

FEDERAL GOVERNMENT'S ROAD SAFETY INITIATIVE

**YOUNG DRIVER RESEARCH PROGRAM:
EVALUATION OF AUSTRALIAN GRADUATED
LICENSING SCHEME**

Prepared by

Narelle Haworth

**MONASH UNIVERSITY
ACCIDENT RESEARCH CENTRE**

CR136

1994

FOR THE FEDERAL OFFICE OF ROAD SAFETY

FEDERAL OFFICE OF ROAD SAFETY

DOCUMENT RETRIEVAL INFORMATION

Report No	Date	Pages	ISBN	ISSN
CR136	1994	59	0 642 51077 6	0810 770X

Title and Sub-title

Young Driver Research Program: Evaluation of Australian Graduated Licensing Schemes

Author(s)

Haworth N L

Performing Organization (Name and Address)

Monash University Accident Research Centre
Wellington Road
CLAYTON VICTORIA 3168 AUSTRALIA

Sponsor

Federal Office of Road Safety
GPO Box 594
CANBERRA ACT 2601

Project Officer: K B Smith

Available from

Federal Office of Road Safety
GPO Box 594
CANBERRA ACT 2601

Abstract

A graduated licensing scheme was one of the elements of the 10-point road safety package announced by the then Prime Minister in December 1989 as part of the Federal Government's Road Safety Initiative, for adoption by States and Territories. The evaluation approach reported here comprised:

- documentation of changes and the current position in the jurisdictions regarding regulations for novice drivers
 - a review of studies of the effects of components of Graduated Licensing Schemes
 - a review of studies of community and young driver attitudes to graduated licensing
 - a major survey of young driver knowledge, attitudes, compliance and perceptions and social costs associated with the components of graduated licensing
-

Key Words

Recently qualified driver, drivers licence, learner driver, attitudes, compliance, drink driving

NOTES:

1. FORS Research reports are disseminated in the interests of information exchange.
2. The views expressed are those of the author and do not necessarily represent those of the Commonwealth Government.
3. The Federal Office of Road Safety publishes four series of research reports
 - (a) reports generated as a result of research done within FORS are published in the OR series;
 - (b) reports of research conducted by other organisations on behalf of FORS are published in the CR series.
 - (c) reports based on analyses of FORS' statistical data bases are published in the SR series
 - (d) minor reports of research conducted by other organisations on behalf of FORS are published in the MR series.

ACKNOWLEDGEMENTS

The author is grateful for the cooperation extended by the members of the following organisations:

NSW

Roads and Traffic Authority, Registration Policy Development Section
Roads and Traffic Authority, Road Safety Bureau
Police, Traffic Operations Group

Victoria

Vic Roads Road Safety Division

Queensland

Department of Transport, Road Safety Division
Department of Transport, Licensing

Western Australia

Police Department, Driver Licensing
Police Department, Research Section
Police Department, Traffic Branch
National Centre for Research in the Prevention of Drug Abuse

South Australia

Department of Transport, Office of Road Safety
Department of Transport, Motor Registration
Police Traffic Intelligence Section

Tasmania

Department of Roads and Transport, Transport Regulations
Department of Roads and Transport, Office of Road Safety
Police, Breath Analysis Section

Northern Territory

Department of Transport and Works

Australian Capital Territory

Department of Urban Services, ACT City Services, Transport Regulation

New Zealand

Land Transport Safety Authority

EXECUTIVE SUMMARY

The Monash University Accident Research Centre was commissioned by the Federal Office of Road Safety to undertake the Young Driver Research Program as part of the Federal Government's Road Safety Initiative. The Program included:

- young driver/passenger research
- analysis of young driver crashes
- evaluation of graduated licensing.

A graduated licensing scheme was one of the elements of the 10-point road safety package announced by the then Prime Minister in December 1989 as part of the Federal Government's Road Safety Initiative, for adoption by States and Territories. The components of the Graduated Licensing Scheme were:

- zero blood alcohol concentration (BAC) for learner drivers
- zero BAC for the first three years after obtaining a non-learners licence up to 25 years of age
- no learner permits to be issued before 16 years of age
- no probationary licence to be issued before 17 years of age
- the minimum period for a learner permit to be 6 months
- licences issued for automatic vehicles are to apply for the probationary period unless a manual test is undertaken or other requirements, specified by the State or Territory, are met

This report commences with a discussion of the concept of graduated licensing. Experiences with graduated licensing schemes in the United States, Canada and New Zealand are outlined. The next section describes Australian proposals for graduated licensing schemes, in particular the proposals by the Federal Office of Road Safety and the Department of Transport in South Australia.

The differences between states in the timing and implementation of specific elements of graduated licensing meant that a combined, quantitative evaluation was not feasible. As a result of these difficulties, it was decided that the evaluation should comprise:

- documentation of changes and the current position in the jurisdictions regarding regulations for novice drivers (Chapter 6)
- a review of previous studies of the effects of components of Graduated Licensing Schemes (Chapter 7)
- a review of previous studies of community and young driver attitudes to graduated licensing (Chapter 8)
- a major survey of young driver knowledge, attitudes, compliance and perceptions and social costs associated with the components of graduated licensing (Chapter 9)

Graduated licensing survey

People aged under 25 who had obtained their driving licence within the previous two years were surveyed. The survey showed:

- that the actual effect of minimum ages and durations for learner permits and first licences is modified by the relationships between these components. For example, allowing a low minimum age for the learner permit will not encourage many drivers to obtain it at that age if the minimum age for obtaining a first licence is high. Thus, a minimum duration for which the learners permit must be held does much more to ensure that a minimum amount of experience is gained before

licensing than solely allowing a low minimum age for the learners permit and a high minimum age for the first licence.

- that the effectiveness of the zero BAC restriction may be limited. Knowledge of the restriction, as measured by reporting it as a restriction, was surprisingly low in Western Australia and New South Wales. About 15% of drivers had failed to comply with the restriction, including about double this percentage in Western Australia. Almost three-quarters of drivers thought they could avoid breath testing by avoiding major roads. Most drivers identified social costs of the restriction but 91.4% agreed with it.
- no strong relationship between enforcement and compliance. Levels of enforcement (as reported by drivers) were no lower in Western Australia where the rate of noncompliance was much higher. Experience of being breath tested did not appear to increase estimates of the risk of being caught drink driving (if someone had been drinking).
- that restricting drivers who obtained their licence in an automatic vehicle to only driving automatic vehicles during their first licence had two effects: discouraging some drivers from obtaining their licence in an automatic vehicle (fewer drivers gained licences in automatic vehicles in States where the rule applies) and preventing drivers who had an "automatic licence" from driving cars belonging to others. The road safety implications of these effects are unclear.

It was concluded that current novice driver licensing systems in Australia generally fail to conform to the concept of graduated licensing. Many of the components serve to reduce exposure, rather than to increase exposure (and thus experience) in a safer driving environment. In the Federal graduated licensing scheme, it is only the components relating to zero BAC and, perhaps the restriction to driving an automatic vehicle, which change the quality of exposure. The increases in licensing age and duration of the learners permit are likely to have as their major result a reduction in the amount of exposure (number of licences on issue and perhaps distance driven).

In addition to exposure reduction, motivation and learning were noted as important ways in which a graduated licensing scheme could contribute to reduction of crash risk by McKnight (1992). Motivation to drive safely can be increased by making removal of restrictions and imposition of sanctions both dependent on driving record. In contrast, time-related restrictions are not expected to have the same motivating effect. Most of the restrictions in current driver licensing systems in Australia are time-related, however. The removal of restrictions is dependent on driving record only to the extent that if the licence is withdrawn due to the accumulation of a critical number of demerit points, the total period for which the restrictions apply is increased.

It was concluded that the adequacy of legislation and enforcement is a major factor affecting the likely success of graduated licensing. To ensure adequate compliance with restrictions, the measures required are compulsory carriage of photographic licences, better enforcement of displaying of P-plates and substantial penalties for driving contrary to the provisions of the licence.

A number of possible disbenefits of graduated licensing schemes were identified. If experience is necessary for the development of the ability to drive safely but the effect of graduated licensing is to reduce experience, then the scheme may retard improvement in driving performance. In addition, young drivers may take steps to avoid detection when driving contrary to the provisions of the licence. Lastly, reduction of mobility is a possible disbenefit of graduated licensing schemes.

The Evaluation of Graduated Licensing was integrated with the addressing of the issue of exposure, in particular the issue of the Young Driver Problem versus the Young Problem Driver. Other reports in this series examine the amount and nature of young driver exposure and investigate whether these characteristics are reflected in crash frequencies and rates.

TABLE OF CONTENTS

	Page
1. INTRODUCTION	1
1.1 Structure of the report	1
2. THE CONCEPT OF GRADUATED LICENSING	3
2.1 Probationary, provisional and graduated licensing	3
2.2 Waller's graduated licensing proposal	4
2.3 Mechanisms underlying graduated licensing	5
2.4 The Young Driver Problem versus Young Problem Drivers	5
3. OVERSEAS EXPERIENCE WITH GRADUATED LICENSING SCHEMES	7
3.1 United States	7
3.2 Canada	8
3.3 New Zealand	9
4. GRADUATED LICENSING PROPOSALS IN AUSTRALIA	13
4.1 Federal proposals	13
4.2 South Australian proposed Graduated Licensing Scheme	15
5. ISSUES IN EVALUATING GRADUATED LICENSING SCHEMES	17
5.1 Data availability and quality issues	17
5.2 Statistical analysis issues	19
5.3 General difficulties in evaluating legislative countermeasures	20
5.4 Other temporal issues in evaluation	21
5.5 Evaluation approach adopted	21
6. CHANGES TO NOVICE DRIVER LICENSING AND OTHER RELEVANT REGULATIONS	22
6.1 New South Wales	22
6.2 Victoria	23
6.3 Queensland	23
6.4 Western Australia	24
6.5 South Australia	24
6.6 Tasmania	25
6.7 Northern Territory	25
6.8 Australian Capital Territory	25
6.9 Status of implementation of graduated licensing components	26
7. REVIEW OF STUDIES OF THE EFFECTS OF COMPONENTS OF GRADUATED LICENSING	27
7.1 Zero BAC	27
7.2 Minimum licensing age	29
7.3 Duration as a learner driver	30
7.4 Automatic licences	30

	Page
8. REVIEW OF STUDIES OF ATTITUDES TOWARDS GRADUATED LICENSING	31
8.1 Attitudes of officials in States and Territories to graduated licensing	31
8.2 Young driver attitudes to graduated licensing	31
8.3 Community attitudes to graduated licensing	33
9. GRADUATED LICENSING SURVEY	38
9.1 Interviewing drivers versus obtaining information from licensing files	38
9.2 The sample	39
9.3 Summary of results	39
10. CONCLUSIONS	45
10.1 Conformity to the concept of graduated licensing	45
10.2 Conclusions from the survey about the effectiveness of graduated licensing schemes	46
10.3 Adequacy of legislation and enforcement	47
REFERENCES	49

1. INTRODUCTION

The overinvolvement of young and/or inexperienced drivers in road accidents is a well-established international phenomenon (Drummond, 1988). It has also shown itself to be one of the most intractable road safety problems, reflecting perhaps the complexity of the problem relative to other road safety issues and the fact therefore that traditional road safety approaches are less applicable (Drummond, 1989). Successful measures in this area have usually involved the restriction of the amount or type of novice driver exposure (e.g. night-time driving restrictions, zero blood alcohol limits).

In response to the seriousness of this problem, the Young Driver Research Program was launched as part of the Federal Government's Road Safety Initiative. An overview of the program is presented in CR 121.

A graduated licensing scheme was one of the elements of the 10-point road safety package announced by the then Prime Minister in December 1989 as part of the Federal Government's Road Safety Initiative, for adoption by States and Territories. The components of the Graduated Licensing Scheme were:

- zero blood alcohol concentration (BAC) for learner drivers
- zero BAC for the first three years after obtaining a non-learners licence up to 25 years of age
- no learner permits to be issued before 16 years of age
- no probationary licence to be issued before 17 years of age
- the minimum period for a learner permit to be 6 months
- licences issued for automatic vehicles are to apply for the probationary period unless a manual test is undertaken or other requirements, specified by the State or Territory, are met.

1.1 STRUCTURE OF THE REPORT

This report commences with a discussion of the concept of graduated licensing. Experiences with graduated licensing schemes in the United States, Canada and New Zealand are outlined. The next section describes Australian proposals for graduated licensing schemes, in particular the proposals by the Federal Office of Road Safety and the Department of Transport in South Australia.

As a result of the difficulties confronting a quantitative evaluation of graduated licensing schemes, it was decided that the evaluation should comprise a combination of process evaluation, review of earlier studies and examination of the effects of the schemes on the young drivers affected. The evaluation approach comprised:

- documentation of changes and the current position in the jurisdictions regarding regulations for novice drivers (Chapter 6)
- a review of previous studies of the effects of components of Graduated Licensing Schemes (Chapter 7)
- a review of previous studies of community and young driver attitudes to graduated licensing (Chapter 8)
- a major survey of young driver knowledge, attitudes, compliance and perceptions and social costs associated with the components of graduated licensing (Chapter 9)

Other reports in this series examine the amount and nature of young driver exposure and investigate whether these characteristics are reflected in crash frequencies and rates.

