high profile public process, one which will generate interest and expectations, including expectations of immediate implementation. The jurisdiction should be prepared to take advantage of the increased public awareness of highway safety and introduce the program as soon as possible after approval.

The graduated licensing program in Ontario is intended to be a dynamic living evolving thing, one which will mature with time and one which may be expected to change and adjust as the provincial driving environment changes.

Because of the recent introduction of the program no evaluation has as yet been completed. The evaluation will be complicated, in part due to the way records were previously kept, and further by the introduction of other safety promotions and programmes during the time period. The results of the evaluation are eagerly anticipated and will be shared as soon as available.

GRADUATED DRIVER LICENSING IN NOVA SCOTIA

James Vance
Nova Scotia Department of Motor Vehicles

Nova Scotia is a relatively small province on the Atlantic coast with a licensed driving population of approximately 600,000. In recent years we have issued about 18,000 learner's licenses and upgraded some 13,000 of these individuals to full driving privileges. Our driving environment consists of seasonal fluctuations in weather tempered by marine influences. This is a polite way of saying we have our fair share of rain, fog, sleet, freezing rain, slush, snow and just about any other form of water you can imagine. Winter drivng conditions prevail for about four months of the year. We have a good network of arterial highways but a minimum of high density expressway conditions. Most of the population resides in two modest sized urban areas or in small towns scattered along the coast. In Nova Scotia you are never more than an hour's drive from salt water hence the motto on our license plate "Canada's Ocean Playground".

Last year we recorded the lowest number of highway fatalities since the 1940s - 91. This continues the gradual downward trend that is generally characteristic of the North American experience. The Department of Transportation and Communications in cooperation with other departments, public interest groups and law enforcement agencies continued to work toward an improved safety record by pursuing initiatives within the context of the National Occupant Restraint Program and the Strategy to Reduce Impaired Driving, both of which where coordinated at the national level through the Canadian Council of Motor Transport Administrators. Overall we decided to focus our attention on high risk groups and behaviours in a period of severe fiscal restraint. Legislative measures proved attractive in this context.

Very briefly other measures we have taken include an immediate three month license suspension for drivers when the police officer has reason to believe they operated a vehicle with a blood alcohol content in excess of 80 mg or refused to provide a breath sample for analysis, a mandatory education program for first time impaired driving offenders as a condition of license reinstatement, a ban on the use of radar detection devices, increased fines for a number of high risk offences and driving while suspended and, of course, graduated driver licensing. We are also actively considering mandatory use bicycle helmets, the seizure and impoundment of vehicles operated by suspended drivers, major revisions to our driver improvement programs and measures to address the senior driver issue.

Nova Scotia has enacted fairly strong highway safety measures in the past and continues to pursue the objective of reducing the adverse consequences of traffic collisions on our highway system. My first point, then, is to emphasize that the people of this province have been willing to tolerate firm legislative action designed to improve safety. My personal experience as Director of Highway Safety has been to enjoy the support of the public, the media and our legislators on many points. As one critique of the major provincial newspaper once remarked, the editorial policy advocated by this media enterprise seldom ventured beyond steadfastly supporting God, Queen and highway safety.

I will not burden you with the familiar data on collision involvement of new, and in particular, young drivers. It will be no surprise to anyone that the patterns observed in our province are largely the same as those experienced in your jurisdiction. I confess to having repeatedly using Leonard Evans' statement to the effect that the overinvolvement of young road users is so robust and repeatable that it is almost like a law of nature. Of course we had to assemble the data to document the problem we wished to address by a new approach to driver licensing.

Let me take a moment to describe the system that was in place prior to introducing graduated driver licensing.

Persons had to be 16 years of age to apply for a learner's license which they could obtain by passing a knowledge test of the rules of the road and sign recognition. A vision screening test was also administered. A one year learner's license was issued which authorized the operation of a motor vehicle only while accompanied by a licensed driver in the front seat and no other passengers in the vehicle. The learner could take a practical test of his or her driving capabilities after 60 days or earlier if a licensed driving instructor certified that the person was ready to be road tested. This did not necessarily mean that the learner had successfully completed a program of driving instruction. The learner was subject to suspension under our demerit point system (six months) after one speeding conviction or two minor moving violations.

Once the road test was completed the learner became a newly licensed driver for the next four years. There were no driving restrictions. A newly licensed

driver differed only with respect to the demerit point system from any other fully licensed driver. The suspension threshold was lower for the newly licensed driver and would occur after two speeding convictions or three minor moving violations. Commercial drivers licenses were restricted to drivers with at least one year of driving experience and a minimum age of 18 or 19 depending on the vehicle being driven.

That was our licensing system as it existed in the early 1990s.

In February, 1991 the Insurance Bureau of Canada sponsored an international symposium on "New to the Road: Prevention Measures for Young or Novice Drivers". This symposium was organized by the Traffic Injury Research Foundation of Canada and was held in our capital city of Halifax. The symposium included presentations from many highly qualified individuals from Canada, the United States, New Zealand and Australia and resulted in an excellent report of key findings and implications. Graduated driver licensing was strongly recommended for implementation in all Canadian provinces in a manner which best reflects the conditions and circumstances under which collisions occur in each jurisdiction. The location of this symposium certainly helped in our efforts to educate decision makers, the media and the public to the new driver issue and the concept of graduated driver licensing.

