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INQUIRY INTO YOUNG DRIVER SAFETY AND EDUCATION PROGRAMS

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Parliament House
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Please find attached a submission prepared by Dr Teresa Senserrick, Dr Rebecca Ivers and Professor Mark Stevenson on behalf of the George Institute for International Health to STAYSAFE, the Joint Standing Committee on Road Safety. This submission is in reference to the current inquiry by STAYSAFE into Young Driver Safety and Education Programs.

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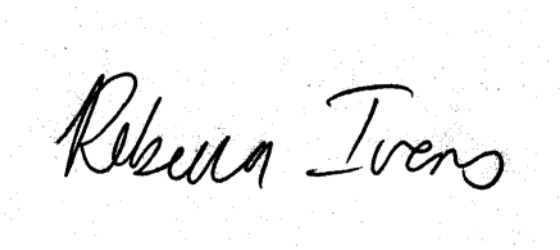
Yours sincerely



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RESPONSE TO STAYSAFE COMMITTEE

Inquiry into Young Driver Safety and Education Programs

Teresa Senserrick, Rebecca Ivers and Mark Stevenson

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SUMMARY

The George Institute commends the Staysafe Committee for their interest in addressing the underlying causes of the high incidence of young driver fatalities in NSW. Young drivers remain overrepresented in road crashes and fatalities and early intervention is warranted. A confluence of factors contributes to this risk, including demographics, personality characteristics, development factors, driving ability and behaviour, the driving environment and perceived environment; not all amenable to change. Fatality risk is inflated in rural compared to urban areas: a current PhD research focus at The George Institute. Diversionary and education programs for serious offenders and recidivists show promise but are yet to specialise programs for young and novice drivers.

The Staysafe Committee has chosen to explore young driver safety and education programs as a potential invention strategy. Most education programs focus on skill development and risk awareness. Currently, no such program has demonstrated effectiveness in reducing crashes or fatalities. The reasons for this are multiple and complex, including limitations in the assumptions, content and duration of programs and program evaluations. Benefits have been found in terms of efficient and effective acquisition of a licence and in reducing night-time crashes by conducting training at night or in dark lighting. Other more promising skill development programs focus on improving cognitive-perceptual skills such as hazard perception and situation awareness. While studies show these skills can be improved with computer-based training, there is no research to demonstrate a subsequent impact on actual crash involvement. Programs focusing on developing or improving safety-focused attitudinal-motivational orientations have shown benefits within multi-level, multi-session graduated driver licensing (GDL) programs, but not independent of these. While attracting strong community support, no skill-based education program is likely to achieve desired reductions in crashes and fatalities compared to GDL-related initiatives.

GDL initiatives are currently the only intervention measures with repeated, demonstrated effectiveness in reducing young driver crashes and fatalities: up to 20% reduction in fatality crashes. NSW currently legislates most of the recommended GDL components. Some Australian education-based programs have shown success in enhancing effective GDL initiatives or improving self-reported knowledge, attitudes and behaviours; however, any subsequent impact on crashes has not yet been assessed. Carefully developed and rigorously assessed programs are essential but currently rare in the young driver field. The George Institute's *DRIVE* study may provide further insights in upcoming months. A large controlled trial of the federal government's *Novice Driver Program* initiative is also planned but has not yet commenced.

It is recommended that the Staysafe Committee focuses its efforts on supporting effective GDL initiatives, whether via education-based strategies or other initiatives. Commitment to skill-based safety and education programs and driver improvement programs specifically targeting young drivers should be reserved until links to crash and fatality

reductions can credibly be established. Findings from the *DRIVE* study and federal *Novice Driver Program Trial* are positioned to provide local insights.

SUBMISSION

Scope of the problem and contributing factors

The George Institute commends the Staysafe Committee for their interest in addressing the underlying causes of the high incidence of young driver fatalities in NSW. Young drivers (<25 years) remain overrepresented in road crashes and fatalities, despite a recent decrease in the young driver fatality rate (per 10,000 licence holders).[1] RTA figures show while young drivers constitute 15% of licensed drivers, they are involved in 28% of motor vehicle crashes, including 26% of all fatal crashes. This overrepresentation of young people in road trauma is echoed internationally.