2. THE CONCEPT OF GRADUATED LICENSING

"Graduated licensing systems are intended to provide new drivers with the opportunity to gain **driving experience** under conditions that minimize the exposure to risk" (Mayhew and Simpson, 1990, p.123, their emphasis). Mayhew and Simpson note that the control of quality of exposure by graduated licensing systems results in a coincidental reduction in the quantity of exposure but that this reduction is not the primary intent of graduated licensing - "it is assumed that **experience** increases proficiency (reduces risk of collision), so driving, per se, is implicitly encouraged" (p.123, their emphasis).

2.1 PROBATIONARY, PROVISIONAL AND GRADUATED LICENSING

Special licences for recently qualified drivers have existed in most jurisdictions for many years. They have commonly been termed probationary or provisional licences.

In general, a *probationary* licensing system requires the new driver to hold such a class of licence for a specified period of time and not to receive a licence suspension during this period, before a regular licence will be issued. The probationary system may also incorporate various 'restrictions' or 'provisions'. *Provisional* licensing is primarily a form of probationary licensing that is applied only to young novice drivers, typically age 16 and 17. Older novice drivers would not be subject to early driver improvement actions (e.g., for fewer demerit points than an experienced driver) or to 'restrictions' but can immediately receive a regular licence and full driving privileges. (Mayhew and Simpson, 1990, p.119)

Mayhew and Simpson (1990) define a graduated licensing system as one which, like probationary and provisional licensing, may incorporate 'restrictions' and 'provisions', but which differs in that it requires the new driver to progress through certain steps or stages before full licensing is achieved.

Warren and Simpson (1976, cited by O'Connor, 1986) have suggested that probationary licences and tougher licensing standards have a small likelihood of success. "They argue that the probationary licence, and its major ramification, licence suspension, will only delay the combination of exposure and experience risk factors for specific drivers, which can be expected to manifest itself later in time. Tougher licensing standards are seen by Warren and Simpson as having possibly negative impacts by encouraging increased exposure at the very time when driver experience is at its lowest" (O'Connor, 1986, p.32).

A major, unintentional, positive effect of learner and probationary licences is discouragement of early licensure (Williams, Lund and Preusser, 1985). Thus longer periods for such licences may delay licensure.

2.2 WALLER'S GRADUATED LICENSING PROPOSAL

The source of the graduated licensing concept is considered to have been Patricia Waller's 1975 paper. She proposed the early issue of a learner's permit but a long period of supervised experience with progressive lifting of restrictions and widening the circumstances of driving.

Waller (1986/9) proposed a graduated licensing program which has the following steps:

- daytime driving with parent
- daytime and nighttime driving with parent
- daytime solo driving, nighttime with parent
- daytime and nighttime solo driving

She argued that classroom and offroad training should precede the first step of the graduated licensing program and that there should be a careful evaluation of driving skill at the licensing station before being allowed to drive solo and again before being allowed to drive solo at nighttime.

The proposed graduated licensing program also includes BAC and passenger restrictions, as illustrated in Table 2.1.

Table 2.1. Graduated licence system proposed by Waller (1986/9). In the table a zero blood alcohol concentration restriction is denoted by 0.00.

Time	Restriction	Driver age						
		14	15	16	17	18	19-20	21-25
Day	Parent required	0.00	0.00					
	No parent required <2 passengers			0.00				
	No parent required No passenger restriction				0.00	0.00	0.00	0.05
Night	Parent required		0.00	0.00				
	No parent required <2 passengers				0.00			
	No parent required No passenger limitation					0.00	0.00	0.05

In Waller's proposed program the parent (or other responsible adult) would

- provide monitoring and supervision of the young driver during the greatest part of initial skill acquisition
- be officially responsible for the young driver and certifying that the specified amount of driving under parental monitoring before moving to the next stage.

2.3 MECHANISMS UNDERLYING GRADUATED LICENSING

In his discussion of driver licensing in Victoria, McKnight (1992) outlined three ways in which the Victorian Probationary Licence (which can be considered a form of graduated licensing) has the potential to reduce risk. They are

- Exposure reduction - by regulating the amount and conditions of driving during the period of greatest risk
- Motivation - using relief from restrictions as an incentive to motivate adherence to the law and to safe driving practices
- Learning - using the terms of the licence as incentives to encourage experiences that will lead to increased skill and knowledge as well as more favourable attitudes.

He noted that any exposure reduction necessarily limits mobility and thus only exposure reduction measures which result in a more than proportional reduction in crashes can be justified.

Motivation to drive safely can be increased by making removal of restrictions and imposition of sanctions both dependent on driving record. In contrast, time-related restrictions are not expected to have the same motivating effect. The restrictions need to be perceived as onerous to some extent in order to motivate the driver to progress through the system.

2.4 THE YOUNG DRIVER PROBLEM VERSUS YOUNG PROBLEM DRIVERS

In practice, graduated licensing schemes operate by placing restrictions on drivers depending on age and/or experience. As such, they restrict all drivers affected, regardless of any other individual characteristics which may affect driving safety. In this sense, graduated licensing schemes at least tacitly assume that all young drivers pose a road safety problem, rather than the problem being the result of the driving actions of a subset of young drivers only.

An important question concerning the influence of young drivers' motives on driving behaviour is whether or not most young drivers are characterised by 'risky' motives or whether the problem is largely confined to a relatively small sub-set of young drivers:

so-called 'young problem drivers'. There is currently insufficient evidence to reach even a tentative conclusion on this matter.

It is evident that nearly all young drivers lack driving experience and thus have underdeveloped driving skills which to some extent increases their risk of crashing. It is not known whether the effects of 'youthful' motives on driving performance and crash risk are similarly widespread, or whether they are largely confined to a subset of young drivers. It is also possible that a segment of novice drivers may have specific skill deficits of a type that make them 'young problem drivers'.

The issue of the 'young driver problem' versus 'young problem drivers' is examined in detail in a separate report (Macdonald, 1993 [CR129]).

3. OVERSEAS EXPERIENCE WITH GRADUATED LICENSING SCHEMES

Graduated licensing schemes have been developed, implemented and tested in the United States, Canada and New Zealand.

3.1 UNITED STATES

In 1977 the National Highway Traffic Safety Administration (NHTSA) developed a provisional driver licensing program entitled "Development of a model system for provisional (graduated) licensing of novice drivers". The program included

- night-time driving restrictions
- parent-supervised driving practice
- licensing, testing and certification
- youth-oriented driver improvement actions (Tannahill, 1985).

A portion of the NHTSA model system was implemented and evaluated in Maryland. It resulted in a five percent reduction in crashes and a ten percent reduction in traffic convictions for 16- and 17-year old provisionally licensed drivers (Tannahill, 1985). Because only about half of this age group held provisional licences during the program, the evaluation is like to have underestimated the total effectiveness of the program.

A California Department of Motor Vehicles provisional driver licensing program was implemented on 1 October 1983 (Hagge and Marsh, 1988). Drivers licensed at 16-17 years of age were

- required to complete additional parent-supervised driving practice
- required to wait longer after failing a written or practical test before retesting
- subject to postlicensing control at lower negligent-operator point counts.

A reduction of 5.3 percent in the rate of total crashes involving 15- to 17-year old drivers was reported although the reductions in casualty crashes and alcohol-involved crashes failed to reach statistical significance. Provisional licensing also resulted in a decrease in the percentage of 16-17 year olds licensed to drive and an increase in the time between licence application and licence issue for 16-17 year olds.

NHTSA and the American Association of Motor Vehicle Administrators (AAMVA) have recently published "An improved driver entry system for young novice drivers" which has the following features:

- learner's permit required for a specified period (90 days to one year) and optional successful completion of a driver education course

- parent-supervised basic driving practice and advanced practice sessions during night-time hours
- youth-oriented and prompt driver improvement actions
- night-time restriction as a licensing phase and a method of taking remedial action
- minimum age of 21 for sale, purchase and use of alcoholic beverages and lower BAC limits for underage drivers
- mandatory seat belt usage by all occupants of a motor vehicle being operated by a provisionally licensed driver
- lack of crashes or convictions for a specified time as evidence of safe driving habits
- distinct provisional licence (e.g. different coloured background)

The majority of US states currently have systems that are probationary in nature. Tannahill and Smith reported in January 1990 that 33 US states had placed some form of restriction on young drivers. These restrictions included a licence of distinctive colour or with a photograph, more severe penalties and restrictions on the use of the motor vehicle (e.g. for travel to and from school only).

3.2 CANADA

The Ontario Probationary Driver System requires two years of driving without a suspension. In addition, probationary drivers are allowed fewer than half the points necessary for regular drivers to be suspended. It has resulted in nine percent fewer crashes and 14 percent fewer offences for the probationary drivers. The crash rate has also dropped seven percent and the offence rate, 11 percent for male drivers under 20 years of age (Tannahill and Smith, 1990). Similar approaches have been introduced in British Columbia and Alberta (Mayhew and Simpson, 1990).

The Ministry of Transportation in Ontario has announced that it will introduce a graduated licensing scheme in April 1994 (IIHS, 1994). The scheme incorporates a learner stage and a provisional stage.

Learner stage

- Duration: 12 months or 8 months if successful completion of driver education course
- Conditions: minimum age 16
supervision by fully licensed driver with at least four years experience
restricted from driving on multilane, controlled access freeways
zero BAC
no driving between midnight and 5 am

Provisional stage

Duration: 12 months
Conditions: zero BAC

Graduation to the unrestricted licence requires passing an advanced driving test.

3.3 NEW ZEALAND

The New Zealand "Graduated Drivers Licence Scheme" (GDLS) was introduced on 1 August 1987. The three stages for car licences are as follows:

Stage 1 Learner licence

Duration: 6 months or 3 months if attend an approved driving school
Prerequisites: at least 15 years of age
pass written and oral test
Conditions: compulsory carriage of licence
0.03 BAC
supervised by someone over 20 years of age who has held a full car licence for at least two years

Stage 2 Restricted licence

Duration: 18 months or at least 9 months if Defensive Driving Course or advanced driving course is passed
Prerequisites: pass practical test
Conditions: compulsory carriage of licence
0.03 BAC
no passengers (except own children) unless supervised by someone over 20 years of age who has held a full car licence for at least 2 yrs
not drive between 10pm and 5am unless supervised

Stage 3 Full licence

Can be applied for as soon as term of Restricted Licence is completed.

The three stages of the motorcycle licence are as follows:

Stage 1 Learner licence

Duration: 6 months or 3 months if attend an approved motorcycle training school
Prerequisites: at least 15 years of age
pass theory and motorcycle handling test
pass written and oral test
Conditions: compulsory carriage of licence
0.03 BAC
250 cc capacity limitation
no pillion passengers
not ride between 10pm and 5am
70km/hr limit on open road
display L plate on rear number plate

Stage 2 Restricted licence

Duration:	18 months or at least 9 months if Defensive Driving Course or advanced riding course is passed
Prerequisites:	pass practical test
Conditions:	compulsory carriage of licence 0.03 BAC 250 cc capacity limitation not ride between 10pm and 5am 250 cc capacity limitation display L plate on rear number plate

Stage 3 Full licence

Can be applied for as soon as term of Restricted Licence is completed.

The maximum fine for driving or riding before obtaining a Learner Licence is \$1000 and postponement of eligibility to apply for licence. Failure to comply with the conditions of the Learner or Restricted Licence carries a penalty of extension of the conditions for up to 6 months.

The three stages for novice car drivers apply only to drivers under the age of 25 but the three stages for motorcycle riders apply at all ages. Novice drivers over the age of 25 have no minimum period to hold a learner licence and progress directly to a full licence.

Since the introduction of the Graduated Driver Licensing Scheme, the involvement of 15 to 19 year old passenger car drivers in crashes dropped markedly in absolute terms (see Figure 3.1). The reduction in crash involvement was greatest for 15 to 17 year olds. The ratio of numbers of 15 to 19 year old drivers in crashes per 10,000 population to all drivers aged 25 and over also dropped (Figure 3.2). The effect appears to have lasted for about two years before partially dissipating. This suggests that the safety of young drivers has improved more than that of older drivers, probably due to GDLS. Other factors may be involved, however. Frith and Perkins (1992) note that unemployment rates began to rise at about the same time as GDLS was introduced.

The major factor involved in the reduction in crash involvement by young people appears to have been reduced driving. There was a rush to obtain licences before the introduction of GDLS, followed by a sharp drop afterward. It took about two years to return from this low level to pre-GDLS levels.