Our Department was very active in this symposium and it ceratinly served as the springboard for our plans to develop a graduated driver licensing system to recommend to government. Shortly after the symposium we established a working group on graduated licensing which was to consider program recommendations for both new and senior drivers. Graduated entry and graduated exit from the driving population was the guiding principle of the group's responsibility. The mandate established for the group was to:

1. Gather and review relevant research materials,
2. Identify and quantify problem areas, and
3. Examine possible program responses.

The senior person in each operating unit of the Highway Safety Division was involved and each shares credit for the result. At this point we did not have a clear assessment of the political acceptability of what we were developing as the direction could be best described as "do something". As I recall from my days as a political science student "do something" is often the public policy response of choice in many, if not most, instances in modern liberal democracies. In any event, we accepted the new driver issue as a priority for us and soon were describing the initative as a plan to develop a new generation of safe drivers.

It is appropriate at this point to acknowledge the cooperation of our colleagues in the provinces of Ontario and British Columbia. Being much wealthier provinces, they were able to engage in much more detailed research and policy development work than was possible in Nova Scotia. We were the beneficiary of very helpful documents delivered in the proverbial brown paper envelopes from an unknown source.

Development of the graduated driver licensing system proceeded quietly within our organization as we waited for the opportune moment to present our recommendations. The approach we were taking was fairly comprehensive and included some elements we knew would be a challenge to gain acceptance. It was also abundantly clear that we were entering a period of fiscal restraint — any proposal which included significant expenditures was known to be a non-starter. As it turned out the graduated driver licensing proposal that was eventually presented enabled us to absorb budget reductions. A serendipitous outcome to say the least!

The required stimulus finally came in October, 1992 when once again the insurance industry targetted Halifax to launch its public information campaign to heighten awareness and support for graduated licensing. The industry stated that it was not advocating a particular design for graduated licensing but simply encouraging government to introduce legislation that is practical and enforceable. This effectively placed the issue on the public agenda and we were prepared with the results of the working group's efforts.

Our Minister recommended to his Government colleagues that we proceed to further develop staff recommendations through a public consultation process. The objective presented to Government was stated as follows:

"To effectively address the persistent problem of road crashes involving inexperienced drivers of all ages in a manner which:

1. May be implemented within existing resource limitations,
2. Is preceived as a fair and reasonable response to a serious social issue, and
3. Emphasizes positive motivation for safe driving while accepting the necessity of addressing those individuals who may require more direct treatment."

While Government considered this recommendation we proceeded with a staff workshop which had been previously scheduled for December with guest speakers

to participate in a panel discussion following the next day by a detailed review of our proposal. This essentially finalized the proposal which was taken to the public when Government approval to consult was received in January, 1993.

It is important to note that the Government's mandate was rapidly coming to a conclusion. A general election was several months away and the public consultation schedule was compressed in recognition of this reality. The Government's standing in public opinion was not high as the election was to conclusively demonstrate. Having made a presentation to the Government's Policy Board, a small group of senior Cabinet Ministers which included the Minister of Education, the Minister of Justice, and the Minister of Health (a former minister of our Department), I can assure you we gained the substantive support of these politicans for the proposal. However, I would be less than honest if I did not also observe that the need to gain a higher approval rating in advance of the election was an important contributing factor to our success.

Our consultation involved the release of a brochure summarizing the problem and the proposal. It was geared to a youth audience. A self-addressed, postage-paid comment card was included in the brochure. We did not utilize any extensive discussion paper normally associated with such a process. Presentations were made to student assemblies in high schools throughout the province usually followed by public sessions at the school in the evening. Public interest was low to moderate. As expected, high school students were keenly interested but for the most part were ill-equipped to engage in discussion on the merits of the proposal.

In my report summarizing the results of the consultation process I reached the following conclusions:

1. There is widespread support for action to reduce the collision involvement of young drivers,
2. Adults strongly endorsed the graduated driver licensing concept, teens tended to oppose it,
3. Many adults expressed support for some form of mandatory driver education/training,
4. There was near unanimous support for a zero BAC for new drivers,
5. Teens opposed usually felt that the good majority would be penalized because of a minority of young problem drivers,
6. Teens were most concerned about the late night driving curfew and the length of time it would take to be able to drive without supervision,
7. Many teens and adults believe it is too easy to qualify for a license.

Implementation of the graduated driver licensing proposal required numerous legislative amendments which were hastily prepared after a legal opinion had been obtained to the effect that the proposal did not offend the Human Rights Act (Nova Scotia) or the Canadian Charter of Rights and Freedoms.

Then the Government was defeated at the polls, activity went into a holding pattern while the new Government established itself. It was fall of 1993 before the new Government became interested in the proposal which had undergone some minor modifications following the public consultation. It was nearly a year later to the day that the new Government announced that it too wished the benefit of public consultation. Again the timeline was short as our new Minister wanted to introduce the legislation in the spring of 1994. This time we were to consult with student leaders assembled at three locations in the province. The representatives were almost always drawn from student councils and driver education classes. While discussion tended to be more meaningful and informed the participants clearly exhibited a selection bias. Another brochure was prepared with most of the content unchanged from the earlier version. Apart from becoming aware that driver education students and student council representatives are, on the whole, more pleasant to talk with and much more articulate than the general student body, not much was gleaned from this process that we had not already learned. The legislation was introduced as planned and enacted without amendment. Legislative debate was positive, no significant concerns were expressed as might have been expected since the former government was now sitting in opposition and could hardly oppose a measure which they had endorsed a year earlier.

