



UNLICENSED AND UNREGISTERED VEHICLE PROJECT

SUMMARY REPORT

Report to Queensland Department of Transport and Main Roads

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Preface

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EXECUTIVE SUMMARY

Unlicensed driving remains a serious problem for road safety, despite ongoing improvements in traffic law enforcement practices and technology. While it does not play a direct causative role in road crashes, unlicensed driving undermines the integrity of the driver licensing system and is associated with a range of high-risk behaviours. Similarly, while there may not be a direct link between unregistered vehicle use and crashes, unregistered vehicles may not meet the safety requirements considered necessary for a vehicle to be used on public roads. Furthermore, the use of unregistered vehicles undermines the deterrent effect of automated traffic enforcement practices.

The Queensland Department of Transport and Main Roads (TMR) commissioned a program of research with separate components relating to different aspects of unlicensed driving. Drawing on Australian and international studies, the Unlicensed and Unregistered Vehicle (UUV) project explored the nature of unlicensed driving in Queensland, consolidates the available research evidence and identifies gaps in current knowledge relating to the driving behaviours of unlicensed drivers and the use of unregistered vehicles.

This project comprised of a number of smaller studies designed to address five key research objectives:

- Estimate the prevalence of unregistered vehicle use in Queensland
- Investigate the links between unlicensed driving and unregistered vehicle use
- Develop, compare and trial methods for estimating the rate of unlicensed driving in Queensland
- Identify the personal and social factors underpinning unlicensed driving
- Investigate the crash involvement pattern of unlicensed drivers

Observational study of unregistered vehicle use

This study (Deliverable 1.1) involved a state-wide observational study of vehicles, conducted to estimate the prevalence of unregistered vehicles on Queensland roads. It was found that the proportion of vehicles observed to be unregistered (2.88%) has increased across all four TMR regions (South-east, Southern, Central and Northern) since the 2005 survey (1.81%). However, the 2010 unregistered rate was still below that reported for the 2003 (5.19%) and 2000 (4.05%) surveys. Consistent with the previous surveys, the majority of unregistered vehicles observed (52.5%) had been unregistered for more than two years.

Subsequent analysis of the traffic infringement, sanction histories and licence status for the registered owner (or last registered owner) of the observed vehicles allowed additional comparisons between drivers to be made. Individuals whose vehicle was unregistered during the observational survey were significantly more likely to have had a sanction recorded against their driver licence in the preceding five-year period (30.7% vs. 10.6%, April 2005 to May 2010). Unregistered vehicle owners were more likely to have a sanction of any type on their driver licence at the time of the observational survey (8.7% vs. 2.0%), were more likely to be unlicensed at the time of the observational survey (6.3%) and to have committed an infringement in the period (April 2005 to May 2010) compared to registered vehicle owners, with these results found to be statistically significant.

Investigation of the links between unlicensed driving and unregistered vehicle use

The first component of this study (Deliverable 2.1) provided a detailed review of the local, national and international literature regarding the degree of association between unlicensed driving and the driving of unregistered vehicles.

To date very little research has focused on links between unregistered vehicles and unlicensed driving. It must be noted that some findings from the literature review drew on studies primarily concerned with other driving behaviours, such as unlicensed driving, motorcycle use and single vehicle crashes and in some instances may preclude any causative links being established. Associations between unlicensed driving and driving an unregistered vehicle in Australia were found in this research. There was also some association found between the driving of unregistered vehicles and other dangerous driving behaviours, including fatigue, drink driving and motorcycle use. In addition, an association was found between the driving of unregistered vehicles and an increased risk of crash involvement.

The second component (Deliverable 2.2) involved an analysis of de-identified crash data and offence data, extracted from the TMR databases and covering the period from 2003 to 2008, to investigate the links between unlicensed driving and the driving of unregistered vehicles.

Of the 201,177 drivers involved in crashes in the period, 3.8% were unlicensed, 2.0% were in control of an unregistered vehicle while 0.5% were both unlicensed and in control of an unregistered vehicle at the time of the crash. The proportion of unlicensed drivers involved in crashes appears to be increasing. The study confirmed associations between unregistered driving and unlicensed driving, drink driving, speeding, motorcycle use and fatigue that have been noted in previous road safety research studies. For example, drivers of unregistered vehicles involved in crashes were 3.1 times more likely than drivers of registered vehicles to have alcohol/drugs as a contributing factor and 3.0 times more likely to be speeding at the time of the crash. Drivers in control of an unregistered vehicle while unlicensed were also found to be over-represented in single vehicle crashes.

Development, comparison and trial of methods of estimating the rate of unlicensed driving

This series of studies consisted of a literature review followed by two state-wide surveys of unlicensed driving.

The literature review (Deliverable 3.1) critiqued a range of methodologies to ascertain their capacity to both estimate the prevalence of unlicensed driving and to provide insights into the nature of the behaviour. No single research method provides a definitive overview of either the community-wide prevalence of unlicensed driving or the nature of the behaviour. However, as different methods are better placed to provide insights into particular aspects of unlicensed driving, a multi-method approach is required for better understanding the problem.

The studies of the UUV project included an *observational study (roadside licence check surveys)*, and *crash data studies*. Roadside licence check surveys provide the most direct means of estimating the community-wide prevalence of unlicensed driving, both in general and among different offender types. When conducted in a periodic manner, these surveys can also provide a valuable tool for evaluating the impact of countermeasures (both intended and unintended) on the level of unlicensed driving.

The use of official crash statistics provides a firm foundation for research into unlicensed drivers. It represents a means of investigating both the extent to which unlicensed drivers are involved in road crashes and the nature of these crashes. Road crash data allows for comparisons between unlicensed and licensed drivers to be made, as well as examinations of the crash involvement patterns across the different types of unlicensed driving, e.g., never licensed, revoked, suspended, and disqualified etc. Road crash data also allows for an examination of other factors that may have been deemed as contributing factors to the crash, such as speed, alcohol, and/or other drugs. Furthermore, quasi-induced exposure methods can be applied to road crash data to estimate the exposure of unlicensed drivers and their related risk of being involved in a crash.

The state-wide surveys (Deliverables 3.2 and 3.3) involved the use of roadside licence check surveys undertaken by the Queensland Police Service (QPS) in conjunction with roadside random breath testing (RBT) traffic operations, with the aim of estimating the prevalence of unlicensed driving on Queensland roads and comparing findings with data relating to the crash involvement of unlicensed drivers. The first wave of surveys were undertaken between 18th February and 25th April 2010 across seven Queensland Police regions (the Central Region was unable to participate) while the second wave was conducted between 17th September and 27th November 2011 across all eight Queensland Police regions.

In both studies 99% of the drivers intercepted by the police were identified at the roadside as having a valid licence, whereas approximately 1.0% were found to be unlicensed or unaccompanied. After matching participant information with official licensing records, a small number of drivers were found to have produced a seemingly valid licence to the police officer, when in fact the driver was technically unlicensed at the time of interception. A comparison of the results from these surveys with data extracted from TMR's road crash database for the years 2003-2008 (Watson, Armstrong, Watson, & Barraclough, 2011), confirms that unlicensed drivers are over-represented in official crash statistics, regardless of severity.

Identification of personal and social factors underpinning unlicensed driving

The first component of this research (Deliverable 4.1) consisted of two elements. Phase 1 comprised a review of the available literature relating to factors contributing to unlicensed driving, while phase 2 involved the development of a questionnaire operationalising the relevant constructs by which to examine the factors that contribute to an individual's decision to drive unlicensed.

The literature review found that employment and family or social reasons were the most frequently cited reasons provided by disqualified drivers for continuing to drive without a valid licence. Driving while disqualified was also found to be more likely among those who were employed, working far from home, living in a household without another licensed driver, and those who had access to a vehicle while many convicted of driving while unlicensed were not aware that their licence was invalid at the time. Environmental factors and issues related to the difficulty and cost of obtaining a licence were linked to the decision of some drivers to not participate in the licensing system. The decision to drive unlicensed can be influenced by a person's perceptions of the risk of apprehension and the certainty, swiftness and severity of punishment, suggesting that in many jurisdictions there is a low perceived risk of detection for unlicensed driving. However, other factors are also understood to contribute to the behaviour, including formal and informal sanctions, direct and indirect

experiences, punishment, and punishment avoidance and a range of compulsive behaviours which are often characteristic of some recidivist offenders.

In Phase 2, a questionnaire was developed to measure the variables shown to be related to unlicensed driving. Following the low response rate for the initial pilot mail outs of the questionnaire and concerns about the appropriateness of drawing inferences from results from a study with a small and likely unrepresentative sample, alternative approaches that would achieve the research objectives were considered. It was determined that an analysis of data drawn from de-identified traffic infringement and sanction histories for drivers in Queensland would provide a more effective method of obtaining information relevant to the objectives of this study.

Deliverable 4.2 examined de-identified traffic infringement and sanction histories of 546,117 Queensland drivers who had lost their licence between 1st January 2003 and 31st December 2008. Of primary interest was the prevalence of unlicensed driving offences and the extent to which particular offences were detected amongst drivers with a licence sanction or disqualified licence.

Almost three quarters (72.7%) of drivers who lost their licence during the study period were male. Speeding was the most common offence committed by drivers in the sample with over half detected incurring this offences type on multiple occasions. In addition, approximately one third (32%) of drivers committed a speeding offence during a sanction period while 27.4% committed the speeding offence during a period of licence loss. Almost a quarter (23.3%) of drivers disqualified due to a drink driving offence went on to commit a further drink driving offence during this period.

One fifth (20.3%) of the total sample had been caught driving while their licence was invalid. Of this group, almost 60% had committed one offence, 20.6% had committed two offences, and 21.4% had been detected driving without a valid licence on more than three occasions. Of the drivers found to have committed an unlicensed driving offence during this period, approximately 63% had a sanction period imposed on their licence at the time and 38.6% were detected while their licence was disqualified. Licence suspension was the most common licence sanction present (76.9%) with the majority of these drivers (83.0%) having received a State Penalties Enforcement Registry (SPER) suspension.

The prevalence of unregistered driving was quite high among offenders caught driving while their licence was invalid, with 22.6% of this group committing an unregistered driving offence.

Investigation of the crash involvement pattern of unlicensed drivers

The first component of this research (Deliverable 5.1) involved a literature review that consolidated the available research evidence and identified gaps in current knowledge relating to crash involvement patterns of unlicensed drivers. Studies have repeatedly found that unlicensed drivers are over-represented in a range of crash types and that these crashes are more likely to result in a fatality or serious injury. Unlicensed driving has been linked to a greater propensity to engage in risky behaviours such as drink/drug driving, speeding, motorcycle use and the non-use of seatbelts and helmets. Gender, age and to some extent socio-economic background were found to be factors in the crash involvement of unlicensed drivers. Specific driving conditions were found to be a possible factor in crashes involving

unlicensed drivers with unlicensed drivers more likely than licensed drivers to be involved in a crash in remote and rural areas and where no traffic controls are present.

Despite some similarities, evidence suggests that unlicensed drivers do not necessarily represent a uniform group. Differences were found between unlicensed driver types in terms of their psychosocial characteristics and their on-road behaviour. For example, drivers with suspended or revoked licences were found to be over-represented in reportable crashes and fatal crashes. The misuse of alcohol and drugs was highlighted with studies showing that a significant number of drivers with high blood alcohol concentrations involved in fatal crashes were also found to be without a valid licence at the time of the crash. In addition, unlicensed drivers involved in fatal crashes in which they also recorded high blood alcohol concentrations, are more likely than other types of unlicensed drivers to have a history of previous licence suspensions. Programs which have been effective in addressing the behaviours of offenders who continue to drive unlicensed were noted, particularly in regard to procedures that target alcohol use.

The second component of this research (Deliverable 5.2) examined official road crash data from Queensland for the years 2003-2008 to compare the crash involvement patterns of unlicensed drivers with those of licensed drivers with the aim of ascertaining the involvement of unlicensed drivers in road crashes and further exploring the extent scope and nature of unlicensed driving.

Although unlicensed driving is a relatively infrequent behaviour, it represents a significant road safety problem with unlicensed drivers representing approximately 9% of the drivers involved in fatal crashes and 5% of those in serious injury crashes. The overwhelming majority of unlicensed drivers involved in crashes in Queensland were male while almost half were under the age of 25. Unlicensed drivers were found to be up to three times more likely than licensed drivers to be involved in a crash of any type and up to four times more likely to be involved in a fatal crash. Drivers who have never held a licence were found to be 15 times more likely than licensed drivers to be involved in a serious injury crash.

Serious crashes involving unlicensed drivers were more likely to feature risky driving behaviours, such as drink driving, speeding and motorcycle use. Unlicensed drivers were also more likely than licensed drivers to be involved in crashes involving inattention, inexperience and (with the exception of unlicensed motorcycle riders) fatigue. Unlicensed drivers, particularly those who had never held a licence, were also found to be more likely than licensed drivers to be involved in a crash at night or on weekends and in locations in which no form of traffic control (traffic lights, stop signs) were present, however no significant difference was found between licensed and unlicensed drivers in regard to the prevailing speed limit at crash sites.

Unlicensed motorcycle riders are represented at a greater rate as crash severity increases than is the case for unlicensed drivers. Drivers and riders most likely to be involved in a crash were those with either a disqualified or suspended licence, classified as never held a licence, or in the case of unlicensed riders, those holding an inappropriate class of licence.

Conclusions

The UUV project studies were designed to provide a more thorough examination of the factors and behaviours associated with unlicensed driving than has previously been available. Linkages between unlicensed driving and speeding, drink driving, dangerous driving and the

use of unregistered vehicles were identified. The results indicate that unlicensed driving is a relatively small but significant road safety problem, with unlicensed drivers over-represented in crashes, in particular serious injury and fatal crashes.

A key reason for conducting further research into the problem of unlicensed driving is to develop more effective countermeasures for the behaviour. However, it could be countered that reducing the level of unlicensed driving may not automatically improve road safety. Many drivers who would otherwise drive unlicensed may still engage in higher levels of risk-taking, irrespective of their licence status (the propensity of many drivers to continue to drink drive despite a loss of licence being one example).

The UUV project highlighted a current lack of understanding in regard to the use of unregistered vehicles on public roads and related areas, and the links between the driving of unregistered vehicles and a range of dangerous driving behaviours. Further research is required to understand the causes of unregistered driving and the links between this practice and other illegal driving behaviours such as unlicensed driving.

A better understanding of unlicensed driving and unregistered vehicle use would inform the development of effective countermeasures, which may need to be multi-strategy in nature. By treating all drivers who have lost their licence and/or failed to keep their vehicle registration current as a homogenous group, important differences between the various types of offenders may be overlooked. Understanding these differences is important if countermeasures are to reflect the different demographic and behavioural characteristics of different types of offenders.

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UNLICENSED AND UNREGISTERED VEHICLE PROJECT

SUMMARY REPORT

1 INTRODUCTION

1.1 Unlicensed driving

Unlicensed driving remains a serious problem in many countries, despite ongoing improvements in traffic law enforcement practices and technology (Sweedler & Stewart, 2007; Watson, 2003). It is acknowledged that suspended drivers are over-represented in fatal crashes (DeYoung, Peck, & Helander, 1997). For instance, in the USA, over 10% of the drivers involved in fatal crashes do not hold a valid licence, while approximately 20% of all fatal crashes involve at least one of these drivers (Griffin & DeLaZerda, 2000). In Australia, the involvement of unlicensed drivers in police-reported crash data between 1995 and 2004 remained relatively stable. Unlicensed drivers were represented in approximately 4% of total crashes and between 6-10% of fatal crashes (Watson & Steinhardt, 2007). Similarly, other (somewhat dated) research published in Australia shows that unlicensed drivers represent over 5% of the drivers involved in fatal crashes, while crashes involving unlicensed drivers and riders account for almost 10% of the national road toll (FORS, 1997b). This supports the assertion that unlicensed drivers are over-represented in more serious crashes.