There was no evidence of any increase in unlicensed driving as a result of the introduction of the System but GDLS has had effects on several aspects of young drivers' behaviour:

- progression through the system
- compliance with the restrictions and their enforcement
- use of commercial driving instructors

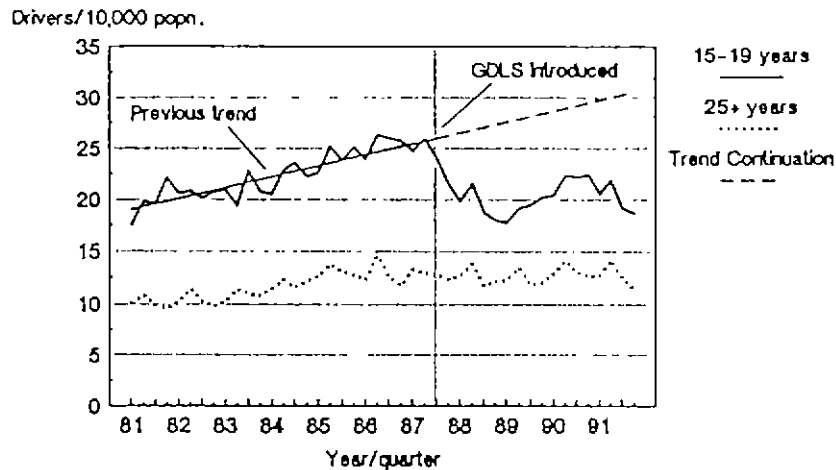


Figure 3.1 Numbers of crash-involved car drivers per 10,000 population. (from Frith and Perkins, 1992)

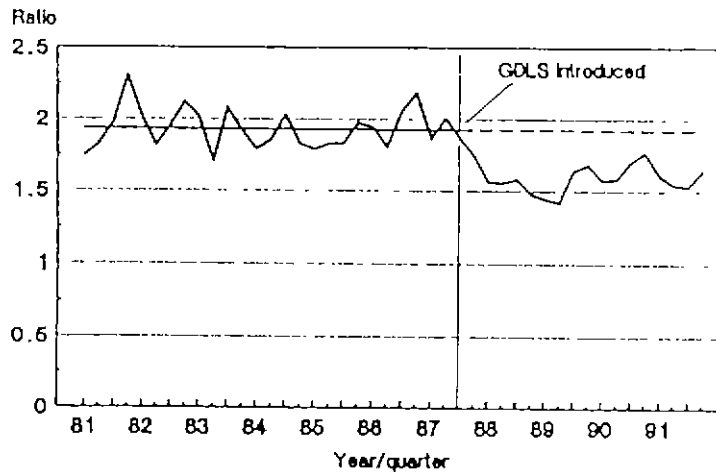


Figure 3.2. The ratio of numbers of 15 to 19 year old drivers in crashes to all drivers aged 25 and over in crashes (both per 10,000 population). (from Frith and Perkins, 1992)

A 27 month follow-up study showed that many drivers failed to progress through the system. More than 15% of persons who took out a learners licence failed to progress to the restricted licence and 37% of restricted licence holders failed to convert them to full licences. Frith and Perkins (1992) comment that a lack of knowledge about the procedures may have led to some of the failure to convert to full licences.

Interviews with young drivers have shown that some young people regularly violate the conditions of their licences. A third of the young drivers interviewed in a 1990 Land Transport Division Survey claimed to break the no passenger restriction on at least a weekly basis. Violation of the curfew at least once a week was reported by 17 percent of drivers. A survey of senior secondary school students found that a majority of those who were novice drivers ignored some aspects of the licence restriction (Archer, 1990, reported in Frith and Perkins, 1992). It is considered that the low level of compliance is at least partly an outcome of the weakness of the penalty applied, an

extension of the minimum time in the relevant licence class.

Since the introduction of GDLS, the use of commercial driving instructors prior to passing the licence test has reduced. This has also happened for drivers over 25, who are not subject to GDLS. Frith and Perkins (1992) suggest that this change may not result from GDLS but from other factors, perhaps economic ones.

4. GRADUATED LICENSING PROPOSALS IN AUSTRALIA

4.1 FEDERAL PROPOSALS

In 1980 the Australian Transport Advisory Council (ATAC) endorsed in principle a set of guidelines for driver licensing and driver improvement programs (ATAC, 1980). These guidelines were prepared by the Advisory Committee on Road User Performance and Traffic Codes (ACRUPTC). The section on graduated licensing recommended that:

a pilot study of graduated licensing be undertaken in one State in cooperation with the Office of Road Safety. This action should be preceded by a survey of the mobility needs of young people under 18 years of age to assist in establishing the controls and restrictions that might apply until the individual becomes fully licensed.

A similar recommendation was made by the House of Representatives Standing Committee on Road Safety in 1982. It added that

The concept of a more structured form of graduated entry of young people into the driving population than that operating under the present system is consistent with the basic philosophy of progressive development of attitudes and knowledge needed for safe driving.

The Federal Office of Road Safety (FORS) has supported the introduction of a graduated licensing scheme for many years. Some of the reasons for their support were presented in an article by Boughton, Carrick and Noonan (1987). They stated that

The major aim of any graduated licensing scheme is to separate these two steps [legal drinking age and minimum driving age] or reduce their combined effect. This can be achieved by separating them in time or by imposing restrictions on drinking for young drivers, or both. Raising the legal drinking age is unlikely and does not address illegal or private drinking and driving.

A specific starting age is not critical to the scheme, however the Federal Office of Road Safety model suggests a starting age for young drivers of 16 years, to give a time separation from the legal drinking age. The model assumes greater parental control at the earlier age, which may curtail the possibility of illegal or private drinking and driving. (p.356)

FORS proposed a graduated licensing scheme made up of four six month stages in August 1983. It comprised

Stage 1 Learner licence

- licensed adult supervision at all times
- no other passengers
- daytime driving only
- zero BAC

Stage 2 Learner licence

- licensed adult supervision at all times
- only family as passengers
- night-time driving allowed
- zero BAC

Stage 3 Learner licence

- may driver solo or under licensed adult supervision
- zero BAC

if solo

- daytime driving only
- no passengers
- zero BAC

Stage 4 Learner licence

- may driver solo or under licensed adult supervision
- zero BAC

if solo

- night-time driving allowed but not with passengers
- zero BAC

Driver licence

- zero BAC in first year

The Motor Transport Group of ATAC in May 1984 recommended that the graduated licensing package should contain the following elements:

- an extended period of supervision
- consideration of a zero blood alcohol content for learners
- possible restriction on passengers
- possible restriction on the use and power of vehicles.

ATAC endorsed graduated licensing in principle in July 1984.

In February 1986 the Federal Minister for Transport, Peter Morris, stressed the need for restricted licensing at an early age (Morris, 1986). He argued that learner drivers

should be subjected to longer probationary periods under varying degrees of supervision and restriction but at an age where the learner would be less influenced by peer group pressures and exhibitionism. He stressed the need for graduated licensing to improve the quality of the learning process, to include better training, relevant testing procedures and education to develop responsible attitudes to road use.

4.2 SOUTH AUSTRALIAN PROPOSED GRADUATED LICENSING SCHEME

At the July 1984 meeting of ATAC, the Minister of Transport announced that South Australia would introduce a Graduated Driver Licensing Scheme (Working Party, 1985). "It is anticipated that the proposed scheme will encourage better driving attitudes through improved pre-licensing training and control. It is based on the philosophy that 'on road' experience is the best way to develop capable drivers. Where possible, offences are penalised by making drivers revert to an earlier stage of learning (incorporating extra restrictions) rather than cancellation of licence" (p.2).

The Working Party considered some of the conditions of the FORS model to be too restrictive but thought that it contained worthwhile concepts which could be adapted to provide an equally beneficial scheme.

The 1985 report of the Working Party was submitted for consideration of the basic concept. The Working Party recommended the adoption of a scheme with the following characteristics:

Stage 1 - Learner Permit

Prerequisite

- passing of written examination dealing with road rules
- passing of eye sight test
- minimum age 16 years

Conditions

- 12 month period
- distinctive plates for identification
- 80 km/h speed restriction
- zero BAC
- licensed adult supervision at all times
- carriage of passengers - daytime only
- no passengers except licensed supervisor - night-time

Stage 2 - Probationary Licence - 1st segment

Prerequisite

- satisfactory completion of Stage 1
- passing of advanced written test
- passing of practical driving examination
- minimum age 17 years

Conditions

- 6 month period
- distinctive plates for identification
- 80 km/h speed restriction
- zero BAC
- solo driving - daytime only
- carriage of passengers - no restrictions daytime
- night-time, one only (must have held a licence for at least three years)

Stage 3 - Probationary Licence - 2nd segment

Prerequisite

- satisfactory completion of Stage 2

Conditions

- minimum age 17.5 years
- 6 month period
- distinctive plates for identification
- 80 km/h speed restriction
- zero BAC
- solo driving - unrestricted
- carriage of passengers - no restrictions daytime
- night-time, one only

Stage 4 - Full Licence

Prerequisite

- satisfactory completion of Stage 3
- minimum age 18 years

Conditions

- zero BAC for the first 12 months or up to age 21, whichever comes first

The Working Party recommended that the Graduated Licensing Scheme apply to all licence applicants up to and including 20 years of age. To allow effective enforcement, mandatory carriage and production of photographic driver licences was recommended. Failure to display the appropriate L or P plates will result in a substantial fine and restarting the 12 months L period or the appropriate six months P period.

"The Working Party considers that there are two significant conditions for the successful operation of the scheme:

- public awareness and acceptance
- creation of a legal and administrative framework within which effective enforcement can be carried out." (Working Party, 1985, p.25)

5. ISSUES IN EVALUATING GRADUATED LICENSING SCHEMES

Initially, this study aimed to conduct a quantitative evaluation of Graduated Licensing Schemes. This was to answer the fundamental question of whether the graduated licensing schemes have affected the number of crashes of novice drivers participating in the schemes and whether the specific components of the scheme (e.g. zero BAC) have achieved their aims. More detailed examination of graduated licensing schemes led to the conclusion that this was not possible, because of data issues and more general statistical analysis issues. These issues are discussed in this chapter, then the approach adopted for the evaluation is described.

5.1 DATA AVAILABILITY AND QUALITY ISSUES

Introduction of components of graduated licensing may, conceptually at least, have effects on crashes, exposure, licensing and specific behaviours (such as drink driving). A thorough evaluation would incorporate all of these types of data. However, discussions in each jurisdiction showed that these data often had problems.

Crash data provide the backbone for most road safety analyses. Unfortunately for analyses of graduated licensing or other issues of young driver safety, status of licence and experience of controller are often very poor quality data. Much data is missing or clearly inaccurate. This makes it difficult to identify drivers at different stages in graduated licensing. Crash data are suitable, however, for general analyses of crash features as a function of driver age - the other reports in the series present these analyses [CR131(1) to (11)].

Exposure data are necessary to gain an understanding of the level of involvement of young drivers in casualty accidents (i.e. the number of accidents). Exposure is usually defined as the opportunity to have a crash and it is used to calculate the level of risk associated with any particular behaviour. For example, if one driver group has twice as many accidents as another but also drives twice as far (distance travelled being used as a measure of exposure), there is no difference in the overall level of risk between these two groups, i.e. they both have the same number of accidents per unit distance (Drummond and Torpey, 1984).

During the periods in which GLS has been implemented, a number of other social changes have occurred which may have affected young driver exposure. Youth unemployment has increased, which is likely to reduce car ownership, licensing and the distance driven per head or per licensed driver. At the same time there has been an increase in the school retention rate. Table 5.1 which is taken from the Survey of Day-to-day travel in Australia 1985-86 (Adena and Montesin, 1988) shows distances travelled as a car driver for persons looking for work, other not employed, part-time workers and full-time workers. The data show that unemployed persons, in general, drive cars less distance per day than employed persons. One may assume that this pattern also applies to unemployed young persons.

Table 5.1. Average distance car driven per day per person (km) as a function of employment status.

Employment status	Male	Female
Looking for work	13.84	8.45
Other not employed	16.24	10.73
Part-time worker	24.99	17.49
Full-time worker	36.96	19.32

Source: Survey of day-to-day travel in Australia 1985-86 (Adena and Montesin, 1988)

Exposure measures which are useful for evaluating the effects of graduated licensing include: distance driven, distance travelled as a passenger and temporal patterns of travel. Unfortunately, exposure information is often not collected in a form where it can be examined by age group and licence status. Often numbers of novice drivers for which information is available from general surveys is insufficient for purposes of graduated licensing evaluations. The timing of surveys is not always appropriate for use in before and after comparisons.

Licensing measures which may be affected by graduated licensing schemes include: number of licenses issued, the age distribution of the licensed driver population and the ratio of car to motorcycle licenses. The problems in using licensing data in an evaluation stem from the basic issue that they are collected for administrative purposes, not for road safety investigations. In a number of jurisdictions, there are difficulties in assessing data about groups of drivers, since the system is designed for record-keeping about individual drivers. They include difficulties in separating "new" learner permit holders or first licence holders from drivers re-entering the system after suspension or cancellation and there are privacy issues in linking licensing information with crash data.

Drink-driving data are generally not easily accessible without considerable data manipulation. In some jurisdictions, the records may not include licence status and age and so it is difficult or impossible to establish whether a low alcohol restriction applied in particular cases. Counting charges of exceeding zero or .02 BAC did not prove to be a useful alternative, as novice drivers whose BAC exceeded .05 (or .15) were commonly charged with that offence, rather than that of the lower limit.

5.1.1 Compatibility of data across time

Changes in definitions or what variables are coded (or computerised) may prevent or complicate analyses. For licensing data, changes in procedure or charging may have impacts on the data. For example, when Tasmania changed from learners licences with 3 month validity to licences with 12 month validity, the number of learners licences on issue doubled.

5.1.2 Compatibility of data between jurisdictions

Characteristics of crash databases vary among jurisdictions and it is likely that licensing

and registration data are also not compatible.

Drummond (1986) pointed out differences in overall safety and reporting rate by state. It is also likely that licensing rates vary among states.

5.1.3 Ethical issues

As in most studies in which information is collected and combined, there is a need to consider ethical aspects of the evaluation. Privacy and confidentiality rules differ between States and discussions will need to be held to outline any possible issues which the evaluation of the graduated licensing system holds. The potential for privacy considerations to be important would be great if drivers' names were needed as the basis of merging of data sets.

5.2 STATISTICAL ANALYSIS ISSUES

5.2.1 Time period needed to detect a change in crash numbers

The time period needed to detect a change in crash numbers can be lengthy and depends on the magnitude of the effect of the countermeasure and the absolute magnitude of crash numbers. Haque and Cameron (1987) in an evaluation of the effect of zero BAC legislation, noted that they would have required 40 months of post-legislation data to detect a 10% reduction in serious casualty accidents during alcohol periods. This was in Victoria, where crash numbers are second only to NSW. Detecting a difference in a smaller state would take even longer. Also affecting time taken to conduct analyses is the lag in the crash data systems. For nonfatal crashes, this varies between jurisdictions from several months to about a year.