Our graduated licensing system came into effect on October 1, 1994.

The system continues the learner, newly licensed driver and regular driver stages which had existed in the past. The learner stage remains unchanged except that the person must wait six months before taking the road test to upgrade his or her license. This can be reduced to three months if an approved driver education or driver training program is successfully completed. The driver who accompanies a learner must be a driver who has completed the newly licensed driver stage. In other words, the supervising driver must be an experienced driver. The learner is subject to a zero alcohol requirement.

Once the road test has been successfully completed the learner becomes a newly licensed driver for two years. If a suspension or revocation occurs during this

period the two years must be repeated. During the newly licensed period the zero alcohol requirement is effective. A midnight to five a.m. curfew is in effect unless the person has obtained an employment exemption or is accompanied by a licensed experienced driver. There must be a seatbelt available to every passenger transported by a newly licensed driver and no more than one passenger can occupy a front seat position regardless of the number of seatbelts available. Newly licensed drivers cannot upgrade their driver's license to a higher class of license. To graduate from newly licensed driver status the driver must successfully complete a six hour defensive driving course.

The requirements apply to anyone, regardless of age, applying to obtain a license for the first time after October 1, 1994. New residents will be given credit for experience while a licensed driver.

A similar system has been developed for motorcycle licenses. A new motorcycle learner's license has been developed. The learner is restricted to daytime driving without passengers. The learner period may be reduced to three months from six months if an approved motorcycle training program is taken.

We have reviewed our driver testing requirements with a view to increasing the standard necessary to qualify for a license. This also involved a policy of discontinuing testing in many small communities where it was felt we could not access a sufficiently challenging road test environment. We are developing new requirements for driver training schools to ensure the programs offered meet minimum standards established by the Department.

The demerit point system has changed with inexperienced drivers being identified sooner for driver improvement action. Violations of the zero alcohol provision result in sufficient points to suspend the license for six months. Violations of the night curfew and other restrictions will result in demerit point accumulation with three convictions being necessary to reach the suspension level.

To assist enforcement personnel our photo driver's license is imprinted with a large "L" or "N" denoting learner or newly licensed driver respectively.

Introduction was accomplished without difficulty. No significant problems have been identified to date. There was a very definite rush before October 1 as persons without a license scambled to beat the deadline. This was followed by a reduced number of persons seeking a learner's license afer that date. Overall there appears to have been a reduction in the number of persons applying for a learner's license and scheduling driver's examinations since implementation. Driver training schools have reported less demand for their services. At this time we see this as a short term adjustment anomaly.

We intend to evaluate the results of our graduated licensing system. It will take several years before there are a sufficient number of new drivers under the system to influence program success criteria.

DRIVER EDUCATION AND GRADUATED LICENSING: HOW SHOULD THEY FIT TOGETHER?

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Northport Association

This paper explores the possibilities for effective, practical models for driver education in conjunction with graduated licensing systems. The requirements for better linking of training and licensing must develop against a background of diverse regulatory and safety program initiatives, as well as the past decline of driver education in many North American jurisdictions and recent attempts to revive and "reinvent" it. Program development should take into consideration data and theory in relevant areas: novice drivers' abilities, motives, and influences; developmental and individual differences during adolescence; age and experience factors in crashes; and effectiveness of methods of instruction and legislated influences. Graduated licensing systems have strong implications for driver education markets, business, and governance, as well as for the structure, content, and sequencing of driver education programs.

DRIVER EDUCATION IN A GRADUATED LICENSING WORLD — WHAT? WHEN? AND BY WHOM?

Graduated licensing systems and the publicity surrounding them may be educational in their own right. Legislation, as society's "conscience," and the publicity surrounding introduction of controversial regulation have educational effects and impact on behavior (Bonnie, 1985; Friedland *et al.,* 1990). Declarative effects of legislation may be transient or may add weight to cultural change. A properly managed implementation of a graduated licensing system could help the understanding of the reasons for concern with novice drivers and support development of a stronger culture of responsibility among novice drivers, parents, and the broader community.

Graduated licensing systems will also have substantial direct impacts on the driver education market. A major wave in the market will probably occur as young people rush to get their licenses in advance of the graduated system's implementation. This naturally leaves a trough in demand after the system becomes operative, which may or may not return to the original baseline rate.

Graduated licensing can provide an incentive for novice drivers to take formal instruction, which may ultimately increase driver education markets. These incentives would typically be in the form of a reduced mandatory waiting period for moving between graduated licensing stages. This incentive would also imply some form of government standard or approval for the training that would qualify the student for the incentive.

The design of graduated licensing restrictions and driver education sequencing must consider the needs of novices to practice what they learn and to learn what they are permitted to practice in a timely manner. In the shorter term, graduated licensing complicates the life of the driver educator and the novice driver. Driver education is typically given in courses that take place over a limited time frame, any where from a few days to several months. It is not clear where during a prolonged graduated licensing period a traditional driver education course should be placed.

Over the longer term, graduated licensing should support the reshaping of driver education. Extending the time over which novice drivers learn is a key goal of graduated licensing systems, and it has been seen as desirable in theory among driver educators and researchers as well (Smith, 1994). Coordinating driver training with licensing raises major questions of organization and sequencing of training programs. Specific training modules may need to be delivered "just in time." Since different jurisdictions will require different staging, new driver education curricula will have to be highly flexible and modular.