Unlicensed driving represents a major problem for road safety in two respects. Firstly, it undermines the effectiveness of driver licensing systems by preventing the allocation of demerit points and reducing the impact of licence loss, which has otherwise been demonstrated to be a very effective deterrent to illegal behaviour (Watson, 2004a, 2004b). Secondly, there is a growing body of evidence linking unlicensed driving to a cluster of high-risk behaviours including drink driving, speeding, failure to wear seat belts and motorcycle use (Griffin & DeLaZerda, 2000; Harrison, 1997; Watson, 1997). Research conducted in Queensland with unlicensed drivers involved in serious casualty crashes between 1995 and 2004 identified the following factors as contributing to the crash: Alcohol or drugs were present in 23-33% of cases (3-7% for licensed drivers); 10-14% were identified as exceeding the designated speed limit at the time of the crash (2-3% for licensed drivers); and 25-34% were judged to be inattentive/negligent (Watson & Steinhardt, 2007). Consistent with this, Watson (2004a) utilised a quasi-induced exposure method to estimate that unlicensed drivers in Queensland were almost three times more likely to be involved in a reported crash than licensed drivers. In the event of a crash, those involving unlicensed drivers were twice as likely to result in a fatality or serious injury.

The findings reported by Watson and Steinhardt (2007) suggest that a particular subgroup of concern is those offenders who continue to drive after having their licence disqualified or suspended, with their results showing that up to one third of these offenders were under the influence of alcohol at the time of the crash. Surveys of disqualified drivers suggest that driving among this group is relatively common (Watson, 2004b). In addition, the proportion of disqualified drink drivers who do not seek relicensing could be as high as 40 – 50 per cent (Victorian Government, 2006). Research conducted in Queensland has demonstrated that these offenders represent a particularly deviant subgroup who report higher levels of prior

criminal offending, alcohol misuse and self-reported drink driving (Watson, 2004b). Overall, it has been estimated that drink-drivers without a valid licence are 14 times more likely to be involved in an alcohol-related fatal crash compared to those holding a valid licence (Victorian Government, 2006).

Linkages between driving an unregistered vehicle and driving while unlicensed have also been made. A Brisbane study found that 13% of the offenders in a survey of unlicensed drivers were also convicted of driving an unregistered or uninsured vehicle at the same time as the unlicensed driving offence (Watson, 2003).

It is widely acknowledged that licence suspension or revocation has been one of the most effective methods of reducing repeat offending and crash involvement (Voas & DeYoung, 2002). However, studies of suspended drivers in the United States suggest that up to 75% continue to drive while suspended (DeYoung, 1999; Voas & DeYoung, 2002) and that licence reinstatement rates are as low as 50% (Voas & DeYoung, 2002). Research conducted in Oregon by Voas (2001) found that amongst first-time and second-time driving while intoxicated (DWI) offenders three years after their offence, 50% of the first-time and 71% of the second-time offenders had not reinstated their licence, despite the fact that they were eligible for reinstatement during this period. The failure to reinstate appeared to be primarily a personal choice of the drivers, at least for driving under the influence (DUI) suspensions, because only 28% of DUI suspended drivers received a further driving while suspended (DWS) charge.

The evidence suggests that the use of licence actions does not completely eliminate unlicensed driving by those who are suspended, revoked, disqualified, or otherwise unlicensed (Voas, Tippetts, & Taylor, 1998). This has been established through examining the crash involvement (DeYoung, et al., 1997; Watson & Steinhardt, 2007) and self-reported driving behaviour of unlicensed drivers (DeYoung, 1999; Voas & DeYoung, 2002; Watson, 2004b). Hence, licence action appears to only discourage those who are able to be deterred through the direct experience of punishment (Voas, et al., 1998).

Another interesting aspect of the unlicensed driving issue relates to what has been termed the “disqualified driver effect” by Hurst (1980) and the “paradox of reinstatement” by Voas (2001). Essentially, Voas (2001) outlines evidence suggesting that while unlicensed drivers may not hold a valid licence that they may in fact drive in a safer manner than those who do reinstate or those who are granted a hardship licence. His research also found in a sample of DUI offenders in Ohio that those who had reinstated their licence had consistently higher rates of DUI arrests, moving violations, and crash involvement than those who did not reinstate their licence. Voas speculates that this finding is the result of an alteration in driving behaviour of suspended or revoked drivers; either they drive less or drive more carefully. Ross and Gonzales (1988) reported in their research that almost half of the DUI suspended drivers they surveyed utilised another driver for transportation during their suspension period and that those who did drive reported driving more carefully. While Watson (2004b) also found evidence that unlicensed drivers limited their driving to avoid detection, they are over-represented in crashes. Hence, while some unlicensed drivers may drive in a manner that reduces their crash risk compared to what it might otherwise have been, as a whole they are considerably less safe than licensed drivers (Watson, 2004a, 2004b).

The suggestion that this “reinstatement paradox” occurs raises the question of whether unlicensed drivers should be brought back into driver licensing systems or allowed to continue to drive without a valid licence (Voas, 2001). The main argument for reinstating is

that suspended drivers are generally not insured, and while they may drive more safely than they would if they were reinstated, it remains that unlicensed drivers have a higher crash involvement than the average licensed driver (Voas, 2001; Watson, 2004b). Similar findings were reported which found that offenders who had been granted a hardship licence had a higher crash involvement than offenders who did not seek a hardship licence (Song & Jones, 1991). Thus, it appears that the issue surrounding relicensing offenders who had previously lost their licence has not been resolved, however there does appear to be some benefit in keeping them within the driver licensing system to ensure appropriate monitoring and statutory obligations of the road system (e.g., insurance requirements are met).

Considering the illegal nature of the behaviour, it is very difficult to estimate the full extent of disqualified/unlicensed driving. Consequently, TMR commissioned the Centre for Accident Research and Road Safety – Queensland (CARRS-Q) to conduct further research in order to compare, contrast, and trial some of the different methods available to researchers to measure the prevalence of unlicensed driving in Queensland.

1.2 Unregistered driving

Vehicle registration is a central component of the management of the road transport system in Queensland. Most vehicles are required to be registered before they can be driven or parked on a public road, however there are some exceptions to the type of vehicles, or the purpose of use of vehicles, that require registration under the Queensland *Transport Operations (Road Use Management - Vehicle Registration) Regulation 2010* (see sections 4. and 12. of the regulation). When it was introduced, the primary purpose of vehicle registration was to collect taxes from vehicle owners in order to fund a state-wide road system for trade commerce and the development of road infrastructure (Rigby, 1983). In addition to the collection of taxes for road construction and maintenance, the current registration system also:

- sets the safety standards required for vehicles to be allowed on public roads;
- allows driver behaviour to be managed by identifying vehicles, and the responsible owners of vehicles, for enforcement purposes; and
- facilitates the collection of insurance premiums for the Queensland Compulsory Third Party (CTP) insurance scheme.

In addition to financial losses experienced from the use of unregistered vehicles on public roads, the driving of unregistered vehicles also has a potential impact on road safety. While there may not be a direct link between unregistered vehicle use and crashes, unregistered vehicles may not meet the safety requirements considered necessary for a vehicle to be used on public roads. A potentially more serious impact on road safety relates to the use of unregistered vehicles undermining the deterrent effect of automated traffic enforcement practices.

Modern automated methods of traffic policing rely on the ability of authorities to identify an offending vehicle and to be able to issue the registered owner of the vehicle with an infringement notice for the detected offence (Zaal, 1994). Speed cameras and red-light cameras are two widespread automated methods of traffic policing used in Queensland and other jurisdictions in Australia which are a cost-effective means to identify drivers who speed and run red lights. These methods have both a specific and general deterrent effect on the behaviour of motorists and vehicles that cannot be identified undermine the deterrent effect of these automated policing activities.

Information collected by Queensland Transport showed approximately 100,000 registrations are automatically cancelled annually after they become overdue for more than 60 days (Queensland Parliamentary Travelsafe Committee, 1999). In approximately half of these cases the number plates are not returned. These number plates could potentially be used by owners of unregistered vehicles to evade detection by automated traffic enforcement practices, while giving the appearance to a casual observer that the vehicle is registered.

There is also concern that the use of unregistered vehicles is associated with a range of other unsafe and illegal driving behaviours. There is some evidence in the research literature of an association between the driving of unregistered vehicles and other dangerous driving behaviours, including fatigue (Armstrong, Smith, Steinhardt, & Haworth, 2008), drink driving (Haworth, Smith, Brumen, & Pronk, 1997; Haworth, Vulcan, Bowland, & Pronk, 1997) and motorcycle use (Blackman, Veitch, & Steinhardt, 2008; Haworth, Ozanne-Smith, Fox, & Brumen, 1994; Haworth, Smith et al., 1997). There has also been some association found between the driving of unregistered vehicles and an increased risk of crash involvement with evidence indicating that unregistered vehicles are over-represented in serious and fatal crashes (Haworth, Smith et al., 1997; Haworth, Vulcan et al., 1997). However it may be that this increased risk is not due to the act of driving an unregistered vehicle *per se*, but due to other high-risk behaviours, such as drink driving (Haworth, Vulcan et al., 1997).

Further, a small number of studies have been undertaken which tend to indicate some degree of association between unlicensed driving and the driving of unregistered vehicles. The available evidence suggests a positive association between unregistered vehicle use and unlicensed driving, with studies undertaken in three Australian states finding that between 16% and 24% of drivers convicted of unlicensed driving were also convicted of driving an unregistered vehicle at the same time (Watson, 2003; Hoel & Freiberg, 2008; The Audit Office of New South Wales, 2003).

1.3 Defining unlicensed driving

In the international literature, a variety of terms are used to describe drivers who choose to operate a motor vehicle or motorcycle without a valid licence. Among the more common terms used are *unlicensed driver*, *unauthorised driver*, *disqualified driver*, *suspended driver*, *revoked driver*, *cancelled driver* and *never licensed driver*. Some of these terms are used in a general sense, while others are used to describe particular sub-groups or types of drivers. For example, terms like *disqualified*, *suspended* or *revoked* are generally used to describe drivers who have had their licence removed by a judicial or administrative process (Watson, 2004b).

In Australia, the term *unlicensed driver* tends to be used as the generic description for all those who drive or ride a motor vehicle without a valid licence (e.g., Queensland Parliamentary Travelsafe Committee, 1998; Watson, 1998). While the term is also commonly used in the USA, it is sometimes confined for use with those drivers who have never held a valid licence (Scopatz, Hatch, DeLucia, & Tays, 2003). To avoid confusion, the Australian terminology will be used throughout this report. Hence, the term *unlicensed driver* will be used in a generic manner to refer to drivers who:

- have let their licence expire;
- hold an inappropriate class of licence for the vehicle they drive;
- drive outside the restrictions of a special licence;

- have had their licence suspended¹ or disqualified²;
- don't currently hold a licence; or
- have never held a licence (Watson, 2003, 2004b).

It should be noted that driving while unaccompanied on a learners licence has not historically been classed as unlicensed driving in Queensland, but it is considered a licence offence.

1.4 Defining unregistered driving

In Queensland a vehicle used on roads must be registered, however a vehicle can only be registered in Queensland if the address where the vehicle is garaged is in Queensland (*Transport Operations (Road Use Management - Vehicle Registration) Regulation 2010 (Qld)*, s.7). It is an offence under section 11 of the *Queensland Transport Operations (Road Use Management—Vehicle Registration) Regulation 2010* to use, or permit to be used, on a road a vehicle which is not a registered vehicle. The maximum penalty for this offence is \$8,000 while the infringement notice amount for this offence ranges from \$160 to \$320 depending on the vehicle type. There are some exceptions to this, including conditional registration and unregistered vehicle permits, and these are detailed in section 12 and section 108 of the *Transport Operations (Road Use Management—Vehicle Registration) Regulation 2010*.

Unregistered vehicles are therefore classified as:

- a vehicle with an expired registration;
- a vehicle that was never registered;
- a vehicle with a cancelled registration;
- a vehicle being driven contrary to permits or conditional registrations; or
- a vehicle not permitted to be used on a road under the *Transport Operations (Road Use Management—Vehicle Registration) Regulation 2010*.

Driving unregistered vehicles often attract additional offences when the driver is detected. In addition to the *use/permit use of an unregistered vehicle* offence in s. 11 of the *Transport Operations (Road Use Management—Vehicle Registration) Regulation 2010*, the driver of an unregistered vehicle is often charged with two additional offences:

- i. *driving an uninsured vehicle*, and
- ii. *having a plate/label attached that is recorded as cancelled/lost/stolen/destroyed*.

¹ A licence suspension is the short term removal of a person's authority to drive under their Queensland driver licence. A licence suspension does not involve the cancellation of a driver licence and there is no requirement to surrender a suspended licence. The main reasons that a driver licence may become suspended in Queensland are due to enforcement of infringement notices issued by the State Penalties Enforcement Register (SPER), high range speeding, and accumulation of demerit points. Upon the detection of an offence that leads to licence disqualification, a driver's licence is suspended for a 24 hour period, after which time the driver may continue to drive on their licence until the matter is dealt with by a court. However, immediate suspensions apply for those drivers charged with high-risk drink driving offences (Watson, Armstrong, Wilson, Livingstone, & Barraclough, 2011).

² In Queensland a driver may be disqualified from holding a driver licence for specified period by a Magistrates Court if the individual is convicted of drink or drug driving; dangerous driving; or a criminal offence involving the use of a motor vehicle (Watson, Armstrong, Wilson, et al., 2011).

Under the Queensland *Motor Accident Insurance Act 1994* (s.20) a person must not drive an uninsured motor vehicle on a road or in a public place, nor can the owner of an uninsured motor vehicle permit someone else to drive it on a road or in a public place. The maximum penalty is \$8,000 while the infringement notice amount for this offence depends on the vehicle classification, and ranges from \$200 to \$1,200. The infringement amount for the majority of cars, vans, light trucks and motorcycles is \$400. However the CTP insurance for a vehicle does not end when the registration period expires and remains in force for a further period of grace, which expires 30 days after the registration period (*Motor Accident Insurance Act 1994 (Qld)*, s.23). Therefore, if a driver is detected of the offence of driving an unregistered vehicle, and the vehicle has been unregistered for less than 30 days, they will not attract the additional offence of driving an uninsured vehicle.

Under section 127 of the *Transport Operations (Road Use Management—Vehicle Registration) Regulation 2010*, a person must not, unless they have a reasonable excuse, use, or permit to be used, on a road a vehicle if a registration label or number plate attached to the vehicle has been recorded in the registered vehicles register as having been cancelled, lost, stolen, destroyed or damaged. The maximum penalty for this offence is \$1,600 while the infringement notice amount for this offence is \$160.

It should be noted however, that no more than three infringement notices for offences against the *Transport Operations (Road Use Management) Act* and *Transport Operations (Road Use Management - Road Rules) Regulation* may be issued at any one time (Queensland Police Service, 2009). If more than three offences are detected for which an infringement notice can be issued, the attending police officer may either issue three infringement notices and provide a verbal caution for all the other offences, or issue a notice to appear for all offences detected and the offences are then dealt with by a magistrate.