5.2.2 Choice of contrast groups

To maximise statistical power when comparing the number of young driver crashes with a contrast group, a group which has at least a similar number of crashes should be chosen. Hampson (1989) chose drivers between the ages of 32 and 59 inclusive as his contrast group for this reason.

The poor quality of coding of driving experience or licence status may force age to be used as a proxy measure.

5.2.3 Actual or proxy measures

The variable of interest (e.g. licence status, driving experience or BAC in crash data) may have a large component of missing data or not be coded. The use of proxy measures such as driver age in lieu of licence status or alcohol times (dividing the week into times in which the involvement of alcohol is high and low) in lieu of driver BAC has proved necessary in previous young driver studies. Noordzij (1983, cited in Maisey, 1984) has pointed out that the sensitivity of comparisons in the analysis may be reduced by the use of surrogate measures.

5.2.4 Choice of denominators

In calculating the crash risk of novice drivers, the decision needs to be made as to whether the denominators of number in population, number of licensed drivers and vehicle kilometres travelled are used. In regard to examining the relationship between the minimum driver licensing age and the casualty crash involvement rates of young drivers, Drummond (1986) claimed that:

"To measure the total effect on road trauma, the accident rate per 10,000 population must be used as it is the only way in which the effects of both accident risk of those holding licences and the licensing rate can be taken into account." (p.i)

Importance of interactions. O'Connor (1986) concluded that "there is a need to consider the interacting effects of age, exposure, experience and alcohol impairment in young drivers involved in accidents and to consider the nature and extent of the trade-offs between these risk factors when assessing countermeasures" (p.viii).

Warren and Simpson (1976) demonstrated that a significant interaction exists between age, experience, exposure and alcohol impairment. Young drivers were seen to have higher risk from the multiplicative interaction of the risk factors rather than from the addition of their independent risks, whereas older drivers were found to have lower risk from the multiplicative interaction, rather than addition, of the independent risks. Warren and Simpson concluded that any countermeasure which reduces

1. the alcohol impairment risk factor
2. the exposure risk factor or
3. the driver experience risk factor

will exert a multiplier effect in terms of reductions in the frequency of serious accidents of young drivers.

5.3 GENERAL DIFFICULTIES IN EVALUATING LEGISLATIVE COUNTERMEASURES

Hingson and Howland (1987) discussed difficulties in assessing the contribution of drunken driving legislation to fatal crash reductions. In addition to problems with the adequacy of drink driving data, they noted that

1. countermeasures that target youthful drivers frequently do not occur in isolation. "When many legislative interventions are enacted in a short period of time, it is extremely difficult to isolate the effects of any single piece of legislation" (p.338).
2. previous research on the impact of legislation indicates that the effect of similar laws can vary widely from state to state. Public education, police and court enforcement, public attitudes as well as the frequency of the behaviour can all influence whether a law reduces fatal crash rates.

3. evaluators of laws conventionally focus on the effective date of laws in pre- and post-law comparisons. However declines can occur before the effective date of implementation of a change because the law is a manifestation of changes in public attitudes.

5.4 OTHER TEMPORAL ISSUES IN EVALUATION

Problems may arise in comparing measures taken just before the introduction of a change to driver licensing and just after the change. Publicity about changes which are foreshadowed may in itself affect the measure before implementation of the change. For example, advance news of the implementation of a new restriction may result in many young people rushing to get a licence under the less restrictive conditions which prevailed at the time. Thus, before and after comparisons exaggerate the difference in licensing rates which resulted from the characteristics of the graduated licensing system itself.

5.5 EVALUATION APPROACH ADOPTED

As a result of the difficulties confronting a quantitative evaluation of graduated licensing schemes, it was decided that the evaluation should comprise a combination of process evaluation, review of earlier studies and examination of the effects of the schemes on the young drivers affected. The evaluation approach comprised:

- documentation of changes and the current position in the jurisdictions regarding regulations for novice drivers
- a review of previous studies of the effects of components of Graduated Licensing Schemes
- a review of previous studies of community and young driver attitudes to graduated licensing
- a major survey of young driver knowledge, attitudes, compliance and perceptions and social costs associated with the components of graduated licensing

6. CHANGES TO NOVICE DRIVER LICENSING AND OTHER RELEVANT REGULATIONS

The following lists summarise changes to novice driver licensing or legislative changes which may have affected novice driver safety in each of the Australian jurisdictions.

6.1 NEW SOUTH WALES

1938/39 1 January 1966	Oral tests on traffic laws. Provisional system introduced. One year Provisional Licence Display P plates 80 km speed limit
1 January 1977	One offence licence cancellation and further Provisional Licence issued.
1 February 1982	250 ml restriction on Learner and Provisional motorcycle riders. Learner permits issued for 12 months duration. Written knowledge tests introduced.
25 March 1985	Provisional licence changes:- Knowledge test only, after cancellation 5 demerit points before licence cancellation provisional demerit points carry over to unrestricted licence
2 April 1985	.02% alcohol limit introduced for learners and Provisional licence holders Drivers supervising learners not to be under influence or exceed .05% alcohol
26 April 1985	Age for driver permits reduced to 16 years
1 May 1987	Introduction of probationary licences
1 August 1987	Holder of Learner's permits and Provisional Licences prohibited from towing vehicles
16 November 1987	Issue of provisional licences where the type of licence being applied for has not previously been held for at least 12 months Motorcycle engine capacity restrictions to apply to all riders licences unless a rider's licence previously held for at least 12 months
5 April 1988	Issue of Learner's licences at no fee where the applicant holds a current licence of the other type
10 January 1989	Introduction of photo licences Proof of identity Learner's licences
18 December 1989	Introduction of three year demerit points scheme. Four demerit points before cancellation of provisional licence.
20 March 1990	Introduction of computerised knowledge tests.
1 August 1990	Tenure of Learner's Licence to drive extended to 15 months. Tenure of Learner's Licence to ride reduced to 6 months. Learner's Licence fee reduced to \$10. Driving Test Fee reduced to one test only.
1 November 1990	Motorcycle Rider Pre-learner Licence Training Scheme introduced.
1 January 1991	Motorcycle Rider Pre-provisional Licence Training Scheme introduced. .02% BAC limit under 25 years if not held a licence (other than a Learner's Licence) for more than 3 years. Applies also to: Drivers of heavy vehicle, public vehicles, dangerous goods vehicles, Drivers of vehicles carrying radioactive material
March 1991	Introduction of speed cameras

The NSW Roads and Traffic Authority is in the process of developing a Novice Driver Curriculum which is likely to result in substantial changes to training and testing.

6.2 VICTORIA

1969	Probationary licence scheme introduced <ul style="list-style-type: none">- 80 km/h speed limit in first 12 months- display P plates for 12 months- loss of licence for any offence other than driving an unroadworthy vehicle, driving a vehicle without prescribed lights and not indicating (these offences earning demerit points)
1979	motorcycle capacity limit of 260 cc for learner permit holders and P plate motorcyclists
June 1983	new arrangements for training and testing of motorcycle learner permit applicants
22 May 1984	zero BAC legislation introduced prohibiting any learner, first year probationary, unlicensed or disqualified driver or rider from driving or riding with any alcohol in his/her blood
1 July 1990	Introduction of graduated licensing scheme. For cars (not motorcycles) the following conditions apply: Learners permit <ul style="list-style-type: none">- minimum age 16 years- pass road law test- supervised by holder of full licence- valid for three years
1 August 1990	Red licence <ul style="list-style-type: none">- pass practical and theory tests- restriction on power to weight ratio of 125 kilowatts per tonne or capacity weight ratio of 3.5 litres per tonne- new design P plate must be displayed (white on red background) Full licence <ul style="list-style-type: none">- must have held red licence continuously without conviction for 3 years- minimum 21 years old compulsory carriage of licence for probationary licence holders or on the spot fine required to pass computer-based hazard perception test to drive powerful cars after the probationary period (proposal to remove this regulation approved in principle by Ministry of Transport June 1992)
February 1994	restriction to one passenger for 12 months after licence restoration introduction of Hazard Perception Test in Geelong only. To become statewide by end 1994

Note: In the period of 12 months post July 1990, about 15% more Learner Permits were issued relative to the previous 12 months. The number of P licences issued during the same period was slightly lower (about 95% of the previous 12 months).

6.3 QUEENSLAND

September 1976	Motorcycle Training Program commenced by Queensland Road Safety Council.
April 1982	Learner and first year motorcyclists restricted to maximum engine capacity of 250cc.
November 1982	Lowering of maximum permissible blood alcohol concentration for drivers from 0.08% to 0.05% BAC.
February 1983	Driver Education lectures introduced for drivers who accumulate 5 or more demerit points.
December 1984	Lowering of maximum permissible blood alcohol concentration for all

June 1985	drivers under 18 years from 0.05% to 0.02% BAC.
August 1986	Alcotubes first used. Likely to have increased number of tests.
October 1988	Reduce Impaired Driving (RID) Campaign introduced.
December 1988	First year motorcyclists limited to machines with an engine capacity not exceeding 250 ml.
1 January 1991	Random Breath Testing (RBT) commenced.
	introduction of the new three stage driver licence system which features:
	0.02% BAC limit extended to all drivers under age 25
	minimum age 17 years for Learner's Permit
	250 cc capacity limitation for motorcycles for first 12 months
	minimum period for Learner's Permit
	6 weeks if obtained between 1 January 1991 and 28 February 1991
	3 months if obtained between 1 March 1991 and 30 April 1991
	6 months if obtained after 1 May 1991
	provisional licence for 3 years if aged 17 to 22, 2 years if aged 23, 1 year if aged 24

As at February 1985 (or before) there was a mandatory minimum learner's period of six weeks. Also as at that time, no requirement to display L or P plates.

Provisional licence and learners permit holders must carry licence. The penalty is 4 demerit points which results in loss of permit or licence. It is understood that older drivers can be penalised for failure to produce a licence within 48 hours of a Police request but the Road Safety Act refers specifically only to people from outside Queensland in this regard.

6.4 WESTERN AUSTRALIA

1 January 1980	definition of a casualty accident changed
9 December 1982	.02 BAC limit for probationary drivers and increase in all drink driving penalties
1 October 1988	RBT legislation introduced
1988	increase in accident report minimum damage limit from \$300 to \$1000
6 January 1989	mandatory breath testing of drivers involved in crashes
13 January 1991	speed cameras became fully operational

6.5 SOUTH AUSTRALIA

1980	Probationary licensing introduced
6 June 1981	.05 BAC limit for probationary drivers introduced
15 October 1981	RBT commenced operation
before 1986	zero BAC limit for learner and probationary drivers
May 1987	commencement of increased level of RBT and publicity
1988	increase in car and m/cycle licensing age from 16 to 16 years 6 months
	minimum 1 yr probationary licence or until 19 yrs (car and motorcycle)
	speed limit probationary increased from 80 to 100 km/h
	250 ml restriction for first year for mcyclists who already hold car licence
	change in car learner permit fee from \$14 for 3 mos then \$7 per 3 mos to \$8 per 3 mos
	change in mcycle learner permit fee from \$14 to \$16

6.6 TASMANIA

1965	Provisional licence introduced. 3 year term for novice drivers and some offenders
1971	Provisional period reduced to 1 year. P-plates and 80 km/h limit introduced.
1 February 1971	zero BAC introduced for first year drivers. preliminary breath screening tests introduced
November 1971	drivers over .15 BAC deemed to be under the influence of alcohol
1980	compulsory wearing of seatbelts where fitted
1980	Level 1 (pre-learner's permit) motorcycle training introduced
1983	Level 2 (pre-provisional licence) motorcycle training introduced
1988	increase from \$4 to \$10 for learner permit
1989	increase in duration of learner permit from 3 mos to 1 year increase in mcycle learner permit fee from \$4 to \$10
1 January 1991	3 year provisional licence introduced 80 km/h limit and P-plates for first year zero BAC
18 December	250 cc and pillion restrictions for motorcyclists for first year riders only Stiffer drink driving laws, including a graduated penalty scale introduced

Revamped demerit point scheme based on national scheme should be introduced by end 1992.

6.7 NORTHERN TERRITORY

2 December 1974	provisional licence introduced, duration 12 months, minimum age 16 years, maximum speed 50 mph
20 November 1981	maximum speed provisional licence 80 km/h
1 February 1984	minimum age 16 years for learners permit (was previously 17)
May 1986	photographic licences introduced but allowed two days to produce licence
October 1987	zero alcohol for learner and provisional drivers
1988	80 km/h limit for learner drivers and riders provisional licence automatically cancelled for drink driving and dangerous driving
1989	increase in mcycle learner permit from \$9.50 to \$10.50
11 November 1992	drivers tested on automatic vehicle restricted to automatics while on provisional licence
1 July 1994 (expected)	minimum age 16 years 3 months for motorcycle learners permit learners permits minimum duration 6 months cars, 3 months motorcycles minimum age 16 years 6 months for provisional licence but 16 years if applicant has passed an approved course

6.8 AUSTRALIAN CAPITAL TERRITORY

1988	increase from \$12 to \$15 for learners permit (car or motorcycle)
1989	increase from \$15 to \$16 for learners permit
27 September 1993	minimum age for learners permit (car) decreased from 16 years 9 months to 16 years minimum duration for learners permit changed to 6 months for car and 3 months for motorcycle (some exceptions apply) provisional licences introduced - minimum age 17 years, duration 3 years, display P-plates first year only, carry licence, .02 BAC limit

6.9 STATUS OF IMPLEMENTATION OF GRADUATED LICENSING COMPONENTS OF THE FEDERAL GOVERNMENT'S 10 POINT SAFETY PACKAGE

Table 6.1 shows the status of implementation of the graduated licensing components of the Federal Government's 10 point safety package. The minimum age for issue of learner permits (16) has been implemented in all jurisdictions but it is not necessary to hold a permit for a minimum of six months in half of the jurisdictions. The minimum age for issue of a first licence (probationary/ provisional licences) remains less than 17 in South Australia and the Northern Territory. Licences for automatic vehicles are required in all jurisdictions except South Australia. In Western Australia and the Northern Territory, zero BAC applies during the first licence period, rather than for the first three years after obtaining a non-learners licence up to 25 years of age.

