Examination of the Victorian Graduated Licensing System's Effect on Young Novice Driver Safety

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Abstract

Against a background of strong community support, the Victorian Government introduced an enhanced Graduated Licensing System (GLS) during 2007 and 2008. Key enhancements included the requirement for licence applicants aged less than 21 years to have completed a minimum of 120 hours of supervised driving practice, a requirement for probationary drivers in the first year of licensing to carry no more than one peer passenger and an extension of the probationary period from three to four years. The key objective of this evaluation was to examine the effect of the enhanced GLS on young novice driver safety. To achieve this, the evaluation consisted of a series of analyses under eight topic areas – crashes, offences, learner permit and licensing trends, learner driver supervised practice, carriage of peer passengers, drink-driving behaviour, speeding behaviour and other behaviours and requirements (e.g. mobile phone use). The results show that the enhanced GLS has supported improved safety for young novice drivers in Victoria.

Background

In the early 2000s, inexperienced drivers aged 18 to 25 years continued to be over-represented in road crashes in comparison with older and more experienced drivers. For example, probationary[1] drivers were three times over-represented in casualty crashes per million kilometres travelled compared with fully licensed drivers (Healy, Imberger & Catchpole, in press). Therefore an enhanced GLS was introduced progressively during 2007 and 2008. Research and consultation with international experts from Canada, New Zealand and the USA led to major enhancements to Victoria's Graduated Licensing System (GLS). Key components included:

- a minimum 12-month learner permit period and a minimum 120 hours supervised driving practice – if aged under 21 years at time of licensing
- no more than one peer aged passenger[2] for P1 (first year of the probationary licence) drivers unless accompanied by a fully licensed driver
- a more challenging on-road driving test that assesses the applicant's performance on a greater number and variety of driving tasks than the previous test
- a two-stage probationary licence: P1 (minimum one year – only applicable to drivers aged under 21 years at time of licensing) and P2 (minimum three years)
- probationary drivers banned from driving certain high-powered vehicles
- a ban on mobile phone use for P1 probationary drivers (extended to P2 drivers in 2013[3]).

These and other changes were introduced progressively between 1 January 2007 and 1 July 2008. The changes came with strong community support, after Victoria's road safety agencies had spent more than a decade (1994 to 2006) promoting safer driving for young people (Healy, Imberger & Catchpole, in press). These promotional activities included developing targeted materials to help

[1] Probationary drivers are considered intermediate drivers not yet on a full licence. Probationary drivers are subject to a number of conditions and restrictions as discussed above.
[2] A peer passenger is a passenger aged between 16 and 21 years, other than family members.
[3] The extension of the mobile phone ban to P2 drivers was not part of the GLS evaluation.

novice drivers, parents and professional driving instructors, and a mass media public education and a direct mail campaign to encourage learners to obtain at least 120 hours of supervised learner driver practice. A range of support programs and resources were also first provided during GLS implementation, such as the L2P – learner driver mentor program for disadvantaged learners (Healy, Imberger & Catchpole, in press). Note that Victoria has had an 18 year old licensing age for many decades.

With more than half a million drivers having now graduated through the enhanced GLS, an evaluation has been undertaken to examine its effect on young novice driver safety. The evaluation involved comparisons on a range of measures pre and post introduction of the enhanced GLS.

Method

The evaluation was guided by a series of questions clustered into eight topic areas:

- crashes
- offences
- learner permit and licensing trends
- learner driver supervised practice
- carriage of peer passengers
- drink-driving
- speeding
- compliance with other GLS requirements (e.g. mobile phone use).

To address the evaluation questions, five data sets were used to examine changes from a pre-GLS period to a post-GLS period:

1. Crash involvement counts and rates: Generalised Linear Modelling was used to determine statistical significance of the changes in rates of involvement in casualty crashes and rates of involvement in fatal and serious injury [FSI] crashes) of novice driver groups (18 to 21 years and 21 to 23 years) compared with experienced driver groups (35 to 42 years). Crash rates were defined as the number of crash involvements per 10,000 driver-years of licence holding (this controlled for exposure). The pre- and post-GLS periods differed slightly depending on the topic of analysis, but were generally 2004/05 to 2006/07 (3 years) and 2011/12 to 2013/14 (3 years) respectively.
2. Offence rates: offence rate odds ratios and Z-scores were used to determine statistical significance of the changes in offence rates of novice driver groups (18 to 20 years and 21 to 24 years) compared with experienced driver groups (drivers who were licensed at 18 to 20 years with 10 to 13 years of experience and those licensed at age 21 to 24 years with 10 to 12 years of experience). Offence rates were expressed as the number of offences per 100 driver-years of licence holding to control for exposure[4].
3. Learner driver self-reported experience: a series of cross-sectional surveys concerning learner driver experience, with statistical testing of changes across surveys. Surveys took place in 1999, 2000, 2004, 2005, 2007, 2008, 2009, 2010 and 2014.
4. Probationary driver self-reported behaviour: a series of cross-sectional surveys (independent samples of drivers, a series of four in total) and longitudinal surveys concerning probationary driver behaviour, with statistical testing of changes. The surveys occurred approximately yearly from 2008 to 2012. The results distinguish the cohort from the cross-sectional findings. Each study group was then broken down into drivers first licensed pre-GLS and post-GLS (unless indicated). Statistical testing was used to determine if results were statistically significant.