A confluence of factors contributes to young driver crash risk, including demographics, personality characteristics, development factors, driving ability and behaviour, the driving environment and perceived environment; not all amenable to change.[2] Of crashes involving young drivers, the young driver is at fault more than 80% of the time; however, the majority of young driver at-fault crashes are due to driver error, rather than intentional risk taking behaviour.[3] Crash risk is particularly high during the early months of independent driving,[4-5] implicating the role of inexperience and suggesting intervention should be targeted prior and during this period.

Risk of a fatality crash is higher on rural roads than urban roads for all drivers, including teen drivers, even when adjusted for distances travelled.[6-7] Differences in driving behaviour, crash outcomes and relevant trends in urban and rural areas of NSW are currently being explored by a PhD student at The George Institute. Key findings can be provided to the Staysafe Committee when available.

Diversionary and educational programs for young offenders

NSW (like other Australian jurisdictions) utilises a demerit point system to identify targets for warning letters, licence revocation and educational and rehabilitative driver improvement programs.[8] International research and reviews have demonstrated the effectiveness of these measures, including reduced recidivism and crash reductions.[9-13] Victorian research has also demonstrated that demerit points can predict crash involvement.[14] A reduced demerit point threshold applies for NSW provisional drivers (3 points for *P1* drivers, 6 points for *P2* drivers, compared to 12 points for fully-licensed drivers). Early research suggests reduced demerit point thresholds are effective for provisional drivers, although larger controlled studies are needed.[15-16]

Based on extensive review, EU recommendations suggest driver improvement programs should be targeted both to the offence and, to the extent possible, to the individual (personal characteristics and attitudes, including age).[9] Moreover, it is recommended that when the offence is indicative of socially problematic behaviour psychologists rather than other educators should conduct the programs. Young driver specific programs are rare, however. Typically single programs are run for all traffic offenders in a given

jurisdiction. Attention to young and novice driver specific issues will likely improve outcomes.

Some courts in NSW refer repeat offenders to education-based Traffic Offenders Programs (TOPS) after a finding of guilt yet prior to sentencing, which is delayed until such time that the program can be undertaken. A 1999 evaluation of the TOPS initiative indicated that participation reduced the probability of re-offending by an average of 25%, although young drivers were not specifically identified.[17] It is likely that education programs such as these could be modified to better target provisional-licensed serious offenders.

Other non-education based sanctions that have demonstrated effectiveness for deterring serious and recidivist offenders include vehicle sanctions involving the use of interlocks (alcohol interlocks for recidivist drink-driving and seat-belt interlocks for recidivist non-restraint use)[18-19], as well as vehicle immobilisation, impoundment or permanent confiscation programs.[20] Benefits include significant reductions in repeat offender behaviours, as well as crash reductions. While evaluations have included young drivers, young driver specific programs (i.e., licensing initiatives) are relatively new and have not yet been fully evaluated. NSW introduced legislation to allow impoundment of vehicles in 2001 and an alcohol interlock program in 2003 for all drivers. Seat-belt interlocks have previously been considered for recidivist non-users but not introduced.[21]

Efficacy and potential of young driver education programs

The Staysafe Committee has chosen to explore young driver safety and education programs as a potential invention strategy. Currently, there is no established driver safety and education program with demonstrated effectiveness in reducing young driver crashes or fatalities.[22-27] The reasons for this are multiple and complex, including limitations in the assumptions, content and duration of programs and program evaluations.[25-28] Some of the key issues include:

- Inexperience is the greatest contributor to crash risk. Therefore, substantial on-road driving experience is a major protective factor that cannot be substituted by short-term education or training programs.
- Risky behaviours and crashes are not necessarily associated with a lack of knowledge of crash factors or inadequate vehicle-handling skills, which are the focus of traditional programs.
- Established behavioural patterns are difficult to modify, particularly when not practiced or performed regularly. Therefore, for example, speeding habits are difficult to break once established. Situation-specific skills taught for use in emergency situations are unlikely to be recalled or performed adequately if only required many months or years from the time of training.
- Any safety messages adopted in short-term programs can be overwhelmed by ongoing parental, peer, personal, and other social influences that shape driving styles and crash involvement.