Table 6.1. Status of implementation of graduated licensing components of the Federal Government's 10 point safety package.

	NSW	Vic	SA	ACT	WA	Qld	Tas	NT
Minimum learner permit age 16	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Minimum period 6 months	Yes (from 1 Jan 93)	Yes (12 mos)	No	Yes (from 27 Sept 93)	No	Yes	Yes	No (but start 1 July 94)
Minimum probationary licence age 17	Yes	Yes	No (16y 6mos)	Yes	Yes	Yes	Yes	No (16y)
Licence for automatic vehicles	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Zero BAC for learner drivers	Yes (.02)	Yes	Yes	Yes (.02)	No (.08)	Yes (if under 25)	Yes	Yes
Zero BAC for first 3 yrs drivers under 25	Yes (.02)	Yes	Yes	Yes (.02)	No (1 year only)	Yes (.02)	Yes	No (1 year only)

7. REVIEW OF STUDIES OF THE EFFECTS OF COMPONENTS OF GRADUATED LICENSING

It was noted in Chapter 5, that the introduction of components of graduated licensing may have effects on crashes, exposure, licensing and specific behaviours (such as drink driving). A thorough evaluation would incorporate all of these types of data. While no such thorough evaluations have been conducted, the available data are reviewed in this chapter.

7.1 ZERO BAC

7.1.1 Previous studies of the effects of zero BAC on crashes

The Road Traffic Authority conducted an evaluation of the effect of the Victorian zero BAC legislation for the period July 1984 to December 1985 (Haque and Cameron, 1987). The involvement in serious casualty accidents by all car drivers subject to the zero BAC restriction was compared with the involvement of Standard Licence Holders. The accidents were divided into "alcohol" and "nonalcohol" times. The pre-post method showed a reduction in serious casualty accidents. Because there were only 18 months of data, no statistically significant effects could be found using time series analyses to compare casualty crash data for learners and first year probationary licence holders with second and third year probationary licence holders. The difficulty is that it would have needed 40 months of post-legislation data to detect a 10% reduction in serious casualty accidents during "alcohol periods".

Maisey (1984) conducted an evaluation of the effect of lowering the statutory alcohol limit for first year drivers from .08 to .02 gm/100ml in Western Australia. He chose night-time casualty accidents and casualty accidents on Thursday, Friday and Saturday night as surrogate measures of accidents involving alcohol affected drivers. They were compared with daytime casualty accidents. Age of drivers was used as a surrogate measure for probationary drivers. Drivers under 18 were chosen because this group would contain few nonprobationary drivers. However it did miss a sizeable number of older probationary drivers. They were compared with drivers of ages 18 and older.

There were too few fatal crashes involving probationary drivers in the two year period for the effect of .02 to be evaluated. There was a 17% nett reduction in the number of night-time casualty crashes involving drivers under 18 years compared with older drivers but the result was not statistically significant given the relatively small number of crashes.

The introduction of .05 BAC limit for all drivers in NSW had a greater beneficial effect on casualty crash involvement of 17 to 20 year old drivers than on older drivers (Smith, 1984, cited in Smith, 1986).

Smith (1986) conducted an evaluation of the introduction of lower BAC limits for

novice drivers in Tasmania, South Australia and Western Australia. In Tasmania the introduction of zero BAC limit for first year drivers was accompanied by preliminary breath testing and .15 as a per se level for drivers to be deemed under the influence of alcohol so a comparison with older Tasmanian drivers was not possible. A comparison with Queensland drivers showed that 17-20 year old Tasmanian drivers and motorcyclists had relatively fewer crashes in the year after zero BAC was introduced.

The introduction of .05 BAC limit for probationary drivers in South Australia led to a significant reduction in less severe casualty crashes of 16 year old male drivers but not female drivers or motorcyclists.

The introduction of the .02 BAC limit for probationary drivers in Western Australia produced a significant decrease in the total number of male and female drivers and motorcyclists aged 17 to 20 years but no significant effect on the number of such casualties admitted to hospital.

A study of the effectiveness of random stopping as a deterrent to drink driving was conducted by Loxley and Smith (1991). They concluded from a community survey in May and June 1988 that random stopping was not an effective deterrent, a finding which they noted was supported by the percentage of intoxicated drivers in fatal crashes in Western Australia being higher than in states in which there was random breath testing. The low level of stopping and performing may have prevented effective deterrence: overall 12% of all women and 28% of all men (5% of women and 30% of men in the 17-24 age group) had ever been stopped and tested. Sixty percent of people aged 17-24 admitted to driving while intoxicated.

7.1.2 Previous studies of the effects of zero BAC on drink driving

Studies of the effects of zero BAC on drink driving are less numerous than studies of its effect on crashes.

Hingson, Heeren and Morelock (1989) reported the effects of the introduction of a .02 BAC limit for drivers under 20 years of age in the US state of Maine in June 1983. Even after three years of the law, most Maine teenagers did not know that they could have their licence suspended if they drove after two or more drinks. Relative to teenagers in the state of Massachusetts (in which no lower BAC limit was introduced), teenagers in Maine reported driving after drinking less in the post-law period. Even though teenagers in both states drove more in the year after the law, the crash involvement of Maine teenagers dropped from 22% in the year prior to the law to 13% in the first two post-law years which was a significantly greater decline than reported by Massachusetts teenagers.

Interestingly, Hingson et al interviewed police officers as well as drivers to investigate whether police might shy away from enforcing a law which they thought to be too strict. 17% of officers felt that the law was too severe and about a third of these officers agreed that the severity discouraged officers in general from stopping teenagers who drive after drinking. A third of the officers surveyed reported that on at

least one occasion they had not tested a teenager who they believed had an even chance of being .02 or higher.

The first three years of operation of RBT in South Australia found that RBT had failed to be effective after an initial period of success (Review of the operation of random breath testing in South Australia, 1985, cited in King, 1988). The review committee claimed that the low rate of testing (less than one in six licensed drivers) had led to the lack of effectiveness and in 1987 resources were increased and this was accompanied by a major publicity campaign.

In 1987 RBT shifts commenced about 4.30 pm and finished about 1 am. Sites were selected using a computer program which applied weightings to different crash types and prior RBT detection rates to derive an index of each site's crash potential with respect to drink driving (King, 1988).

A survey of drinking drivers on the road was conducted by the Road Accident Research Unit of the University of Adelaide before and after the increase in RBT (and publicity). Of drivers less than 21 years of age, 22.9% had a BAC greater than zero before the increase and 16.8% had a BAC greater than zero after the increase in RBT (and publicity). However the percentage of drivers under 21 years who were over the (then) legal limit of .08 did not change (4%).

7.1.3 Effects of zero BAC on exposure

Crash reductions as a result of zero BAC legislation could be achieved through one of two mechanisms or a combination of both. "Firstly, beginning drivers may travel less as their opportunities to drink and drive have been restricted i.e. an exposure reduction mechanism. Alternatively, novice drivers' travel pattern may not change but their consumption of alcohol may be reduced i.e. a risk reduction mechanism" (Haque and Cameron, 1987, p. 5).

Zero BAC is conceptually a direct method of reducing risk but onroad exposure surveys reported by Drummond et al (1986) have shown that the legislation appears to have discouraged drivers from driving at times when otherwise they would have been both drinking and driving - an exposure reduction effect.

The evaluation of the effect of the Victorian zero BAC legislation for the period July 1984 to December 1985 (Haque and Cameron, 1987) found that first-year drivers reduced their driving during weekend nights when drink driving is most prevalent but their P-plate use remained unchanged at 40-60%.

7.2 MINIMUM LICENSING AGE

Restrictions on minimum licensing age or based on other age criteria assume that it is age, not experience, that is the important factor in young driver safety, unless age is being used as a proxy for experience. The debate and latest findings on the issue of age versus experience is detailed in the proceedings of the New to the Road

symposium held in Canada in 1990 (Mayhew and Simpson, 1990).

In considering the impact of raising the licensing age, it is necessary to consider the relationship between minimum licensing age and the proportion of people licensed at any age. Many studies have shown that a low minimum licensing age is associated with a high proportion of licensed drivers at all ages up to 20 years (Drummond, 1986; Williams, Karpf and Zador, 1983).

Drummond (1986) investigated the interaction between the minimum driver licensing age and the casualty crash involvement rates of young drivers, using data from all Australian states. He concluded that "while 18/19 year old Victorians tend to have a higher accident rate than 18/19 year olds in other States, the accident savings flowing from having no 16 or 17 year old licensed drivers still results in a nett road safety benefit. The cumulative involvement rates show that Victoria does better than all other States" (p. 8).

O'Connor (1986) claimed that Drummond's analysis could have been improved by the use of age specific standardised rates rather than cumulative rates. The latter assume that the population distribution is even, which O'Connor showed to be not always the case. In addition, he considered that 30-59 year old Victorian drivers should have been used as the control group, rather than 26-59 year olds. He also was concerned whether the injury data used by Drummond was comparable between states.

7.3 DURATION AS A LEARNER DRIVER

Williams (pers comm, 1990, cited by Mayhew and Simpson, 1990) stated that "holding people in the learners phase longer and ensuring that they accumulate supervised on-road driving experience is the key, in that it will produce older, more experienced initial licence holders" (p.121).

The effect of requiring that the minimum period for a learner permit be 6 months depends largely on whether the current average duration of holding a learner permit is greater than or less than 6 months.

7.4 AUTOMATIC LICENCES

In comparison with the other components of the graduated licensing scheme, there is very little evidence available about the safety effects of driving a manual car after passing the onroad driving test in an automatic vehicle. Some jurisdictions endorse the driving licences of such persons "automatic vehicles only", presumably because driving a manual car is considered more difficult than driving an automatic car.

Rogerson (1989) reported weak evidence that drivers who took their practical driving test in an automatic car and subsequently drove a manual car had a relatively high crash risk during their first year of driving compared with other first year drivers.

8. REVIEW OF STUDIES OF ATTITUDES TOWARDS GRADUATED LICENSING

8.1 ATTITUDES OF OFFICIALS IN STATES AND TERRITORIES TO GRADUATED LICENSING

Visits were made to driver licensing and road safety officials in most jurisdictions. In a number of jurisdictions the view was expressed that FORS wanted a lower minimum driving age and that the 10 point package was designed as a step in that direction. This is probably a hangover response from FORS' early proposal of a graduated system for 15 year old learner drivers.

In Tasmania, road safety and licensing authorities expressed the view that restrictions should not apply to all young drivers, but only those who constitute the problem. This issue is discussed in Section 2.4 of this report, The Young Driver Problem versus Young Problem Drivers.

Williams (1985) has questioned the effectiveness of such an approach. The problems include:

1. identifying young problem drivers
2. lack of effectiveness in reducing crashes of most programs that have been used for those with poor driving records
3. most drivers involved in serious crashes have not had a prior crash or conviction.

After an examination of the data, Robertson (1981) concluded:

Only 10 percent of drivers under age eighteen in fatal crashes had been in any previously reported crash, compared to 25 percent of drivers aged eighteen to nineteen, and 24 percent of those aged 20 or older....Only eighteen percent of drivers less than eighteen years old in fatal crashes had any convictions for moving violations prior to the fatal crash. Among those eighteen to nineteen years old and those 20 or older, 48 percent had at least one conviction for a moving violation....About 77 percent of drivers....would not be identified for a rehabilitation program before someone died in a crash in which they were driving. (p.309)

8.2 YOUNG DRIVER ATTITUDES TO GRADUATED LICENSING

Young driver attitudes to graduated licensing are of importance because the degree to which there is resistance to specific countermeasures will contribute to determining the amount of enforcement effort needed to bring about an acceptable level of compliance. Whines (1988), in a discussion of two earlier NZ reports, noted that they concluded "that where legislation introduces factors which are of annoyance or inconvenience to drivers, enforcement measures will need to be high, but that where regulations are seen to be acceptable and supported by the majority of drivers they will tend to be complied

with regardless of enforcement efforts" (p.327).

Most surveys of young driver attitudes to graduated licensing have interviewed both young drivers and other members of the community. Commonly the young drivers were less supportive of proposed restrictions than were other members of the community.

8.2.1 Western Australian survey of driver attitudes

Van Brakel (1987) reports the result of a survey of attitudes to drink driving and graduated licensing that was sent to samples of the general driving population and probationary (mostly first year) drivers. A majority of both groups supported a lower BAC limit for probationary drivers than the current .08 g/100ml for fully licensed drivers (the limit for probationary drivers was then .02 g/100ml). Table 8.1 shows the proportions of each group supporting each maximum BAC level.