[4] The offence rates analysis used different age groups to the crash analysis. The crash rates analysis design was informed by the learner permit and licensing trends analysis, which provided important information for changes in the analysis design compared with that of the offence rates.

5. Learner permit and licensing trends: patterns in learner permit and licence issue and tenure. Trends (counts of first learner permits and first licences issued) were analysed from 1991/92 to 2013/14. No statistical analysis was applied.

Results

This paper covers the main results across the above eight topic areas (Healy, Imberger & Catchpole, in press; VicRoads, 2017). The reader is referred to two other papers from the current conference for more detailed results on crashes (Catchpole, Makwasha, Newstead, Imberger & Healy, 2017) and probationary driver behaviour (McIntyre & Imberger, 2017), and a third conference paper from 2015 on learner driver behaviour (Meyer et al., 2015).

Crash involvement rates: driver age

The enhanced GLS shows support for reducing young driver crash involvement rates for drivers aged 18 to 20 years at crash involvement (Figure 1). However, for those aged 21 to 23 years at the time of crash involvement there were no statistically significant changes in crash involvement rate. Key results included:

- Drivers aged 18 to 20 years at crash involvement were the group with the highest crash involvement rates pre-GLS. The casualty crash involvement rate of this group reduced by 13.6% ($p<0.0005$) and FSI involvement rate by 20.3% ($p<0.0005$).
- For drivers aged 21 to 23 years at crash involvement, there were no significant changes in their overall casualty and FSI crash involvement rates.
- For drivers aged 18 to 23 years (all novices), the casualty crash involvement rate reduced by 9.4% ($p<0.0005$) and FSI involvement rate by 18.1% ($p<0.0005$).