- Crashes are relatively rare events, and those not involving injury are under-reported. There may be some crash benefits in safety and education programs that have not been detected in the absence of comprehensive data on low severity crashes and with most studies constricted to short timeframes.

Most driver safety and education programs focus on skill development or improvement. To this end, instructional programs provide an efficient and effective method for beginning drivers to learn to manage a vehicle in a controlled and safe environment and to pass their licensing tests.[25, 27] Vehicle management does not necessarily equate with safe driving, however. Many of the factors underlying young driver crashes pertain to higher-order skills beyond the vehicle-handling skills and risk awareness components most commonly addressed in current programs.[27]

A national Norwegian study did demonstrate some benefits from conducting traditional driving instruction at night or in dark lighting, such that reductions in night-time crashes were realised post-training and at a two-year follow-up.[29] The success of this program was likely its positioning within a comprehensive mandatory licensing framework.[27] Most concerning have been findings of counterproductive outcomes of driver education programs, such that crash risk actually increased.[26, 30] This was due to the programs directly or indirectly resulting in early licensure, thereby increasing exposure.

Research demonstrates that some higher-order cognitive-perceptual skills associated with crash risk[31] can be improved via computer-based training,[32-33] such as hazard perception and situation awareness. The ability to scan the road environment, perceive and identify specific hazards, evaluate other drivers' location in the traffic environment, and predict other drivers' behaviour are complex skills developed over time, with age and experience.[34-35] Crash risk doubles for those with poor hazard perception skills (5^{th} cf 95^{th} percentile), even when controlling for age and distances travelled.[31] Research show young, novice drivers are slower at detecting hazards and have poorer search patterns compared to experienced drivers.[34, 36-37] While computerized programs have shown skill improvements in simulated environments[32-33] and recently on-road,[38] there is no research to demonstrate a subsequent impact on actual crash involvement.

Other higher-order skills shown to improve via education and training programs pertain to attitudinal-motivational orientations. Such programs seek to address goals and motivations underlying driving per se as well as driving behaviour, including overestimation of skills and underestimation of risks.[39-40] The approach involves raising awareness or improving insight into factors that contribute to road trauma, including active learning methods, such as self-reflection of young drivers' own experiences and in-vehicle demonstrations of safety margins. Crash benefits have been demonstrated in Scandinavia but only within the context of multi-level, multi-session programs as mandatory components of graduated driver licensing (GDL).[41-44] Small scale studies, independent of the GDL infrastructure, have had inconsistent findings of support or little improvement (but no disbenefits).[45-47]

In general, therefore, while attracting strong community support, skill-based education programs are unlikely to achieve desired reductions in crashes and fatalities. While some new directions offer some promise, a positive impact on crashes and fatalities is yet to be demonstrated directly. Moreover, any improvements are unlikely to achieve the level of benefits currently achieved by another available intervention approach, namely GDL.[27, 48-51]

Effectiveness of graduated driving licensing (GDL)

GDL initiatives are currently the only intervention measures with repeated, demonstrated effectiveness in reducing young driver crashes and fatalities. In the United States, a net reduction of 11% in fatality crashes of 16 year olds (primary target) has been realised in GDL states compared to non-GDL states.[49] Moreover, states with the most comprehensive GDL program in place have achieved a 20% reduction.[49] In New Zealand, an early conservative estimate of an 8% reduction in serious injury crashes among 15-19 year olds (main targets) was reported, and hospitalisations and fatalities have continued to decline.[50]