1.5 Unlicensed driving and Unregistered Vehicle Use (UUV) project

This project comprised of a number of smaller studies designed to address five key research objectives:

- Estimate the prevalence of unregistered vehicle use in Queensland
- Investigate the links between unlicensed driving and unregistered vehicle use
- Develop, compare and trial methods for estimating the rate of unlicensed driving in Queensland
- Identify the personal and social factors underpinning unlicensed driving
- Investigate the crash involvement pattern of unlicensed drivers

1.6 Structure of the report

Chapter 2 examines unregistered vehicle use on Queensland roads, reporting on the results of a state-wide observational study of unregistered vehicle use. Chapter 3 examines the links between unlicensed driving and unregistered vehicle use through a literature review and an analysis of crash and offence data. Chapter 4 reports the findings of a literature review critiquing a range of methodologies in terms of their capacity to both estimate the prevalence of unlicensed driving and to provide insights into the nature of the behaviour before providing the results of two road-side surveys. Chapter 5 examines the personal and social factors

underpinning unlicensed driving by way of a literature review, a pilot study and an examination of traffic infringement and sanction histories of Queensland drivers over a six year period. Chapter 6 examines the crash involvement pattern of unlicensed drivers both generally and through an examination of Queensland crash data over a six year period. A list of reports associated with the specific research objectives is provided at the end of each of these chapters (2 to 6). Chapter 7 draws together the key results from the program of research and discusses a number of recommendations for future research needs and potential policy considerations.

2 OBSERVATIONAL STUDY OF UNREGISTERED VEHICLE USE

2.1 Purpose of the study

The objectives of the research were to obtain a sound estimate of the numbers of unregistered vehicles being utilised on the Queensland road network. Furthermore the links between the driving of unregistered vehicles and other illegal driving behaviours were examined to enhance existing knowledge of this behaviour.

2.2 Method

A state-wide observational study was undertaken by CARRS-Q in order to investigate the prevalence of unregistered vehicles on Queensland roads. This study was conducted on behalf of TMR. This study builds upon research commissioned by Queensland Transport and conducted in 2000, 2003 and 2005 (AC Nielsen 2001, 2003, & 2005). The prevalence of unregistered vehicles was analysed by:

- Location;
- Day of week;
- Time of day;
- Length of time unregistered; and
- Make of vehicle.

Vehicles were observed throughout Queensland from 13th April, 2010 to 8th May, 2010 in a mix of small rural towns, regional centres and metropolitan locations. The locations sampled for this study were restricted to destinations (e.g. shopping centres, hospitals, airports and park-and-ride facilities) rather than residential areas, and a variety of different destinations were sampled. Sampling vehicles in these types of locations provides a higher probability that the vehicles captured in the survey are being driven on a regular basis (Younglove, Malcolm, Durbin, Smith, Ayala & Kidd, 2004).

An additional objective of this research was to explore the links between the driving of unregistered vehicles and other illegal driving behaviours. This analysis was not undertaken during the previous unregistered vehicle surveys conducted in 2000, 2003 and 2005. It is important to note that due to the limitations involved with the data collection method employed, it was not possible to verify the individual who had driven and parked the vehicle at the time of observation. Therefore, this aspect of the report discusses the status of the vehicle and the offence history of the currently registered, or in the case of unregistered vehicles, the last registered, owner of the vehicle.

2.3 Key results

2.3.1 Prevalence of unregistered driving

This observational study found that the proportion of vehicles observed to be unregistered has increased significantly from the 2005 (1.81%) to 2010 (2.88%) survey, $z = 11.10$, $p < .001$.

However, the 2010 unregistered rate was still below that reported for the 2003 (5.19%) and 2000 (4.05%) surveys. The unregistered rate has increased across all four TMR regions (South-east, Southern, Central and Northern) when compared to the 2005 survey. The highest rate of unregistered vehicles was observed in the Central region (3.18%), while the lowest was observed in the Southern region (2.66%).

2.3.2 Time periods and unregistered driving

The unregistered vehicle rate was observed to be highest on Tuesdays (3.28%). This differs from the previous surveys, which found the prevalence of unregistered vehicles was highest on weekends. The present study observed that the lowest rates of unregistered vehicles occurred on Mondays (2.21%). Analysis of time of day revealed between 9:00am and 9:29am as well as 5:00pm and 5:29pm were when the highest rates of unregistered vehicles were observed (3.86% and 4.10% respectively). The lowest rate of unregistered vehicles was observed in the period from 6:30pm to 7:00pm (1.23%).

2.3.3 Period unregistered and make of vehicle

The majority of unregistered vehicles observed (52.5%) had been unregistered for more than two years, which is consistent with all previous surveys. No strong associations were observed in regard to unregistered vehicles and the make of these vehicles. The unregistered rate for the most common vehicle makes (those makes for which a minimum of 50 vehicles were observed) varied between 1.36% and 6.56%.

2.3.4 Analysis of the links between unregistered driving and other illegal driving behaviours

This analysis of the data revealed a range of associations between unregistered driving and other illegal driving behaviours. Individuals whose vehicle was unregistered during the observational survey were significantly more likely to have had a sanction recorded against their driver licence in the preceding five-year period (30.7% vs. 10.6%, April 2005 to May 2010). This pattern was found to be similar, and statistically significant for licence disqualifications, demerit point and State Penalties Enforcement Registry (SPER) suspensions, good driving behaviour, work licence and late night driving restrictions. In addition, unregistered vehicle owners were more likely to have a sanction of any type on their driver licence *at the time of the observational survey* (8.7% vs. 2.0%), and this difference was statistically significant.

Unregistered vehicle owners were more likely to be unlicensed at the time of the observational survey (6.3%) compared to registered vehicle owners (0.8%), and this difference was also statistically significant. This aligns with the results of other research in Australia which has demonstrated that a positive association exists between unlicensed driving and the driving of unregistered vehicles (Watson, Armstrong, & Wilson, 2011). Unregistered vehicle owners also appeared much more likely to have a current disqualification on their driver licence at the time of the observational survey (2.0% vs. 0.2%), however it was not possible to test whether the difference was statistically significant.

Unregistered vehicle owners were more likely to have committed an infringement in the period (April 2005 to May 2010) when compared to registered vehicle owners (59.9% vs. 55.8%). While this difference was statistically significant, this result should be treated with caution as the effect size was very small ($\Phi = .01$). A comparison of different infringement types present among the sample revealed unregistered vehicle owners were more likely than

registered vehicle owners to have committed any type of infringement, *with the exception of speeding infringements*. For speeding infringements there was no statistically significant difference between the unregistered vehicle owners and registered vehicle owners.

2.4 Implications

Comparison of these results with previous surveys conducted in 2000, 2003 and 2005 shows that the unregistered vehicle rate has fluctuated during the 10-year period in which the observational survey has been undertaken, from a high of 5.19% in 2003 to a low of 1.81% in 2005. The TMR region which recorded the highest unregistered rate has also varied for each survey during the 10-year period, as have the days and times in which the highest numbers of unregistered vehicles have been recorded. One constant over the 10-year duration is that the majority of unregistered vehicles observed have been unregistered for a period of greater than two years.

The current survey method is considered by the authors to be one of the more robust and reliable methods for determining the number of unregistered vehicles currently being utilised on the Queensland road network. Surveying vehicles parked at destinations such as shopping centres and transport hubs offers a reliable way of capturing the proportion of the unregistered vehicle fleet that are being utilised.

While this study has attempted to quantify the extent of unregistered vehicle use in Queensland, future research should consider *why* drivers use unregistered vehicles, which was beyond the scope of our data. This research can then inform the identification of appropriate countermeasures to reduce unregistered driving. In particular, the use of Automatic Number Plate Recognition (ANPR) technology to monitor and deter unregistered driving and assess the effectiveness of other countermeasures should be trialled.

2.5 Related report

Armstrong, K., Livingstone, K., Wilson, A., & Watson, B. (2011). *Estimating the prevalence of unregistered driving in Queensland*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 1.1

3 INVESTIGATION OF THE LINKS BETWEEN UNLICENSED DRIVING AND UNREGISTERED VEHICLE USE

3.1 Purpose of the study

The objectives of this component were to undertake a detailed review of the local, national and international literature with the aim of identifying the degree of association between unlicensed driving and the driving of unregistered vehicles. The research also included an examination of the characteristics of the drivers and vehicles in crashes involving unlicensed drivers and unregistered vehicle use. In addition the study sought to examine the licence status of drivers who have been charged for driving an unregistered vehicle, the proportion of drivers charged for both unlicensed driving and unregistered vehicle use and report on the broad demographic characteristics of drivers charged with either unlicensed driving or unregistered driving, or both offences. As such it is an important initial undertaking into understanding these behaviours.

3.2 Method

The literature review included both published and unpublished literature. Although a comprehensive search was undertaken, there was very little published research discovered which investigated the unregistered driving problem, or the links between unregistered and unlicensed driving as a primary aim of the research in either the local or international literature.

While there is a lack of research into the driving of unregistered vehicles, the current research uncovered some studies which have found links between the driving of unregistered vehicles and a range of other unsafe and illegal driving behaviours. However, evidence has come from studies focussed on other driving behaviours, such as unlicensed driving, motorcycle use and single vehicle crashes. Therefore while unregistered driving was discussed in these research studies, it was not the main behaviour of interest and the studies therefore do not explore unregistered driving in a comprehensive manner. The design of these studies precludes any causative links being established.

The second phase of this component involved analysis of data to investigate the links between unlicensed driving and unregistered vehicle use. To this end de-identified data was drawn from two sources: crash data; and offence data from the TMR databases, covering the period from 2003 to 2008.

The analysis compared the proportions of crashes involving unlicensed drivers and unregistered vehicle use, the degree of overlap of these two behaviours in crashes and any changes in these two elements over time. The study reported overall numbers of unlicensed and unregistered driving offences during the period. Objectives of the research also included an examination of the characteristics of the drivers and vehicles in crashes involving unlicensed drivers and unregistered vehicle use. In addition the study sought to examine the licence status of drivers who have been charged for driving an unregistered vehicle, the proportion of drivers charged for both unlicensed driving and unregistered vehicle use and report on the broad demographic characteristics of drivers charged with either unlicensed driving or unregistered driving, or both offences.

3.3 Key results

3.3.1 Literature review findings

It has been found that there is an association between unlicensed driving and driving an unregistered vehicle. Studies undertaken in three Australian states have found the proportion of drivers convicted of both unlicensed driving and driving an unregistered vehicle at the same time varied from 16% in Queensland (Watson, 2003) to 24% in Victoria (Hoel & Freiberg, 2008), while in NSW the proportion was estimated to be 19% (The Audit Office of New South Wales, 2003).

There was also some association found between the driving of unregistered vehicles and other dangerous driving behaviours, including fatigue, drink driving and motorcycle use. A study into fatigue crashes occurring in low speed, urban environments with speed limits of 60km/h or less concluded that persons driving an unregistered vehicle were three times more likely to crash due to fatigue or falling asleep compared to crashes considered to be the result of other circumstances (Armstrong, Smith, Steinhardt, & Haworth, 2008). In relation to drink driving, a case control study of motorcycle crashes (Haworth, Smith, Brumen, & Pronk, 1997) found that riding an unregistered motorcycle was associated with positive blood alcohol content (BAC) and/or being unlicensed. Another Victorian study of fatal single-vehicle crashes (Haworth, Vulcan, Bowland, & Pronk, 1997) found that five percent of the crashed vehicles were unregistered with two of these unregistered vehicles being driven by drivers that had a BAC of $\geq .150$ and one driven by a driver that had a BAC of $> .05$ but $< .149$.

Three other studies were found which indicted an association between motorcycle use and unregistered driving. Firstly, a North Queensland study of motorcycle crashes in rural and remote areas found that 15% of motorcycles involved in crashes on highways, secondary or sealed local roads were unregistered (Blackman, Veitch, & Steinhardt, 2008). Secondly, a Victorian study of riders and pillion passengers under 21 years of age, who were either hospitalised or fatally injured in a crash, found that over 30% of on-road motorcycle crashes occurred on an unregistered motorcycle (Haworth, Ozanne-Smith, Fox, & Brumen, 1994). Thirdly, an Australian study into crashes involving motorcycles (Haworth, Smith et al., 1997) found that five percent of the motorcycles involved in crashes were unregistered, compared to only one percent for motorcycles in a control sample, and in 55% of cases, the unregistered motorcycles were being operated by riders that had never held a motorcycle licence.

There has also been some association found between the driving of unregistered vehicles and an increased risk of crash involvement. Two Victorian studies of serious and fatal crashes found that five percent of the motorcycles involved in crashes were unregistered, while five percent of cars and light commercial vehicles involved in single-vehicle crashes were also unregistered. Both of these studies involved comparison with a control group which were vehicles stopped at control sites during the studies. In the case of the motorcycle study, only one percent of the control motorcycles were unregistered, while in the case of cars and light commercial vehicles, none of the control cases were unregistered. These studies provide some evidence that unregistered vehicles are over-represented in serious and fatal crashes, but further research is required to confirm this relationship.

3.3.2 Analysis of crash data; and offence data findings

3.3.2.1 Prevalence of unlicensed drivers and unregistered vehicles in crashes

The current research study examined data relating to 201,177 drivers involved in crashes in the period, of which: 7,669 (3.8%) were unlicensed; 4,114 (2.0%) were in control of an unregistered vehicle; and, 1,072 (0.5%) were both unlicensed and in control of an unregistered vehicle. While both the proportion of controllers involved in a crash while driving an unregistered vehicle, and the proportion of unlicensed controllers involved in a crash have significantly changed over time, only the latter generally exhibits a consistently rising trend during the period.

The proportion of the unlicensed drivers that were also known to be unregistered in the period in the crash data is similar to that found in a comprehensive study into unlicensed drivers undertaken at the Brisbane Central Magistrates Court (Watson, 2003).

3.3.2.2 Offence history of unlicensed and unregistered sample

Of the 545,616 individuals with a Queensland driver licence who had lost their licence between 1st January 2003 and 31st December 2008 as a result of committing an offence that would result in either a licence suspension or disqualification:

- 110,909 (20.3%) were charged with committing at least one unlicensed driving offence;
- 123,545 (22.6%) were charged with committing an unregistered vehicle offence; and
- 51,145 (9.4%) drivers were charged with an unregistered vehicle offence while they were under a period of licence loss (although they may not necessarily have been charged with unlicensed driving at the time).

Of those individuals charged with unlicensed driving at least once in the period:

- 53,872 (48.6%) were also charged with driving an unregistered vehicle in the period; and
- 24,862 (4.6%) were charged with driving unlicensed and driving an unregistered vehicle at the same time.

Drivers in control of an unregistered vehicle, whether validly licensed or not, were more likely to be male and under the age of 25, which is consistent with findings from previous research into unlicensed drivers in Australia (Watson, 2004a)

3.3.2.3 Crash data

The present study found that crashes involving unregistered vehicles are more likely to occur at night time (6:00pm to 5:59am) and on the weekends, and in 100/110 km/hr speed zones. Drivers in control of an unregistered vehicle while unlicensed were over-represented in single vehicle crashes.

Drivers of unregistered vehicles were particularly over-represented for the *alcohol/drugs*, *speeding* and *fatigue* categories when comparing the contributing factors of crashes, as cited by police. When compared to registered vehicles, the unregistered vehicles involved in crashes were:

- 3.1 times more likely to be attributed to alcohol/drugs;
- 3.0 times more likely to be attributed to speeding; and
- 1.8 times more likely to be attributed to fatigue.