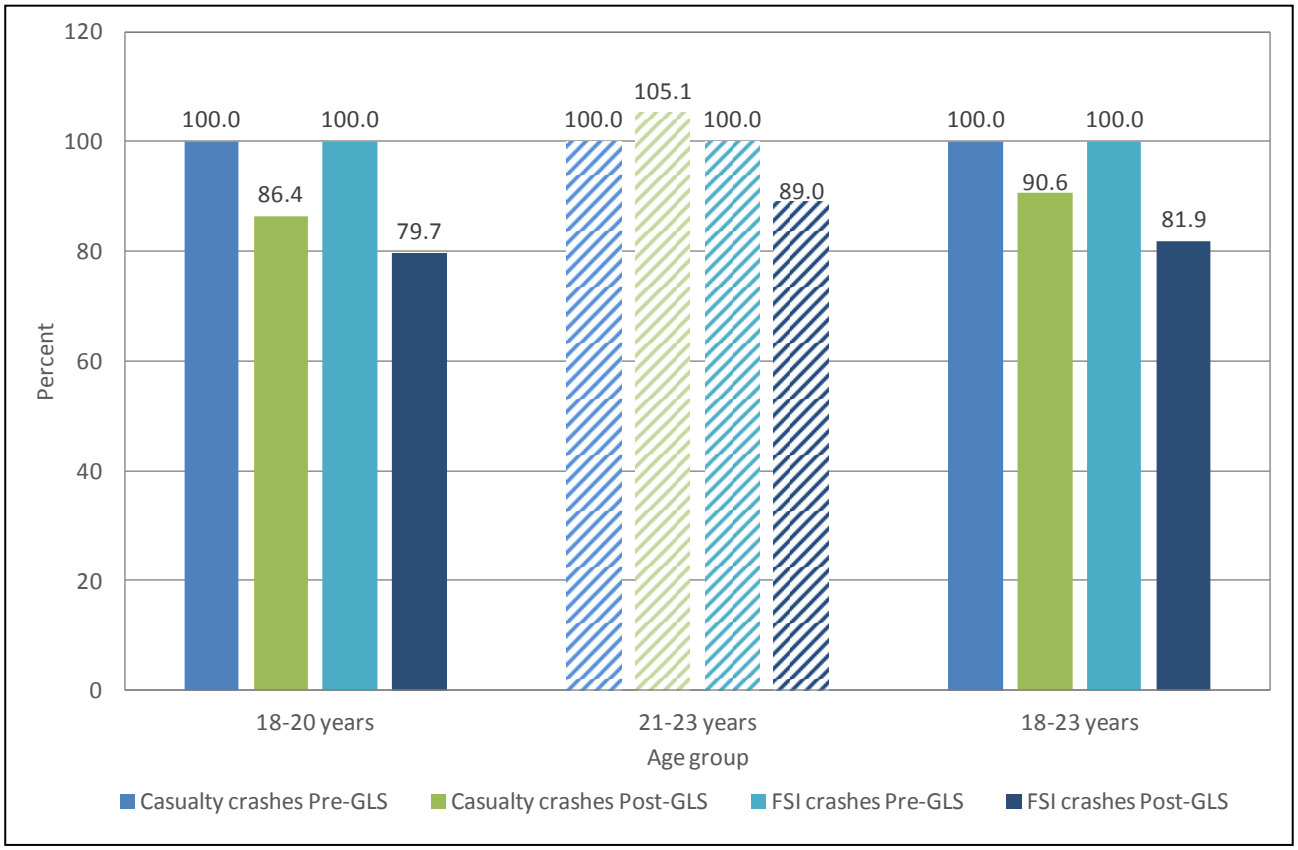

Figure 1. Casualty crash involvement rate by age group at crash – percent pre-GLS (2004–05 to 2006–07) and post-GLS (2011–12 to 2013–14) relative to a comparison group (solid coloured columns indicate statistically significant changes)

Crash involvement rates: driver experience

The enhanced GLS was successful in reducing young driver crash involvement rates for drivers in their first year of holding a licence[5]. Table 1 shows there were significant reductions in crash rates for drivers with less than one year experience for most driver groups (by age at licence issue) (ranging from 18.7% to 21.7%, $p<.05$). However, for drivers in their fourth year of holding a licence there were some significant increases in crash rates of 18.2% and 17.1% ($p<.05$).

Table 1: Change in crash involvement rate from pre-GLS (2004–05 to 2006–07) to post-GLS (2011–12 to 2013–14) by experience level (year of driving) relative to a comparison group

Crash type and experience	Driver group (age at licence)	Percent change	Significance (S = significant, NS = not significant)
Drivers in 1st year of driving involved in casualty crashes	Licensed at 18–23 yrs	18.7% decrease	p<0.0005 (S)
	Licensed at 18–20 yrs	19.2% decrease	p<0.0005 (S)
	Licensed at 21–23 yrs	13.2% decrease	p=0.247 (NS)
Drivers in 1st year of driving involved in FSI crashes	Licensed at 18–23 yrs	19.4% decrease	p=0.001 (S)
	Licensed at 18–20 yrs	21.7% decrease	p<0.0005 (S)
	Licensed at 21–23 yrs	17.4% increase	p=0.527 (NS)
Drivers in 4th year of driving involved in casualty crashes	Licensed at 18–23 yrs	18.2% increase	p=0.010 (S)
	Licensed at 18–20 yrs	17.1% increase	p=0.017 (S)
	Licensed at 21–23 yrs	35.8% increase	p=0.279 (NS)

There were no significant changes in casualty or FSI crash involvement rates for drivers licensed at 18 to 23 years who were in either their second or third year of licensed driving.

Traffic offence rates

Statistical comparisons of pre- versus post-GLS offence rates were analysed for two groups of novice drivers (18 to 20 years and 21 to 24 years at licence issue) against two groups of fully licensed drivers to analyse overall offence rates. The enhanced GLS was only successful in reducing some offence rates. Overall, the offence rates results were varied, with no clear pattern emerging. For example, for drivers aged 18 to 20 years at licence issue:

- Overall, offence rates decreased by 9.3% for those in their fourth year of licensed driving ($p<0.00005$). There were no significant changes in overall offence rate in each of the first, second or third years of licensed driving.
- A 3.2% reduction in offence rate was found for those aged 18 years when they committed the offences ($p=0.0005$). No significant changes in overall offence rate were found for those aged 19 to 24 years when they committed the offences.

For drivers aged 21 to 24 years at licence issue:

- There was an 8% increase in offence rate for those in their first year of licensed driving ($p=0.0006$). There were no significant changes in overall offence rate in their second and third years of driving.

[5] Before the enhanced GLS, drivers in their first three years of holding a licence were on a probationary licence. For those drivers post-GLS the first three or four years of holding a licence were on a probationary licence (if aged over 21 years at licensing, the applicant progressed to the P2 licence which was three years in duration, all other new drivers had a four year probationary licence).

Learner permit and licensing trends

Trends in learner permit tenure and licensing since the introduction of the enhanced GLS were analysed. Learner permit tenure has increased considerably since the enhancement of the GLS. Sixty percent of 18 to 20 year olds have held a learner permit for at least 24 months post-GLS compared with 37% pre-GLS. For those aged 21 to 24 years when first licensed, 66% of drivers post-GLS versus 41% pre-GLS held the learner permit for at least 36 months.

Regarding licensing trends, the findings show that the total number of licences issued each year to drivers aged 18 to 24 years is similar pre- and post-GLS enhancement. However, Figure 2 shows that the age profile of young adults at licence issue has changed.