Lonero *et al.* (1995) suggested dividing driver education into two or more discrete stages, to correspond with graduated driving privileges. However, there is not sufficient data or theory now to say confidently what the most effective content and structure for multi-phase driver education curriculum should be. These should in principle be empirical questions, but it will be difficult to answer them clearly with data until sophisticated research on alternative models is carried out. Meanwhile, multi-stage driver education could be shaped in various ways - by the demands of graduated licensing "exit" testing, by adding later stages based on current "advanced" training, or by a new multi-stage or

continuous-process model based on inference from current knowledge and opinion.

Using the licensing test to shape driver education has considerable appeal. Ideally, the test could serve as the principal standard for driver preparation, if it could validly assess everything we want the new driver to know, do, and be. There are strong natural incentives to learn and teach that which is necessary to pass licensing tests, and new test development may substantially improve reliability of tests. However, while a valid test can measure what drivers are able to do, it cannot measure what they will later choose to do. There will continue to be a need for some form of extrinsic standard to control the materials and experiences that constitute driver education, even given improved license testing.

Using current conceptions of "advanced" driver training as models for multi-stage driver education also has difficulties. Given the ambiguity of its effects, the car-handling approach to advanced training should only be used with caution. The classroom-based Defensive Driving type of advanced driver training seems to have little chance of positive effects. Hybrid approaches, such as training hazard perception and evaluation in the car, have promising potential for beneficial effects in late-stage driver education, but they have not been empirically evaluated yet.

For practical purposes, we need to try out a number of different multi-stage designs that seem, on theoretical and empirical grounds, to have a fair chance of beneficial effects. A large number of approaches are logically possible, and trials of a number of new driver education models explicitly designed for the graduated licensing environment is the most plausible approach. It seems that concrete efforts to develop these models are just now beginning. At this point we are not in a position to positively select from among the many possible options but will outline some representative ones below, in hope of initiating dialogue and stimulating more detailed program design.

Two basic approach options for two-stage programs, and a suggestion of more complex multi-stage and continuous-process structures are outlined briefly below.

Option 1 — Stage 1 Comprehensive — Stage 2 Perceptual/Cognitive Advanced

In this approach, Stage 1 resembles a current comprehensive driver education course, which basically teaches the psychomotor mechanics of handling the vehicle and the fundamental of interacting with traffic.

At Stage 2, a focused and intensified "graduate level" package of course material in perceptual and cognitive skills for crash avoidance would follow some time after the comprehensive driver education program. In a successful related approach, a Norwegian night driving module was shown to have a positive effect on male novice drivers (Glad, 1988). Ideally, this stage would also contain some motivational and responsibility oriented group work, emphasizing peer influences, and values development and clarification.

The Stage 2 package would be a cognitively oriented, risk evaluation and decision course. It would extend and reinforce strong motivational, risk-acceptance, and group work components of the comprehensive Stage 1 course, preferably with diagnostic and in-car components for assessment, branching, and remediation.

This Option is likely the gentlest departure from current driver education practice. Nevertheless, considerable difficulty would be experienced by the training industry in retooling for it.

Option 2 — Stage 1 Minimal Pre-driving — Stage 2 Comprehensive

A second option starts with a minimal prelicensing entry course, and provides a comprehensive Stage 2 course. This approach is consistent with one suggested by McKnight (1984), who pointed out that rank beginners are less capable of absorbing some needed information and training. As youth is said to be wasted on the young, much of driver education may be wasted on those who cannot yet drive well enough to fully benefit from it. For the first stage in this proposed approach one would identify a small set of:

- Low level objectives to permit basic car handling;
- A parental training package;
- Practice exercises for driving with parents; and
- Self-instruction, home video, and interactive computer-based learning (CBL) materials.

Many instructional objectives, such as those addressing high speeds, night driving or risk acceptance, could be left out of the Stage 1 package altogether. This is because they either are not needed within the licensing restrictions imposed, can be provided by the required accompanying adult, or because they are judged to be better absorbed at Stage 2. One might also attempt to plant seeds of concepts that may lead to

discovery learning during Stage 1 driving practice and to facilitate later learning at Stage 2.

Stage 2 training in this option would be given at the entry to Stage 2 privileges, as there may be critical gaps in skills, knowledge, and motivation for coping with Stage 2 graduated privileges. Diagnostics, remediation, branching, and self-paced progress would be relatively critical at Stage 2 training in this option, as the range of entry levels competencies would probably have been exaggerated somewhat by the varying amounts of experience and practice during Stage 1.

Option 3 — Multi-Stage, Just-in-time Modular Driver Education

A third option involves more stages, in order to deliver training modules when they are best able to be learned and practised.

3A — The simplest variation on this option would add a third package of modules, for example to produce a sequence:

- Module 1 — Graduated Stage 1 Entry — Pre-Driving
- Module 2 — Graduated Stage 2 Entry — Pre-Solo
- Module 3 — Graduated Stage 2 Exit — Perceptual/Cognitive

This would permit still closer matching of training and opportunity to absorb and use new knowledge and skills over the duration of the graduated time frame. Such a multi-stage approach could also be closely tailored to specific strengths and weaknesses and individual learning styles.

