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DRIVER EDUCATION, TRAINING AND ROAD SAFETY

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STAYSAFE Committee
Inquiry into driver education, training and road safety

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Thank you for opportunity to make comments concerning the parliamentary inquiry to examine the role of whole-of-life driver education and training in supporting improved road safety outcomes.

The importance of the inquiry goes far beyond the publicised reason that the recent spike in road fatalities in New South Wales is a concern as the State has been a standout road safety performer for many years, as well as the statistics that indicate that certain age groups, and especially some experienced drivers, are over-represented in road trauma. There are fluctuations in road crashes, injuries and deaths on a year-to-year basis, and in may take several years for changes in the overall trends – which have been impressively downward for more than two decades – to be discerned. Changes to the downward trend provide the political opportunity to review and reflect upon policies and programs, and to formulate and necessary legislative changes based on emerging research evidence and, importantly, assessment of the impacts of developing technologies, social changes in the community, and economic developments.

It is appropriate that the inquiry's terms of reference are broad, aiming to examine driver education and training as it relates to all drivers throughout their driving lives. As the STAYSAFE Committee Chairman has remarked,

> "Driver education and training are often seen as only relevant to the young. We think it is time to examine the role of education and training for people of all ages, wherever they live, and however they use their vehicles."

This focus is appropriate, particularly in terms of changing vehicle technologies, as well as changes in road infrastructure and traffic management, as well as new ideas regarding education and training. Broad social and economic factors also play an important role, as population and workforce demographics impact on how the road transport system is accessed and used across New South Wales metropolitan, regional and rural landscapes.

Educational aspects of road use rely heavily upon school-based curricula, spanning pedestrian, bicyclist, passenger and, ultimately driver (vehicle controller) issues through the infants, primary and high school years. However, specific driver-focused education is integrated into driver licensing and while some driver issues are covered in the New South Wales school curricula (predominately in the PDHPE subject area), most driver education is undertaken out-of-school or post-school.

The broad areas of driver education are:

1. Novice drivers (including novice motorcycle rider training);

2. Fleet drivers (or work-related driver and rider training);

3. Traffic offenders (primarily through the Traffic Offender Intervention Program, the Increased Traffic Offender Penalties program, and the Sober Driver program);

4. Older drivers (aged driver assessments and testing); and

5. Driver rehabilitation (associated with fitness to drive assessments for persons who have a physical or cognitive disability).

These five areas of driver education are each closely tied with driver licensing.

In the mid-1990's I proposed that the way forward for driver licensing should be based upon an assessment of the effectiveness and efficiency of the operation of the licensing system throughout a driver's licence tenure. That is, for the lengthy period extending from the time when a driver is issued a provisional licence and on through the 'whole course of driving life' to the time when a driver ceases to drive permanently. I commented that at that time:

> "Such a focus has the unusual feature of including drivers who have, in essence, experienced over three quarters of the total time that the New South Wales driver licensing system has been in operation. That is, the focus on 'whole of driving life' includes older drivers now in their late 80's or 90's who obtained their driving licences in the 1930's. (One feature of such drivers, and of the operation of the New South Wales driver licensing system generally, is that apart from administrative requirements relating to driver licence fees and the regular reissue of licences, for such older drivers there have been virtually no licensing interventions affecting them until medical review from age 80 years and practical driving retesting requirements from age 85 years!)"

Twenty years later, this general observation still applies, and the majority of drivers in New South Wales have had scant interaction with the driver licensing system other than routine administrative requirements. Upon occasion, a driver may be caught for a traffic offence, but, again, such matters are typically dealt with administratively through a traffic infringement notice with payment of a penalty and assignment of demerit points against the driver licence record.

There are thus few opportunities for formal driver education. Instead, education is usually delivered through public service advertisements and the occasional inclusion of safety information with driver licence and vehicle registration renewals (but with a move towards e-transactions in licensing and registration, even this latter opportunity is reduced).

The development of a regulatory system for licensing drivers to drive motor vehicles on public roads in New South Wales arose almost 110 years ago. This reflected a general trend to develop an organised driver licensing system which is a feature of all motorised societies (see European Transport Safety Council, 1996; Mills, 1998). The trend over time has been for increasing sophistication within driver licensing systems, with increasing restrictions upon drivers in different licence classes regarding the type and degree of driving experience and regarding the type of vehicle that can be driven. Such developments and elaborations of the driver licensing system have been piecemeal, and developed and implemented in response to community pressures and demands for improvements in drivers' behaviour on public roads. It is now true to say that it would now be impossible for any motorised nation to remove or dismantle its driver licensing system, yet there is increasing recognition that modern approaches to driver licensing do not sit well within a regulatory and administrative framework that has its antecedents extending back to the turn of the twentieth century.

It is appropriate to consider the functions of a driver licence system in modern motorised societies. At the time of introduction of the most basic of driver licensing requirements in most motorised nations around the turn of the twentieth century, a driving licence served a very necessary and continuing purpose: as a means of personal identification (similarly, vehicle registration was also developed for the primary purpose of identification).

The development of a reliable means of identifying drivers meant that all drivers could be better monitored and their driving behaviour better managed. In particular, instances of bad driving behaviour—usually excessive or inappropriate speeding—could be addressed and the legal obligations of a driver to observe traffic law could be enforced. Driver licences offered a ready mechanism for penalising bad behaviour: offending drivers could now be removed and prohibited from driving through the mechanisms of licence suspension, disqualification, and cancellation.

Two important features of a driving licence soon developed. First, to obtain and continue to hold a driving licence signified that a person had agreed to act in a law abiding and safe manner by voluntarily participating in a regulatory system that restricted access to public roads. And second, to obtain and continue to hold a driving licence signified that a person had the requisite competencies to drive a motor vehicle. A driver licence thus came to be seen as a document of privilege, not a document of right. No longer did a driver of a motor vehicle have the same automatic rights of access to the road network as did other road users such as a

pedestrian, a bicyclist or a horse rider. Certainly, any person might aspire to obtain a driver licence as of right, but the granting of that licence and its continued tenure required that each driver observe defined administrative and legal obligations. Individuals intending to become drivers began to be subject to medical tests, tests of their driving ability, and tests of knowledge of road traffic law. Driving a motor vehicle on public roads became, and remains today, a privilege.
However, the privilege of driver licence tenure is embedded within a complex social structure, as exemplified in further features of the licence. In particular, the age restriction upon the ability to gain first access to a driver licence to the mid-to-late teenagers (in New South Wales, not less than 16 years for a learner licence, and not less than 17 years for a P1 provisional licence), and the process of transition and maturation from childhood into adulthood through those same teenage years, provided a nexus that inexorably led to the process of procedure of obtaining a driver licence becoming a significant part of the process of entry into the adult world, that is, of 'growing up'.

Another important feature was the recognition by licence administrators that the requisite competencies to drive a motor vehicle extended beyond basic car control skills and a cursory knowledge of road traffic law. Increasingly, driver licensing administrators are requiring more comprehensive, global examinations and assessments of:

- a driver's skill in manoeuvring a motor vehicle across a variety of road and traffic conditions;
- a driver's experience of manoeuvring a motor vehicle across a variety of road and traffic conditions;
- a driver's attitudes to safe road use;
- a driver's physical and psychological fitness to drive a motor vehicle;
- a driver's knowledge and understanding of the reasons for traffic law and safe road behaviour; and
- a driver's understanding of the competing demands of safety, access, mobility and amenity arising from road use

The various features that are now incorporated into the modern concept of a driver licence have emerged only slowly, and at different times in different jurisdictions. Reviews of driver licensing systems throughout the world reveal that this process is ongoing. Such reviews, however, also establish that the New South Wales driver licensing system is among the most advanced and well developed in the world. But it remains that there are many drivers on New South Wales roads who first obtained their driver licences under markedly different licensing regimes, either because the current features of the New South Wales driver licensing system were not in place when they first obtained their driver licence, or because they first obtained their driver licences in other Australian jurisdictions or overseas. The implications of some of these issues must be an essential part of any review of driver education in New South Wales. As well, despite the advanced nature of the New South Wales driver licensing system, there are opportunities for general development and reform in both driver education and driver licensing.

Overall, there is a lack of integrated road safety research into whole-of-life driver education and whole-of-life driver licensing. In Australasia, research tends to be focused on, and limited within, the individual areas of driver education outlined previously, namely:

- research into novice driver education, for example, the leading work being undertaken by:
    - Dr Bridie Scott-Parker at the University of the Sunshine Coast;
    - Associate Professor Teresa Senserrick at the University of New South Wales (particularly now that the George Institute for Global Health has moved, taking the DRIVE dataset relating to a cohort of New South Wales novice drivers);
    - Dr Jenny Oxley and colleagues at Monash University; and
    - Dr Rebecca Brookland and Dr Dorothy Begg at the University of Otago.

- Fleet driver education (or work-related driver training), for example, the influential work by
    - Professor Narelle Haworth and Dr Darren Wishart at Queensland University of Technology;

- Driver offender education (in New South Wales, primarily through the Traffic Offender Intervention Program, the Increased Traffic Offender Penalties program, and the Sober Driver program), for example,
    - my work at Queensland University of Technology (with a cohort of New South Wales traffic offenders),
    - Associate Professor James Freeman and colleagues at Queensland University of Technology; and
    - the work of Mr Gerard Waters in New Zealand;

- Older driver assessments, for example, the influential work of
    - Professor Kaarin Anstey and colleagues at the Australian National University;
    - Dr Kristy Coxon and colleagues with the George Institute for Global Health; and
    - Dr Jo Bennett at Macquarie University; and

- Driver rehabilitation education, associated with fitness to drive assessments for persons who have a physical or cognitive disability, for example,
    - Dr Matthew Baldock and colleagues at the University of Adelaide.