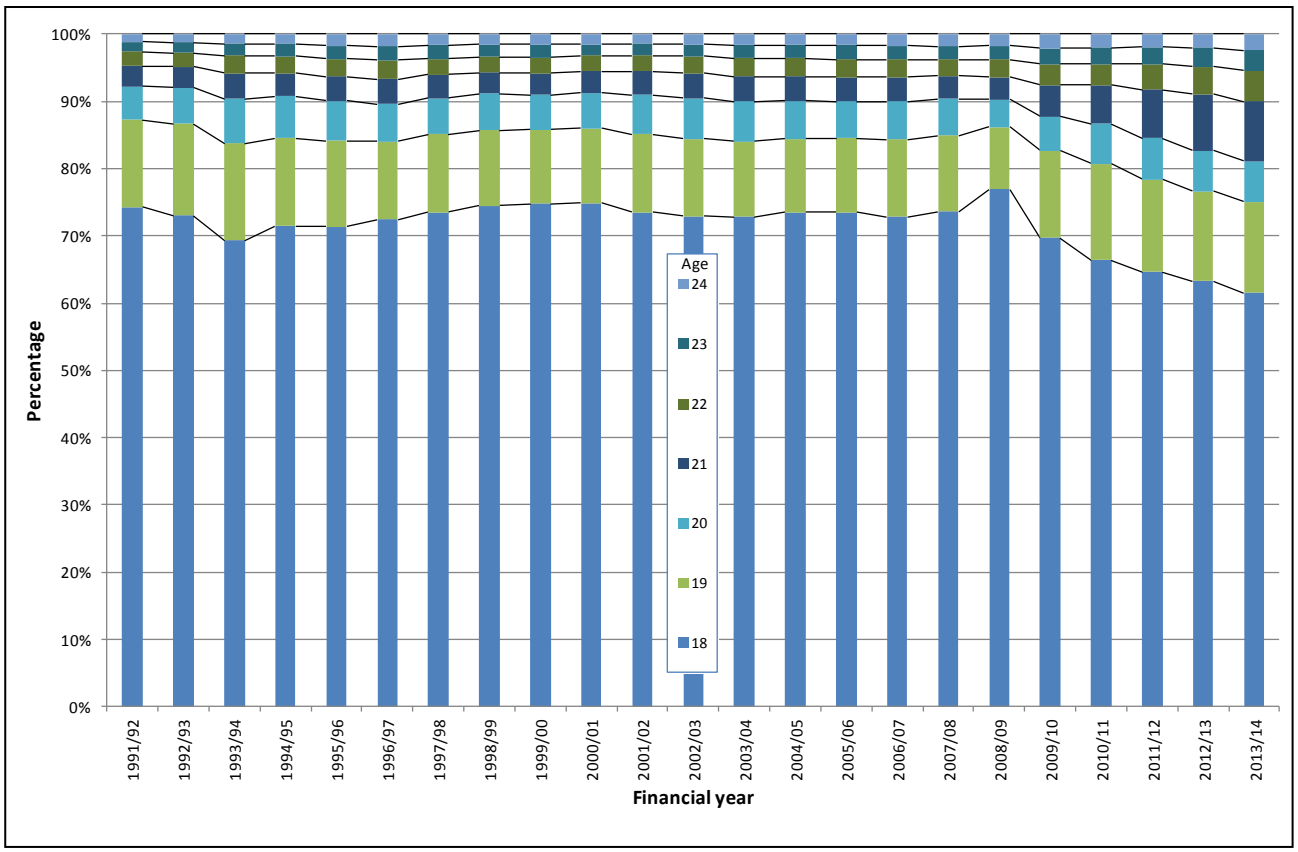

Figure 2. First licences issued by age as a percentage of total licences issued to 18 to 24 year olds by financial year (1991–92 to 2013–14)

The figure shows that the percentage of licences issued to 18 year olds has decreased since the GLS enhancement from approximately 74% in 2007–08 to 62% in 2013–14. The figure suggests that change was continuing to occur in 2013–14 but with some signs of levelling off. For 19 year olds, the proportion of licences issued rose from 11% since GLS enhancement to 14% by 2013–14. Also, 21 to 24 year olds comprised 19% of new licence holders in 2013–14 compared with 10% pre-GLS. Overall, there were changes in learner permit and licence issue age and tenure over time, which appear to be associated with the introduction of the enhanced GLS.

Learner driver supervised practice

The analysis of the learner driver self-reported experience found:

- Across all learner permit holders, average practice hours increased over the survey years from 83 hours in 1999 to 119.1 hours in 2014. In comparison with 1999, a statistically significant increase occurred across each of the surveys from 2005 to 2014 ($p<.005$ for each comparison).

However, in comparison with 2005, there were no statistically significant improvements over the survey years (from 2007 to 2014) although significance was nearly achieved for 2014 (p=.006)[6].

- On average females achieved more practice hours than males, with averages in excess of 120 hours in 2014 compared with slightly over 100 hours for males. The increase of practice hours for females in metropolitan and rural areas over time was statistically significant (p<.001).
- Sixteen year olds at permit issue achieved an average of 108 hours in 1999, the minimum 120 hour target in 2000, and achieved more than the target of minimum 120 hours driving practice in 2014 (average of 137 hours). The 2014 estimated mean practice hours for this age group was statistically significantly higher than the 120 hour target level (p=.005).
- Seventeen year olds at permit issue increased their average practice hours from 46 hours in 1999 to 127 hours in 2014. There was increasing variability in practice hours for these drivers, therefore statistical testing was not undertaken on whether the 2014 hours were higher than the minimum 120 hour target.
- Those aged 18 years and above at permit issue did not show significant increases in the average number of practice hours across the surveys, and did not achieve the minimum 120 hour requirement (averaging only 88 hours in 2014). The 2014 estimated mean practice hours for this age group was statistically significantly lower than the 120 hour target level (p<.001). It is important to note that the 120 hour minimum target does not apply to drivers aged 21 or older when they obtain a licence (Meyer, Cunningham & Rajendran, 2015).