3B — A more complex "just in time" approach would see elimination of fixed time frames of the instruction altogether, making it essentially a continuous process over the graduated period. This approach might be seen as less like taking a discreet, time-limited course and more like joining a sports or other club where skills, self-discipline, commitment, values, personal standards of conduct, and leadership are developed and shared, such as an alpine climbing club or martial arts club. Peer teaching and self-paced, self-directed and computer-based learning could be integral to such an environment, with the in-class teacher serving as facilitator and coordinator. The student could be made responsible for coordinating her/his in-car and other learning experiences. Such an approach would benefit strongly from CBL, self-paced teaching technologies.

HOW COULD EFFECTIVE MULTI-STAGE DRIVER EDUCATION BE DELIVERED?

The practical problems presented by multi-stage driver education are substantial. Even if not much longer in total time than current programs, these new programs would represent a major logistical complication. Adding more teacher time may be cost prohibitive in many settings. While extending the duration of learning to drive may be helpful, it is not clear that simply spreading out current content in multi-staging would be enough more effective to meet safety requirements.

A simple two-stage program, with short, coventional course modules, might be readily delivered by many existing commercial driving schools. Because of limitations of space and other facilities, it is harder to see them delivering a more complex model, with very much self-paced learning, peer teaching, or group work. There are, however, schools that use and even develop some rather sophisticated and high-tech methods, so one should not be too quick to assume that the industry will not be able to meet the considerable challenges presented. A great deal of costly reorganization, retooling, and instructor training would seem to be required for most of the commercial driver education industry to deliver effective multi-stage training. Economics will presumably rule, and if the graduated licensing incentive to take formal training is strong enough, then the market will support the needed reorganization in the industry.

Multi-stage or continuous-process driver education might fit better in the high schools, where, at least, the students are present over an extended period. It may, however, be that many students would graduate from high school before their graduated licensing periods had run their course, limiting their access to training over the whole period. Early school leavers would be left out nearly from the start, and their disadvantage would be greater than in the current system, where they might be able to complete a single stage course before leaving.

Family and community influences are critically important to personal and social values, self-esteem, empowerment, optimism, community cohesion, and health protection. These are important motivators for both community-minded, pro-social behaviours and individualistic self-protective behaviours. Active participation, peer influences, community education programs, and incentives can all contribute to a stronger impact on novice drivers' behavior, and these motivators can be designed in to a new driver education/graduated licensing model.

At present, parents may inadvertently contribute to the apparent failure of driver education by giving better-trained novices more freedom and less supervision, leading to earlier licensing, more exposure to risk, and subsequent crashes. Parents need skills and motivation to take a more active, effective role in their novice drivers' progress to mature driving (*e.g.*, Beck & Lockhart, 1992; Gregersen, 1994). New materials and approaches for parent participation are under development in various locations. The declarative effects of graduated licensing programs may support stronger parental involvement and encourage use of these materials.

With sufficient support from education programs, family and community programs, and enforcement, well-designed and carefully-implemented graduated licensing systems may have a chance of shifting novice drivers' motivational balance toward safer choices. However, so much faith is being placed in graduated licensing that the disappointment potential seems quite high. To have a lasting effect on safety, we believe it is necessary to enhance positive motivation and values through understanding of the reasons for safe behavior and establish good habits through practice and reinforcement. Driver education, public education, and graduated licensing can be mutually supportive. It is important that new drivers fully understand these systems, the reasons for them, and the benefits for themselves and the wider community.

SUMMARY

The best way to ensure effectiveness of graduated licensing is to support these systems with other coordinated influences, including more effective driver education, parent involvement, and community influences. Graduated licensing permits, and even necessitates, a coordinated, multi-stage structure for driver education, which raises many questions of content, structure, and sequencing. Achieving effective multi-stage training will require a broad and flexible partnership among government, schools, driving schools, communities, and families, as well as insurance and other businesses. However, many similar organizational changes will also be needed for achieving safety effectiveness in driver education, even without the graduated license linkage and added complexity of multi-stage structures.

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AN ASSESSMENT OF GRADUATED DRIVER LICENSING: PROS & CONS

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Inexperienced drivers — especially *young* inexperienced drivers — constitute a very high risk segment of the driving public. They are a threat to the well-being of themselves, their passengers, and other drivers on the road. There is substantial room for reduction of injuries and their associated costs in this sector, probably more than among any other segment of the driving population. In this workshop, we have seen the magnitude of the problem, heard about the reasons that these drivers are at such a high risk of crashing, and learned about the various approaches that have been taken toward this problem during the past fifteen years both in the U.S. and throughout the world.

In consideration of all this information it is useful to take a step back and look at Graduated Driver Licensing (GDL) in broader perspective. In particular, I would like to examine not only the positive aspects, which have been both spelled out and implied, but also the drawbacks or shortcomings of GDL. This is not so much to question whether we should pursue graduated licensing, but rather to understand and prepare to face the kinds of questions that inevitably arise when attempts to enact GDL legislation are undertaken.

I will consider the strengths and weaknesses of the GDL approach in the context of four central issues:

- Effectiveness;
- Fairness;
- Public Reaction; and
- Implementation.