Night-time and passenger restrictions are highlighted as among the most beneficial elements of New Zealand's GDL.[49] A national evaluation in the US[48] demonstrates the most beneficial US GDL systems include at least five of the following components:

- A minimum age of at least 16 years for gaining a learner permit.
- A requirement to hold the learner permit for at least 6 months before gaining a license that allows any unsupervised driving.
- A requirement for certification of at least 30 hours of supervised driving practice during the learner stage.
- A provisional stage of licensing with a minimum entry age of at least 16 years and 6 months.
- A night-time driving restriction for provisional licence holders, beginning no later than 10 p.m.
- A passenger restriction for provisional licence holders, allowing no more than one passenger (except family members).
- A minimum age of 17 years for full licensure.

In Australia, these are qualified further by extending the minimum supervised practice hours to 120 hours, increasing the minimum provisional licence age to at least 17 years and the full license age to at least 20 years.[52] In addition, zero or 0.02% Blood Alcohol Concentration (BAC) limits, mandatory seat-belt use and restriction to hands-free only mobile use apply.

Notably, NSW meets many of the recommended requirements, having already matched minimum age requirements and recently introduced a 12-month minimum learner period, 120 hours supervised practice during this period, and a combined night-time and

passenger restriction for *P1* drivers: one passenger only between 11 p.m. and 5 a.m. Subsequent benefits of the legislative changes are likely to be substantial. Rather than focus on other skill-based development, driver safety and education programs could seek to support these GDL initiatives.

Efficacy of current local young driver education initiatives

GDL related initiatives

A recent review of developments in driver training and education in Australia found a number of educational developments aimed primarily to support or enhance effective GDL initiatives.[52] While many had not been evaluated, some promising findings were reported and are briefly described here.

The Australian Capital Territory's classroom-based *Road Ready* program aims to raise awareness of the road environment and the complexity of driving among young people, via a range of problem-solving and decision-making sessions, statistical analysis, group tasks and research assignments, including from a co-pilot approach. It also includes specific modules focusing on the computerised learner test and ways to maximize supervised practice driving. A 2004 evaluation[53] found participants held their learner permit longer than non-participant peers and achieved more practice driving hours. In addition, program participants reported fewer demerit points in the early provisional licence period. Crash results were inconclusive due to limited data.

A follow-up *Road Ready Plus* or *P… off* program available at six months post-licensure allows removal of P-plates and a higher demerit point threshold after completion. It comprises group activities, including facilitated small group discussions on driving experiences. A 2004 evaluation[54] found participants had more demerit points prior to the course than non-participant peers (likely a result of the higher demerit threshold incentive) and continued to attract more points following participation. While little difference was found in self-reported attitudes and behaviours, there was some indication of fewer crashes, including injury crashes, although no significance testing was reported. The researchers concluded that the program provides at least some support for those who could most benefit – those who attract many demerit points.

In Victoria, VicRoads' offers schools a two-hour interactive multimedia information session students and their parents, *Keys Please*, which promotes 120 hours of practice driving in a variety of conditions. The program focuses on the complexities of driving, why novices are at risk, and provides resources and strategies to achieve a high number of practice hours. Presenters can include local police officers and a state registration and licensing officer to explain local laws and procedures. A 2001 evaluation[55] found supervised practice driving increased significantly among participants compared to non-participant peers.

While controlled studies are lacking on the impact of these programs on crashes and fatalities, such programs offer promise by supporting GDL initiatives already established as effective in achieving reductions.

Apart from these state-based initiatives, the Australian federal government has advanced development of a national driver education and training program for mandatory inclusion in all state GDL systems.[56] The *Novice Driver Program Trial* will be the largest initiative of its kind in Australia, requiring 7,000 trained drivers and 7,000 controls in NSW and Victoria after allowing for attrition; therefore, requiring more than 30,000 participants. Recruitment will occur at the time of licensing, at which time voluntary limits on exposure, including night-time driving and carriage of passengers, will be encouraged. The remaining modules, staged over the following 2-3 months, will focus on fostering safety-orientated attitudes and behaviours. A 2-3 year evaluation is intended. Impacts on road safety knowledge, awareness, attitudes, and behaviours will be assessed; however, the primary outcome will be crash involvement.