Research continues on such topic areas as graduated driver licensing and program development and evaluation within the other broad areas of driver education. Overseas, while much work is undertaken and published from the United States of America (and, to an extent, Canada), a range of multinational projects in the European Union have proven to be very relevant to Australian policy makers. A prominent example is the continuing influence of the late 1990s EU GADGET project

in novice driver education and the graduated driver licensing system in New South Wales. Other EU projects in driver education and driver licensing remain important (e.g., EU DAN, EU BASIC and EU SUPREME through the 2000-2010 period).

Since the development of road safety strategies in the late 1980s and early 1990s, road trauma has been reducing in Australia. Similarly, New South Wales has been reducing consistently since that time.

There have been periods where road toll reductions stalled (e.g., in the late 1990s, and currently). These instances provided an opportunity to review road safety policy making and introduce new legislation, novel policies and new programs. We are now again in a period where road toll reductions are stalled, and again the cry is out for review. These are now regular and expected "crises" as the downward trend in the rate of road deaths and injuries fluctuates from year to year, but it is clear that over the past two and one half decades the existing policies and programs have been very successful.

What is less clear, however, is the relative contribution made by individual elements that work to improve road safety and decrease road trauma risks. To date, there is no reliable method to isolate and determine these individual contributions.

The DRIVE Study undertaken by the George Institute of International Health was an interesting approach based on epidemiological principles and using a New South Wales novice driver dataset, but despite an impressive number of publications the work did not yield robust research findings that could have a strong influence on policy and program development. This is not because of any inadequacy in the research as performed, rather the weakness arises because the epidemiological approach is based on identifying associations within the data - an association isn't the same as causation. As well, if there is not a fundamental understanding of the policy underpinnings, then interpretations of the research findings can be misjudged and inadequate, particularly if such interpretations rely on research from jurisdictions that have markedly different driver licensing regimes. For example, extrapolations from graduated licensing systems used in North America have relatively little currency for Australian or European graduated licensing approaches.

An important, but poorly researched and poorly understood aspect of the safe operation of the road transport system in New South Wales is the effect of changes in technology. Technology change operates across the broad spectrum of Australian society and the Australian economy, and technology change affecting road safety does not just arise in road-related or vehicle-related sectors. For example, changes in communication technology have seen the emergence of better understandings about the role of distraction and inattention in road and driving behaviours, although

appropriate policy and legislative responses are unfortunately still lagging. There is a significant gulf between the response of drivers and other road users and the response of road safety and driver licensing agencies to changing communications technology, particularly post the introduction of smart phones from mid-2007 onward (iPhones, and later android smartphones).

The introduction of digital technologies associated with ticketing and with payment can have great effects on decisions by the public to use public or private transport (following the introduction of the Oyster Card in London in 2003, there has been a 53% per cent increase in usage of London's public transport – could a similar result may be achieved with the Opal Card in New South Wales?)

Changes in digital technologies are also provoking significant disruption in the way the road transport system operates, from:

- new forms of public (private) transport such as Uber; to
- shared private transport such as GoGet and Link & Co;
- the development of real-time data gathering and information sharing, enabling better integration affecting demand management, travel choices and travel behaviours; and,
- the development of new insurance products such as Pay-As-You-Drive products (PAYD, e.g., Youi products) and Pay-How-You-Drive products (PHYD, where the premium adjusts on the basis of your personal driving habits regarding speeding, braking, accelerations, etc.).

New apps or other software products are emerging across a variety of contexts that affect who, when, where, how, with whom, and with what people access the road transport system, including:

- the current development of a elogbook for learner driving in New South Wales (in pilot testing currently); and
- the development of online education interventions for traffic offenders (in pilot testing in both Queensland and New South Wales currently).

The introduction of alternative vehicles (of which the mobility scooter, derived from assistive technology development, is but one example), together with electric bicycles, is impacting of peoples' decisions to obtain a driver licence and purchase a vehicle.

Another digital technology that is proving disruptive is video technologies, with the rise of vehicle and personal video products (e.g., DashCam, GoPro), as well as the wider deployment of traffic video cameras. The potential uses of video continue to be explored, particularly in documenting crash occurrences and other instances of unsafe and risky driving.

Exploratory research and commercial innovation often occur side-by-side as new technologies emerge, and road safety and driver licensing policy development and legislative response are often delayed significantly or if implemented quickly run a

risk of being a knee-jerk reaction and may miss the mark. The development of autonomous and semi-autonomous vehicles (driverless cars, trucks and buses) is but one field where these issues are being recognised and explored.

This range of technology change is already having an impact on driver licensing (and hence on driver education), with marked delays being seen in the decisions by young people to obtain a driver licence, to progress through the graduated driver licensing system in New South Wales, and to become vehicle owners. Some pundits decry these changes and advocate policy change to challenge (and potentially reverse) these trends.

The driver training industry in New South Wales appears to be operating well, although it is fragmented and remains overly focused on traditional training for novice drivers despite the advance of technology change. The other broad areas of driver education (fleet drivers or work-related driver training, the management of traffic offenders, older drivers, and driver rehabilitation) appear to be caught betwixt-and-between. For example, is work-related driver training an area for driving instructors or for workplace safety practitioners?

Driver licensing and driver trainers (driving instructors) were the subject of one of the first successful ICAC investigations to expose systemic corrupt practices. ICAC has retained both an investigative interest and corruption prevention activities associated with organisations and government agencies involved in education qualifications and the accreditation of persons who work in the licensing of activities.

Since the early 1990s there have been no systemic issues investigated by ICAC in the driver training industry or in driver licensing administration. While there does not appear to have been overt corrupt activity within driver licensing and the driver training industry over the past couple of decades, but the activities of some driving instructors have come under occasional scrutiny, as has the activities of one industry organisation – the Australian Driver Trainers Association (NSW).

Competency standards exist as tools for training and assessment in the workplace. In Australia, it is common and accepted practice for industries to have standardised the way they define jobs by adopting competency standards – otherwise known as skill sets. TAFE and other vocational trainers in industry workplaces use these standards to develop and deliver training programs to promote the acquisition of knowledge and performance to demonstrate capabilities regarding these skill sets, and judge people's performance and competence by assessing them against the skills sets. The Australian Qualifications Framework (AQF) provides a comprehensive, nationally consistent yet flexible Framework for

all qualifications in post-compulsory education and training. The Framework was introduced Australia-wide on 1 January 1995, and implemented fully by 2000. There have been regular review processes to update and further develop relevant skills sets.

There are some who argue that driving cannot be adequately defined in terms of competency standards, but such a position cannot be justified.

There is a need to better integrate driver licensing specificities and road safety messaging into the competencies laid out in the Australian Qualifications Framework.

An important element of such an action is to ensure that the skills sets contributing to the competencies are transparent and accessible to the public, so that parents, those who are acting as supervising drivers, driving instructors, and others involved in driver education activities can see just what are the behaviours and knowledge required across the five broad areas of driver education outlined earlier (novice drivers, fleet drivers or drivers at work, traffic offender interventions, older drivers, and those involved in driver rehabilitation).

Currently, such a resource encompassing these skill sets in driver education is not available.

From time to time interstate cross-border issues (concerning whole-of-life driver education and training) do arise, typically relating to differences in graduated driver licensing systems across the Australian States and territories. Such issues, while perhaps of some local significance in border communities, are not issues for which an overall review of driver education and driver licensing should be focused.

Developing a national approach to driver education has merit, but only in the context and recognition of Australia's federal political structures. Indeed, there is a strong argument to be made that the general harmony of approaches to driver education across Australian jurisdictions is advantaged by each individual State or Territory being able to introduce a new approach or policy with requiring a unanimity of agreement. If such an initiative is proven useful, then the other jurisdictions can adopt it as they wish. This has been the historical path of all Australian road safety initiatives (e.g., mandatory seat belts, random breath testing, etc.), and the system is well proven. Of course, the Commonwealth Government, as the national program funder via the national taxation system, has a flexibility to foster the general adoption of programs of safety value (e.g., through the 10-Point Road Safety Plan in the 1990s).

One issue of significant concern is the rollback on some driver education and training requirements in New South Wales. Curiously, there has been little if any criticism of the actions taken even though there may well have a deleterious effect on road safety into the future. In fact, road safety pundits appear to have overlooked these fundamental changes that are coming to the current New South Wales graduated driver licensing system on 1 November 2017.

In New South Wales, novice drivers moving to a through the P1-P2-Full driver licensing sequence will no longer have to undertake any tests for the P1-P2 driver licence transition and the P2-Full driver licence transition.

The Hazard Perception Test will now form part of the L-P1 driver licence transition. Novice drivers seeking to graduate from their Learner driver licence will now have to pass the on-road driving test and Hazard Perception Test (a computer-based test).

As a result, the P1-P2 driver licence transition will now be an administrative matter, occurring 12-18 months after the licence is issued.

The Driver Qualification Test (DQT) for the P2-Full driver licence transition is being abandoned. As a result, the P2-Full driver licence transition will be an administrative matter, occurring 24-30 months after the licence is issued.

Transport for NSW has acknowledged that the removal of testing as part of the P1-P2 and P2-Full driver licence transitions is simply about "cutting costs" (it was also argued that the changes were also about "reducing red tape for young drivers", but these young drivers still have to attend a Service NSW centre and pay the P1 and P2 driver licence fees, so the red tape remains). But altering a well-functioning purely on the basis of saving money can have bad consequences.

I argue that the net effect of these changes – unremarked by any other road safety pundit – is to negate one of the fundamental features of the whole-of-driving-life concept endorsed by the STAYSAFE Committee twenty years ago. This fundamental feature is encapsulated by the phrase "keep them learning longer", and states that novice drivers should be:

- given incentives to remain within the protective phases of a graduated driver licensing system – first, as learners, and then as P1 and P2 provisional drivers; and
- there should be no incentives to accelerate progress through a graduated driver licensing system;

Given the structure of the graduated driver licensing system, which extends over 4-10 years for novice drivers currently, it will take several years to see any negative outcomes that may follow from the changes. For the policy makers who took the decisions, the consequences are much removed in time and will likely not be acknowledged.