EFFECTIVENESS

The advantages of GDL would seem to be self-evident. If it works the lives of many inexperienced drivers, their passengers, and members of the general driving public will be saved. Many thousands of injuries will be prevented. Millions of dollars in resulting societal costs will be averted. The incalculable toll in human suffering will be reduced. But there is that simple caution - if it works. And that is one of the first questions legislators ask. There is, appropriately, little interest in modifying the way a licensing system works, especially through legislation, merely in an effort to see if we might do better.

On the positive side here, we do have some evidence that graduated licensing will indeed work. The careful evaluation of earlier efforts in Maryland and California suggest that some of the elements being promoted as central to GDL do have the desired effect (McKnight et al., 1983; Hagge & Marsh, 1988). The results from a long-term evaluation of a full-blown, genuinely graduated system in New Zealand are even more encouraging (Frith & Perkins, 1992).

Equally as encouraging is the fact that GDL is a sophisticated, integrated approach to addressing the problem it seeks to resolve. It takes into account (whether by design or not) principles of human behavior developed over the years in the social and behavioral sciences as well as the classic principles of injury control elucidated by Bill Haddon, both of which seem all too often to be ignored in highway safety programs. Rather than relying once again on the truism (which is not true) that stiffer punishments are the answer to individual misbehavior (and misadventure), GDL recognizes that human behavior - including driving - is not simply a matter of proper and improper behavior, willfully engaged in. It approaches driving errors by inexperienced drivers as being multiply determined and to some extent unavoidable - resulting from inexperience, poor judgment, impulsiveness, and immaturity. None of these is curable by punishment or threats of punishment.

Instead of placing the burden not to make a mistake (either intentionally or unintentionally) entirely on the shoulders of every individual who begins driving, GDL helps new drivers. It does this by placing inexperienced drivers in the safest possible environment, thereby protecting them from crashes and injuries to the greatest extent possible. Simultaneously, it provides a positive motivation for new drivers to help themselves by requiring appropriate behavior (e.g., no traffic violations) for a specified period of time before allowing unlimited driving privileges.

Rather either simply accepting, or naively denying, that "kids will be kids," GDL attempts to insulate these individuals from the disastrous consequences of what is a natural condition for them. We can't really expect to obtain mature, rational behavior from individuals who by their very nature are immature. It is not a sin to be young, to have some maturing to do, or to make

mistakes. It is certainly wrong to have to die for it. By limiting early driving to the safest of conditions - where both the external and internal driving environments are the safest possible, and with a positive motivation in place for the driver to be careful - GDL puts these people in the best possible learning situation.

Perhaps even better than controlling the environment, GDL is also designed to instill in individuals the habit of exercising caution. This is achieved by requiring that a new driver demonstrate a safe and proper orientation toward driving by not committing traffic violations during their initial driving period. There is potentially a double benefit to this. First, young drivers are motivated to be cautious, safe drivers at the very time when they are the most at risk to themselves and others - during their initial year or two of driving. Even if there is no lasting benefit in terms of reduced crash likelihood during subsequent years of driving, GDL should be of great benefit by encouraging calmer driving among young drivers during the year or two when they are most likely to crash and injure themselves or others.

There is another potential benefit. Having encouraged young drivers to more effectively establish a habit of (more) careful driving, a GDL system stands to produce safety benefits for years to come, rather than merely during the months or years when new drivers are under some driving restrictions. That is, we may find a lasting cohort effect. It is well established that many driving behaviors are habitual. To the extent that GDL is successful in preventing new drivers from developing dangerous habits, those are habits that will not have to be unlearned and which will not result in crashes.

In sum, rather than taking the traditional, ineffective approach of seeing unsafe driving of novice drivers as merely an individual matter to be controlled with threats of punishment, GDL sees the problem as one that can be addressed by employing the reward and positive motivation that behavioral science studies have demonstrated to be effective in modifying human behavior. It treats the problem of crashes, injuries, and resulting costs as a social policy issue rather as simply a matter of irresponsible individual behavior that merits punishment or retribution. Accordingly it addresses the problem by attempting to reduce the resulting crashes by controlling the driving environment as well as the driver.

Despite these very encouraging signs about the potential effectiveness of GDL, it is well to keep in mind that we do not have a particularly strong empirical data base from which to make projections about the likely magnitude of effects. I think we all believe that it will help to reduce crashes. Just how effective it will be seems to be an open question. Unfortunately, in a number of jurisdictions the GDL systems likely to be enacted probably won't produce any easily measurable beneficial effects. The system in New Zealand is comprehensive and well-integrated. It addresses what would appear to be the most important issues. Yet the demonstrated effects of that program over a long period of time have been modest. An eight percent reduction in crashes is certainly a worthy achievement. However, it is not so large as to suggest that the GDL concept is so robust that any GDL system, no matter how piecemeal or nonsensical it may seem, will produce at least some desired effect. Moreover, it is important to keep in mind that importing traffic safety programs from different cultures without consideration of the implications of cultural differences for their effectiveness is risky (Simpson, 1990). Accordingly, it is extremely important to work toward enactment of genuinely comprehensive GDL systems that are carefully tuned to the particular nature of the novice driver problem in each state, rather than easily accepting 'whatever we can get through the legislature.' Although political realities cannot be ignored, merely enacting a few elements of the GDL approach (e.g., a mandatory supervised driving period and mandatory belt use by passengers of a novice driver), will not likely yield the benefits anticipated from the GDL concept.