Comparing the various categories of drivers showed that the *unlicensed only* and *unlicensed and unregistered* drivers had an over-representation of alcohol/drugs, speeding and inattention as contributing factors of crashes, while the *unregistered only* drivers were the group that had the highest proportion of fatigue assigned as a contributing factor.

There was a significantly higher representation of motorcycles among the unregistered vehicles involved in crashes. Motorcycle riders were particularly over-represented among the *unlicensed and unregistered* drivers. These results support findings from previous Australian research studies which have found a higher incidence of unregistered motorcycles in crashes (Haworth et al., 1994; Haworth & Smith et al., 1997), and that the majority of unregistered motorcycles involved in crashes were being operated by riders that had never held a motorcycle licence.

3.4 Implications

The literature review highlights a current lack of understanding regarding the use of unregistered vehicles on public roads and related areas, and the links between the driving of unregistered vehicles and a range of dangerous driving behaviours. Further research is required to understand the causes of unregistered driving and the links between this practice and other illegal driving behaviours such as unlicensed driving.

The current analysis of crash and offence data provides an important initial foray into understanding the usage of unregistered vehicles on public roads and related areas, and the links between the driving of unregistered vehicles and a range of dangerous driving behaviours. This study confirmed associations between unregistered driving and unlicensed driving, drink driving, speeding, motorcycle use and fatigue that have been noted in prior road safety research studies. These findings suggest that people who drive unregistered vehicles and/or drive while unlicensed are likely to engage in other high risk driving behaviours. These results, and those of prior road safety research, tend to indicate that people who engage in these behaviours are an at-risk group of drivers.

It would be valuable to continue to monitor rates of unlicensed driving, driving of unregistered vehicles and the overlap between the two behaviours over time. Further, it would also be valuable to examine the stability of the association between the driving of unregistered vehicles and the range of dangerous driving behaviours found in this study.

For example, the use of ANPR systems provides an effective mechanism by which unregistered vehicles driven in specific locations can be accurately recorded. Drawing on ANPR data of the licence status and driving history of the last registered owner of unregistered vehicles observed, linkages to associated illegal driving behaviours, including unlicensed driving, could be examined. Ongoing analysis of ANPR data would reveal changes and trends in driving behaviours.

3.5 Related reports

Watson, B., Armstrong, K., & Wilson, A. (2011). *Literature review: Links between unlicensed and unregistered driving*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 2.1

Watson, B., Armstrong, K., & Wilson, A. (2011). *Links between unlicensed and unregistered driving*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 2.2

4 DEVELOPMENT, COMPARISON AND TRIAL OF METHODS OF ESTIMATING THE RATE OF UNLICENSED DRIVING

4.1 Purpose of the study

The objectives of this aspect of the research were to examine the feasibility of researching the extent of unlicensed driving including examination of: the relevant and existing literature; the appropriateness of the use of different methodologies; and the feasibility and approximate costs associated with implementing the different methodologies. The research also included the results of a consultation with stakeholders regarding issues related to privacy and the feasibility of implementing the different methodologies with a view to recommending appropriate methodology/options to measure unlicensed driving.

4.2 Method

The first phase of this project involved a review of the available literature relating to the issue of measuring unlicensed driving. In particular, a range of methodologies were critiqued in terms of their capacity to both estimate the prevalence of unlicensed driving and to provide insights into the nature of the behaviour. Among the methodologies examined were: roadside licence check surveys; observational studies; postal self-report surveys; face-to-face self-report surveys; crash data studies (including the use of the quasi-induced exposure method); and the use of traffic offence data. Phase 2 involved consultation with key stakeholders and consideration of relevant road safety and privacy legislation to determine the feasibility of implementing these methodologies in the Queensland context. It was determined that roadside licence check surveys provided the best avenue by which to achieve the goals of this study.

The first wave of the roadside licence check surveys was undertaken between 18th February and 25th April 2010 across seven Queensland Police regions (see Appendix A). Central Region was unable to assist in collecting data for the roadside licence check survey as they were involved in conducting their own operations at the time. Approximately 49 percent of surveys were conducted in the greater Brisbane area, encompassing the Metropolitan South and Metropolitan North regions. The methodology utilised was devised by CARRS-Q, TMR and QPS. The data collection instrument used by police is included as Appendix B.

A second, revised roadside licence check survey was undertaken by the QPS in conjunction with roadside RBT traffic operations. The survey was undertaken between 17th September and 27th November 2011 across all eight Queensland Police regions. The proportion of drivers intercepted was weighted to reflect the proportion of total population for each region, with approximately 30 percent of surveys being conducted in the greater Brisbane area, encompassing the Metropolitan South and Metropolitan North regions.

4.3 Key results

4.3.1 Review of the methods to determine the prevalence of unlicensed driving.

The critique of the different methodologies indicated that there is no single approach that provides a definitive overview of either the community-wide prevalence of unlicensed driving or the nature of the behaviour. In particular, different methods provide insight into different

aspects of the problem. Hence, a multi-method approach is required for better understanding the problem.

4.3.2 *Roadside licence check surveys*

Roadside licence check surveys provide the most direct means of estimating the community-wide prevalence of unlicensed driving, both in general and among different offender types. When conducted in a periodic manner, these surveys can also provide a valuable tool for evaluating the impact of countermeasures (both intended and unintended) on the level of unlicensed driving. Based on provisions in the Queensland *Police Powers and Responsibilities Act 2000*, it would appear that it is feasible that licence check surveys in Queensland could be undertaken by police officers, particularly if conducted in conjunction with RBT operations

4.3.3 *Observational studies*

Utilising information contained in the Transport Registration and Integrated Licensing System (TRAILS) database, it would be possible to conduct a postal survey of unlicensed drivers. However, it is possible that such a survey may contravene the Queensland *Information Privacy Act*. A review of the methodology utilised in previous studies conducted on behalf of TMR would be required to ensure compliance with information privacy principles.

4.3.4 *Self-report surveys*

In contrast to roadside surveys and observational studies, self-report surveys provide an opportunity to obtain valuable information about the on-road behaviour of unlicensed drivers and the factors contributing to their behaviour. However, a major methodological challenge for postal and face-to-face surveys is to achieve a reasonably high response rate in order to reduce the effects of non-response bias.

While postal surveys are relatively inexpensive and have the potential to produce relatively large samples, they tend to have the lowest response rates. Moreover, previous research suggests that the more serious offenders are least likely to respond, introducing a major source of bias. It was subsequently decided that alternative sampling methodologies would be explored, e.g., inserting participation flyers in licence and vehicle registration renewals or traffic infringement notices; utilising Queensland Police officers to hand out recruitment flyers during the roadside licence check survey; or surveying unlicensed drivers who are required to appear in court for unlicensed driving offences. It should be noted that not all unlicensed driving offenders are required to attend court as many drivers are administratively suspended, e.g., accumulation of demerit points. Similarly, it would be feasible to include items relating to unlicensed driving in omnibus surveys conducted with the general community (e.g. telephone surveys). However, it is unlikely that any of these approaches would result in a sufficiently large or diverse sample of unlicensed drivers to allow meaningful analyses and may, once again, under-sample the more serious offenders.

In contrast, face-to-face surveys tend to produce higher response rates and, hence, results that are more likely to be reliable and representative. However, they tend to be more costly than postal surveys since there is a need to employ trained interviewers and to offer monetary inducements to participants to enhance response rates.

In the case of unlicensed driving, the challenge is to select a recruitment strategy that provides access to a wide cross-section of offenders given the limitations discussed above. In the Queensland context, the three most promising places to recruit serious offenders are through official communication between TMR and drivers, e.g., licence and vehicle registrations or traffic infringement notices; through the roadside licence check survey; and at Magistrates Courts.

4.3.5 Crash data studies

As already noted, it has been difficult for road safety authorities to reliably estimate the community-wide prevalence of unlicensed driving. Given the illegal nature of the behaviour, it is expected that some unlicensed drivers will attempt to conceal their actions from the authorities. The use of official crash statistics provides a firm foundation for research into unlicensed drivers. It represents a means of investigating both the extent to which unlicensed drivers are involved in road crashes and the nature of these crashes. While previous research indicates that unlicensed drivers tend to be over-represented in serious casualty crashes, exact reasons for this finding remain unclear. For example, it could be the product of under-reporting of minor crashes among this cohort of drivers, or it could be the result of underlying differences in the behaviour of unlicensed drivers. As noted earlier, there is a growing body of evidence linking unlicensed driving to other high-risk behaviours, including drink driving, speeding, failure to wear seat belts and motorcycle use (FORS, 1997a; Griffin & DeLaZerda, 2000; Harrison, 1997; Healy & Harrison, 1986; Watson, 2000).

Road crash data allows for comparisons to be made on the crash involvement of unlicensed drivers compared to licensed drivers and the crash involvement patterns across the different types of unlicensed driving, e.g., never licensed, revoked, suspended, and disqualified etc. Road crash data also allows for an examination of other factors that may have been deemed as contributing factors to the crash, such as speed, alcohol, and/or other drugs. Furthermore, quasi-induced exposure methods (DeYoung, et al., 1997; Watson, 2004a, 2004b) can be applied to road crash data to estimate the exposure of unlicensed drivers and their related risk of being involved in a crash.

4.3.6 First wave of roadside tests (Wave 1)

A total of 3,112 drivers were intercepted and surveyed by Police Officers between 18th February and 25th April 2010 across seven Queensland Police regions. Of these drivers, 3,081 (99%) were identified at the roadside as having a valid licence, while 31 (1%) were unlicensed or unaccompanied. After matching participant information with official licensing records, TMR found a further nine drivers were not validly licensed at the time of the survey. That is, at the time of the roadside licence check, nine drivers produced a seemingly valid licence to the police officer, when in fact the driver was technically unlicensed at the time of interception.

The recorded details of 42 drivers were unable to be matched or identified by TMR as they were either international or interstate licence holders, or the Customer Reference Number (CRN) was either not provided at all or was invalid. Following the removal of the 11 unaccompanied learner drivers from the final unlicensed driving population, the overall unlicensed driving rate was found to be 0.9%. This figure includes those detected roadside and subsequently by TMR.

The study found that 14 of the Queensland drivers (0.4%) who had their licence checked also returned a positive preliminary roadside breath test, and two of these drivers were unlicensed at the time of the survey. In addition, 105 drivers (3.4%) were driving an unregistered vehicle when surveyed and five of these drivers were also unlicensed/unaccompanied at the time.

4.3.7 Second wave of roadside tests (Wave 2)

In total 3,240 drivers were intercepted and surveyed by Police Officers between 17th September and 27th November 2011 with the proportion of drivers intercepted weighted to reflect the total populations in each of the eight Queensland Police regions. The results were broadly consistent with those found in the earlier wave of the survey. This study found that 3,204 (99%) of drivers intercepted by the police were identified at the roadside as having a valid licence, whereas 36 (1%) were unlicensed or unaccompanied. After matching participant information with official licensing records, TMR found 17 drivers were not validly licensed at the time of the survey. That is, at the time of the roadside licence check, 17 drivers produced a seemingly valid licence to the police officer, when in fact the driver was technically unlicensed at the time of interception.

After removal of the 5 unaccompanied learner drivers from the final unlicensed driving population, the overall unlicensed driving rate was found to be 1.1% (this figure includes those detected roadside and later by TMR).

In Wave 2 of the survey, five of the Queensland drivers (0.2%) who had their licence checked also returned a positive preliminary roadside breath test. Only 24 drivers (0.7%) were found to be driving an unregistered vehicle when surveyed, with one of these also driving with an 'expired' licence at the time. This figure is much lower than the 105 (3.4%) drivers who were detected driving an unregistered vehicle during the Wave 1 survey.

4.4 Implications

The findings of the two wave surveys were generally consistent, with the methodology employed in the second survey enabling valuable information be obtained as to the prevalence of unlicensed driving across Queensland. While the prevalence of unlicensed driving was relatively low, this behaviour remains a serious concern, given the extent to which these drivers are over-represented in crashes of all types and particularly more severe crashes. A comparison of the results from both surveys with data extracted from TMR's road crash database for the years 2003-2008 (Watson, Armstrong, Watson, & Barraclough, 2011), confirms that unlicensed drivers are over-represented in official crash statistics, regardless of severity. Ongoing research would contribute greatly to our understanding of trends in the rate of unlicensed driving and effectiveness of unlicensed driving countermeasures.

4.5 Related reports

Watson, B., Armstrong, K., Livingstone, K., & Wilson, A. (2009). *A comparison of methods to estimate the extent of unlicensed driving*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 3.1

Watson, B., Armstrong, K., Watson, A., Livingstone, K., Wilson, A. (2011). *Estimating the extent of unlicensed driving: Roadside licence check survey. Wave 1*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 3.2

Armstrong, K., Watson, B., & Watson, A. (2012). *Estimating the extent of unlicensed driving: Roadside licence check survey. Wave 2*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 3.3

5 IDENTIFICATION OF PERSONAL AND SOCIAL FACTORS UNDERPINNING UNLICENSED DRIVING

5.1 Purpose of the study

In addition to gaining a better understanding of the actual prevalence of unlicensed driving, it is important that research into this problem includes an examination of the factors that contribute to this behaviour among the different types of unlicensed driving offenders. Applying a licence disqualification sanction to drivers who have committed a drink or drug driving, unlicensed, or dangerous driving offence, in many instances does not effectively stop them from continuing to drive or commit other driving offences. The first phase of this research sought to illuminate the factors that contribute to unlicensed driving and in turn inform the development of a questionnaire designed to explore related elements such as personal characteristics, social environment and the effectiveness of legal sanctions or deterrence. The second phase consisted of an examination of traffic infringement and sanction histories for drivers who had lost their licence, which provided an additional method by which to ascertain the extent of unlicensed driving in Queensland. This approach allows comparisons between licensed and unlicensed drivers to be made on the basis of demographic factors and also provides an overview of the key offence types, such as drink driving, dangerous driving, speeding and the practice of unregistered driving, committed by drivers who have lost their licence both while validly licensed and during periods of licence loss.

5.2 Method

The first component of this series of studies into unlicensed drivers consists of two phases. Phase 1 of this project involved a review of the available literature relating to factors contributing to the unlicensed driving problem. Phase 2 involved the development of a questionnaire operationalising the relevant constructs by which to examine the factors that contribute to an individual's decision to drive unlicensed.

The second component consisted of an analysis of de-identified traffic infringement and sanction histories for drivers in Queensland who had lost their licence between 1st January 2003 and 31st December 2008. The study focused primarily on the prevalence of unlicensed driving and the extent to which particular offences including drink driving, dangerous driving, speeding and the practice of unregistered driving are associated with unlicensed driving.

5.3 Key results

5.3.1 Literature review findings

Unlicensed driving is a serious problem in many countries, despite ongoing improvements in traffic law enforcement practices and technology. Unlike alcohol impairment and speeding, unlicensed driving does not play a direct causative role in road crashes. However it represents a major problem for road safety in two respects. Firstly, it undermines the effectiveness of driver licensing systems by preventing the allocation of demerit points and reducing the impact of licence loss (Watson, 2004b). Secondly, there is a growing body of evidence linking unlicensed driving to a cluster of high-risk behaviours including drink driving, speeding, failure to wear seat belts and motorcycle use (Griffin & DeLaZerda, 2000; Harrison, 1997; Watson, 1997, 2004b). Consistent with this, utilising the quasi-induced

exposure method, Watson (2004a) estimated that in Queensland, unlicensed drivers were almost three times more likely to be involved in a reported crash than licensed drivers.