Table 8.1. Support for lower maximum legal BAC level for probationary drivers by drivers from probationary and random samples. (from Van Brakel, 1987)

Maximum BAC	Probationary drivers (%)	Random sample (%)
zero	35.6	45.9
.02	21.0	23.5
.05	21.8	31.4
.08	10.5	9.0
Other	0.8	0.6

When asked how long the lower BAC limit should apply, about half of the probationary group said one year (48.3%) and more members of the random sample than the probationary group approved of two or three years. In addition, about a quarter of the probationary group and a half of the random sample were in favour of increasing the minimum legal drinking age (then 18 years).

The survey showed some support for night-time driving and vehicle occupancy restrictions but, not surprisingly, support was lower among the probationary group than the random sample of drivers. Support for the idea of a curfew was expressed by 38.6% of the probationary drivers and 59.3% of the random sample of drivers. Generally, the probationary drivers chose a shorter time period for the curfew and a shorter duration (in months) of application than did the random group.

Passenger restrictions were supported by almost half of the probationary drivers and more than two-thirds of the random sample. The probationary drivers favoured a shorter duration of application of the restriction than did the random group.

Another Western Australian study has shown that there is a strong need for enforcement of sanctions for young drivers. A survey of disqualified and suspended

drivers (Smith and Maisey, 1990) showed that single young male drivers were more likely than any other group to drive illegally. Young male respondents were also more likely to

- state that driving was essential to their employment
- spend a number of hours driving each work day
- drive many kilometres each week
- have applied for an extra-ordinary licence
- report that licence disqualification affected their work activities
- feel that their licence disqualification was unfair.

8.2.2 Attitudes to New Zealand Graduated Driver Licensing Scheme

A survey of drivers who had just passed their practical driving test before (pre-GDLS) and after the introduction of the Graduated Driver Licensing Scheme (post-GDLS) was conducted (Whines, 1988). Drivers in the post-GDLS group tended to favour a lower minimum licensing age. This was clearest for males. Most respondents in both groups felt that a restricted licence was not as worthwhile as a full licence but they did not feel that it was wrong that the restrictions only applied to young drivers. The low BAC level was a more acceptable restriction (preferred by 56.0% pre and 60.0% post) than the curfew (9.4% pre, 9.2% post), passenger restriction (6.0% pre, 8.1% post) or all three restrictions (28.6% pre, 22.7% post). The time taken to learn to drive converged for the post-GDLS group, with the largest proportion taking 3-4 months with fewer taking 1-2 or 6-12 months than in the pre-GDLS group. This may have been a consequence of the timing of the post-GDLS questionnaire, however. Respondents did not have very high expectations of being apprehended by traffic officers driving without a licence but were more positive about parents' ability to enforce restrictions.

8.3 COMMUNITY ATTITUDES TO GRADUATED LICENSING

In February 1986 the Federal Office of Road Safety commissioned Neilson Associates Pty Ltd to undertake research into the implementation of graduated licensing (specifically the FORS 1983 proposed scheme). As part of this project, community consultations were held in Melbourne, Adelaide, Wollongong and Mildura. Young people who did not yet have a licence, their parents and community groups which might be affected by changes in licensing arrangements were consulted.

Initial reactions to the FORS proposed graduated licensing scheme were generally positive despite the complexity of the scheme. Associated with this was the view that the high crash rate among young people needed to be addressed. Participants generally felt that any initiative to address the high number of deaths by young drivers needed to be encouraged and developed.

The extension of the period of supervised driving to six months was not perceived as onerous by either the adults or the young people. It was often suggested that six to twelve months was an acceptable time for the learning process within the community.

The amount of parent supervised driving that can be achieved during the learning period was questioned. It was considered that this was limited by the small degree of availability of the family vehicle and the parent's time. It was considered likely that a lot of supervised experience would have to be gained through a professional driving school.

In general, parents felt that an extended learner period should comprise six months to one year of supervised driving experience with supervisors who had held a full licence for at least three years. They did not favour any restrictions on the time of day or night driving experiences, nor the number of passengers in the car. It was felt that a minimum amount of time driving under supervision for different road conditions (e.g. country, night-time, peak-hour city etc) should have to be certified.

Young people did not fully agree with the need for supervision to be longer than three to six months.

There was strong support for zero blood alcohol during the first two years of a licence. It was considered that the community benefit outweighed the significant difficulties in social and recreational activities that this restriction would cause.

The need for a tolerance factor such as .02 to cover situations such as cough medicines was discussed. Overall, a simple banning with no exemptions was favoured.

The preferred model from the community consultation was:

- Learner permit: 16 years 3 months minimum age, supervised driving for nine months and compulsory driver education
- Probationary licence: 17 years minimum age, 12 month period drive solo with up to three passengers
- Learner and probationary periods: zero BAC, general speed limits only, curfew 10 pm to 5 am
- Full licence: minimum 18 years age
- Licensing and testing: more rigorous testing between graduated licensing stages and lifetime testing every four years.

The proposal of lowering the age of entry to graduated licensing to 15 years was thought by both young people and adults to be highly undesirable. Estimates of the appropriate age ranged from 16 to 25 years, with over 75% of people of the view that 16 years is the appropriate age for a learner permit.

Opinion was divided almost equally over whether the graduated licensing scheme should apply only to under 25 year olds or to all new drivers. Most people felt that the scheme should not be seen as specifically punishing the young.

Over 90% of adults and 82% of young people thought that the introduction of a photographic licence was a good idea and there was support for increased licence checking.

About 80% of adults felt that the penalties for breaking the conditions of the licence

should be strict enough to ensure reasonable compliance. Mandatory automatic disqualification for drink driving or unsupervised driving was considered essential. For other offences it was felt that there should be a demerit points system based on the severity of the offence.

8.3.1 FORS Community Attitudes to Road Safety Survey

Six waves of the FORS Community Attitudes to Road Safety Survey have been reported (October 1986, June 1987, May 1988, February 1989, November 1990 and August 1991). Two questions have been asked which are relevant to community attitudes to graduated licensing. The first question, which has been included in each wave of the survey, asks "What factor do you think most often leads to road crashes?" As Table 8.2 shows, the response "driver inexperience/young drivers" has been among the top six responses in each wave of the survey. "Drink driving" and "speed" have always been selected by the highest percentage of respondents.

Table 8.2. Percentage of respondents who chose each factor in answer to the question "What factor do you think most often leads to road crashes?" in the FORS Community Attitudes to Road Safety surveys Wave I to VI.

Factor	WAVE					
	I	II	III	IV	V	VI
Drink driving	34	26	31	26	19	15
Speed	24	27	27	33	32	33
Careless/negligent driving	11	10	10	6	7	7
Inattention/lack of concentration	6	3	5	5	4	9
Driver behaviour/ attitude/impatience	8	5	7	5	5	7
Driver inexperience/ young drivers	5	6	3	2	4	5
Insufficient training/driver training	2	2	-	-	-	1

A more specific question has addressed the level of support for proposed restrictions on newly licensed drivers. While the wording of the introductory paragraph of the question varied somewhat between the Waves of the survey, it was essentially as follows:

The typical road crash involving young drivers occurs late at night with a car full of friends and often involves alcohol. Given this, which of the following restrictions do you think would reduce road deaths among young drivers?

Not allowing any drinking of alcohol before driving or, in other words, zero Blood Alcohol Content when on the road.

Restricting them from driving late at night i.e. after 11 pm.

Restricting them from carrying their friends as passengers.

The question was only put to those persons who had ever held a licence or permit. It was first included in Wave II but the results were not reported because of difficulties with the wording and placement of the question. The percentages of respondents who agreed with the proposed restrictions in Waves III, IV, V and VI are reported in Table 8.3.

Table 8.3. Percentages of respondents who agreed with restrictions on newly licensed drivers in the FORS Community Attitudes to Road Safety surveys Wave III to V.

Restriction	WAVE			
	III	IV	V	VI
Zero BAC	80	80	80	84
No late night driving	16	21	18	21
Not carrying friends as passengers	16	22	19	15

As Table 8.3 shows, about 80% of respondents in each wave agreed with zero BAC as a restriction for newly licensed drivers and between 15% and 22% of respondents agreed with restrictions on late night driving and carrying friends as passengers.

In Wave III, approval for zero BAC for young drivers was widespread across all states and territories, sex and age groups. However, in Wave IV agreement was significantly lower amongst those aged 30-39 (70%) and in Wave V support for zero BAC was significantly higher in Tasmania (88%) than in South Australia (72%). In Wave 6 support for zero BAC was lowest among 15-24 year olds (74%) and increased with age. Support for zero BAC was highest in Tasmania (88%, as in Wave V) and lowest in the Northern Territory.

Support for restrictions on late night driving and carrying friends as passengers varied as a function of State or Territory, educational level and age group of the respondent. In Waves IV and V there was most support for both restrictions from residents of Tasmania and least support from residents of the Northern Territory. South Australians expressed more support for late night driving restrictions (Wave IV) and passenger restrictions (Wave V). In general, approval for these restrictions decreased with educational level of the respondent (Waves IV, V and VI).

Unlike passenger restrictions, support for late night driving restrictions did not show a simple pattern of being lowest for the age group affected. In Wave III support was

greater from respondents of 50 years of age or greater and in Wave IV support was lowest among 15-19 year olds and 25-29 year olds. Surprisingly, support for the restriction was highest among 17-19 year olds in Wave V and lowest among 20-24 year olds. In Wave VI, support for both restrictions increased with age.

8.3.2 Attitudes towards zero BAC in Victoria

Attitudes toward zero BAC legislation in Victoria were studied as part of market research study conducted for the RTA (Monk and South, 1985, cited in Haque and Cameron, 1987). There was a broad range of responses related to approval or disapproval of the law but more people approved at some level than disapproved. Approval was higher in metropolitan areas than in the country but did not differ noticeably amongst age and sex groupings.

9. GRADUATED LICENSING SURVEY

One of the major components of the Evaluation of Graduated Licensing Schemes was the collection of empirical data on:

- knowledge
- attitudes
- compliance and perceptions of enforceability, and
- social costs

associated with the components of the graduated licensing system which were stated as:

- zero BAC for learner drivers and for the first three years after obtaining a nonlearners licence up to 25 years of age
- no learner permits issued before 16 years of age
- no probationary licence to be issued before 17 years of age
- the minimum period for a learner permit to be 6 months
- licences issued for automatic vehicles to apply for the probationary period unless a manual test is undertaken.

It was considered preferable to ask young drivers not only about attitudes to graduated licensing, but about behaviours as well. While information about attitudes may be helpful in determining the level of acceptance of a proposed legislative or regulatory change, behaviour is more closely linked to safety. A change in attitudes that is not reflected in behaviour will have little effect on safety.

A summary of the results of this survey is presented in this chapter. For a full discussion of the results and a copy of the data in the form of an SPSSPC+ system file, the reader is referred to Haworth, Bowland and Foddy (1994 [CR 139]).

9.1 INTERVIEWING DRIVERS VERSUS OBTAINING INFORMATION FROM LICENSING FILES

Interviewing drivers was chosen in preference to obtaining information from licensing files for a number of reasons. The type of information available differs between the two methods although there is some overlap. Interviewing has the potential to collect some data which would require difficult or impossible retrieval/file matching. In addition, interviewing may be better for privacy reasons, direct permission is obtained from the driver. On the other hand, retrieving from files is likely to be cheaper than interviewing.

There are a number of aspects of behaviour which, although information may be available from driver licensing or Police data files, are easier to collect and link to other behaviours and attitudes in a survey. One example of this is length of time spent in each stage of the licensing scheme. While this is available from licensing databases in

some (not all) states, it is much easier to collect during the survey and much more useful when able to be compared with responses to other survey questions.

9.2 THE SAMPLE

A telephone survey was conducted to examine the effects of graduated licensing on novice drivers. Administration of the survey was undertaken by the Roy Morgan Research Centre. Interviews were conducted in New South Wales, Victoria, South Australia and Western Australia between March 4 and 13, 1994.

The sample consisted of people aged under 25 who had obtained their driving licence within the previous two years. Table 9.1 summarises the characteristics of the sample. Overall, about 60% of the sample held a probationary or provisional licence (hereafter termed a first licence). The proportions of the sample which held a full licence differed among the States because of the different lengths of the first licence periods. In New South Wales and Western Australia, about two-thirds of the sample held a full licence. In Victoria, very few respondents held a full licence. In South Australia, about a quarter of the sample held a full licence.

Table 9.1. Characteristics of the sample of drivers.

State	Males	Females	Mean age (years)	Probationary/provisional (first) licence holders	Full licence holders	Total
NSW	97	98	19.9	72 (36.9%)	123 (63.1%)	195
Vic	98	99	20.5	186 (94.4%)	11 (5.6%)	197
SA	98	99	18.9	148 (75.1%)	49 (24.9%)	197
WA	95	99	19.2	70 (36.5%)	124 (63.9%)	194
Total	388	395	19.6	476 (60.8%)	307 (39.2%)	783

Because of the variations in minimum licensing ages among States, drivers from different States had different mean ages. Drivers from Victoria were older on average than respondents from the other States (Tukey-HSD procedure, see Table 9.1). Drivers from New South Wales were older than those from South Australia and Western Australia.

9.3 SUMMARY OF RESULTS

9.3.1 Minimum age of 16 for learners permit

There is no direct relationship between the legal minimum age for obtaining a learners permit in each States and the median age that this occurs (see Figure 9.1). While NSW, Victoria and South Australia allow a learner permit to be issued at the minimum age of 16 years, the median age at which permits are actually taken out is lowest in South Australia, followed by New South Wales. The pattern suggests that the age at which a first licence (probationary/provisional) can be obtained is a major determinant

of when the learners permit is taken out (SA 16y6mos, NSW 17years, Vic 18years).