Carriage of peer passengers

Figure 3 shows that the peer passenger restriction was supportive in reducing P1 driver casualty and FSI crash involvement rates with two or more peer passengers in the car. The restriction was also successful in reducing the self-reported occurrence of P1 drivers carrying more than one peer passenger. However, a large proportion of P1 drivers reported having to change their travel plans due to the restriction, although this was not very often. Results included:

- For P1 drivers, there was a large decrease in both the rate of casualty crash involvements (69.8%, p<0.0005) and FSI crash involvements (69.2%, p<0.0005) when carrying two or more peer passengers.
- For P1 drivers, there were also reductions in the rate of casualty crash involvement when carrying no peer passengers (9.1%, p=0.009) and when carrying one peer passenger (12%, p=0.027)[7].
- Among P1 drivers, the proportion of self-reported trips with more than one peer passenger decreased from 13% pre-GLS to 5% post-GLS (p<.001) (cohort survey).
- There was no significant change in the percentage of self-reported trips undertaken with one peer passenger (cohort survey).
- The cross-sectional survey showed that the majority of P1 drivers (85%) reported that their trip plans were impacted by the peer passenger restriction. Twenty-seven per cent were impacted more than once a week, 19% once a week, 22% every couple of weeks, 9% once a month, 8% less than once a month and 15% never.
- The majority of P1 drivers (63%) reported never violating the restriction (cross-sectional survey).

[6] Only p-values below 0.005 were regarded as statistically significant because of the large number of comparisons made between years.

[7] The comparison group for this crash analysis was experienced licensed drivers with 12 to less than 19 years driving experience after licence issue. For these experienced drivers their first car licence was issued at age 18 to less than 21 years. This was relevant to both the pre-GLS and post-GLS periods.