A particular concern is a subgroup of offenders who continue to drive after having their licence disqualified for drink driving. Surveys of disqualified drivers suggest that driving among this group is relatively common (Watson, 2004b), and in the United States, Voas and DeYoung (2002) estimate the figures to be as high as 75% of offenders who continue to drive while unlicensed. In addition, the proportion of disqualified drink drivers who do not seek relicensing could be as high as 40 to 50 per cent (Victorian Government, 2006). Research conducted in Queensland has demonstrated that these offenders are part of a particularly deviant subgroup who report higher levels of prior criminal offending, alcohol misuse and self-reported drink driving (Watson, 2004b).

Due to the illegal nature of the behaviour, it is very difficult for Road Safety Authorities to reliably estimate the full extent of disqualified/unlicensed driving within the community. Therefore there has been a tendency to rely on self-report methods to gain information regarding the extent and nature of unlicensed driving.

There is a common assumption in the literature that unlicensed drivers drive in a more cautious manner to avoid detection. This has been termed the disqualified driver effect and suggests that disqualified and suspended drivers are rewarded for driving safely and inconspicuously as it reduces the threat of detection (Hurst, 1980). However researchers have argued that the driving behaviour of unlicensed drivers may not actually be safer, but more oriented to avoiding detection (Warren, 1982). This assertion has found support in self-report surveys which report that disqualified drivers adopt strategies to reduce their risk of detection by driving less frequently and more cautiously (Job, Lee, & Prabhakar, 1994; Mirrlees-Black, 1993; Smith & Maisey, 1990; Williams, Hagen, & McConnell, 1984).

The assumption that unlicensed drivers drive in a more cautious manner is questioned by the evidence provided by crash data. While unlicensed drivers may modify their driving, crash data suggests that they are more likely to engage in risky driving such as drink driving, speeding, failure to wear a seat belt, and motorcycle use (FORS, 1997b; Griffin & DeLaZerda, 2000; Harrison, 1997; Healy & Harrison, 1986; Watson, 1997, 2000). While the crash data suggest that unlicensed drivers engage in more risky behaviour than licensed drivers, it does not necessarily confirm that they have a higher crash risk. The crash data does not account for possible differences in the exposure of unlicensed drivers (Silcock, 2000). However, utilising the quasi-induced exposure method, it has been estimated that suspended/revoked drivers and other unlicensed drivers were over-involved in fatal crashes by a factor of 3.7:1 and 4.9:1, respectively, compared to licensed drivers (DeYoung, et al., 1997). A similar study in Queensland (Watson 2004b) found a crash risk ratio of 5.43:1 for the never licensed drivers and 3.84:1 for the disqualified/suspended drivers, compared with 2.9:1 for all unlicensed drivers.

While some similarities have been found among unlicensed drivers involved in crashes, e.g., more likely to be male, younger in age, ride a motorcycle, unemployed or student/blue collar worker, and the crash occurring in remote, rural areas (FORS, 1997a); other research suggests that that they do not represent a homogenous group. Specifically, cancelled or suspended drivers were more likely to be male, with less education and to report less care when driving unlicensed than their licensed counterparts (Job, et al., 1994). Griffin and DeLaZerda (2000) reported that revoked drivers were the most divergent group from licensed drivers, and were more likely to be under the age of 40, male, and to have three or more previous suspensions

or revocations. It has been reported in research conducted by DeYoung and Gebers (2004) that suspended/revoked drivers are different on both demographic characteristics and their driving behaviour based on the reason for them being suspended or revoked.

It is important that research into the unlicensed driving problem looks at not only the extent of the problem, but also the factors that contribute to this behaviour among the different types of unlicensed driving offenders. Survey research conducted in Victoria with disqualified drivers reported continued driving in exceptional circumstances, with employment (Robinson, 1977; Ross & Gonzales, 1988), and family or social reasons (Job, et al., 1994; Smith & Maisey, 1990) being the most frequently cited reasons. Driving while disqualified has also been found to be more likely among those who were employed, working far from home, living in a household without another licensed driver, and those who had access to a vehicle (Ross & Gonzales, 1988). Another reason commonly cited by convicted unlicensed drivers for driving while unlicensed is not being aware that their licence was invalid at the time; this was particularly prevalent among those whose licence had expired and those who held an interstate licence (Job, et al., 1994). Some research has also highlighted that difficulty in passing the driving test and the cost associated with obtaining a licence were associated with some drivers choosing not to participate in the licensing system (Silcock, Sunter, van Lottum, & Beuret, 1999).

Theoretical perspectives have also been used to understand and characterise the factors associated with the unlicensed driving problem. For instance, according to deterrence theory, the decision to drive unlicensed should be mainly influenced by a person's perceptions of the risk of apprehension and the certainty, swiftness and severity of punishment (Stafford & Warr, 1993). Therefore it has been used to explain the prevalence of unlicensed driving by suggesting that in many jurisdictions there is a low perceived risk of apprehension (Nichols & Ross, 1982; Ross, 1991; Lenton, Fetherston & Cercarelli, 2010).

However, deterrence theory has been criticised in the literature for its failure to account for a wide range of factors that can influence social conformity. Akers (1977, 1990) argues that deterrence theory is not a general or complete model of criminal behaviour, but represents a sub-set of social learning theory. Whereas deterrence theory is concerned with the influence of legal sanctions on criminal behaviour, social learning theory is more concerned with the overall social setting in which behaviours occur and the way in which they are differentially rewarded and punished (Akers, 1990). While social learning theory has not been widely used to examine unlicensed driving, it appears to offer a number of heuristic advantages over deterrence-based theories. Specifically, it addresses a range of important factors including formal and informal sanctions, direct and indirect experiences, punishment, and punishment avoidance. Also, this approach appears better equipped to explain compulsive behaviours which are often characteristic of some recidivist offenders.

An examination of survey data collected from unlicensed driving offenders following their appearance at the Brisbane Central Magistrate's Court, indicates that social learning theory does represent a comprehensive framework for predicting illegal driving behaviours, such as unlicensed driving (Watson, 2004b). This study found punishment avoidance to be a significant predictor of both the frequency of unlicensed driving and to a lesser extent, an intention to drive unlicensed (Watson, 2004b). Analyses also indicated that the participants' 'sensation seeking score' was not significantly associated with either prior conviction for unlicensed driving or a conviction for another type of traffic offence (Watson, 2004b). However, sensation seeking was significantly correlated (albeit weakly) with prior criminal conviction and also with self-reported speeding (Watson, 2004b). Given this, it appears that

while sensation seeking may contribute to certain risky behaviours that can lead to a person losing their licence (e.g., speeding or drink driving), it is not directly associated with unlicensed driving.

The relative success of countermeasures to address unlicensed driving, ranging from licence restrictions to vehicle-based sanctions, can be determined by a variety of factors. These include sufficient awareness of offenders regarding penalties for unlicensed driving, perceptions of the fairness of such penalties and the perceived likelihood that offenders will be detected and penalties swiftly imposed.

5.3.2 Results of pilot studies for Phase 2

A questionnaire was developed, drawing on items and standardised scales from a variety of sources, that had been identified by way of the available literature and previous research conducted by CARRS-Q as factors associated with unlicensed driving. These areas included: socio-demographic characteristics; circumstances related to detection and punishment; unlicensed driving behaviour; deterrence variables; social learning variables; availability of a motor vehicle or alternative transport; and other issues of interest. Two pilot mail outs were conducted, with a questionnaire posted to a random selection of 200 unlicensed drivers on both occasions. Unfortunately the response rate to both was low (five people replied to the first mail out and eight to the second). Due to the poor response rates observed during the piloting process, it was decided to abandon this approach.

A number of alternative approaches that would achieve the research objectives were considered, including a court-based study, or computer assisted telephone interviews (CATI). Neither approach was considered feasible once financial and privacy implications were examined.

It was determined that an analysis of data drawn from de-identified traffic infringement and sanction histories for drivers in Queensland would provide a more effective method of obtaining information relevant to the objectives of this study. After examining financial and privacy issues, it was decided that this method of research was best suited for these purposes. While this method does little to directly explain the personal decisions that contribute to an individual's decision to drive unlicensed, it can provide insight into the factors that contribute to this behaviour. Key areas examined included the prevalence of unlicensed driving and the extent to which particular offences were detected amongst drivers with a licence sanction or disqualified licence. This research is reported in the following section.

5.3.3 Results of analysis of traffic infringement and sanction histories

A total of 546,117 Queensland drivers were identified as having lost their licence during the period 1st January 2003 to 31st December 2008. Almost three quarters (72.7%) of drivers who lost their licence during this period were male. The most common licence sanction among the sample drivers was a licence suspension with 76.9% of the sample receiving a suspension in this period. The majority of these drivers had received a State Penalties Enforcement Registry (SPER) suspension (83.0%) with 17.6% having received a good driving behaviour condition. Licence disqualification was the second most common sanction, with 30.2% of the offenders in this sample experiencing a disqualification. Of these, 68.7% had received only one disqualification during the period of interest.

In regard to unlicensed driving, 20.3% of the total sample had been caught driving while their licence was invalid. Of this group, almost 60% had committed one offence, 20.6% had committed two offences, 16.6% had committed between three and five offences, and 3.8% had committed six or more offences. Of the drivers found to have committed an unlicensed driving offence during this period, approximately 63% had a sanction period imposed on their licence at the time and 38.6% were detected while their licence was disqualified. Of drivers found to have committed a dangerous driving offence, over one fifth of these offences (21.5%) were committed during a period of licence disqualification.

Approximately 32% of drivers committed a speeding offence during a sanction period and 27.4% committed the speeding offence during a period of licence loss. In addition, 16.8% of these drivers committed a speeding offence while they were on a good driving behaviour condition.

The prevalence of unregistered driving was quite high among offenders caught driving while their licence was invalid. Overall, there were 123,545 (22.6%) drivers who were both detected and charged with an unregistered driving offence, with approximately 40% of unregistered driving offences committed during a period of sanction or licence loss.

An analysis of offences incurred by the drivers over the entire survey period found speeding to be the offence committed most frequently by drivers in the sample, with 67.4% of offenders receiving an infringement notice for exceeding the posted speed limit. Of this group, 35% committed one speeding offence, while 51.3% committed between two and five offences. The proportion of drivers from the total sample detected driving while over the legal Blood Alcohol Content (BAC) limit was 27.6%, with 80% of these drivers subsequently disqualified due to this offence, and 13.9% given a work licence. The majority of drivers from the total sample detected driving while over the legal BAC limit were found to have committed only one offence (76.7%) and less than 1% committed between five and 14 offences, however almost a quarter (23.3%) went on to commit a further drink driving offence during this period.

5.4 Implications

A range of opportunities for future research have been identified. As noted previously, the use of ANPR systems provides an additional source of data. Drawing on ANPR data of the licence status and driving history of the registered / last registered owner of vehicles recorded, linkages to other illegal driving behaviours associated with unlicensed driving could be examined. Ongoing analysis of ANPR data would reveal changes and trends in driving behaviours.

The analysis of traffic infringement and sanction histories for drivers who had lost their licence identified associations between unlicensed driving and speeding, drink driving, dangerous driving and the use of unregistered vehicles. It also noted the propensity of many drivers to continue to drink drive despite a loss of licence. Further research of this type, in conjunction with a repeat of the TMR Wave surveys (Watson, Armstrong, Watson, Livingstone, & Wilson, 2011; Armstrong, Watson & Watson, 2012), would serve to clarify whether the characteristics and on-road behaviour of unlicensed drivers identified in this study are indicative of only those actually detected breaking the conditions of their licence, or are representative of unlicensed drivers in general. This has important implications for the scope of the countermeasures required to address the problem.

It would be valuable to repeat this study to examine the stability of unlicensed driving rates and offences over time. This exercise would be enhanced by analysing information as to the actual offence types which lead to licence suspension or loss. This would facilitate a better understanding of the driving history of drivers who lose their licence and also the effectiveness of licence sanction on reducing specific behaviours, drink driving being just one example.

In addition, research evaluating key aspects of the Indigenous Driver Licensing Program would provide insights into the effectiveness of a program that aims to advance road safety and increase opportunities to obtain a valid licence in many Indigenous communities in Queensland. Finally, further research on two key groups identified as engaging in risky behaviours; motorcycle riders operating a vehicle with an inappropriate licence and learner drivers who drive unaccompanied; would enhance understanding of seldom studied groups of road users.

5.5 Related reports

Watson, B., Armstrong, K., Wilson, A., Livingstone, K., & Barraclough, P. (2012). *An examination of the factors contributing to unlicensed driving*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 4.1

Watson, B., Livingstone, K., Armstrong, K., Wilson, A. & Barraclough, P. (2011). *Profiling unlicensed riders and drivers in Queensland*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 4.2

6 INVESTIGATION OF THE CRASH INVOLVEMENT PATTERN OF UNLICENSED DRIVERS

6.1 Purpose of the study

Unlicensed driving remains a serious problem for road safety, despite ongoing improvements in traffic law enforcement practices and technology. While it does not play a direct causative role in road crashes, unlicensed driving undermines the integrity of the driver licensing system and is associated with a range of high-risk behaviours. In order to better understand the impact of this behaviour on road safety. This aspect of the research consisted of two components: a literature review of the available publications relating to crash involvement patterns of unlicensed drivers; and an analysis of Queensland crash data to explore the scope and nature of unlicensed driving in this state.

This study examined official road crash data from Queensland for the years 2003-2008, allowing comparisons to be made between the crash involvement patterns of unlicensed drivers and those of licensed drivers. This research replicates and extends upon two previous studies examining the involvement of unlicensed drivers in crashes in Queensland (Watson, 2004a; 2004b; Watson & Steinhardt, 2006).

6.2 Method

Local and international literature was examined to investigate the extent of unlicensed driver involvement in vehicle crashes and to provide insights into the nature of the behaviour. In an effort to obtain a comprehensive overview, a range of publications were reviewed including journal articles, conference papers and government reports. Relevant research findings were identified by searching electronic publications databases, conference proceedings, and through Internet searches of organisations that may have sponsored recent research. Key publications focusing on unlicensed driving and crash related behaviours were examined with relevant references also identified and reviewed. Historically, most of the research into disqualified driving and other types of unlicensed driving has been undertaken in North America. However, there is growing evidence relating to the extent and nature of unlicensed driving in Australia, particularly in the state of Queensland. This review also includes findings from studies undertaken in the UK, New Zealand, Sweden and Taiwan. No publications from other Western countries were found which addressed the issue of crash involvement patterns of unlicensed drivers.

Data used in the second component of this study was extracted from Transport and Main Roads' road crash database for the years 2003-08 and contains records for all eligible crashes reported to police. Six years of data was analysed to ensure that general trends were identified and to provide sufficient numbers to permit meaningful comparisons among the different groups of unlicensed drivers. The main unit of analysis was the drivers involved in crashes during the period, rather than crashes *per se*. Information provided for each crash included: age; gender; licence status; vehicle type; details of the circumstances of the crash including the day, time, location, prevailing road and traffic conditions; and contributing factors to the crash as cited by the attending police.