The rhetoric surrounding driver safety is often coloured by feelings, suspicions, prejudices and anecdotal evidence rather than the facts and statistics. This is particularly so for discussions about appropriate driver licensing policies for novice drivers and for aged drivers. More generally, a denial of the facts and statistics can be seen across the road safety debates, for example, in a refusal to countenance the factual reality that inadequate and inappropriate decisions about drivers' control of vehicle speeds underpin the rates of crashes and near misses that are an unfortunate and continuing feature of the road transport system. Indeed, when a discussion about 'speed' commences, rather than being a discussion about the ways to undertake the management of the kinetic energies of vehicles within the road transport system, the debate is shifted to an argument about speed limits and the need for better driver training (which apparently entitles a 'trained' person to select what speed they wish rather than to comply with the road rules). The recent Northern Territory experience with the provision of an 'open speed limit' on a section of the Stuart Highway north of Alice Springs demonstrated that drivers do recognise the need for effective control – few drivers elected to drive at speeds much faster than when the 130 km/h speed limit was in place (a speed limit since restored, without any serious criticism). In fact, in recognition of the inherent 'unsafety' of an open speed limit, when demonstration activities were undertake to achieve exceptionally high vehicle speeds – typically, in excess of 250 km/h – motor racing drivers were used, the highway was closed to other vehicles, and a watch was kept to avoid animals and livestock in the road reserve. This was said to be required because of workplace safety concerns!

As much as road safety policy is a political debate – and I argue that is fundamentally is a politic debate – the temptation is to mindlessly go with how people feel rather than to accept the evidence base and policy advocacy of theoreticians. This is particularly so in the area of driver education, and I urge caution regarding the eventual implications of any recommendations that may emerge from such a misguide approach.

I recommend that the STAYSFAE Committee pay close attention to the multinational projects in the European Union, which, as I stated earlier, are very relevant to Australian policy makers. A prominent example is the continuing influence of the late 1990s EU GADGET project in novice driver education and the graduated driver licensing system in New South Wales. Other EU projects in driver education and driver licensing are also important abd very relevant (e.g., EU DAN, EU BASIC and EU SUPREME through the 2000-2010 period).

A further project is EU PRAISE, and I enclose, as an attachment, a paper I wrote in 2012 for a national conference on fleet safety that discussed this project and outlined some of the concepts antecedent to the conduct of the work for this project.

Attachment A:

Faulks, I.J. (2012). Safe System and fleet safety - "safer vehicles, yes, but we need safer people and safer speeds on safer roads too": Examples in fleet safety management. In: Proceedings of the Innovation Group annual Fleet Risk Seminar, Homebush, 25 May 2012.

Safe System and fleet safety - "safer vehicles, yes, but we need safer people and safer speeds on safer roads too": Examples in fleet safety management

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Safe System and fleet safety - "safer vehicles, yes, but we need safer people and safer speeds on safer roads too": Examples in fleet safety management.

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Abstract

This report is the text of a paper presented to the Innovation Group Fleet Safety Seminar, held at Homebush, Sydney, on Friday 25 May 2012. The relationship between the Safe System approach and work health and safety is examined, and examples of good practices in fleet management are discussed. These include the "Mining road safety" and "Driving to conditions" projects developed by Bathurst/Blayney council and Lismore council, respectively, as well as initiatives such as BHP Billiton's recent decision to purchase only 5-star vehicles for their fleet. Enforcement approaches relevant to fleet management are identified. Safer technology examples are also identified and discussed.

Keywords

Safe System, Haddon Matrix, 3D Haddon Matrix, Work-related driving, Business, Commuting, OHS, Work health and safety, Policy, EVR, Event data recorders, Police enforcement, Heavy vehicles, ANCAP, EU PRAISE project, camera enforcement, Pay As You Drive insurance, Mining safety, Route reviews, Driver licensing, Whole-of-driving-life, Fleet management, Local councils, Road Safety Officers

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Safe System and fleet safety - "safer vehicles, yes, but we need safer people and safer speeds on safer roads too": Examples in fleet safety management.

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Paper presented at the Innovation Group annual Fleet Risk Seminar, Homebush, 25 May 2012.

Introduction

The ongoing management of drivers after they have first entered into the driver licensing system (i.e., after going through the L and P1 / P2 phases) is an often overlooked aspect of driving experience in favour of novice driver and senior driver issues. But there are important issues to be examined in the context of work and fleet operations. The efficiency of defensive and advanced driving training courses and the effectiveness of fleet driver assessments and training courses and programs are often raised as issues in the ongoing management of licensed drivers. Less discussed areas include the operation of the driver licensing system as it affects those drivers who choose to discontinue their drivers licence voluntarily or who are banned because of administrative or judicial action from holding a drivers licence for a period of time and who then seek to regain their driving licence, and the implications of unlicensed drivers at work.

So what do we know about drivers who are working while they are driving—either as fleet drivers, as drivers who are required in the performance of work to journey from place to place, or as commuters travelling to and from their home and workplace? When I first asked this question, some 15 years ago now, it was very evident that there was an information gap. Certainly, there was a great deal of advertising of successful strategies and successful programs by providers working in the area of fleet operations. There was a great deal of anecdote amongst insurers, amongst driver trainers, and amongst licensing and road safety workers. Despite this literature in the trade press, there was almost nothing that was published in academic journals and very little information in the public domain as a whole. What information was there was scattered difficult to find, and it tended to view relevant issues in work-related driving from a single perspective, perhaps from the point of a driver trainer or from the point of an insurer or a government policy-maker. In short, in the mid-1990s there was comparatively little information available concerning drivers who are required in the performance of work to journey from place to place, or as commuters travelling to and from their home and workplace.

So, I set out to address that. In 1996, I organised the first ever conference on work-related driving to look at fleet management and post-licensing management and regulation.

At that time, I commented that it is useful to view a person's lifetime interaction with driving motor vehicles as extending from a pre-driving and pre-licensing stage, through to the period of licence acquisition and shortly afterwards, and then on to the lengthy period of licence tenure which ends when a person no longer drives a motor vehicle. The pre-driving and pre-licensing stage is essentially a stage lasting through the childhood years, and is characterised by interventions such as the road safety curriculum for schools from years K-12 and such specific programs as the NSW Police Force's CARES program. In the main, the focus is on road safety as a pedestrian, a cyclist or as a passenger. It is only towards the end of this stage that the pre-licensing programs are introduced. Throughout this stage, children are exposed to innumerable instances of good and poor driving behaviour which can be remembered and later may be modelled in their own driving. The stage of licence acquisition and the several years afterwards is characterised by interventions such as the mandatory requirements for a learner driver, the passing of a test of road traffic law and road safety knowledge, a test of practical driving ability, and a period of provisional licensing, as well as community programs run through service clubs such as Rotary and Lions. It is during this stage that the predominant interventions under driver licensing systems occur. It is also during this stage that the risk to a driver of injury or death is at its highest, following the transition from accompanied driving as a learner driver into solo driving as a provisional driver.

The final stage, the typically very lengthy period of licence tenure which ends when a person no longer drives a motor vehicle, is characterised by the progressive reduction in risk of injury during driving, which only reverses in the later part of a person's driving life and which is associated with old age. There are comparatively few interventions during this stage. For most, the major interaction with the licensing system occurs during licence renewal. For some, the driving behaviour is so poor that police and ultimately court action is taken. And, for an unfortunate few, there are questions arising from fitness to drive.

What interventions are available during this stage of adult licence tenure? There are defensive and advanced driving training courses, and there are fleet driver assessment and training courses and programs, but questions remain as to the efficacy of these approaches. This seems to result from the tremendous diversity of programs that are offered commercially, many of which contain legacy approaches involving off-road driving, often in inappropriate environments such as motor racing circuits which evoke images of speed and "advanced" driving performance.

The recognition that there are important possibilities offered by new technologies applicable to driver licensing has also focused attention towards developments in managing fleet systems and managing the driver records of employees. If fleet managers make use of developments in motor vehicle technologies and design then they can have a profound effect on the likelihood of crashes and the injury outcomes from crashes. For example, simply selecting safer vehicles ("5-star cars" as rated by the Australasian New Car Assessment Program, ANCAP), and purchasing specifications for improved engine monitoring systems, electronic stability control, the provision of anti-skid braking systems (ABS), and the use of speed limiters and cruise

controls are associated with reduced crash risk, while air bags, side impact protection, and improved passenger compartment padding are associated with reduced injury risk in crashes.

Another set of issues relate to those drivers who are, because of their poor behaviour, forced from the driver licensing system by the court or administrative sanctions. How should these drivers be re-introduced into the licensing system? What barriers exist to discourage re-entry into the licensing system?

Finally, there are issues associated with the rehabilitation and effective return to work of those persons who through injury or disease may require assistance in regaining their driving skills.

The Safe System and fleet safety - "safer vehicles, yes, but we need safer people and safer speeds on safer roads too"

Road safety is one of the most important issues facing the New South Wales community. As fundamental principles, road crashes can be avoided (and in many situations eliminated or avoided completely), and when road crashes do occur the risk of injury can be minimised. If we can find new ways to reduce the likelihood of the occurrence of road crashes and to reduce the risk of injury, not only will this be a great personal gain to the families and communities of New South Wales, it will benefit the New South Wales community as a whole by limiting productivity loss, providing the conditions for improved profitability, making savings in the costs of the provision of services, and promoting a safe and healthy workforce.

When considering the operation of the road transport system it is important to include an assessment of the interdependence and the interrelationships of the roles of the driver, other road users, vehicle travel speeds, the vehicle, and the road environment (see Figure 1).