Those who have worked with the legislative process know that the GDL systems that will be enacted in some states will make little sense from a social policy viewpoint. Our experience in North Carolina illustrates this, although we are further along on graduated licensing than most other states. As matters currently stand in NC, a form of GDL has passed the Senate and awaits action in the House, where passage is thought to be likely. However, this bill will put in place a system that in essence only mandates (1) a six-month supervised driving period under a learner's permit, (2) accumulating six months violation free driving (but not necessarily six consecutive months), and (3) limitation of passengers to the number of seat belts in a vehicle (which must be worn by all occupants).

To many legislators this structure makes sense. It provides the supervised driving they see as the key to a person learning how to drive and would appear to motivate novice drivers to drive carefully. However, this bill largely misses the point of the GDL concept that the problem is multi-faceted and is best solved with an integrated, scientifically informed approach. It fails to address the point that the real risk of careless, impulsive behavior of young drivers is when they are in the car alone or only with their age peers. That is when they

need the motivation not to take risks. As it currently stands, the NC bill pressures young drivers not to be careless, impulsive, risky drivers only during a period when they must have a parent in the car with them (which serves the same purpose). Nonetheless, should the current bill become law, we may be in a position in NC to have to report that GDL has failed to produce. Not because the concept is unsound, but because its implementation is inadequate. Of course this will then be an opportunity to ask for a stricter version of GDL, but, unfortunately, it might also be the opportunity for opponents of GDL (although there are few such individuals) to maintain that the system has failed and should simply be abandoned.

Some of the concerns that lead legislators to enact (or modify) the particular laws that they do, and these are the 'cons' of GDL, are fairness, constituents' (often anticipated) reactions, and the burden GDL might place on the driver licensing agency.

FAIRNESS

A question that often arises when graduated licensing is suggested concerns whether it is 'fair.' As a program that focuses on new drivers only, rather than all drivers, it is often considered to be discriminatory. This is especially the case when only *young* new drivers are singled out. Despite the very high risk of crashing among this group, when pondering this approach to the problem, individuals inevitably will make the point that not all novices are bad drivers and not all experienced drivers are good drivers. Nonetheless, GDL limits the mobility of an entire group of drivers, not just those known to be most dangerous.

This objection is not necessarily a problem with GDL *per se*, but rather arises from the way most individuals think about social and behavioral phenomena. The human tendency is to think deterministically rather than stochastically. Hence, individual exceptions to a pattern are focused on not as exceptions, but as 'facts' that belie the truth of the matter, and the general pattern is often ignored. Be that as it may, this is the kind of thinking that occurs when GDL is considered and if the label 'unfair' or 'discriminatory' is not quickly and effectively countered, it becomes an easy characterization and a convenient justification for dismissing this approach to the novice driver problem without giving it serious consideration.

Another dimension of this problem with the image of GDL is that it is sometimes perceived as inappropriately punitive. Whereas it is generally considered acceptable to penalize an individual who has transgressed, GDL can be seen as punishment before the crime. Many individuals do not consider it 'fair' that simply because one is young or inexperienced he or she should not have the same rights as others who are older or more experienced drivers, unless they have done something wrong.

Part of the problem here is that GDL is seen as taking something away from young drivers. That this 'something' is a cultural icon tends to inflame emotions. The rite of passage from childhood to adulthood in the U.S., the unbridled freedom that accompanies a driving license, is seen by many as sacred. This can make it difficult for individuals to listen to the facts and rationale that underlie GDL. Were we to just now be designing a driver licensing system, this would not be an issue. That we are changing something that has been in effect for some time means we must deal with this issue.

Perhaps the notion that GDL is taking away something can be minimized by pointing out that it is not taking anything away from any cohort of drivers to which it applies (this will require a fairly long lead time for GDL legislation to come into effect). Rather, it simply places them under a different system, and one that is designed for their benefit. It is also important to understand (and point out) that unless a novice driver demonstrates a cavalier attitude toward safety by continuing to accumulate citations, none of the restrictions involved in GDL are in effect for very long.

The most appropriate way to address the question of fairness may be to turn the question around and ask whether the current system is fair. A compelling case can be made that the current approach to driver licensing, which results in young drivers having dramatically higher crash rates, is not itself fair. It is not difficult to argue that we, as a society, are shirking our duty to protect our children if we allow such a state of affairs to continue. It is also worth considering that there is substantial legal and social precedent for treating children differently, especially concerning programs and policies designed for their benefit.

PARENTS' VIEWS OF GRADUATED LICENSING

Despite the ease with which GDL can be perceived as inappropriate government intervention in family affairs, it is viewed positively by the general public. It has a logic, backed up by fact, that is compelling. In considering the public's view of GDL, the most relevant populations are those most directly affected: new young drivers and their parents.

Parents of young teenagers might be expected either to oppose or support graduated licensing. Clearly, if parents' perspective on GDL focuses on how it

should reduce the risks to their children, they are quite likely to be supportive. On the other hand, substantial anecdotal evidence suggests that parents look forward to the freedom from chauffeuring their teenage children almost as much as teens look forward to obtaining their license and the freedom it brings. If parents view GDL as extending their years of service, they may not embrace it.

Results from a recent nationwide survey of parents of 17-year-old drivers suggest that there is a substantial degree of support for the concept of GDL in general and for the individual elements often suggested as components of a GDL system (Ferguson & Williams, 1995). Fifty-eight percent were in favor of a GDL system with several months supervised driving, a nighttime driving restriction, and restrictions on transporting teenage passengers. Support was even higher for the individual elements like a minimum period of supervised driving (90%), nighttime driving restriction (74%), and a zero BAC limit (97%). Fewer (43%) supported a restriction on passengers of novice drivers.