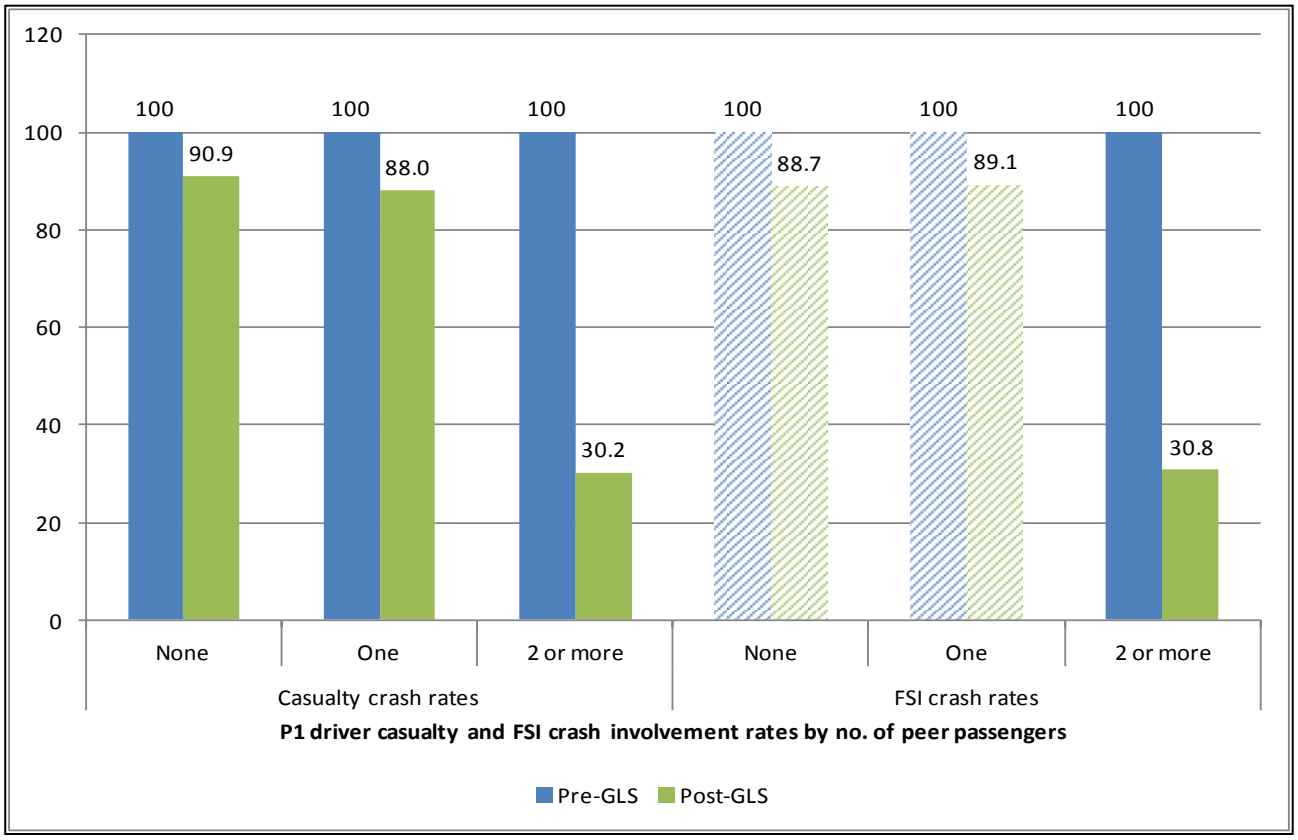

Figure 3. P1 drivers – rates of crash involvement when carrying none, one or two or more peer passengers relative to a comparison group - percentage change from pre-GLS (2004–05 to 2006–07) to post-GLS (2011–12 to 2013–14)
(solid coloured columns indicate statistically significant changes)

Drink-driving behaviour

The enhanced GLS, which requires probationary drivers to drive for four years with a zero BAC (if licensed when aged below 21 years), was supportive in reducing instances of self-reported drink-driving among those in their fourth year of unsupervised driving. Cross-section survey participants in the fourth year of their probationary licence were half as likely to self-report drink-driving[8] (4.5%) compared with drivers in their first year of fully-licensed driving after the former three year probationary period (9.9%). Drivers on a full licence post-GLS reported even less drinking (3.3%) (p=.014) (Figure 4).

Other results pertaining to drink-driving included:

- For drivers aged 18 to 20 years at licence issue, the rate of all alcohol offences decreased by 20.7% ($p<0.00005$).
- For drivers aged 21 to 24 years at licence issue, the overall reduction in alcohol offences (25.1%) was not significant.
- There was a non-significant decrease (9.4%) in the overall casualty crash involvement rate during High Alcohol Hours (HAH)[9].

[8] Survey participants were asked, 'How many of the last ten trips have you driven after drinking when you probably shouldn't have?'
[9] A surrogate for blood alcohol concentration (BAC) that measures when people are most likely to be driving under the influence of alcohol. This surrogate was used as BAC levels were mostly unavailable in the crash data. The times are a) Monday to Thursday: midnight to 6 am and 6 pm to midnight, b) Friday: midnight to 6 am and 4 pm to midnight, c) Saturday: midnight to 8 am and 2 pm to midnight, d) Sunday: midnight to 10 am and 4 pm to midnight.

- Casualty crash involvement rates during HAH decreased by 19.9% (p=0.031) in metropolitan areas, particularly metropolitan area crash involvements for:
    - single-vehicle crashes (40.7%, p=0.030)
    - males in single vehicle crashes (51.2%, p=0.015).