The Safe System approach requires that all aspects of the transport system (i.e., roads, vehicle speeds, vehicles, and the users of the system, as well as the wider framework including health, justice, policing and licensing agencies) work together for the safest possible outcomes

The Safe System approach, to be successful, relies on the designers and operators of the road transport system to manage successfully kinetic energy within the system as well as the cognitive and perceptual capacities of road users. The Safe System approach also requires system users to be unimpaired and to be able to respond appropriately to road situations and comply with key road rules. The principal task of the Safe System therefore is to manage vehicles, road infrastructure, and speeds within the capabilities of road users who act reasonably and without impairment, and to facilitate the safest interactions between these components. This will then ensure that when crashes do occur – and it is assumed that people will make mistakes and that the occurrence of risky situations will thus be a feature of the normal operation of the road transport system – then any crash energies will remain at levels that minimise the probability of death and serious injury. This is summarised by the motto: "5-Star Roads, 5-Star Vehicles & 5-Star People", where the vision statement posits that the designers and operators of the road transport system desire to provide '5-star' roads, vehicle manufacturers desire to provide '5-star' vehicles, and these will be used by '5-star' people who are alert, attentive and who undertake comply with road safety rules.

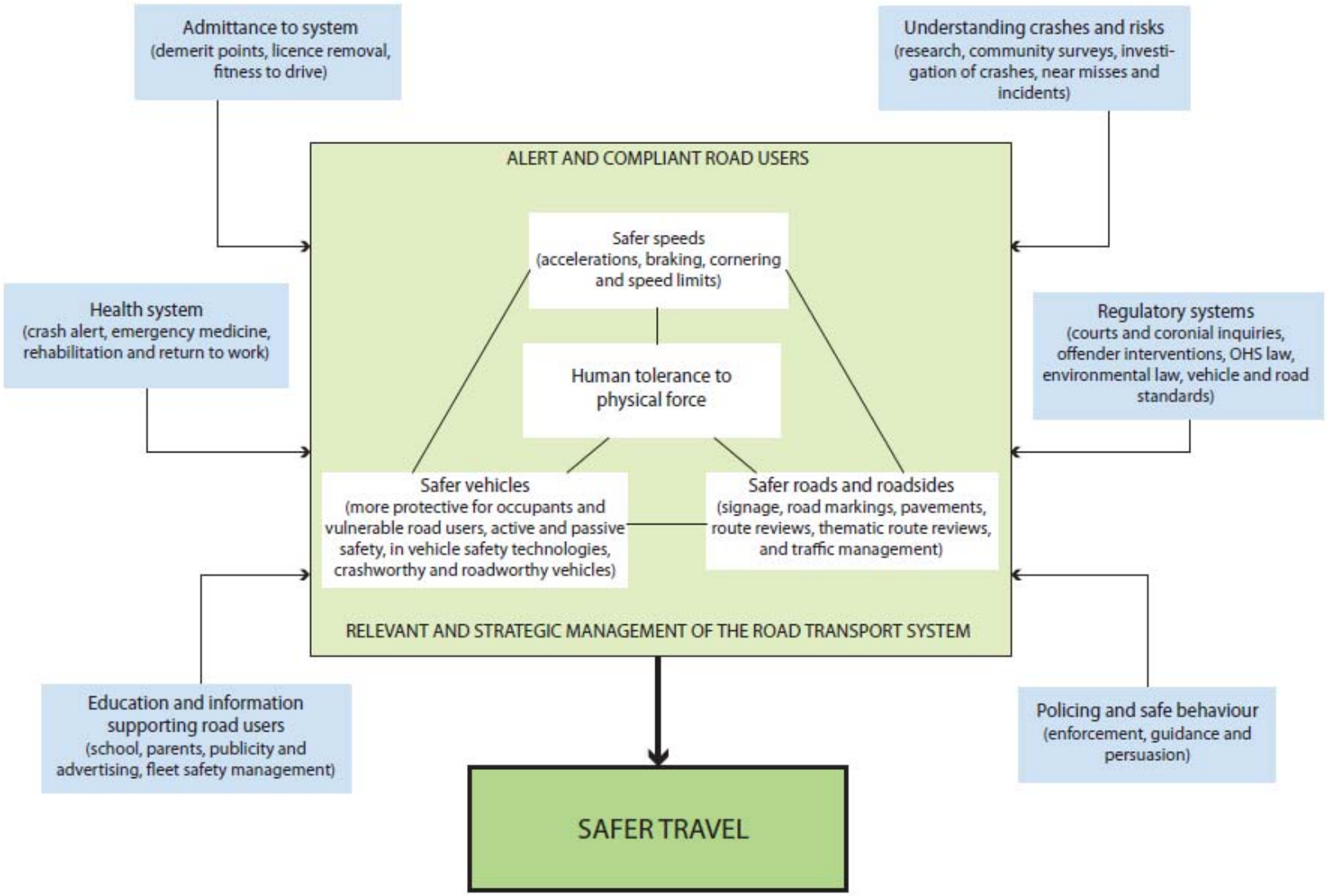


Figure 1: The Safe System (adapted by I.J. Faulks)

In the model shown, the human body is situated in the centre of the conceptual model and is surrounded by protective layers to counter the threat of uncontrolled and injurious discharge of kinetic energy in the traffic system (i.e., crashes and impacts).

In the first layer, (1) Safer Vehicles, (2) Safer Roads and Roadsides, and (3) Safer Speeds are highlighted. These are core elements to be considered in developing an integrated and comprehensive program to improve safety and reduce trauma within the road transport system.

The next layer identifies (1) Relevant (responsive, timely, appropriate) and Strategic Management of the Road Transport System and (2) Alert, Attentive and Compliant Road Users as two crucial requirements – confirming that there are responsibilities for safer travel that are imposed upon the road managers as well as the road users.

A third layer identifies elements such as Admittance to the system, Understanding crashes and risks, Regulatory systems, Policing and safe behaviour, Education and information supporting road users, and the Health system as relevant to the operation of a "Safe System" of travel within the road transport system.

The 3D Haddon Matrix

So where does fleet management fit within the Safe System model? For a fleet manager, all aspects of the transport system (i.e., roads, vehicle speeds, vehicles, and the users of the system, as well as the wider framework including health, justice, policing and licensing agencies) must work together for the safest possible outcomes.

Another useful concept is the 3D Haddon Matrix, which I developed in the late 1990s to allow a focus on work-related road use (see Figure 2). The essence of the 3D model is to take the well-known Haddon Matrix which organises pre-, within-, and post-crash interventions by their human, vehicle, road environment, or wider social environment contexts – and incorporate an additional, third dimension that relates to motivation or the "purpose of travel". The three primary purposes (or reasons) for travel are work-related, recreational, or home-related. Recreational travel includes road use for holidays, tourism, or social and entertainment activities. Home-related road use includes shopping, the "school run", health appointments, etc. (i.e., more mundane activities).

In the 3D Haddon Matrix, work-related road use is a category that recognises that a major reason why people are on the road is because they are engaged in some business or work-related activity. They might be commuting to work or commuting back home from work. They might be travelling from the main place of business to see clients, obtain supplies, or are otherwise engaged in work when they are using the road.

Work-related road use includes such obvious users as truck drivers, courier and parcel delivery drivers, armoured car crews, police officers, parking patrol officers and council rangers, tradesmen travelling to and from work sites, retail and wholesale transport staff, business executives travelling to meetings – the list is extensive and we would probably need the agency

involved in work health and safety regulation and promotion (WorkCover) to provide a definitive listing.

We modify our roads to deal with work-related road use: we have special roadways for commuters (bus-only lanes for commuters, transit lanes for drivers and two or three passengers), and special roadway rules for commuting and common working hours (clearways, parking restrictions for certain times of the day, S-lanes, etc.).

Some vehicles are exclusively used for work – trucks, many light trucks and vans – and most light vehicles are used for work-related purposes at least some of the time (primarily for commuting).

A very important element that falls out of this kind of conceptualisation is a recognition that pedestrian movements can often be work-related or business-related activities. Typically, that is not recognised within a fleet management context. It was recognised, I must add, within the United Kingdom's Interagency Work-related Road Safety Task Force, which investigated these issues at the turn of the century.