About two-thirds of drivers preferred 16 as the minimum age for obtaining a learners permit. Less than 5% preferred a lower age.

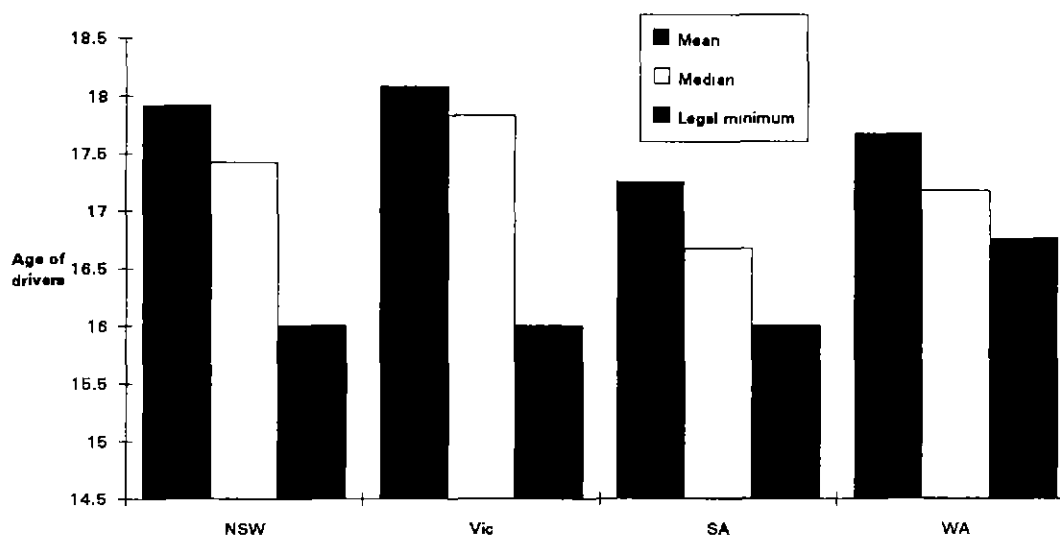


Figure 9.1. Mean and median ages at which drivers obtained their learners permits and the legal minimum in each State.

9.3.2 Minimum duration of six months for learners permit

The six months minimum duration was in force in NSW from 1 January 1993 (prior to that it was 3 months), the minimum is 12 months in Victoria (unless an exception is granted) and no prescribed minimum duration applies in SA and WA.

As Figure 9.2 shows, several factors were found to affect the mean durations learners permits were held:

- the prescribed minimum
- de facto minimums which arise from the differences between the minimum permit age and the minimum first licence age

In those States where there is a legal minimum duration, most drivers agree with it. The preferred minimum duration was shorter than 6 months in those States where there is currently no legal minimum duration. In other States, the preferred minimum duration was 4-6 months or 7-12 months.

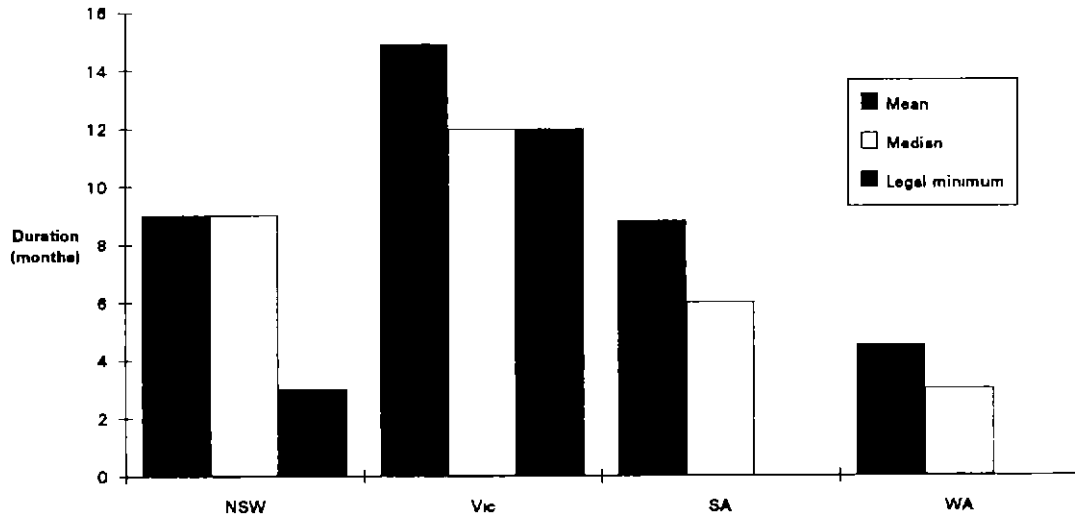


Figure 9.2. Mean and median durations drivers held their learners permits and the legal minimum in each State.

9.3.3 Minimum age for first licence to be 17 years

The minimum age for obtaining a first licence is at least 17 years in NSW, Vic and WA but it is 16 years 6 months in SA. Drivers from SA gained their licence at the same average age as those from WA, despite the opportunity to do so six months earlier. In Victoria, where the legal minimum age is 18 years, most drivers obtained their licence soon after this time (Figure 9.3).

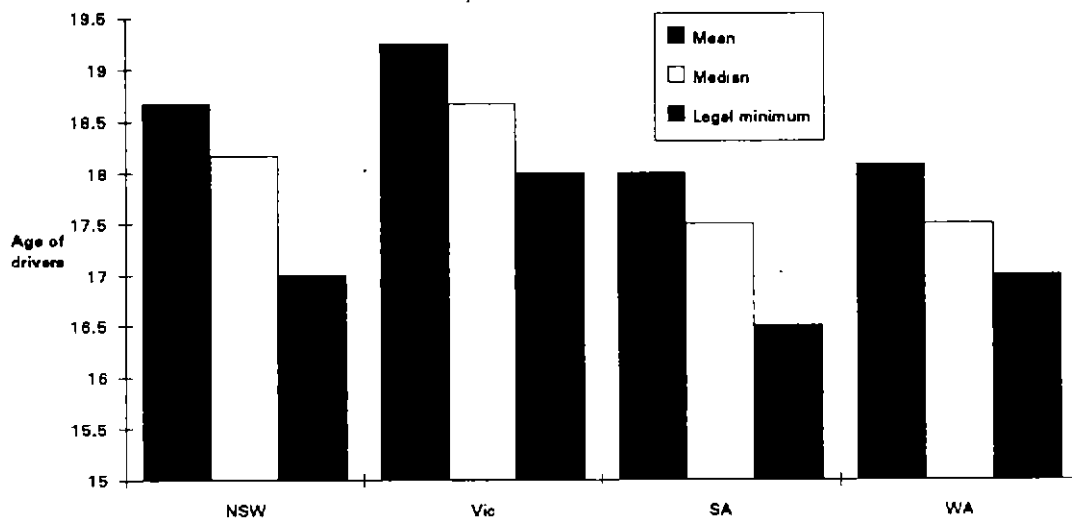


Figure 9.3. Mean and median ages at which drivers obtained first licence and the legal minimum in each State.

Preferred minimum ages were in line with the actual minimum ages in the driver's own States. In general, males preferred lower minimum ages.

Almost 95% of drivers agreed that there should be a minimum duration for holding a first licence. The preferences for the minimum duration mirrored the actual situations in the drivers own States. More females than males agreed with the restriction and they generally preferred longer minimum durations than males.

9.3.4 Restrictions on drink driving

Fewer drivers from Western Australia and NSW than other States reported an alcohol restriction as a condition of the first licence.

Overall, 91.4% of drivers agreed with the alcohol restriction. Males and drivers with trade training were less likely to agree with the restriction.

All drivers were asked how long the alcohol restriction should apply. Responses were in line with current restrictions in the States. Males preferred a shorter period of restriction than females.

As Table 9.2 shows, about 15% of drivers said they had sometimes drunk alcohol before driving when on their first licence. Drink driving was twice as common in WA, was more common in males and in drivers with trade training.

Table 9.2. Frequency of drinking alcohol before driving for drivers from each State. (some frequency categories on questionnaire have been combined)

Frequency	New South Wales	Victoria	South Australia	Western Australia	Overall
Never	85.6	88.8	90.4	74.7	84.9
Sometimes	13.8	11.2	9.6	25.3	14.9
Refused	0.5	0.0	0.0	0.0	0.1

The proportion of drivers who had been breath-tested in their first year of licensing did not differ among States. Ratings of the risk of being caught drink driving were similar for drivers who had and had not been breath-tested.

The most commonly reported social costs of the alcohol restriction were to encourage the drivers to drink nonalcoholic drinks, to travel with friends or take a taxi or public transport when going out at night. Males were more likely than females to state that the restriction prevents or sometimes prevents them going out at night.

WA drivers were less likely to have been displaying P-plates when breath-tested. Police were least likely to ask to see the drivers licence in Victoria.

About 85% of drivers reported that the penalty for drink driving was suspension or cancellation of the first licence. Those drivers who reported this penalty gave higher

ratings of the risk of detection than those who did not report the penalty. Almost three-quarters of drivers suggested that avoiding major roads would reduce the possibility of being detected when drink driving.

9.3.5 Displaying L- and P-plates

Displaying L- and P-plates and carrying a licence play an important role in enforcement of restrictions on learner and first licences. Overall, more than 10% of drivers had not displayed L-plates "all of the time" and more than a third of drivers did not display P-plates "all of the time" (see Table 9.3). Failure to comply with both restrictions was most common in NSW and failure to display with the P-plates was also most common in Western Australia. Males were less likely to display L- or P-plates than females. P-plates were frequently not displayed because they had been forgotten, lost, they were considered inconvenient or the driver was driving someone else's car. Drivers who sometimes drank and drove were less likely to display P-plates "all of the time" (see Table 9.4).

Table 9.3. How often respondents displayed P-plates when a first licence holder.

Frequency of displaying P-plates	New South Wales	Victoria	South Australia	Western Australia	Overall
Never/almost never	2.7	2.5	1.5	11.4	4.5
Sometimes	33.2	18.8	23.0	35.2	27.4
All of the time	64.2	78.7	75.5	53.4	68.0

Table 9.4. How often respondents displayed P-plates when a first licence holder as a function of how often they drank alcohol before driving.

Frequency of displaying P-plates	Never (n=658)	Sometimes (n=114)	Refused (n=1)
Never/almost never	2.3	17.5	0.0
Sometimes	24.5	44.7	0.0
All of the time	73.3	37.7	100.0

9.3.6 Manual/automatic first licences

Drivers in Western Australia and Victoria were less likely to take their test in an automatic car. Females were more likely to take their test in an automatic car and to drive an automatic car.

Two-thirds of drivers of manual cars said that the presence of the restriction in their State encouraged them to take the test in a manual car. About half of drivers of automatic cars said that the rule prevented them from driving other people's cars.

About two-thirds of drivers "strongly agree" or "somewhat agree" with the restriction. South Australian drivers (who do not have this restriction) were the most strongly opposed to the restriction.

10. CONCLUSIONS

It is only possible to evaluate graduated licensing as it has been introduced in each of the jurisdictions, rather than the effects of changes made as a result of Federal Government's Road Safety Initiative (10 point package). This is because most aspects of the 10 point package which apply to GLS have been largely introduced. Recent changes have been modifications to existing GLSs, rather than the introduction of GLS per se.

Differences between states in the timing and implementation of specific elements of graduated licensing mean that a combined evaluation is not feasible. It was considered likely that evaluations could be conducted on a state-by-state basis with overall conclusions being drawn from these results. However the resources needed for such an exercise were beyond the scope of this study.

10.1 CONFORMITY TO THE CONCEPT OF GRADUATED LICENSING

The review of driver licensing systems showed considerable differences among the jurisdictions. Currently, the licensing systems in New South Wales, Victoria, Australian Capital Territory, Queensland and Tasmania incorporate all of the components of the Federal Government's graduated licensing package but even these States differ in other characteristics of their licensing systems. Thus there is not a universal scheme of which the conformity with the concept of graduated licensing can be discussed. For that reason, the remarks in this section may apply to differing degrees according to the jurisdiction.

The first issue is the degree to which the licensing schemes are probationary, provisional or graduated in nature. As noted in Chapter 2, a *probationary* licensing system requires the new driver to hold such a class of licence for a specified period of time and not to receive a licence suspension during this period, before a regular licence will be issued. *Provisional* licensing is primarily a form of probationary licensing that is applied only to young novice drivers, typically age 16 and 17. A *graduated* licensing system may also incorporate 'restrictions' and 'provisions' but it requires the new driver to progress through certain steps or stages before full licensing is achieved (Mayhew and Simpson, 1990).

The graduated licensing scheme announced by the Federal Government has both probationary and provisional components. The requirement that a learner permit be held for a minimum of six months and the zero BAC limit for learner drivers are both probationary in nature, applying regardless of age. The zero BAC limit for the first three years of a non-learners licence under 25 years of age is provisional, however.

None of the current driver licensing systems in Australia incorporate parent-supervision, day vs night-time differences in driving restrictions and passenger restrictions which were characteristics of the graduated licensing scheme proposed by Waller (1986/89). This may be because they do not link graduated licensing and early licensing in the way that she originally conceived.

Mayhew and Simpson (1990) noted that the control of quality of exposure by graduated licensing systems results in a coincidental reduction in the quantity of exposure but that this reduction is not the primary intent of graduated licensing. In the Federal graduated licensing scheme, it is only the components relating to zero BAC and, perhaps the restriction to driving an automatic vehicle, which change the quality of exposure. The increases in licensing age and duration of the learners permit are likely to have as their major result a reduction in the amount of exposure (number of licences on issue and perhaps distance driven). If experience is necessary for the development of the ability to drive safely but the effect of graduated licensing (as implemented in most Australian jurisdictions) is to reduce experience, then the scheme may have disbenefits.