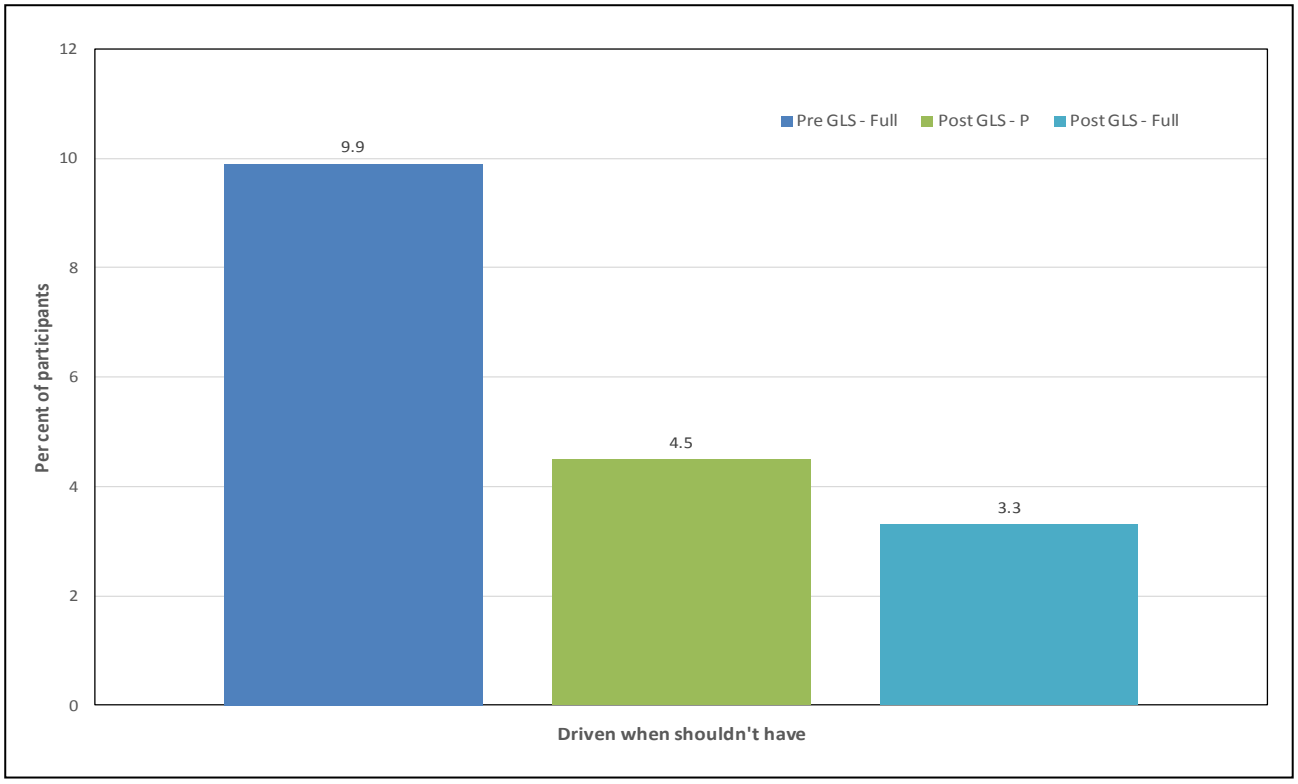

Figure 4. Percentage of survey respondents in their fourth year of driving reporting drinking then driving when they 'probably shouldn't have'

Speeding behaviour

There was no evidence showing a reduction in self-reported and offence related speeding behaviour (both surveys) among probationary drivers from the enhanced GLS[10]. Results included:

- There were no significant changes from pre- to post-GLS in terms of probationary driver self-reported speeding by:
    - less than 10 km/h above the speed limit
    - 10 to 25 km/h above the speed limit
    - more than 25 km/h above the speed limit.
- On average, speeding by less than 10 km/h was reported in around two trips in the last ten.
- For drivers aged 18 to 20 years at licence issue, the overall rate of speeding offences increased by 5% ($p<0.00005$).
- For drivers aged 21 to 24 years at licence issue, the overall rate of speeding offences increased by 10.3% ($p<0.00005$).

Other behaviours

The enhanced GLS did not reduce instances of driving while fatigued, breaches of 'other' probationary driving restrictions and requirements (such as carriage of licence, display of P-plates, high-powered vehicle restrictions and automatic transmission conditions), and driving without a

[10] Crashes involving speed as a causation factor were not available for analysis.

seatbelt among probationary drivers as these behaviours were already very low pre-GLS. Driving while very tired was reported in about one trip in the last ten (both surveys).

However, there was a decrease in P1 drivers using their mobile phone hands-free in the last ten trips from pre- to post-GLS by ten percentage points (36%, both surveys). However, for hand-held mobile phone use, young drivers reported a significant increase in text messaging (0.7 trips in the last 10 pre-GLS, versus 1.0 trip in the last 10 post-GLS) (p=.003) (cohort survey only).

The enhanced GLS was supportive in reducing young driver offence rates for 'other' offences (these included disobeying traffic control signals, failure to display P-plates, use of a hand-held mobile phone while driving, driving without a fastened seatbelt and driving while banned):

- For drivers aged 18 to 20 years at licence issue, the rate of 'other' offences decreased by 17.9% ($p<0.00005$).
- For drivers aged 21 to 24 years at licence issue, the rate of 'other' offences decreased by 14.3% ($p<0.00005$).

Discussion

The enhanced GLS was supportive in reducing young driver crash involvement rates for drivers aged 18 to 20 at crash involvement and in their first year of holding a licence, but there was no significant change for older young driver (21 to 23 years) crashes. For example, drivers aged 18 to 20 years, which is the group with the highest rates of crash involvement pre-GLS, reduced their overall casualty crash involvement rate by a significant 13.6% and their FSI involvement rate by a significant 20.3% (Healy, Imberger & Catchpole, in press). Following more than 10 years (1994–2006) of young driver safety promotions and initiatives by the road safety agencies (i.e. public education and other support initiatives), the implementation of the enhanced GLS had strong community support. This helped to create an environment in Victoria which allowed the benefits of the enhanced GLS initiatives to be realised to maximum effect.

For drivers aged 21 to 23 years at crash, there were no significant changes in their overall casualty and FSI crash involvement rates. A possible explanation for this finding is that some drivers in this age group do not need to complete the minimum 120 hours of supervised practice, a requirement that provides a crash protective effect for drivers during the first year of driving after getting a licence to drive unsupervised (Gregersen, 1997), and are not subject to the peer passenger restriction. Furthermore, for the majority of the post-GLS period in this study, new licence holders who were not required to complete 120 hours of supervised practice (20%) were also not subject to the ban on hands-free mobile phone use. However, it should be noted that this group does not contribute quite as many crashes to the overall young driver crash problem as 18 to 20 year olds. Offence rates increased for young drivers aged 21 to 24 years at licence issue (e.g. drivers in their first year registered an 8% significant increase in offences overall) and those aged 18 at learner permit acquisition, many of whom would be older at licensing, did not achieve the 120 hour minimum practice hour requirement. These results lend support to also targeting older novice drivers with interventions.