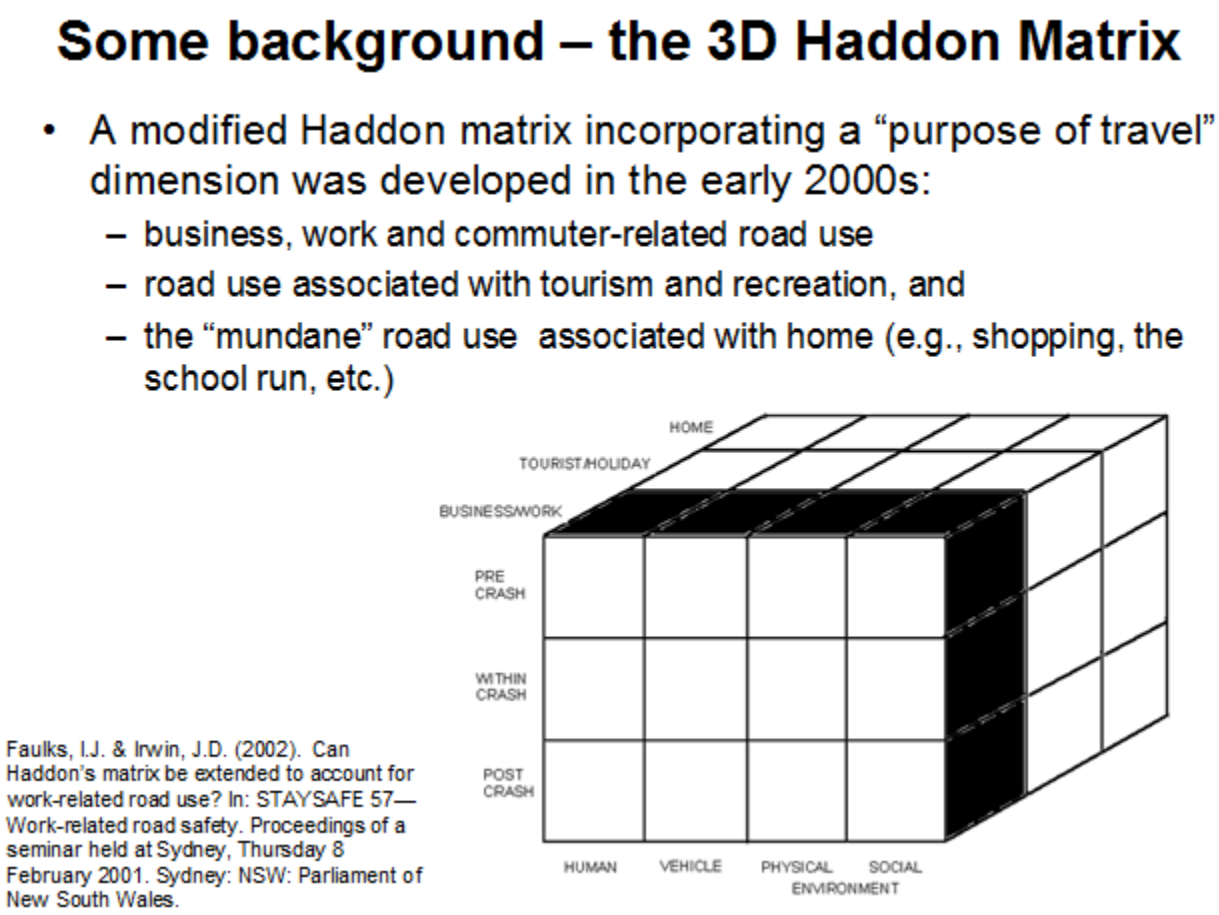


Figure 2: The 3D Haddon Matrix (from Faulks & Irwin, 2002)

	Management Culture	Journey	Road / Site Environment	People - Drivers & Managers	Vehicle	External / Societal / Community / Brand
Pre-Collision or Pre-Drive	Business case Legal compliance Safety audit, claims analysis & focus group discussions Benchmarking Board level champion Pilot studies & trials Goals, policies & procedures Safety culture / climate Management structure Fleet safety committee Safety leadership by example and commitment Communications programme Contractor standards Grey fleet (own vehicle) policy	Travel survey Travel policy Purpose Need to travel Modal choice Journey planning and route selection Route risk assessment Journey scheduling Emergency plan Shifts / working time Fatigue management	Risk assess Observation Guidelines & rules Site layouts & signs Work permits Delivery & collection procedures Road improvement Black-spot mapping and hazard assessments Engage local and national agencies	Select Recruit Contract Induct Licensed & qualified Handbook Risk assess Train Work instructions Engage & encourage Equip e.g. high viz Communicate Driving pledge/ Code of Conduct/ Risk Foundation Health & wellbeing Monitor Correct	Risk assessment Selection Specification Active and passive safety features Standards Servicing Maintenance Checking Use policy and legal compliance e.g. loading Mobile communication and navigation policy Telematics to monitor Wear and tear policy Grey fleet standards	Regulator / policy engagement Insurer engagement CSR External benchmarking External communications Family members programme Community involvement Engaging other road users Road safety weeks / days Safety / ECO groups European Road Safety Charter Road safety conference presentations Media / outreach / PR Safety & environmental achievement awards

	Management Culture	Journey	Road / Site Environment	People - Drivers & Managers	Vehicle	External / Societal / Community / Brand
At Scene	Emergency support to driver	Engage local investigators	Manage scene	Known process and 'crash pack / bumpcard' to manage scene	Reactive safety features Crashworthy Telemetry data capture	Escalation process
Post-Collision	Policy and process to report, record & investigate incidents Change management process Ongoing claims data analysis Data warehousing & linkages Evaluation, KPI benchmarking & programme development	Debrief and review Review journey elements of collision data Ongoing journey management review	Investigate and improve Review site / road elements of collision data	Reporting and investigation process Driver debrief and corrective action Review people elements of collision data Counselling, trauma management & support Reassess / train	Strong open able doors Investigate telemetry data Vehicle inspection & repair Review vehicle elements of collision data Review vehicle selection & use	Manage reputation and community learning process

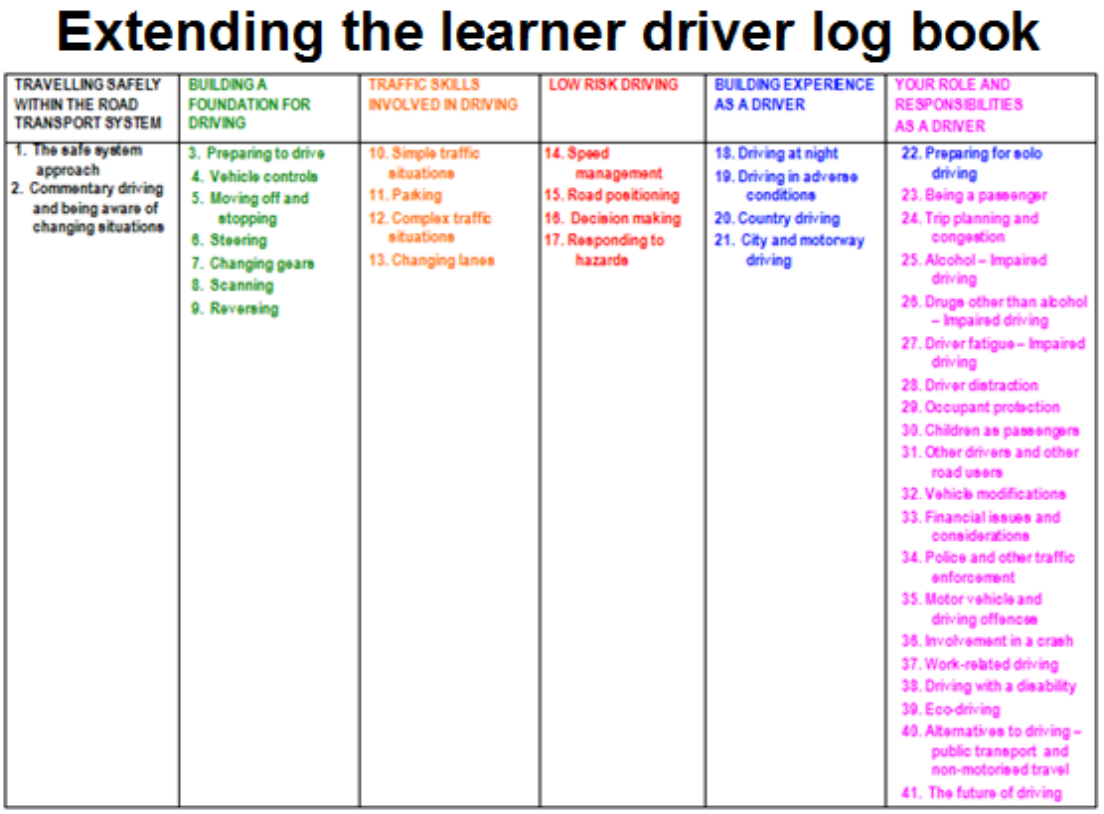
Figure 3: The PRAISE model – Preventing Road Accidents and Injuries for the Safety of Employees

PRAISE: Preventing Road Accidents and Injuries for the Safety of Employees

The 3D Haddon Matrix, with its explicit focus on "purpose of travel", is a very useful framework for looking at work-related road use. It was further developed by other Australian researchers into a model which can used to explicitly address organisational and social factors in "driving for work" – this model is used in Australia, the US and in Europe, as the PRAISE project: Preventing Road Accidents and Injuries for the Safety of Employees (see Figure 3). This is a project co-funded by the European Commission and implemented by the European Transport Safety Council (ETSC). The project aims to advance work-related road safety management and to provide both a structure and a process for employers to better manage the challenge of safer road use for their employees (both staff and contractors).

Extending the learner driver log book

The 3D Haddon Matrix is also used in projects adapting the NSW learner driver log book for driver training and education, under the TLI10 - Transport and Logistics Training Package (see Figure 4). The learner driver log book in New South Wales has not been subject to major revision since it was first published a decade or so ago.



Extending the learner driver log book

TRAVELLING SAFELY WITHIN THE ROAD TRANSPORT SYSTEM	BUILDING A FOUNDATION FOR DRIVING	TRAFFIC SKILLS INVOLVED IN DRIVING	LOW RISK DRIVING	BUILDING EXPERIENCE AS A DRIVER	YOUR ROLE AND RESPONSIBILITIES AS A DRIVER
1. The safe system approach 2. Commentary driving and being aware of changing situations	3. Preparing to drive 4. Vehicle controls 5. Moving off and stopping 6. Steering 7. Changing gears 8. Scanning 9. Reversing	10. Simple traffic situations 11. Parking 12. Complex traffic situations 13. Changing lanes	14. Speed management 15. Road positioning 16. Decision making 17. Responding to hazards	18. Driving at night 19. Driving in adverse conditions 20. Country driving 21. City and motorway driving	22. Preparing for solo driving 23. Being a passenger 24. Trip planning and congestion 25. Alcohol – Impaired driving 26. Drugs other than alcohol – Impaired driving 27. Driver fatigue – Impaired driving 28. Driver distraction 29. Occupant protection 30. Children as passengers 31. Other drivers and other road users 32. Vehicle modifications 33. Financial issues and considerations 34. Police and other traffic enforcement 35. Motor vehicle and driving offences 36. Involvement in a crash 37. Work-related driving 38. Driving with a disability 39. Eco-driving 40. Alternatives to driving – public transport and non-motorised travel 41. The future of driving

Faulks, I.J., Tynan, D. & Letinuca, M. (2011). Education and intervention programs for young drivers in a metropolitan Sydney community. Paper presented at the Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.