These survey results closely parallel anecdotal evidence from several states that have recently attempted to pass one or several elements of a graduated licensing system. If such laws are to be enacted it appears to be critical that the parents who support GDL be vocal about their beliefs, not leaving to chance the kind of opinions that legislators hear from their constituents. If opponents speak up, the points they make can easily hold sway with legislators. It is also important to keep in mind that driving curfews that may have initially been opposed by parents often come to be seen as desirable after they have been enacted.

TEENS' VIEWS OF GRADUATED LICENSING

It is almost axiomatic that teenagers will not accept the notion of GDL because it restricts their mobility and will delay full licensure. Research suggests, however, that teenagers recognize the wisdom of the GDL approach and are not particularly offended by it. Focus group discussions held in North Carolina yielded only two serious concerns about GDL: a curfew and passenger restrictions. Teens who have begun to drive generally admit that they were not very good drivers to begin with, that they didn't have enough supervised experience, and that having a parent ride with them for at least a few months would be a good idea. Anecdotal information of a similar nature comes from other states as well.

Surveys of representative samples of teenagers corroborate the subjective impressions obtained from focus groups and anecdotal reports. Although teens are not particularly enthusiastic about the kinds of limitations that GDL would impose on them, they do understand and agree with the logic behind the restrictions. In a 1985 survey of teens in four states that have nighttime driving restrictions (curfews), the majority of teens expressed support for these restrictions (ORC, 1985).

The most compelling evidence of teen drivers' positive views on graduated licensing comes from a recent survey of a cohort of teens in New Zealand prior to and following their experience with a full graduated licensing system. It found broad support for the system (Begg et al., 1995). Prior to enactment of the NZ GDL system, which is a comprehensive one, 79% of 15-year-olds agreed with the driving restrictions the system entails. Perhaps more interesting is that among the same group, interviewed three years later after having progressed through the licensing system, fully 70% continued to agree with the restrictions on drivers.

In sum then, although teenagers do not necessarily warmly embrace GDL and the various limitations it imposes on them, neither do they rise up in indignation at any perceived unfairness. Indeed, those who assume teens will roundly oppose such a system clearly are not giving them the credit they deserve.

One objection to nighttime driving restrictions that both teens and especially adults raise is that they will interfere with teens working. This can be overcome by allowing exemptions for driving to and from work. Although this does increase the exposure of teens somewhat to some of the risks of late night driving, such an exemption is unlikely to seriously degrade the benefits of GDL. Only a very small amount of driving by 16-year-olds involves transportation to or from work, especially within the limited duration of most recommended driving curfews (typically about six months). Moreover, the most dangerous aspect of late night driving exposure is that which occurs inside the vehicle, with a number of age peers possibly distracting the driver and encouraging him or her to take risks. Such risks do not accompany travel involved in work or transport to and from work. Hence, if only nighttime *recreational* driving is the target of a driving restriction, parents and legislators are less likely to object and most of the benefits are likely to be retained.

OVERBURDENING THE DRIVER LICENSING AGENCY

The only good justification for having a driver licensing requirement is to promote traffic safety. Nonetheless, driver licensing and the large bureaucracy that supports it has become an entity unto itself. Accordingly, when the prospect of complicating the licensing process arises,

the licensing 'system' itself may respond with skepticism. It goes without saying that enacting a GDL system without the support of the state licensing agency is unlikely.

A comprehensive GDL system will inevitably make the licensing process more complex. This constitutes an added burden both on individuals who wish to become licensed and on the system charged with issuing licenses. If a person must pass through three (or more) stages in the licensing process, each with a distinctive license, then more personnel may be required in the licensing agency to handled the added work. In addition, equipment may need to be upgraded, computer software used to maintain driver records will likely need to be modified, and waiting times at licensing offices may well increase as a result of the additional visits required for novice drivers to obtain additional licenses. All these are legitimate concerns. They entail real and immediate costs at a time when available funding for government services is dwindling. Whether such costs will be offset by reduced crash-related costs is a critical consideration and, unfortunately, one that can not currently be addressed precisely.

It is worth noting here that advances in technology may well permit the issuance of appropriate interim permits without additional visits to a driver licensing office. In the very near future, photographs will be stored as digital images and will not need to be taken each time a license is issued. Thus, it may not be necessary to increase personnel to avoid degrading service to the driving public as more licenses are issued in a GDL system.

SUMMARY AND CONCLUSION

The problem that GDL seeks to address is large and serious. Although GDL cannot be expected to solve this problem alone, there appears to be sufficient empirical evidence and a sound conceptual rationale to believe that it will have clear, measurable benefits. At the same time it is inescapable that a GDL system will limit the mobility of novice drivers. These limitations are not great, however, nor do they last very long. A well-conceived GDL system can minimize these limitations without sacrificing the benefits to be achieved. The challenge is to successfully navigate the legislative process, addressing the legitimate questions that are raised, to achieve such a system, rather than one that is graduated in name only. If a proposed GDL system is put forth in the appropriate manner, presenting the issues in the desired perspective from the beginning, it should be possible to enact beneficial GDL systems in a number of states during the next few years.

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