6.3 Key results

6.3.1 Literature review findings

The literature review provides a summary of the available publications relating to crash involvement patterns of unlicensed drivers. A range of methodologies were employed in the studies highlighted in this review and the relative strengths and weaknesses of these approaches were noted. Among the methodologies examined were crash data studies (including the use of the quasi-induced exposure method); the use of traffic offence data; postal self-report surveys and face-to-face self-report surveys. Other methods, such as roadside licence check surveys, examining traffic offence data (if not crash-related) and observational studies are designed to capture general driving behaviours and are usually not directly applicable to crashes. The review recognised that crash data studies in particular have provided useful information on a range of crash circumstances and that through the use of the quasi-induced exposure method, crash risk ratios can be calculated.

In contrast to the view that unlicensed drivers drive more carefully to avoid detection, studies have repeatedly found that unlicensed drivers are over-represented in a range of crash types. Australian studies have tended to be in line with international research, which consistently show unlicensed drivers have a greater likelihood than licensed drivers of being involved in a crash, and that these crashes are more likely to result in a fatality or serious injury. Unlicensed driving has been linked to a greater propensity to engage in risky behaviours such as drink/drug driving, speeding, motorcycle use and the non-use of seatbelts and helmets. Gender, age and to some extent socio-economic background were found to be factors in the crash involvement of unlicensed drivers.

Specific driving conditions were found to be a possible factor in crashes involving unlicensed drivers. In Queensland research has shown that unlicensed drivers to be more likely than licensed drivers to be involved in a crash in remote and rural areas and where no traffic controls are present (Watson, 2004a; Watson, Armstrong, Watson, & Barraclough, 2011). Unlicensed drivers, particularly those who had never held a licence, were also more likely than licensed drivers to be involved in a crash at night or during the weekend. However no significant difference was found between licensed and unlicensed drivers in regard to the prevailing speed limit present at crash scenes. Nor have unlicensed drivers been found to be more likely than their licensed counterparts to hit a pedestrian.

Despite some similarities, evidence suggests that unlicensed drivers do not necessarily represent a uniform group. Differences were found between unlicensed driver types in terms of their psychosocial characteristics and their on-road behaviour. For example, drivers with suspended or revoked licences were found to be over represented in reportable crashes and fatal crashes. The misuse of alcohol and drugs was highlighted with studies showing that a significant number of drivers with high blood alcohol concentrations involved in fatal crashes were also found to be without a valid licence at the time of the crash. In addition, unlicensed drivers involved in fatal crashes in which they also recorded a high BAC, are more likely than other types of unlicensed drivers to have a history of previous licence suspensions.

While unlicensed drivers have been found to have a higher risk of involvement in traffic crashes, there is also evidence pointing to the effectiveness of licence sanctions and other programs in addressing the behaviour of offenders who continue to drive unlicensed. Laws and procedures targeting alcohol use, the use of vehicle impoundment and vehicle confiscation in combination with the monitoring of reoffenders, were associated with a

reduction in crashes involving those who continued to drive despite licence suspensions or revocations.

6.3.2 Crash data findings

A total of 227,918 drivers were recorded as being involved in crashes in Queensland in the period 2003 to 2008. After international and unknown licences were removed, data for 211,537 licensed and 8,733 unlicensed drivers were obtained for the analysis.

Unlicensed driving was found to be a relatively infrequent, but significant road safety problem with unlicensed drivers representing approximately 9% of the drivers involved in fatal crashes and 5% of those in serious injury crashes. Based on a quasi-induced exposure method of estimating crash risk, unlicensed drivers were found to be up to three times more likely than licensed drivers to be involved in a crash of any type and up to four times more likely to be involved in a fatal crash.

The overwhelming majority of unlicensed drivers involved in crashes were male while almost half were under the age of 25. Younger drivers are generally more likely to be involved in a crash. Unlicensed drivers are more likely than licensed drivers to be involved in a serious injury crash at night or on weekends and in locations in which no form of traffic control (traffic lights, stop signs) were present.

Serious crashes involving unlicensed drivers were more likely to feature risky driving behaviours, such as drink driving, speeding and motorcycle use. Unlicensed drivers were also more likely than licensed drivers to be involved in crashes involving inattention, inexperience and (with the exception of unlicensed motorcycle riders) fatigue.

The proportion of unlicensed riders involved in motorcycle crashes is higher than that of unlicensed drivers for all levels of crash severity except property damage only crashes. Unlicensed motorcycle riders are represented at a greater rate as crash severity increases than is the case for unlicensed drivers. A significant proportion of unlicensed motorcycle riders involved in crashes were under the age of 17, which is the legal age at which a provisional licence can be obtained.

Drivers with a *disqualified* or *suspended* licence were involved in a greater number of fatal and serious injury crashes than other categories of unlicensed drivers. Drivers who have *never held* a licence were found to have a crash risk 15 times greater than licensed drivers of becoming involved in a serious injury crash.

Unlicensed drivers do not appear to represent a homogeneous group with important differences identified in the characteristics and behaviour of different types of drivers involved in crashes, suggesting that countermeasures in this area may need to be multi-strategy in nature. A brief summary of findings as they relate to the principal categories of unlicensed drivers is provided below.

6.3.2.1 Disqualified suspended drivers

Analysis of traffic infringement and sanction histories for the period January 2003 to December 2008 showed drivers with a *disqualified* or *suspended* licence comprised the largest group (76.9%) of unlicensed drivers involved in crashes. Drivers with a *disqualified* or *suspended* licence were involved in a greater number of fatal and serious injury crashes than

other categories of unlicensed drivers and represented almost half of the unlicensed drivers involved in crashes. The *disqualified/suspended* drivers were generally more likely than other groups to have had prior convictions for drink driving and also reported higher levels of prior criminal convictions, alcohol misuse and drink driving behaviour.

6.3.2.2 *Never licensed drivers*

Consistent with the 1994-1998 study (Watson 2004b), the *never licensed* drivers were most likely of all unlicensed drivers to crash as a result of risk taking or inexperience and be involved in severe crashes. This pattern is also consistent with the crash ratios derived from the quasi-induced exposure method. The *never licensed* drivers had the highest estimated crash risk for most of the different crash severities and for total crashes. Indeed, the risk of involvement in a crash of any sort was 9.47:1 for the *never licensed* drivers compared with 3.02:1 for all unlicensed drivers. Drivers who have never held a licence were found to be 15 times more likely than licensed drivers to be involved in a serious injury crash. Over two fifths of crashes involving *never licensed* drivers [43%] occurred on a weekend, the highest of any type of unlicensed driver. The *never licensed* were highly represented in single vehicle crashes. This may be indicative of less driving skill or, alternatively, a higher degree of impairment or risky behaviours. It should be noted however that the crash ratios for the *never licensed* drivers should be treated with some caution due to the instability in their involvement rates. The high degree of risk associated with the *never licensed* drivers also reflects the large proportion of unlicensed motorcycle riders within this category. However, given that almost ten percent (9.7%) of the unlicensed drivers involved in serious casualty crashes were under the age of 17 and presumably most of these have never held a licence, the behaviours of these drivers warrant further attention.

6.3.2.3 *Expired licence drivers*

Drivers with *expired* licences were less likely to be aware of their unlicensed status than other offenders, suggesting that for many, their licence status was due to an oversight rather than a result of poor driving habits *per se*. To some extent this was reflected in an analysis of their crash involvement data. Crashes involving drivers with an expired licence were significantly less likely to have drugs or alcohol as a factor and were also less likely to involve speeding, inexperience or motorcycle use than crashes that did not involve drivers with an expired licence. These factors no doubt contribute to the finding that drivers with an *expired* licence were under-represented in fatal crashes. Of all unlicensed drivers, those with an expired licence were also the group least likely to be considered at fault by police. Males were also particularly under-represented among the *expired* drivers when compared to other categories of unlicensed drivers (although they still represent two thirds of this group).

6.3.2.4 *Inappropriate licence drivers*

Drivers with an *inappropriate class* of licence were over-represented in fatal and serious injury crashes. This reflects the large number of motorcycle riders [82.2%] in this group. Drivers with an *inappropriate* licence were the group most likely to crash during the day (6am–5:59pm). Drivers with an *inappropriate class* of licence were also over-represented in crashes where traffic control devices were not present (compared with both other unlicensed drivers and licensed drivers). This suggests that these drivers experience difficulties in general (non-conflict) driving conditions, which may be indicative of risk taking or a lack of driving skills. Offenders with an *inappropriate class* of licence who were involved in crashes riding motorcycles could have been unlicensed for two reasons. Firstly, they could have been

illegally riding because they only held a licence for another type of vehicle, such as a car. Alternatively, they could have held a provisional motorcycle licence (RE) but been riding a larger motorcycle (> 250cc) than permitted on this licence.

6.3.2.5 *Unlicensed motorcycle riders*

Unlicensed motorcycle riders can be seen to be more at risk than other unlicensed drivers. The proportion of unlicensed riders involved in motorcycle crashes is higher than that of other unlicensed drivers for all levels of crash severity except property damage only crashes. Unlicensed motorcycle riders are also represented at a greater rate as crash severity increases than is the case for unlicensed drivers. The unlicensed riders most likely to be involved in a crash were those holding a *disqualified or suspended* licence followed by those with an *inappropriate* class of licence. A significant proportion of unlicensed motorcycle riders involved in crashes were under the age of 17, which is the legal age at which a provisional car licence can be obtained in Queensland without an exemption. Individuals must have held their car licence for 12 months before being able to apply for a motorcycle learner's permit, meaning the minimum age for motorcyclists in Queensland without an exemption is 18.

6.4 Implications

Despite a view that unlicensed drivers may alter their driving behaviours in order to avoid detection, these drivers have been found to be involved in crashes at a greater rate and a greater severity than their licensed counterparts. The findings of this study lend further support to the view that unlicensed drivers are not a homogenous group, with significant differences found in the driving behaviours of the different unlicensed driver types. However the analysis of the crash data supports previous research that has shown a greater degree of risky driving behaviours to be present amongst unlicensed drivers involved in crashes. From a criminological perspective, the results suggest that the *never licensed* and the *disqualified/suspended drivers* may represent more deviant sub-groups of drivers. The behaviour of these drivers tends to represent a more flagrant breaking of the road rules, since they have decided to drive either without a licence or in contravention of a driving ban. In contrast, it is arguable that the offences committed by the drivers with an *expired* licence are more administrative in nature.

These findings have two clear implications for road safety. Firstly, they indicate that more effective approaches are required to reduce the level of unlicensed driving. Secondly, there is a need to review policies that may be inadvertently exacerbating the problem. These issues were examined further in other reports prepared by CARRS-Q as part of the overall UUV project.

6.5 Related reports

Watson, B., Armstrong, K., Wilson, A. & Barraclough, P. (2011). *Literature review: Crash involvement patterns of unlicensed drivers*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 5.1

Watson, B., Armstrong, K., Watson, A., & Barraclough, P. (2011). *Crash involvement patterns of unlicensed drivers and riders in Queensland*. Brisbane: Centre for Accident Research and Road Safety (CARRS-Q) - Deliverable 5.2

7 DISCUSSION OF UUV PROJECT FINDINGS

7.1 Observational study of unregistered vehicle use

7.1.1 Discussion of findings

A comparison of the recent observational study of vehicle registration with previous surveys conducted in 2000, 2003 and 2005 shows that the unregistered vehicle rate has fluctuated during the 10-year period in which the survey has been undertaken, from a high of 5.19% in 2003 to a low of 1.81% in 2005. It is possible that the high number of registrations which could not be matched against the TRAILS database (2.11% of observed plates) as recorded in the recent survey may in part account for this discrepancy. If this were the case, the current figure would be closer to the figures for 2000 and 2003, suggesting that the figure for 2005 is unusually low.

The TMR region which recorded the highest unregistered rate has also varied for each survey during the 10-year period, as have the days and times in which the highest numbers of unregistered vehicles have been recorded. One constant over the 10-year duration is that the majority of unregistered vehicles observed have been unregistered for a period of greater than two years.

Analysis of the traffic infringement and sanction histories for the registered owner (or last registered owner) of all vehicles observed was undertaken for the first time during the current survey. This found that when compared to the owners of registered vehicles, the unregistered vehicle owners are generally more likely to have committed driving offences and to have had a sanction applied to their driver licence. Unregistered vehicle owners were also more likely to be unlicensed at the time of the observational survey, and to have previously committed unlicensed and unregistered driving offences. Similarly, unregistered vehicle owners were significantly more likely to have a sanction of any type on their driver licence *at the time of the observational survey*. These findings align with research examined in the literature review, which demonstrated that a positive association exists between unlicensed driving and the driving of unregistered vehicles in Australia (see *Literature review: Links between unlicensed and unregistered driving* Watson, Armstrong, & Wilson, 2011).

7.1.2 Study limitations

The observational study of vehicle registrations recorded vehicles parked in locations that were considered destinations (e.g., shopping centres, hospitals, airports and park-and-ride facilities) rather than vehicles parked in residential areas. An underlying assumption for sampling these types of locations is that it provides a higher probability that the vehicles captured in the survey are being driven on a regular basis. However, the vehicles are still observed while parked, rather than when they are travelling on the road. The unregistered vehicles sampled during this survey may therefore include vehicles that have been abandoned at these locations and are not actually being utilised on the Queensland road network. As noted previously, it was not possible during the observational phase to verify the individual who had driven and parked the vehicle at the time of observation. Therefore, the comparison of the sanction and infringement histories compared the status of the observed vehicle with the offence history of the currently registered, or in the case of unregistered vehicles, the last registered, owner of the vehicle.

A further limitation of the observational study is the proportionately large number of observed vehicle number plates (2.11% of vehicle number plates presented for matching) which could not be matched against the TRAILS database. This may result in the stated unregistered rate (2.88%) being an underestimate. The proportion of vehicle number plates which could not be matched against the TRAILS database has not been reported in previous surveys, so the extent to which this figure has changed over time is unknown.

While many of the differences found between the driving records of unregistered and registered vehicle owners were statistically significant, it is important to note that the effect sizes for most of the chi-square analyses were small ($\Phi < .10$). The statistical significance of the chi-square tests may have been influenced by large sample size ($N = 48,060$). Therefore care must be taken in the interpretation of these findings. It would also be advisable to consider the actual differences in the proportions of unregistered and registered vehicle owners for each of the types of sanctions and infringements.

7.1.3 Future directions for research

Notwithstanding the limitations outlined above, the current survey method is considered by the authors to be one of the more robust and reliable methods for determining the number of unregistered vehicles currently being utilised on the Queensland road network. Continuation of this series of studies would be enhanced by: further investigation of vehicles which could not be matched against the TRAILS database; inclusion within survey locations of parking bays set aside specifically for the Powered Two Wheelers to obtain a figure that more accurately represents this prevalence of this vehicle type; observers undertaking the data collection in pairs, to minimise the risk of errors during the observation phase; survey locations selected and sampling stratified to reflect updated population (census) statistics; and the use of automated methods of number plate collection (e.g., ANPR) for future surveys.

7.2 Investigation of the links between unlicensed driving and unregistered vehicle use

7.2.1 Discussion of findings

The literature review found some degree of association between unlicensed driving and the driving of unregistered vehicles. There was also some association found between the driving of unregistered vehicles and other dangerous driving behaviours, including fatigue, drink driving and motorcycle use. There has also been some association found between the driving of unregistered vehicles and an increased risk of crash involvement, with some evidence that unregistered vehicles are over-represented in serious and fatal crashes. However it may be that this increased risk is not due to the act of driving an unregistered vehicle *per se*, but due to other high-risk behaviours associated with unregistered vehicle use, such as drink driving.