Figure 4: Learning goals and topic areas for an extended learner driver log book (from Faulks, Tynan & Letinuca, 2011)

This recent revision of the log book and its learning goals and topics . . . introducing additional (first and sixth) learning goal – "Travelling safely within the road transport system", and "Understanding your role and responsibilities as a driver within the road transport system", with twenty one (21) new topics (shown as topics 1-2, and 22-41). There is an introduction to Safe System (Topic 1), and a new topic (2) under the learning goal of "Travelling safely within the road transport system", which is commentary driving and situational awareness (knowing what is going on and changing in the road ahead and around you). The topics under the learning goal "Understanding your role and responsibilities as a driver within the road transport system" are taken from studies of traffic offender programs, and reflect on what the offenders themselves say they wished they had known, or were able to learn, at the time of commencing driving. Altogether, this revision doubles the number of topics that a learner driver (and their supervisor and professional driving instructor) need to address. Some current projects are using this extended learner driver log book:

- as the basis for a smart phone app for use by parents and learner drivers as an electronic log book and driving practice guide;
- to support learner driver mentoring to facilitate accompanied driving practice as well as support parents through graduated driver workshops, log book runs, etc.;
- to support programs to improving the safety of young drivers at work, for example, through courses such as TLIC1051A 'Operate commercial vehicle' (previously TLI107 'Drive vehicle'); and
- as the basis for authorised courses under the Traffic Offender Intervention Program for people before the Courts for serious and/or multiple driving offences.

A simple truth

A simple truth is so many fatalities, injuries and crashes, as well as near miss incidents, are avoidable. Many are the result of speeding, drink-driving, fatigue, distraction, and no seat belts, but we are now recognising that many crashes are as a result of drivers performing illegal manoeuvres: for example, illegal manoeuvres from failing to signal, crossing double lines, running red lights, and taking forbidden U-turns contributed to one quarter of all fatal crashes in Queensland in 2011. This was the single biggest contributor to road fatalities in Queensland in 2011.

We need enhancements to current data collection, particularly information on crashes, near misses and incidents.

While police continue to blitz speeding and drink-driving, and continue to discourage tired drivers while also keeping an eye out for anyone failing to wear a seat belt, they also must try to convince motorists to obey even the most fundamental of road rules.

Law-abiding drivers, extreme drivers, everyday drivers

Who does these inappropriate and illegal behaviours? One way of thinking about traffic offences is that drivers belong to one of three groups (see Figure 5):

- law-abiding drivers who do not commit offences
- extreme drivers who are contemptuous of their role in the road transport system and who undertake criminal behaviour (again, a small but identifiable group, e.g., BAC

>0.10, speeding >20 km/h over the limit, not wearing seat belts, continual illegal manoeuvres, etc.)
- those everyday drivers who haven't "figured it out yet" and remain to be convinced that their behaviour is unsafe.

Who does it . . . law-abiding drivers, extreme drivers, everyday drivers

- A way of thinking about traffic offences is that drivers belong to one of three groups:
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  - those everyday drivers who haven't "figured it out yet" and remain to be convinced that their behaviour is unsafe.

Faulks, I.J. & Lane, M. (2012). The Australian experience with road safety policy and traffic enforcement: Actions speak louder than words. Keynote presentation to the National Conference on Traffic Laws and Rules: Opportunities and Challenges Ahead, Teheran, Iran, 22 April 2012.

Figure 5: Law-abiding drivers, extreme drivers, and everyday drivers (adapted from Faulks & Lane, 2012).

Some inappropriate and illegal behaviour might not be intentional.

Think, for example, about safe speeds

We present drivers with several "speed" concepts:
- Speed limits – generally, but also by location, by vehicle type, by licence class, unexpectedly (work zones)
- Advisory speeds at curves
- The notion of "maintaining traffic speed" (or travel speed, relative to other road users)
- The notion of "drive to the conditions"

Driver must consider these different aspects of "safe speeds", and respond appropriately. But it is a difficult challenge.

Another challenges about speeding is that it is a transitory behaviour, that is, you can be speeding one minute, and compliant with the speed limit the next.

The bottom line is that relatively small changes in travel speed (<5%) result in relatively large changes in road casualty outcomes.

Let's look at an example: speeding violations in school zones – are these drivers extreme or everyday drivers? As shown in the speed distribution data in Figure 6, (A) 70.0% of all vehicles entering school zones during the morning school zone period exceeded 40km/h, while (B) 47.6% of vehicles exiting the zone exceeded the limit. During the afternoon school zone period, (C) 78.8% of the vehicles entering, and (D) 75.4% of those exiting, school zones exceeded the reduced 40km/h school zone limit. These data challenge our ideas about compliance with traffic laws.

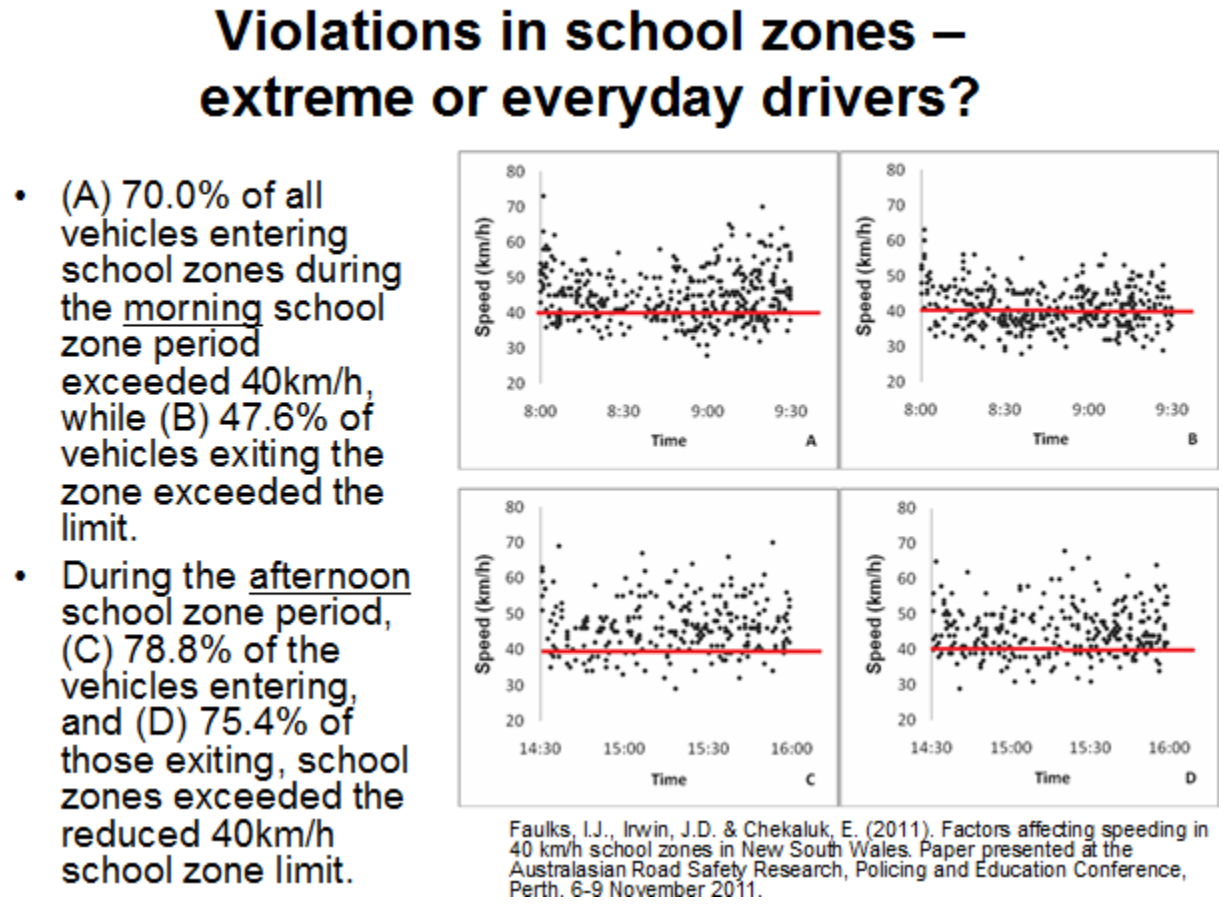

Figure 6: Speeding in NSW school zones (from Faulks, Irwin & Chekaluk, 2011).

Who obeys the road rules?
So the question of compliance with the road rules is perhaps more difficult to resolve than it might first seem

I argue that road users do obey road rules if they make sense and are useful to travel. But a problem is that sometimes what road users understand about the sensibility and appropriateness of a road rule, and what they accept as being sufficiently "safe" for travel, are not what is desired under the Safe System approach.

One way of thinking about this is that while some people are violators and intend to behave in illegal and non-compliant ways (because they think they won't get caught), many commit violations because they . . .

- Apply a rule, but in the wrong context (make a mistake);
- They forget the rule (a lapse); or
- They intend to comply but they are distracted, inattentive (a slip)

We might be forgiven for thinking, from media reports and road safety debates about traffic violations, that "extreme" drivers predominate – this is particularly so in the recent "speed camera debates".

But a survey of driver policies in road freight companies in the Blacktown area indicated:

- Strong management support and concern for their drivers
- The predominant issues related to speed and fatigue, but there were concerns with other issues such as traffic congestion

However, . . .

- Only half keep records of the licence demerit point history of their heavy vehicle drivers
- Driver licence checks were typically done on hiring, but then only done annually
- Only half included provisions relating to reporting traffic offences in the driver policy

These are unpublished results from a survey of driver policies in road freight companies in the Blacktown LGA conducted by David Tynan and Ian Faulks.

Improving fleet management practices

So there is scope for improvement in fleet management practices.

How can this be achieved? Obviously, there is a requirement for policy development and implementation, as well as amendments to regulatory practices in road transport legislation and in work health and safety legislation.