In addition to exposure reduction, motivation and learning were noted as important ways in which a graduated licensing scheme could contribute to reduction of crash risk by McKnight (1992). Motivation to drive safely can be increased by making removal of restrictions and imposition of sanctions both dependent on driving record. In contrast, time-related restrictions are not expected to have the same motivating effect. Most of the restrictions in current driver licensing systems in Australia are time-related, however. The removal of restrictions is dependent on driving record only to the extent that if the licence is withdrawn due to the accumulation of a critical number of demerit points, the total period for which the restrictions apply is increased.

There is little evidence that learning is encouraged by graduated licensing schemes in Australia. The proposed administration of a hazard perception test at the end of the first stage of probationary licensing in Victoria had the potential to do this.

In summary, current driver licensing systems in Australia generally fail to conform to the concept of graduated licensing. A number of possible explanations have been identified. First, the minimum driving age has traditionally been higher in Australian jurisdictions than that in United States and New Zealand. Administrators in the States have been unwilling to allow licensing at an earlier age. Such earlier licensing seems to be necessary in order to begin with a large number of restrictions. Curfews and passenger restrictions appear to be less acceptable when novice drivers are older. Instead, the higher minimum licensing age may have affected the introduction of restrictions because most young drivers can vote. The pattern of reliance on time-based restrictions, rather than ones based on driving record, may have resulted from this form of restriction being cheaper to administer. Time-based restrictions do not require monitoring records of infringements or retesting.

10.2 CONCLUSIONS FROM THE SURVEY ABOUT THE EFFECTIVENESS OF GRADUATED LICENSING SCHEMES

10.2.1 Minimum ages and durations

Minimum ages and durations for learner permits and first licences are set in an attempt to ensure that drivers have a minimum level of cognitive and emotional maturity before

driving (minimum age) and that a minimum amount of experience is gained during each stage of the licensing process (minimum duration).

The survey showed that the actual effect of minimum ages and durations for learner permits and first licences is modified by the relationships between these components. For example, allowing a low minimum age for the learner permit will not encourage many drivers to obtain it at that age if the minimum age for obtaining a first licence is high. Thus, a minimum duration for which the learners permit must be held does much more to ensure that a minimum amount of experience is gained before licensing than solely allowing a low minimum age for their learners permit and a high minimum age for the first licence.

10.2.2 Zero BAC

The results of the survey suggest that the effectiveness of the zero BAC restriction may be limited. Knowledge of the restriction, as measured by reporting it as a restriction, was surprisingly low in Western Australia and New South Wales. About 15% of drivers had failed to comply with the restriction, including about double this percentage in Western Australia. Almost three-quarters of drivers thought they could avoid breath testing by avoiding major roads. Most drivers identified social costs of the restriction but 91.4% agreed with it.

The survey failed to show any strong relationship between enforcement and compliance. Levels of enforcement (as reported by drivers) were no lower in Western Australia where the rate of noncompliance was much higher. Experience of being breath tested did not appear to increase estimates of the risk of being caught drink driving (if someone had been drinking).

10.2.3 Licences for automatic vehicles

Restricting drivers who obtained their licence in an automatic vehicle to only driving automatic vehicles during their first licence had two effects: discouraging some drivers from obtaining their licence in an automatic (fewer drivers gained licences in automatic vehicles in States where the rule applies) and preventing drivers who had an "automatic licence" from driving cars belonging to others. The road safety implications of these effects are unclear.

10.3 ADEQUACY OF LEGISLATION AND ENFORCEMENT

As the survey showed, some aspects of graduated licensing may encourage young drivers to avoid detection: e.g. not carry licence, not report single vehicle crashes or crashes in which they are the only one hurt (this could be a consequence of having demerit points or cancellation). The report of the South Australian Transport Minister's Working Party into Introduction of Graduated Drivers Licences was of the opinion that "the successful application of the scheme is dependent upon a requirement that all drivers either when in charge of a vehicle, or supervising a novice driver, carry a licence incorporating a photograph. Such licences would have to be produced upon demand by the police" (Working Party, 1985, p.2).

Photographic licences are essential for enforcement of graduated licensing - together with the requirement to carry the licence. In many jurisdictions, novice drivers can borrow other people's licences and it is difficult for the Police to know about it or do anything about it.

In addition there need to be substantial penalties for driving contrary to the conditions of a learner's permit or a probationary licence. This would reduce the tendency of young drivers to gamble that they will not be caught.

REFERENCES

- Adena, M. A. and Montesin, H. J. (1988). *Day-to-day travel in Australia 1985-86* (CR69). Canberra: Federal Office of Road Safety.
- AGB:McNair. (1988). *Community attitudes to road safety: Community attitudes survey Wave III* (CR74). Canberra: Federal Office of Road Safety.
- Boughton, C. J., Carrick, C. and Noonan, G. (1987). Development of graduated licensing in Australia. In T. Benjamin (Ed.), *Young drivers impaired by alcohol and other drugs* (pp.338-348). London: Royal Society of Medicine Services Ltd.
- Drummond, A. E. (1986). *Driver licensing age and accident involvement rates of young drivers* (GR/86/15). Hawthorn: Road Traffic Authority.
- Drummond, A. E. (1988). *Driver problem areas - Young drivers*. Paper presented to the Initiative on Driving Behaviour Colloquium, Australian Psychological Society and The Victoria Police, Melbourne.
- Drummond, A. E. (1989). *An overview of novice driver performance issues: A literature review* (MUARC Report No.9). Melbourne: Monash University Accident Research Centre.
- Drummond, A. E. and Healy, D. J. (1986). The risk of driver crash involvement per distance travelled in metropolitan Melbourne. *13th ARRB/5th REAAA*, 149-159.
- Drummond, A. E. and Torpey, S. E. (1984). *Young and/or inexperienced driver accident study. Interim report of the Expert Working Group* (GR3/84). Hawthorn: Road Traffic Authority.
- Frith, W. J. and Perkins, W. A. (1992). *The New Zealand Graduated Driver Licensing System*. Road Traffic Safety Research Council Seminar, Wellington.
- Glowaski, D. (1979). The young male driver; the influence and effect of peer groups and "P-plate" probationary licence labels upon driving behaviour. Research report submitted to Swinburne Institute of Technology, Melbourne.
- Hagge, R. A. and Marsh, W. C. (1988). *The traffic safety impact of provisional licensing* (CAL-DMV-RSS-88-116). Sacramento: California Department of Motor Vehicles.
- Hampson, G. (1989). Young drivers in Australia. In *Proceedings of the 14th Australian Transport Forum*, Vol. 2. (pp.883-901). Perth: Department of Transport.
- Haque, M. O. and Cameron, M. (1987). *Evaluation of the effect of the Victorian zero BAC legislation: July 1984-December 1985* (GR/81/11). Hawthorn: Road Safety Group, Road Traffic Authority.
- Haworth, N. L., Bowland, L. and Foddy, W. (1994). *Graduated licensing survey - Technical report and data* (CR139). Canberra: Federal Office of Road Safety.
- Haworth, N. L., Vulcan, P. and Foong, C. W. (1990). *Australian Truck Safety Study. Task 5: Analysis of Australian data on truck accidents and assessment of data sources*. Report submitted to the Australian Road Transport Federation and the Australian Road Research Board.
- Hingson, R., Heeren, T. and Morelock, S. (1989). Effects of Maine's 1982 .02 law to reduce teenage driving after drinking. *Alcohol, Drugs and Driving*, 5, 25-36.

- Hingson, R. and Howland, J. (1987). Prevention of drunk driving crashes involving young drivers: an overview of legislative countermeasures. In T. Benjamin (Ed.), *Young drivers impaired by alcohol and other drugs* (pp.338-348). London: Royal Society of Medicine Services Ltd.
- Insurance Institute for Highway Safety. (1994). Slower graduation to full licensing means fewer teenage deaths. *Status Report*, 29(4), 1-3.
- King, M. (1988). *Random breath testing operation and effectiveness in 1987* (Report no. 7/88). Adelaide: Road Safety Division.
- Lang, E., Stockwell, T. and Kai Lo, S. (1989). Drinking locations of drink-driving offenders in Perth metropolitan area. Report prepared for the Western Australian Police Department.
- Loxley, W. and Smith, L. (1991). Roadblock testing in Western Australia and the process of deterrence. *Australian Journal of Psychology*, 43, 101-106.
- Macdonald, W. A. (1993). *Young Driver Research Program - A review of information on young driver performance characteristics and capacities* (CR129). Canberra: Federal Office of Road Safety.
- Macdonald, W. A., Bowland, L. and Triggs, T. J. (1992). Evaluation of driver testing and licensing in Victoria. Report on preliminary investigations. Melbourne: Monash University Accident Research Centre.
- Maisey, G. E. (1984). *The effect of lowering the statutory alcohol limit for first year drivers from 0.08 to 0.02 gm/100ml* (Research report 84/2). Perth: Research and Statistics Section, Police Department.
- Mayhew, D. R. and Simpson, H. M. (1990). *New to the road. Young drivers and novice drivers: Similar problems and solutions?* Ottawa: Traffic Injury Research Foundation of Canada.
- McKnight, A. J. (1992). Driver licensing in Victoria (Report No.26). Melbourne: Monash University Accident Research Centre.
- Morris, P. (1986). Address to the National Traffic Education Conference, Armidale, NSW, 7-8 February 1986.
- Neilson Associates Pty Ltd Lansley, Hayes and Storer. (1986). *Implementation of graduated licensing for young drivers* (CR53). Canberra: Federal Office of Road Safety.
- O'Connor, P. J. (1986). Report on Graduated Driver Licensing and other road accident countermeasures focusing on young drivers (6/86). Adelaide: Office of Road Safety, SA Department of Transport.
- Reark Research Pty Ltd. (1987). *Community attitudes to road safety. Community attitudes survey Wave II* (CR73). Canberra: Federal Office of Road Safety.
- Reark Research Pty Ltd. (1989). *Community attitudes to road safety. Community attitudes survey Wave IV* (CR85). Canberra: Federal Office of Road Safety.
- Reark Research Pty Ltd and Federal Office of Road Safety. (1990). *Community attitudes to road safety. Community attitudes survey Wave V* (CR93). Canberra: Federal Office of Road Safety.
- Robertson, L. S. (1981). Patterns of teenaged driver involvement in fatal motor vehicle crashes: Implications for policy choice. *Journal of Health Politics, Policy and Law*, 6, 303-314.
- Rogerson, P. (1989). Accident risk of first year drivers: Automatic v. manual transmission (GR/89/5). Melbourne: Road Safety Division, Road Traffic Authority.

- Roy Morgan Research Centre. (1992). *Community attitudes to road safety. Community attitudes survey Wave VI*. Canberra: Federal Office of Road safety.
- Smith, D. I. (1986). Effect of low proscribed blood alcohol levels (BALs) on traffic accidents among newly-licensed drivers. *Medicine, Science and the Law*, 26, 144-148.
- Smith, D. I. and Maisey, G. E. (1990). *Survey of driving by disqualified and suspended drivers in Western Australia* (CR94). Canberra: Federal Office of Road Safety.
- South, D. R. (1986). *Surrogate measure of alcohol related accidents*. Internal memorandum. Road Traffic Authority, Victoria.
- Sweatman, P., Ogden, K., Haworth, N., Pearson, R. and Vulcan, P. (1990). *NSW Heavy Vehicle Crash Study Final Technical Report* (CR92, CR5/90). Federal Office of Road Safety and Traffic Authority of NSW.
- Tannahill, W. J. (1985). *Provisional driver licensing system for young novice drivers* (DOT-HS-806 891). Washington, D.C.: National Highway Traffic Safety Administration.
- Tannahill, J. and Smith, M. (1990). States' experience with inexperienced drivers. Update on status of provisional licensing. *Traffic Safety*, Jan/Feb, 18-21.
- Van Brakel, R. (1987). A survey of driver attitudes to drink driving and speeding behaviour, and various young driver crash countermeasures (87/4). Perth: Research and Statistics Section, Police Department.
- Waller, P. F. (1986/9). A graduated licensing system for beginning drivers. In *Provisional licensing programs for young drivers. Topical papers by licensing experts, including an annotated bibliography* (PB90-181108). Washington D.C.: National Highway Traffic Safety Administration.
- Whines, J. R. (1988). Young people and driving: the Graduated Driver Licensing System. *Seminar Papers. Road Traffic Safety Seminar* (Vol 1.) pp.325-345. Wellington, NZ: Road Traffic Safety Research Council.
- White, W. T. (1979). Survey of driver exposure to risk of accident: Overview of findings. Proceedings of Seminar on Driving, Road Traffic Safety Research Council, Wellington, New Zealand.
- Williams, A. F. (1985). Fatal motor vehicle crashes involving teenagers. *Pediatrician*, 12, 37-40.
- Williams, A. F., Karpf, R. S. and Zador, P. L. (1983). Variations to minimum licensing age and fatal motor vehicle crashes. *American Journal of Public Health*, 73, 1401-1404.
- Williams, A. F., Lund, A. K. and Preusser, D. F. (1985). Night driving curfews in New York and Louisiana: results of a questionnaire survey. *Accident Analysis and Prevention*, 17, 461-466.
- Working Party appointed by the Minister of Transport. (1985). *Introduction of graduated drivers licences* (Report series 1/85). Adelaide: Division of Road Safety, Department of Transport.