Analysis of crash data showed that while both the proportion of controllers involved in a crash while driving an unregistered vehicle and the proportion of unlicensed controllers involved in a crash have significantly changed over time, only the latter generally exhibits a consistently rising trend during the period from 2003 to 2008. Of the 201,177 drivers involved in crashes in Queensland in this period, 3.8% were unlicensed while 2.0% were driving an unregistered vehicle, with 0.5% of drivers involved in a crash driving an unregistered vehicle while unlicensed.

Examination of the age and gender of drivers of unregistered vehicles involved in crashes found that, compared with the registered vehicles, the drivers of unregistered vehicles were more likely to be male and younger in age. This is an interesting finding, as it is similar to findings of studies of unlicensed driving, which have shown that compared to licensed drivers, unlicensed drivers involved in crashes are more likely to be male and younger in age (FORS, 1997; Knox, Turner, Silcock, Beuret, & Metha, 2003; Watson, 2003; 2004b). Of the unlicensed drivers involved in crashes between 2003 and 2008, 1,072 (14.0%) were also known to be unregistered, a proportion similar to that found in a comprehensive study into unlicensed drivers undertaken at the Brisbane Central Magistrates Court (Watson, 2003).

Comparison of the crash circumstances found that, in line with previous studies (Haworth et al., 1994; Haworth & Smith et al., 1997), there was a significantly higher representation of motorcycles among the unregistered vehicles involved in crashes, and the majority of unregistered motorcycles involved in crashes were being operated by riders that had never held a motorcycle licence. Crashes involving unregistered vehicles were more likely to occur at night and on the weekends, times also associated with recreational driving behaviours. Crashes involving unregistered vehicles were also more likely to occur in 100/110 km/hr speed zones with unregistered vehicles also found to be over-represented in single vehicle crashes. Consistent with previous research (Watson, 2003; Armstrong et al. 2008), drivers of unregistered vehicles were over-represented in all categories of recorded contributing factors of crashes as cited by police, but particularly in regards to *alcohol/drugs, speeding* and *fatigue*.

The analysis of the offence data shows that of the 545,616 individuals with a Queensland driver licence who had lost their licence between 1st January 2003 and 31st December 2008, one fifth (20.3%) were charged with committing at least one unlicensed driving offence and slightly more (22.6%) were charged with committing an unregistered offence in the period. There were 51,145 (9.4%) drivers charged with unregistered driving while they were under a period of licence loss, although they may not necessarily have been charged with unlicensed driving at the time. Almost half (48.6%) of those charged with unlicensed driving at least once were also charged with driving an unregistered vehicle in the period, while there were 24,862 (4.6%) individuals charged with driving unlicensed and driving an unregistered vehicle at the same time.

7.2.2 *Study limitations*

The literature review of links between unlicensed driving and the driving of unregistered vehicles found there is a lack of research in this area. While the small number of studies discussed did indicate some degree of association between these two behaviours, these studies have not been direct investigations of the driving of unregistered vehicles, but rather have focussed on other driving behaviours, such as unlicensed driving, motorcycle use and single vehicle crashes. Therefore, while unregistered driving was discussed in these research studies, it was not the main behaviour of interest and therefore these studies do not explore unregistered driving in a comprehensive manner. The findings from these studies also preclude any causative links being established.

7.2.3 *Future directions for research*

The findings suggest that people who drive unregistered vehicles and/or drive while unlicensed are likely to engage in other high risk driving behaviours. While it is not possible to establish that these behaviours are directly linked to increased crash risk, these results and those of prior research indicate that people who engage in these behaviours are an at-risk

group of drivers. It would be valuable to repeat this study to examine the stability of the rates of unlicensed driving, driving of unregistered vehicles, and the overlap between the two behaviours over time.

7.3 Development, comparison and trial of methods of estimating the rate of unlicensed driving

7.3.1 Discussion of findings

The literature review critiqued a range of methodologies to ascertain their capacity to both estimate the prevalence of unlicensed driving and to provide insights into the nature of the behaviour. No single research method provides a definitive overview of either the community-wide prevalence of unlicensed driving or the nature of the behaviour. However as different methods are better placed to provide insights into particular aspects of unlicensed driving, a multi-method approach is best suited to examine this road safety problem.

The findings of the two waves of the roadside licence check surveys were generally consistent, with the methodology employed in the second survey enabling valuable information to be obtained regarding the presence of unlicensed driving across Queensland. The extent of unlicensed driving in Queensland as indicated by these findings is consistent with previous research (Carseldine, Court & Graham, 1992; Malenfant, Van Houton & Jonah, 2002). While the prevalence of unlicensed driving was relatively low, this behaviour remains a serious concern, given the extent to which these drivers are represented in crashes of all types and particularly more severe crashes.

It is interesting to note that a difference between Wave 1 and Wave 2 in the number of drivers detected driving an unregistered vehicle when surveyed, 105 (3.4%) and 24 drivers (0.7%) respectively. An explanation for this discrepancy is beyond the scope of this project.

The overall consistency between the two surveys supports the validity of the methods employed in this project. In addition, the use of Mobile Integrated Network Data Access (MINDA) checks, despite a small number of inconsistencies with the TRAILS database, was generally shown to be effective. As the use of roadside licence check surveys represents the most accurate and reliable method of estimating the extent of unlicensed driving, since it more directly accounts for the exposure of offenders than other methods, the methodological improvements employed in the current study offer a more accurate representation of the behaviour than research published to date. For example, the sampling strategy employed for each Police region (based on population statistics) ensured that the percentage of intercepts was representative across the State. Further, in order to limit the possibility that a driver could assume another person's identity, those drivers who did not produce a licence at the roadside were required to show a secondary form of identification to ensure that the details given to the Police officer were correct. Finally, conducting intercepts across a diverse range of times, days of the week, and in both rural and urban locations helped to strengthen the representativeness of the data collected.

7.3.2 Study limitations

The methodology employed the roadside licence check survey undertaken by QPS in conjunction with roadside RBT traffic operations involved requesting the driver to show their licence as part of regular policing practice (i.e., RBT operations). The locations for the data

collection were therefore restricted to static interception sites, which may be well known, especially by residents of a particular suburb and in smaller regional towns. Previous research has indicated that unlicensed drivers modify their driving behaviour in order to avoid detection (Watson, 2004b). Therefore a limitation associated with this type of study may be that some unlicensed driving offenders were able to avoid detection by not driving through those areas which are known to be used by police to conduct RBT and other interception operations.

It is also likely that further biases were introduced as it was not possible to accurately verify the details given by drivers who were not carrying their licence. The inability to match licensing records for a relatively small number of surveyed drivers surveyed roadside is problematic, having the potential to significantly influence the unlicensed driving rate reported. If all unmatched records of this type were treated as representing unlicensed drivers, the related proportions would increase from 0.9% to 2.2% in Wave 1 and from 1.0% to 3.0% in Wave 2. It must also be noted that this study did not report the outcomes related to those drivers directed to produce a licence at a Police station within 48 hours.

Further investigations using this same methodology would need to improve the data collection to minimise the ability of a driver to give inaccurate details to the interviewing police officer.

7.3.3 Future directions for research

It would be valuable to repeat this study to examine the stability of unlicensed driving rates over time. It is recommended to undertake the roadside licence check on a periodic basis (e.g., once a year or every second year), with consideration given to the following recommendations. Firstly, the sampling strategy employed for each Police region (based on population statistics) must ensure that the percentage of intercepts is representative across the State. Secondly, in order to limit the possibility that a driver could assume another person's identity, drivers not able to produce a licence at the roadside be required to show a secondary form of identification to ensure that the details given to the Police officer are correct. Finally, conducting intercepts across a diverse range of times, days of the week, and in both rural and urban locations enhances the representativeness of the data collected.

7.4 Identification of personal and social factors underpinning unlicensed driving

7.4.1 Discussion of findings

Research into unlicensed driving must consider not only the extent of the problem, but also the many differences present among the various types of unlicensed driving offenders. A range of factors, either alone or in combination, contribute to the decision to drive unlicensed. The decision to drive unlicensed can be influenced by perceptions as to the likelihood of being detected. Attitudes towards continuing to drive while unlicensed may also be directly attributable to the actual circumstances and infringements which lead to licence loss. For example, Clark and Bobevski (2008) reported that some individuals who had lost their licence for less serious offences had favourable attitudes toward driving while unlicensed as they did not consider their initial driving dangerous or a threat to other road users. It is worth noting that analysis of de-identified traffic infringement and sanction histories for drivers in

Queensland who had lost their licence between 2003 and 2008 showed that over three quarters (76.9%) of this group had received a licence suspension. For the majority of these drivers (83.0%) this suspension was a State Penalties Enforcement Registry (SPER) suspension. Drivers with a SPER suspension in turn represented over half (51.4%) of those found to have committed unlicensed driving offences. This may in part explain findings from the 2003-2008 study of crash involvement of unlicensed drivers in Queensland, which shows that the *disqualified/suspended drivers* represent a more deviant sub-group of offenders. Drivers categorised as *disqualified/suspended* represented almost half (47.5%) of the offenders involved in crashes. This is consistent with earlier research which found that, *punishment avoidance* and the *need to drive for work purposes* were the main personal influences on unlicensed driving in a survey of unlicensed drivers (Watson, 2004b). In this sense, the behaviour of the *disqualified/suspended* drivers can be taken to represent a more flagrant breaking of the road rules than other unlicensed drivers, given they have decided to drive in contravention of a specific ban.

Certain subsets of unlicensed drivers, such as persistent drink driving offenders, tend to display numerous psychological and behavioural characteristics that distinguish them from the general driving population, including higher levels of aggression, hostility and sensation seeking (Hedlund & Fell, 1995; Mayhew, Simpson & Beirness, 1997). A survey of unlicensed drivers in Queensland (Watson 2004b) found that almost one quarter of offenders reported driving when they thought they might have been over the alcohol limit with a similar proportion admitting to regularly exceeding the speed limit by 10 km/h or more. An Australian study of people who use illicit opiates, stimulants and cannabis found that nearly 10% of the total sample was driving unlicensed at the time (Aitken, Kerger, & Crofts, 2000), suggesting that drug misuse exerts a major influence on the behaviour of some offenders. While sensation seeking may contribute to certain risky behaviours that can in turn lead to a person losing their licence (e.g., speeding or drink driving), no causative association was found with these behaviours and unlicensed driving in the UUV project studies. However, the extent to which these behaviours are present amongst unlicensed drivers may in part explain the high representation of unlicensed drivers in crashes generally and more serious crashes in particular. For example behaviours such as speeding and drinking were clearly present in unlicensed driving in both the crash data and the infringement history analysis.

The analysis of drivers who lost their licence or committed an unlicensed driving offence between 2003 and 2008 showed that the prevalence of specific offences committed during a period of sanction or licences loss were reasonably stable across the unlicensed driver categories. That is, the rate at which offences were allocated to particular groups of unlicensed drivers was relatively consistent to their proportion of the total sample. However, some exceptions were evident. For example, men were more likely to be detected driving while unlicensed. In particular, men were much more likely to have committed a *dangerous driving offence* (87.7%) or a *seatbelt offence* (83.9%) while unlicensed. Among drivers who committed an unlicensed driving offence during the period 2003 to 2008, those identified as having been *disqualified* from driving at the time of detection, and drivers on a *good driving behaviour condition* who had committed a speeding offence, were over-represented in relation to other driver types within the sample. This strongly suggests that applying a licence disqualification sanction to drivers who have committed a drink or drug driving, unlicensed, or dangerous driving offence, did not always effectively stop them from continuing to drive. However, as noted above, the true rate of disqualified driving may be higher than observed in our offence data, given drivers may adjust their behaviours or frequency to avoid detection.

The number of offences committed during periods when the driver was validly licensed was compared with periods when the driver was without a valid licence. Analysis showed that drivers were more likely to commit an offence when they were validly licensed, providing a degree of support to the argument that those unlicensed drivers who continue to drive do adjust their behaviours to avoid detection. Alternatively, a drop in infringement rates for unlicensed drivers suggests that many drivers with a licence sanction or disqualification do comply with the conditions that apply to their new licence status.

7.4.2 Study limitations

Analysis of official traffic infringement and sanction histories does provide an opportunity to better understand the behaviours of unlicensed drivers. However data drawn from this source can underestimate the true proportion of behaviour, given that it only includes such items that have been detected and recorded by police.

Due to the size and nature of the infringement and sanction history files provided to CARRS-Q, it was not feasible to attribute specific infringements to a specific sanction. For example, it is not possible to ascertain whether unlicensed drivers who were subsequently detected speeding originally attracted demerit points for this same offence.

No distinction was made between types of vehicle used by drivers. It is possible that associations can be made between particular behaviours, types of licence sanction and type of vehicle driven, however this particular analysis was not the focus of this study.

The study does not control for exposure in such a way that the amount of unlicensed driving can be determined and therefore some results should be treated with caution. For example, SPER suspended drivers may have been detected driving unlicensed more than any other group for a range of reasons, including: they were the largest of the groups that received a driving sanction; they showed greater inclination to drive; or they may have been suspended for longer periods than other groups. It is also possible that this group of drivers believe a loss of licence as a result of non-traffic related offences is inherently unjust and are therefore less inclined to comply fully with the conditions which are imposed (Fox, 2003). This attitude could also be expected if the individual was not aware they were unlicensed i.e., if the letter was “lost” in the mail, or address details were incorrect.

The study also does not control for sanction days, which may provide a partial explanation for some of the differences observed, given that offences detected while driving unlicensed (for whatever reason) may occur at a different rate than when drivers are validly licensed i.e., on days when driving is permitted as a condition of licence. It must also be noted that no comparison group was included in the data set provided, although comparisons can be made given information already publicly available.

7.4.3 Future directions for research

It would be valuable to repeat this study to examine the stability of unlicensed driving rates and offences over time. This exercise would be enhanced by analysing information as to the actual offence types which lead to licence suspension or loss, facilitating a better understanding of the driving history of drivers who lose their licence and also the effectiveness of licence sanction on reducing specific behaviours, drink driving being just one example.

In addition, the inclusion of information indicating the type of vehicle driven at the time of the offence (truck, car or motorcycle), would also allow useful comparisons to be made. For example, motorcyclists may adopt different driving behaviours than other motorists. It is also recommended that any future study control for sanction days, given that offences while driving unlicensed may occur at a different rate than when drivers are validly licensed.

It would be useful to determine whether individuals who lose their licence for non-payment of fines are similar to individuals who lose their licences for more serious offences. Also of interest would be the more deviant sub-groups of offenders, including the *disqualified/suspended, not currently licensed* and *never licensed* drivers. While the first two of these offender types generally have had prior convictions for drink driving, all three have reported higher levels of prior criminal convictions, alcohol misuse and drink driving behaviour. A better understanding of the behaviours and motivations of different types of unlicensed drivers informs the development of effective countermeasures, which may need to be multi-strategy in nature.

7.5 Investigation of the crash involvement pattern of unlicensed drivers

7.5.1 Discussion of findings

The study of Queensland crash data confirms that unlicensed driving is a significant road safety problem. The number of crashes involving unlicensed drivers, while still relatively small, is increasing. An increase in the severity of crashes involving unlicensed drivers was also detected. As mentioned earlier, Queensland crash data shows that for the period 2003-2008 the proportion of unlicensed drivers involved in reported crashes was 3.8%, compared with 3% for the period 1994-1998 (Watson, 2004b). Findings for 2003-2008 show the proportion of unlicensed driver involvement in fatal crashes at 8.9%, up from 6.3% for the period 1994-1998 (Watson, 2004b).