Non-GDL related initiatives

Independent of licensing, two driver education initiatives in NSW that have undergone recent evaluation are the Rotary Young Driver Awareness (RYDA) and Reduce Risk – Increase Student Knowledge (RRISK) programs.

RYDA, conducted with Year 11 students, targets increased awareness of road safety issues and the fostering of positive attitudes. The one-day program has a particular focus on peer issues and addresses both driver strategies and passenger empowerment strategies. A 2005 longitudinal self-report evaluation found significant improvement in self-reported knowledge and attitudes were reported immediately following the program, with most gains lost after three months.[57] The program is currently being updated and rolled out further across NSW with plans to extend to other states.

RRISK, conducted in Years 10 and 11, aims to empower young people with the knowledge, attitudes, and skills to make informed decisions about driving, drug and alcohol use, and celebrations. The one-day seminar incorporates a range of learning strategies including factual presentations, drama, peer education and real life experiences relevant to the social life, developmental stage and interests of adolescents. A 2005 longitudinal self-report evaluation found 21 of 23 significant changes in knowledge, attitudes and behaviours were improved towards safety, including safe driving and passenger behaviours at a 5-month follow-up.[58] The program has extended into South Australia and Tasmania and further expansion is intended.

Need for evaluation

While these local initiatives show promise, evaluation of the programs has not demonstrated links to reduced crashes or injuries. The history of unintended consequences of young driver programs, still evident in current literature, serves as a timely reminder about why the careful development of a curriculum based on strong

evidence from the road safety and education literature is imperative. Moreover, this emphasises the need for the adequate implementation of the curriculum including quality assurance/ process evaluation and subsequent outcome evaluation to ensure that the program is having the desired, and not adverse, effects. Rollout of any current programs should be cautioned unless they are implemented within the context of a well designed evaluation.

Rigorous evaluation requires large, well controlled trials, in which appropriate targets and outcome indicators are carefully identified and assessed pre and post program implementation. An experimental or quasi-experimental design is essential in order to establish a causal relationship between the intervention and road safety outcomes. To date, such trials are rare within the young driver research field.

The George Institute's *DRIVE* study, a prospective web-based cohort study of young NSW drivers, has the potential to offer some insights into this issue in upcoming months, although, as alluded to above, experimental study designs are necessary to provide definitive conclusions.[59] Over 20,822 young drivers were surveyed on a wide range of driving-related issues, including participation in driver education and training programs (with specific items concerning RRISK and RYDA). These data have recently been linked prospectively to offence, crash, injury and death data and analyses are underway. Finding will become available over the next six months and can be provided to the Staysafe Committee.

Conclusions and recommendations

The overrepresentation of youth in road crashes and related fatalities in an international problem that continues to be a challenge, despite recent gains. A range of individual and situational factors contribute to the phenomenon, not all of which are amenable to change or are suited to educational intervention. Fatality risk is particularly inflated in rural versus urban areas and research is underway to further our understanding of this finding.

Current diversionary programs rarely specifically target young and novice drivers, although literature suggests this will be beneficial. Well developed and evaluated young driver education programs are rare and none has demonstrated a direct impact on crashes or fatalities. The single demonstrated effective initiative to impact young driver road trauma is graduated driver licensing. NSW's GDL includes many of the recommended elements and should be supported.

The George Institute recommends the Staysafe Committee focuses its support on effective GDL initiatives, whether via education-based strategies or other initiatives. Commitment to skill-based safety and education programs and driver improvement programs specifically targeting young drivers should be reserved until links to crash and fatality reductions can credibly be established. Findings from the *DRIVE* study and federal *Novice Driver Program Trial* are positioned to provide local insights.

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