Conferences and seminars
But the important contributions have come from conferences, seminars and workshops, which have often served as catalysts for research and the initiation of policy reform. Some of the important activities, both in Australia and internationally, have been:

- Two STAYSAFE Committee conferences, reported in 1997 and 2002

Three important recent activities have been:

- NIOSH - An inaugural international conference on road safety at work, organised by the US National Institute for Occupational Safety and Health (NIOSH) and partners including the World Health Organization, Pan American Health Organization, International Labour Organization, US Department of State, and National Safety Council was held in Washington DC 16-18 February 2009
- As noted, the European Transport Safety Council is conducting PRAISE - Preventing road accidents and injuries for the safety of employees – a project on work-related road safety

This conference today is an important event, and . . .

Occupational Safety in Transport conference
The first international conference on Occupational Safety in Transport, will be held at the Crown Plaza Gold Coast, 20-21 September 2012, organised by the Queensland University of Technology's Centre for Accident Research and Road Safety - Queensland (CARRS-Q). The website is www.ositconference.com

Themes will cover topics such as:
- Organisational Safety Culture and Management Systems
- Organisational and Industry Transport Risks
- Use of Technologies
- Interventions and Program Strategies and Evaluation
- Data-driven Interventions and Evaluations

Figure 7: The Occupational Safety in Transport conference, Gold Coast, 20-21 September 2012

Current policy developments in work-related road use

Heavy vehicles

I note that SCOTI - the Australian Standing Council on Transport and Infrastructure - met in mid-May 2012, and approved reforms that include the implementation of a national law and regulator for heavy vehicles. The draft national heavy vehicle law, or Bill 1, establishes the regulator. Work is now underway to finalise drafting of the second national heavy vehicle law bill, Bill 2 (such as a nationally consistent approach to fatigue management) and to finalise the second heavy vehicle national law bill. As Bill 1 and Bill 2 are passed in Queensland – the lead jurisdiction - the NSW Government will introduce the laws into the New South Wales legislature as part of the process to develop national law in this area (as will other Australian States and Territories). It is anticipated that the new heavy vehicle regulator will commence in January 2013, with a focus on improving road safety outcomes and reducing costs for Australia's road transport industry (particularly in terms of interstate freight movements). Some reforms are already being implemented before the national system is created. For example, as part of the establishment of a national B-triple network, New South Wales agreed at the Standing Council on Transport and Infrastructure meeting to allow B-triples operating at general and concessional mass limits to be granted access to the existing road network west of the Newell Highway that is already approved for road train operations.

About 75 per cent of interstate trucks use New South Wales roads for some part of their journey, and effective system management is central to the further development of Australian road transport network.

The impact of the national carbon tax on vehicle fleet management will likely be challenging in terms of sustainability and competition.

A Road Safety Remuneration Tribunal is being established to set 'safe pay rates' and remove incentives for drivers to resort to unsafe practices behind the wheel (and thus affect how contracts are structured and the relationships between transport companies and their customers / consignors). This is an outcome of the Road Safety Remuneration Act 2012 (C'th). This legislation should have an important role in changing work practices and eliminating (or, at the least, addressing) behaviours which contribute to unsafe road transport use involving heavy vehicles. It will also potentially affect remuneration and work hours for heavy vehicle drivers.

The current prosecutions commenced by NSW police and roads authorities into alleged illegal behaviours by truck drivers, transport company executives, directors and ultimately consignors. It will be interesting indeed to see the case law relating to "chain of responsibility" that is established as a result of these prosecutions.

Note that several years after adoption of national "chain of responsibility" in many States, only in November 2011 did Western Australia finally introduce its legislation into its State Parliament (the Road Traffic (Vehicles) Act 2011 (WA)), and not all parts of the National Model Bill were adopted (even though this legislation is part of the national reform process).

Work health and safety

The Work Health and Safety reforms introduced in NSW from 1 January this year (see Work Health and Safety Act 2011 (NSW)) are also impacting on the road transport sector strongly. This reforming Act and its accompanying Regulations give effect to the Work Health and Safety Act 2011(C'th) and the National Model Work Health and Safety Regulations 2011 (C'th). Other jurisdictions to introduce this national legislation in 1 January 2012 were the Commonwealth, Queensland, the Australian Capital Territory and the Northern Territory. The other States will follow in due course, although it can be expected there there may be differential implementation (as has occurred for the national heavy vehicle and light vehicle reforms over the past two decades).

The draft Australian Work Health and Safety Strategy 2012-2022 was been released for comment in March 2012 and the time for comment has just closed. The Strategy will set specific targets for the reduction of work-related death, injury and illness over the next 10 years. Once the Strategy is in place, Implementation Plans will be developed. There will also be a review of the Strategy and national priorities half-way through the Strategy's life (i.e., in 2017). The ultimate goal is the

"reduced incidence of work-related death, injury and illness achieved through:

- reduced exposure to hazards or risks causing work-related injury and illness
- improved quality of workplace controls, and
- improved work health and safety infrastructure."

The targets for work health and safety (to be developed and implemented by 2015) are:

- Work-related fatalities targets: a 20 percent reduction in the number of injury fatalities.
- Work-related injuries targets: a 30 percent reduction in incidence rates of all claims resulting in one or more weeks off work.
- Body stressing injuries targets: a 30 percent reduction in the incidence rate of claims due to body stressing.

The priority sectors for the Strategy are the broad industry groups identified for the reduction of the incidence of traumatic fatalities, injuries and illnesses by 2015 are: Agriculture; Transport; Manufacturing; Construction; and Health.

One of the areas in which action can be taken to improve work health and safety is the Action area: "Healthy and safe by design", with the proposed outcomes being:

- All links along a supply chain and within a network understand their cumulative impact and actively improve the health and safety of the supply chain.
- Commercial relations within the supply chains and networks are used to improve work health and safety.
- Industry leaders champion health and safety in supply chains and networks.

Work health and safety and the Safe System approach

The paradigms at the disposal of regulators include:

- the traditional legal approach of monitoring and enforcing law,

- the educative approach of explaining what law means and what compliance looks like,
- the social influence approach of modelling the benefits of compliance, and
- the architectural approach of making it impossible to be non-compliant through clever job or engineering design

All are needed to create safe workplaces.

This type of thinking about workplace safety marries well with the Safe System approach. But under Safe System thinking, the system managers (i.e., the regulators) are also responsible for ensuring the system itself is designed to eliminate deaths and serious injuries

So it would seem that the tension that dogged the debates over work-related road safety during the 1990s – a squabble between road safety elites who insisted that safety "on the roads" was the concern of the then Roads and Traffic Authority, and workplace safety practitioners who argued that drivers were often workers and vehicles were often workplaces, has been supplanted by a common framework for policy and program development and implementation.

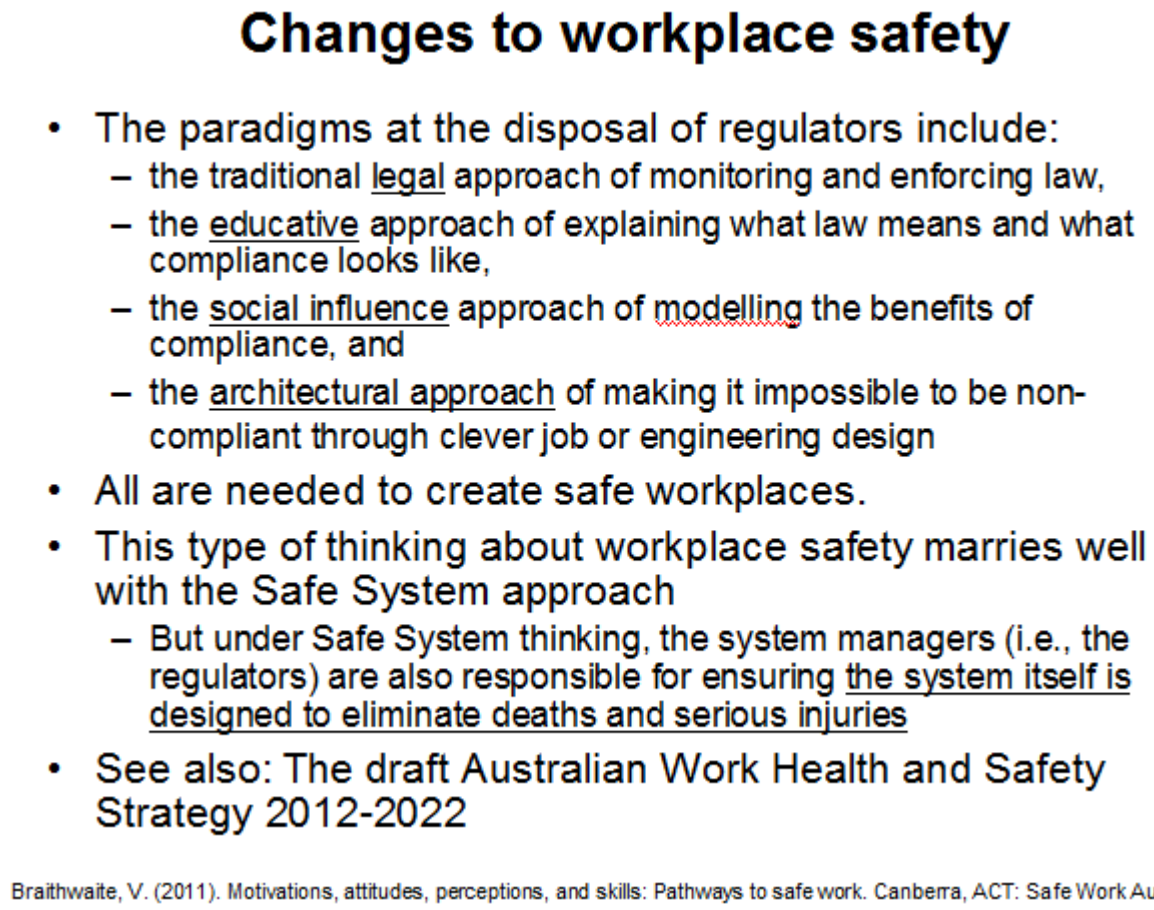

Figure 8: Approaches to workplace safety and road safety – can they be reconciled?