Analysis of crash data drawn from the period 2003 to 2008 provides support for previous research which found that unlicensed driver involvement in serious crashes has been associated with: gender; age; motorcycle usage; location; employment status and to a lesser extent, socio economic background (FORS, 1997a). The crash data showed that the overwhelming majority of unlicensed drivers involved in crashes were male while almost half were under the age of 25. Of Queensland drivers who lost their licence between 1st January 2003 and 31st December 2008, 72.7% were male, however the percentage of male unlicensed drivers involved in serious casualty crashes during this period was 81.1%. Strong support was also obtained for the findings that unlicensed driver crashes were more likely to involve alcohol, speeding, inexperience and motorcycle use than those involving licensed drivers, and that unlicensed driver crashes are more likely to occur at recreational times than those involving licensed drivers. These results are consistent with previous research (Harrison, 1997; FORS, 1997a; ATSB, undated; Griffin & DeLaZerda; 2000) and tend to confirm a link between unlicensed driving and risk-taking behaviour. This is also supported by the crash data which found unlicensed drivers to be more likely than licensed drivers to be considered at fault by the police for the crashes in which they are involved.

Unlicensed drivers were found to be over-represented in single vehicle crashes and those where no traffic control (traffic lights, stop signs) was present. These types of crashes are typically associated with loss of control and running off the road, which is consistent with

speeding, driver impairment (including fatigue) and inexperience. Unlicensed drivers were also more likely than licensed drivers to be involved in crashes involving inattention, inexperience and (with the exception of unlicensed motorcycle riders) fatigue.

The serious casualty crashes involving unlicensed drivers were more likely to occur at night and on the weekend, times generally associated with recreational driving and may also be reflective of less public transport availability, and in locations in which no form of traffic control were present. At first glance, this finding is somewhat at odds with other evidence suggesting that a lot of unlicensed driving occurs for work-related reasons. However, it may only indicate that the driving undertaken by unlicensed drivers at recreational times tends to be more risky than work-related driving (which traditionally occurs during daylight hours through the week). This interpretation is consistent with other evidence confirming a link between risk-taking and driving during recreational hours. In Queensland, a higher proportion of fatal single vehicle crashes occur after dark, while alcohol-related crashes are more likely to occur at night-time and on weekends (Queensland Transport, 1999). In Victoria, Harrison (1997, p. 110) found that the crashes involving disqualified drivers suggested: “*a pattern focused on recreational road use and drink driving*”.

Unlicensed drivers were generally found to have a higher representation the greater the crash severity, which also appears to have increased³. The proportion of unlicensed driver involvement in *fatal* crashes for the period 2003-2008 was 8.9%, up from 6.3% for the 1994-1998 period (Watson, 2004b) while an increase in the proportion of unlicensed drivers involved in *other injury* crashes was also detected. There is also evidence indicating increased involvement of unlicensed motorcycle riders in fatal crashes. The proportion of unlicensed riders involved in fatal crashes for the period 2003-2008 was 15.3%. This figure is higher than for the overall period 2000-2004, the proportion in 2003 being 9%, however the recent figures are well below levels recorded prior to 1998 (Watson & Steinhardt, 2007).

Involvement of unlicensed drivers in crashes categorised as *serious injury* remained consistent (5.1%) over the periods 1994-1998 and 2003-2008. However, a greater proportion of unlicensed drivers were found to have fatigue, alcohol or drug use identified as a factor in their crashes than was the case in the earlier study (Watson, 2004b). As mentioned earlier, use of a quasi-induced exposure method found unlicensed drivers to be three to four times more likely to be involved in crashes of various severities than licensed drivers.

7.5.2 Study limitations

Analysis of crash data does provide an opportunity to better understand the behaviours of unlicensed drivers. However as noted previously, official data can underestimate the true proportion of behaviour, given that it only includes behaviour that has come to the attention of police. The analysis of crash data does not fully address the issue of whether the behaviour of unlicensed drivers involved in crashes is representative of these drivers in general. In other words, it remains possible that crash-involved unlicensed drivers represent a special sub-set of offenders who are generally less concerned about the risks of detection and punishment. However this deficiency is addressed by findings from other components of the UUV project.

It is important to note that the use of the quasi-induced method of analysis for crash data is not without limitations. Firstly, the method is open to the bias associated with a negative halo

³ The one exception being a slightly higher representation of unlicensed drivers involved in a *Property Damage Only* crash when compared with the *other injury* category during the period 2003-2008.

effect (DeYoung et al., 1997). If the police are more likely to find unlicensed drivers at fault for reasons other than their immediate driving behaviour, it would tend to inflate their involvement rate and, hence, their crash ratio when compared to licensed drivers. On the other hand, the use of multi-vehicle crashes appears to introduce another potential bias that serves to deflate the crash ratio for unlicensed drivers. Compared with licensed drivers, unlicensed drivers are under-represented in multi-vehicle crashes. In addition, they are more likely to be considered at-fault in the single vehicle crashes in which they are involved. Consequently, an involvement rate based on multi-vehicle crashes would likely underestimate the full extent of the at-fault driving undertaken by unlicensed drivers. This suggests that the crash ratio obtained for unlicensed drivers may actually underestimate their crash risk. Finally, while the overall involvement rate for unlicensed drivers was reasonably stable over time, there were some fluctuations for some of the subgroups, particularly the *never licensed* drivers. This suggests that some of the factors influencing the determination of at-fault driving may not be stable over time, at least for the smaller groups of unlicensed drivers.

In summary, although the quasi-induced exposure method “*has its limitations... it is perhaps the best method we have now for estimating over-involvement that corrects for exposure, especially for unlicensed drivers*” (Scopatz et al., 2003, p. 17). Nonetheless, the problems inherent in the approach suggest that the results obtained through its use should be treated with some caution. Over and above this, there is a need to develop better methods of estimating the exposure of unlicensed drivers, such as implementing periodic roadside stopping surveys. This would enable the crash risk of unlicensed drivers to be estimated through more direct methods. This would also provide a benchmark against which to assess the validity and reliability of the quasi-induced exposure method.

7.5.3 Future directions for research

Future research would be enhanced by improved data collection practices as they relate to unlicensed drivers involved in crashes. Future research needs to better distinguish between different types of unlicensed drivers. In particular, it would be ideal to separately identify the disqualified and suspended drivers involved in crashes (who are currently grouped together in one category despite the different types of behaviour for which they would have lost their licence). Similarly the “other” category of unlicensed driver is relatively large, suggesting that there are many unlicensed drivers whose exact status could be better identified. Better identification of unlicensed drivers, with the particular aim of reducing the number allocated to the *other* category, would facilitate a greater understanding of the different types of offenders.

It remains unclear whether the behaviour of unlicensed drivers involved in crashes is representative of these drivers in general. In other words, it remains possible that crash-involved unlicensed drivers represent a special sub-set of unlicensed drivers who are generally less concerned about the risks of detection and punishment. While this project has provided some important insights into unlicensed driving behaviour, there is a need to further explore the research questions with a more general sample of unlicensed drivers. This would establish how representative the findings from these study are, and facilitate a deeper examination of certain issues.

Also highlighted are a number of issues requiring further attention that are beyond the scope of the current research program. Firstly, while the quasi-induced exposure method offers certain advantages and warrants replication in other jurisdictions, there is a need to develop better methods of estimating the exposure of unlicensed drivers. This is required to better

estimate the crash risk associated with unlicensed driving and to act as a benchmark for evaluating the effectiveness of future countermeasures. To this end, there is a need to evaluate the cost-effectiveness of different methodologies such as periodic roadside stopping surveys, the sampling of driver's licences at RBT and the surveillance of unlicensed drivers. Secondly, there is a need for further research into the issue of underage driving. Almost 10 percent (9.7%) of the unlicensed drivers involved in serious casualty crashes were under the age of 17. Research with this group will require the use of special age-appropriate methodologies, due to these drivers being technically minors.

7.6 Final comments

The UUV project highlighted a current lack of understanding in regard to the use of unregistered vehicles on public roads and related areas, and the links between the driving of unregistered vehicles and a range of dangerous driving behaviours. Further research is required to understand the causes of unregistered driving and the links between this practice and other illegal driving behaviours, including unlicensed driving.

Unlicensed drivers do not appear to represent a homogeneous group with important differences identified in the characteristics and behaviour of different types of offenders involved in crashes, suggesting that countermeasures in this area may need to be multi-strategy in nature. By treating all drivers who have lost their licence as a homogenous group, important differences between the various types of offenders may be overlooked. Understanding these differences is important if countermeasures are to reflect the different demographic and behavioural characteristics of different types of offenders.

The relative success of countermeasures to address unlicensed driving, ranging from licence restrictions to vehicle-based sanctions, can be determined by a variety of factors. These include sufficient awareness on the part of offenders of the penalties for unlicensed driving, perceptions in regard to the fairness of such penalties and the likelihood that offenders will be detected and any subsequent sanctions swiftly imposed (Job, et al., 1994; Ross, 1982).

A key reason for conducting further research into the problem of unlicensed driving is to develop more effective countermeasures for the behaviour. However, it could be countered that reducing the level of unlicensed driving may not automatically improve road safety. Many drivers who would otherwise drive unlicensed may still engage in higher levels of risk-taking, irrespective of their licence status (Watson, 2003, 2004a). The propensity of many drivers to continue to drink drive despite a loss of licence is but one example. Nonetheless, it is likely that more effective countermeasures for unlicensed driving would have a positive effect on road safety by:

- Encouraging drivers who have never been licensed to participate in the licensing system and thus be subject to processes such as graduated licensing and demerit point systems;
- Deterring people from driving vehicles for which they do not have an appropriate class of licence;
- Reducing the level of disqualified or suspended driving, thereby improving the deterrent impact of these sanctions; and
- Exposing persistent offenders to rehabilitation programs that may assist them to resolve the personal or social factors underpinning their behaviour (Watson, 2003, 2004a).

Accordingly, a robust theoretical explanation of unlicensed driving and the driving of unregistered vehicles will need to account for the behaviour among a wide range of offenders. In particular, it will need to account for a wide range of potential motives for the behaviours, some of which may be more deviant than others. Without a robust sampling strategy, these methods could inadvertently either under-estimate or over-estimate the extent of unlicensed driving and unregistered vehicle use in Queensland.

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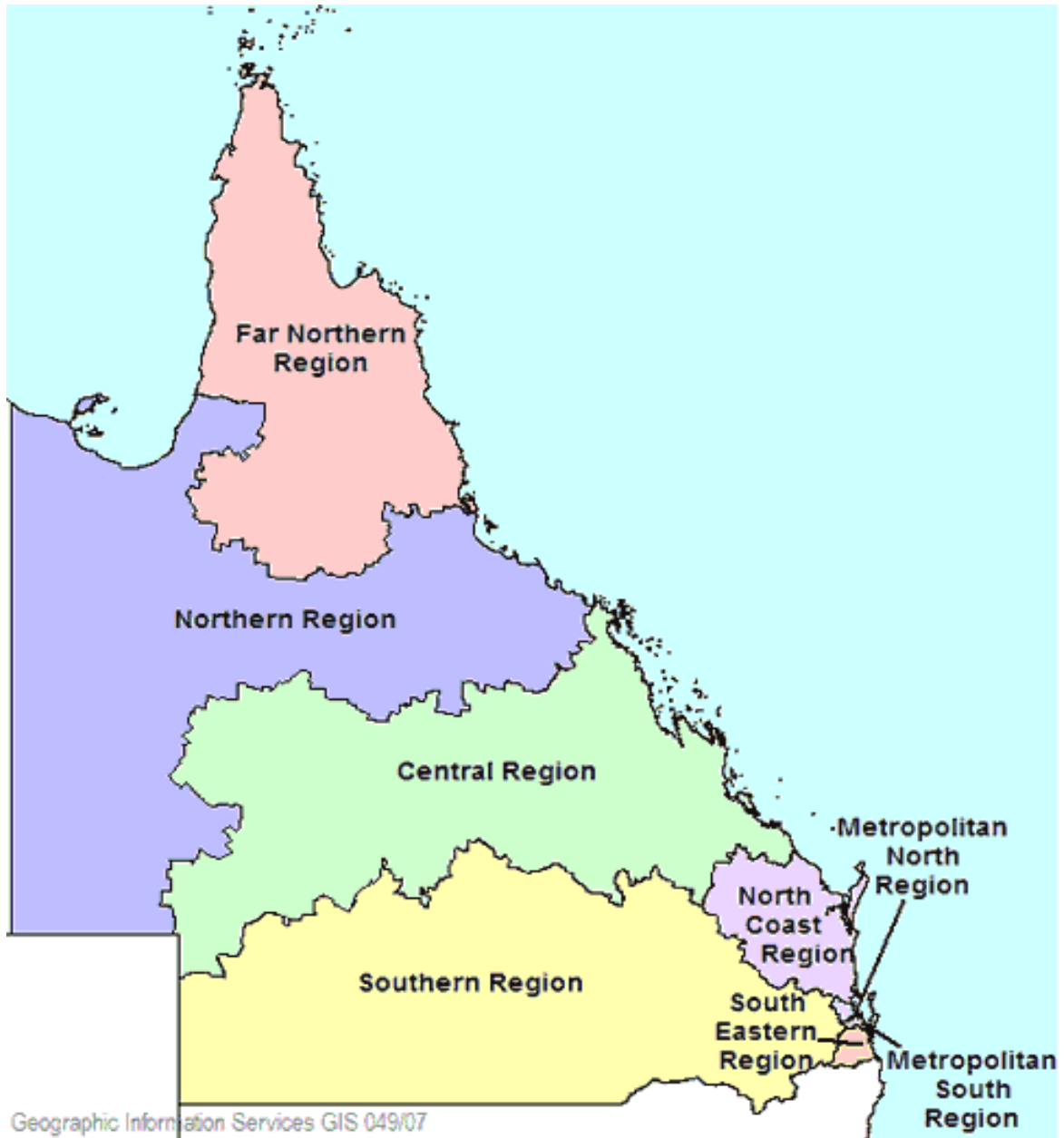
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APPENDIX A QUEENSLAND POLICE REGIONS



APPENDIX B DRIVER LICENCE INTERCEPTION SURVEY



Driver Licence Interception Covering Report

Shift Information	
Date:	
Start Time:	
Finish Time:	

Location Information	
Region (where licence survey is being conducted)	
Road:	
Suburb:	

Site Safety Officer Information	
Officer Name:	
Officer Station:	
Officer Rego #:	

RBT Information	
Total number of RBT's conducted in this location	

Data collection form

Vehicle Details	
<i>Rego #</i>	<i>Rego Valid</i> <input type="checkbox"/> Yes <input type="checkbox"/> No
Driver Details	
<i>Licence Produced</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No Interstate:
<i>Licence #</i>	<i>D.O.B.</i>
<i>Unlicensed/Unaccompanied</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Determined
<i>If unlicensed / unaccompanied give reason:</i>	<input type="checkbox"/> Court Disqualification <input type="checkbox"/> Expired
	<input type="checkbox"/> Points Suspension <input type="checkbox"/> Never held licence
	<input type="checkbox"/> SPER Suspension <input type="checkbox"/> Incorrect class of vehicle
	<input type="checkbox"/> Learner Unaccompanied <input type="checkbox"/> Unknown
<i>If unlicensed / unaccompanied, please fill in these fields</i>	Surname:
	Given Name:
	Driver Prosecuted <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	Roadside RBT <input type="checkbox"/> Neg <input type="checkbox"/> Pos <input type="checkbox"/> N/A
Comments: (optional)	