When experience levels were analysed, the enhanced GLS did reduce crash rates of young drivers 18 to 23 years in their first year of driving only (18.7% and 19.4% for casualty and FSI crashes respectively). This effect was especially evident for those aged 18 to 20 years in their first year of driving (19.2% and 21.7% for casualty and FSI crashes respectively). There were no significant reductions for drivers aged 18 to 20 years at licence in their second or third year of driving. Casualty crash involvement rates for drivers aged 18 to 23 years at licence in their fourth year of driving increased by 18.2% overall. This unexpected increase in the casualty crash involvement rate of fourth-year novices could possibly be linked to an increase in on-road driving exposure, with

these novices driving more kilometres or more hours per month in the post-GLS period than in the pre-GLS period and therefore creating a greater opportunity to be involved in crashes. However, this hypothesis cannot be investigated due to an absence of reliable data (on-road observational data) on time or distance driven by novice and comparison drivers in the pre-GLS and post-GLS periods (Catchpole et al., 2016).

Encouragingly, learner permit and licensing trends have been positively affected by the enhanced GLS in terms of learner permit tenure increasing. Increased tenure can translate to more supervised practice hours, which is confirmed by the surveys measuring hours of learner driver practice. Increased tenure also provides the new driver with time to mature, which translates into reduced crash risk in general (Senserrick & Williams, 2014).

When the enhanced GLS was introduced, there was a drop in the number of licences issued. The licensing trends confirmed that there was a change in licensing profile. For example, for those aged 18 to 24 years a new licensing profile emerged. Eighteen year olds dropped from 74% to 62% of those getting a first licence, while 21 to 24 year olds comprised 19% of new licensees in 2013–14 compared with 10% before the enhanced GLS. These changes may be due to a range of factors including:

- The enhanced GLS requirement to log a minimum of 120 hours of supervised practice and the requirement to hold a learner permit for a minimum of 12 months. Some learners may not have had time to complete these requirements by the age of 18 years.
- The new Drive Test caused some young people to be unsuccessful in obtaining a licence at the earliest opportunity. It should be noted that the Drive Test pass rate has now returned to the levels pre-GLS.
- Young people may be delaying getting their licence to avoid the four year probationary period, including the peer passenger restriction, which applies during the first year of the probationary period only.
- A general delay in licensing that is occurring world-wide due to lifestyle factors and other reasons such as the cost of motoring, and not due to the requirements of Graduated Licensing Systems (Delbosc & Currie, 2013).

The peer passenger restriction, introduced as part of the enhanced GLS, is an effective countermeasure. The probationary surveys indicated that 85% of survey respondents felt that their trips were affected by the restriction, with 27% affected more than once a week. Sixty-three percent reported that they never violated the restriction, but, 45% of those respondents who said that they did violate the restriction, said that they had driven more carefully to avoid drawing attention. This tactic to avoid being caught by the police may have provided benefits in the form of lower-risk, more compliant driving resulting in fewer crashes (Catchpole et al., 2016). Nonetheless, the safety outcome in terms of reduced crash involvement rates for P1 drivers carrying two or more peer passengers is very favourable.

Self-reported speeding did not decrease after the enhanced GLS was introduced. It was hypothesised that there would be a reduction in speeding offences from the enhanced GLS, but there were increases in offending for those aged 18 to 20 and 21 to 24 years at licence issue. However, the increases in speed-related offences are not considered to be a result of introducing the GLS. It is possible that experienced drivers are more attuned and responsive in the short term to substantial changes in speed enforcement levels than are young, inexperienced drivers. However, this explanation needs further investigation and may include investigation of crashes where speeding was a contributing factor.

In terms of other behaviours such as driving whilst fatigued and not wearing a seatbelt, using a mobile phone and obeying restrictions such as compulsory carriage of licence, illegal behaviours

were all low pre-GLS to post-GLS. However, there was an increase in trips where text messaging was undertaken in the cohort study (and not in the cross-sectional study). This could possibly be related to the changes in phone and smartphone technologies and the use of those technologies over the same period (e.g. the increased penetration of mobile phones in the marketplace; introduction of multi-touch interfaces and virtual keyboards by Apple in 2007 [Erickson, 2012]), and would require further investigation.

There were some limitations to the work reported here. In the crash and offence analyses the exposure measure for both the novice and experienced groups was driver-years of licence holding, rather than a more robust measure of vehicle kilometres travelled. However, we did control for enforcement levels and associated advertising campaigns in the offence and crash analyses by including the experienced comparison group. Novice drivers programs and relevant advertising continued to occur across both the pre-GLS and post-GLS study periods at similar levels so would not have influenced the results.

Conclusions

The enhanced GLS has contributed to improved safety of young drivers on Victoria's roads and is an effective countermeasure. However, the benefit appears limited to those aged 18 to 20 and in their first year of driving. Further interventions will be required to address the crash rates of those aged 21 to 23 years, who may not always be subject to the minimum 120 hour learner supervision requirement or the P1 licence requirements. This is important due to the changed licensing profile. A focus is also needed on older learner permit holders who may not reach the minimum 120 hour supervision target.

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