Role of local government in fleet management

Freight movements in typically involve multicombination heavy trucks on freeways and major highways, but also light and medium rigid trucks involved in site deliveries using local roads. Commuter movements in local government areas are to public transport hubs or to employment attractors (industry, shopping, education, entertainment).

All of these movements necessarily involve dealing with local councils.

Since the 1990s, local councils are able to access the NSW Local Government Road Safety Program and appoint specialist staff – a Road Safety Officer -0 would is an important first point of contact for business and fleet managers in dealing with issues of access routes, as well as vehicle selection and use, and the training of staff and contractors in road safety, .

Road Safety Officers provide a nexus between communities and their local councils, integrating traffic management, public health, policing, and road safety activities in ways that can solve local problems by local action.

There are now less than 40 Road Safety Officers across NSW – inexplicably, the program has been allowed to wither over the past 3-4 years. This must be reversed, as Road Safety Officers are an important resource for fleet managers. Their local knowledge and local focus can allow fleet managers to deal with the "last mile" issues of access, mobility and safety effectively.

Road Safety Officers can be very involved in work-related road use.

For example, Iris Dorsett from Bathurst & Blayney councils (working with the NSW Mines Safety Advisory Council) has developed the "Mining safer roads" program that targets safer driving by all mine workers and staff, and their families – that is, the program has a 24/7 safety focus. The program was developed from the local "Kids of Cadia" project which focused on young driver safety specifically, and has been delivered to 26 mines across NSW. It is shortly to be available for staff and contractors working in mines in the Hunter region, and I would not be surprised if the program becomes generally available at a national level. The "Mining safer roads" program was highly commended in the 2012 Local Gov't Excellence in Road Safety Awards.

Another example is the "Drive To Conditions" project developed by Road Safety Officer Lisa Marshall and her colleagues at Lismore Council. This project is a local council initiative, with funding by then RTA as a Safe System demonstration project. It targeted safer driving on the 10 worst roads for crashes and compliance in the Lismore local government area, and involved an investigation of road usage for commuters, for drivers at work, for recreational drivers ("out for the night") and tourism, and for routine local trips (cf the 3D Haddon matrix). The project also looked at road performance in terms of vehicle types and loads. The deliverable outcomes from this project included a review of road infrastructure (signage, road markings), community interventions targeting the purpose of travel and the selection of appropriate routes, and better targeting of police enforcement action to challenge particular types of inappropriate and illegal behaviours that occurred over a day or during a week (e.g., drink driving associated with recreational road use). As well, the data developed from the project were used to support a

funding application for a Commonwealth grant for black spot improvements within the local council road transport network. Ms Catherine King MP, Commonwealth Parliamentary Secretary for Transport, recently announced that the "Drive to conditions" project was the 2012 National Awards for Local Government—Excellence in Road Safety Award winner.

These are just two examples of local governments working on work-related road safety projects. You might look for further projects on the National Awards for Local Government website. (http://www.regional.gov.au/local/awards)

Technology developments in vehicles, road infrastructure and enforcement

Other speakers at the Fleet Safety Seminar today have addressed issues of vehicle safety and road infrastructure, and have addressed enforcement technologies.

New technologies are available to better target risky behaviours and illegal manoeuvres, including:

- Point-to-point speed cameras
- Long range cameras
- Event Data Recorders (black boxes)

These are, or may be, very useful in detecting drivers acting inappropriately and illegally.

Point-to-point (P2P) speed enforcement

The great advantage posed by point-to-point speed enforcement is that the pattern, or sustained behaviour, associated with speeding can now be monitored. No longer is speeding the transitory behaviour that is associated with a specific enforcement point . . . it is now what you do, as a driver, over distance and over time that can be bought to attention, and enforced.

Figure 9: Point-to-point speed enforcement signage used in NSW

In a sense, then, the problem of dealing effectively with transitory speeding behaviour is gone, replaced with the new "horizon" of dealing with sustained or persistent speeding as an illegal behaviour.

In NSW, point-to-point speed enforcement is only being used for heavy vehicles currently . . . there is a need to extend this enforcement technology to the drivers of all vehicles.

Long range cameras
An exciting enforcement technology that is becoming available is the use of long range cameras also target risky behaviours and illegal manoeuvres. This new camera technology allows police to target drivers doing illegal manoeuvres, drivers not wearing seat belts, and drivers using communication devices (mobile phones, texting, etc. (see Figure 10).

Figure 10: Long range cameras for traffic enforcement.

Currently, the NSW Police Force is not investigating the use of these cameras, as it considers the use of in-car video technologies as sufficient to detect offences. But there is an undoubted deterrent benefit from police being able to identify, assess and gather photographic evidence of illegal behaviour before the offending drivers are aware of the presence of police surveillance.

Event Data Recorders and other in-vehicle monitoring technologies

Use of event data recorders (EVRs) to provide a record of driver behaviour appears to have great promise. There is a diversity of technologies available, ranging from the traditional "black boxes" derived from electronic tachographs, through to devices using GPS technologies in smartphones and "sat-navs", as well as video-based approaches that monitor road use and record incidents once pre-conditions have been met (e.g., excessive accelerations, cornering or braking, over-revving, etc.).

These technologies are already widely used in industrial contexts, including, in particular, mining and extraction industries. In rural and remote Australia, these technologies will commonly integrate emergency beacons and messaging if severe crash pulses are detected.

Event data recorders are widely used for trucks in North America, but not in Australia.

The data recorded may include: vehicle speed; engine RPM; idle time; start time; finish time; engine hours; driving hours; heavy braking; heavy acceleration; driver identification; vehicle odometer; distance travelled.

Figure 11: Smartbox, an event data recorder application for young driver safety

Data recorders that track vehicle speed, accelerations and decelerations (braking), rotational forces in cornering, would be helpful in detecting illegal manoeuvres. As well, these technologies can be used to detect unrestrained drivers and the use of communication devices (mobile phones, texting, etc.). There may need to be legislation to allow access and use by police and road authorities to support prosecutions.

A more general application for the community as a whole, rather than just work-related road use, is Pay How You Drive insurance. Pay How You Drive insurance products are available in the UK and the US, but not yet in Australia.

Figure 11 provides an example of a Pay How You Drive product, "Smartbox", for young drivers, offered by Co-operative Insurance (UK). Pay-How-You-Drive technology measures how well the car is driven, continuously. It uses GPS to send information to the insurer on how those on the policy are driving . . . and the insurer uses that information to review your insurance premium every 90 days. The focus is on "exceptions", i.e. inappropriate and illegal behaviour. The safe driving parameters measured are: Speed, Cornering, Time of day, Acceleration, and Braking. The premium can go up as well as down, depending on how the car is driven, but by driving safer you can earn discounts. Sustained inappropriate and illegal driver behaviour results in higher premiums, and if the bad behaviour of the policy holder proves intractable, the insurance cover may be cancelled.

A caveat

There is a philosophical disconnection between Fleet Management and Safe System – without careful implementation of the Safe System approach, the two concepts will not be "on the same path". In business, fleet management is really about "cost minimisation". Long term visions (e.g, the Safe System) are good, but only if you can survive the current year's unbudgeted costs (and the jobs of the fleet manager and insurance manager are to keep the premiums and excess payments within budget).

A challenge under the Safe System approach is that safer vehicles and safer roads will usually increase the cost of damage and injury for business:

- More people survive each crash but sustain a "workplace injury" requiring injury management costs
- Safer vehicles result in increased costs in minor damage claims and excess payments (crumple zones and pedestrian friendly vehicles are significantly more expensive to fix, and with over half of vehicle insurance claims occurring in "car park" type low speed / low impact crashes this is an expanding area of the cost base for fleets)

It would seem that such considerations may act against the Safe System approach.

However, increasingly businesses in Australia are taking a longer term view and investing in programs to improve work-related road safety.

For example, in late May 2012 BHP Billiton announced that it would require vehicles in its worldwide fleet to have the maximum 5-star safety rating under New Car Assessment Programs operating around the globe. The Australasian New Car Assessment Program

(ANCAP), like other New Car Assessment Programs around the globe, awards star ratings that reflect a vehicle's safety based on its performance in a range of crash tests and inclusion of key safety features. BHP Billiton's decision has the potential to maximise the safety of up to 50,000 vehicles across Australia, which will be 5-star rated by ANCAP.

The Australian Government has actively led the way in introducing the highest vehicle safety standards on its own fleet and since 1 July 2011 it has required that all light passenger vehicles have a 5-star ANCAP rating. Support of ANCAP and the introduction of more stringent safety performance requirements in government fleet purchasing policies complement the existing role of governments in Australia in regulating road safety for the community.

Concluding remarks

The adoption of the Safe System approach by all Australian governments – nationally, by States and Territories, and by local councils – provides an excellent context for fleet managers to start to address and extend work-related road safety in their own operations. As well, the policy developments in the areas of heavy vehicle regulatory reform and in work health and safety will require fleet managers to review and appraise their current approaches.

Here then are the questions you must ask . . .

- Do you operate vehicles for work-related purposes
- Do your employees drive for work-related purposes
- Do you use contractors who drive for your work-related purposes
- Do employees, contractors or others drive on your premises
- Do you provide employees with personal vehicles
- Do you contract transport services

If the answer is "Yes" to any of these queries, then chain of responsibility provisions will mean that executive management and board members – and consignors – are responsible for ensuring appropriate safe systems and controls are identified, put in place and are operating effectively.

The Safe System provides the context. The 3D Haddon Matrix and the PRAISE project provide a framework and structure for enterprise-level policies and practices. And remember, look for local assistance – your council's Road Safety Officer – as after all, you are employers in a local community, using the local roads to conduct your business.

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