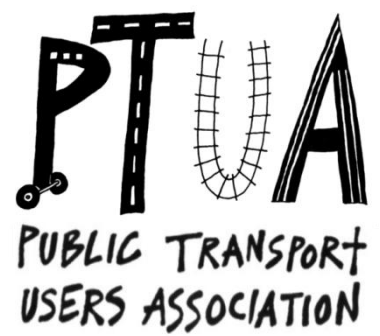


# Submission to the Inquiry into the Increase in Victoria's Road Toll

30 April 2020



## Contents

1	Introduction .....	1
2	Road Safety Strategy.....	1
3	Driver behaviour .....	4
3.1	Driving under the influence of drugs and/or alcohol.....	4
3.2	Speed .....	4
3.3	Distracted driving.....	5
3.4	Improving driver behaviour .....	6
3.4.1	Compliance measures.....	6
3.4.2	Insurance.....	7
4	Vehicle technology.....	8
5	Road design and maintenance.....	9
5.1	Design.....	9
5.2	Maintenance .....	10
6	Driver training .....	11
7	Data collection .....	11
8	References .....	13

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# 1 Introduction

The Public Transport Users Association (PTUA) welcomes the opportunity to contribute to the Inquiry into the Increase in Victoria's Road Toll and commends the committee for seeking measures to reduce the level of death and trauma resulting from road crashes.

Victoria has been an early adopter of many road safety measures such as seatbelts, random breath testing, speed cameras and powerful public awareness campaigns through the Transport Accident Commission (TAC). While these measures have helped to reduce the number of people killed on Victorian roads, private motor vehicle use remains an inherently risky activity and crashes are the largest cause of death in some age groups. A strategy based on reducing exposure to this risk represents an opportunity to continue Victoria's tradition of leading on road safety.

## 2 Road Safety Strategy

Since the peak of Victoria's road toll of over 1,000 lives lost in both 1969 and 1970, the state road toll has been on a downwards trend. However this progress has stalled during the current Road Safety Strategy period of 2016-2020, as it has in a number of jurisdictions (Litman 2018), pointing to a need for a fresh approach informed by successful examples from around Australia and the world (Litman 2020a).

Much of the focus of road safety has traditionally been on motor vehicle occupants (especially in terms of vehicle standards) to the detriment of vulnerable road users. The decline in vehicle occupant deaths has not been matched by a decline in vulnerable road user deaths. We therefore acknowledge and welcome the focus on vulnerable road users in the current Victorian Road Safety Strategy.

A fundamental feature of any sound risk management strategy is the elimination of risk as this is more effective and reliable than engineering<sup>1</sup> and administrative<sup>2</sup> controls or personal protective equipment<sup>3</sup> (Safe Work Australia 2018). Both the National and Victorian Road Safety Strategies include a number of principles that are premised on avoided driving. These include avoiding driving while under the influence of drugs and/or alcohol, avoiding driving when fatigued, and avoiding driving without a licence. More generally there is also recognition that "people will make mistakes" and when this happens behind the wheel they pose a deadly or life-altering risk to themselves and other road users.

For example, fatigue is believed to be a major contributor to road crashes, particularly on rural roads, although quantification of its role is subject to definitional issues (Dawson et al., 2018). Regional rail and coach services can offer an alternative to driving long distances on rural roads if

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<sup>1</sup> e.g. road design and construction, vehicle automation technologies, etc.

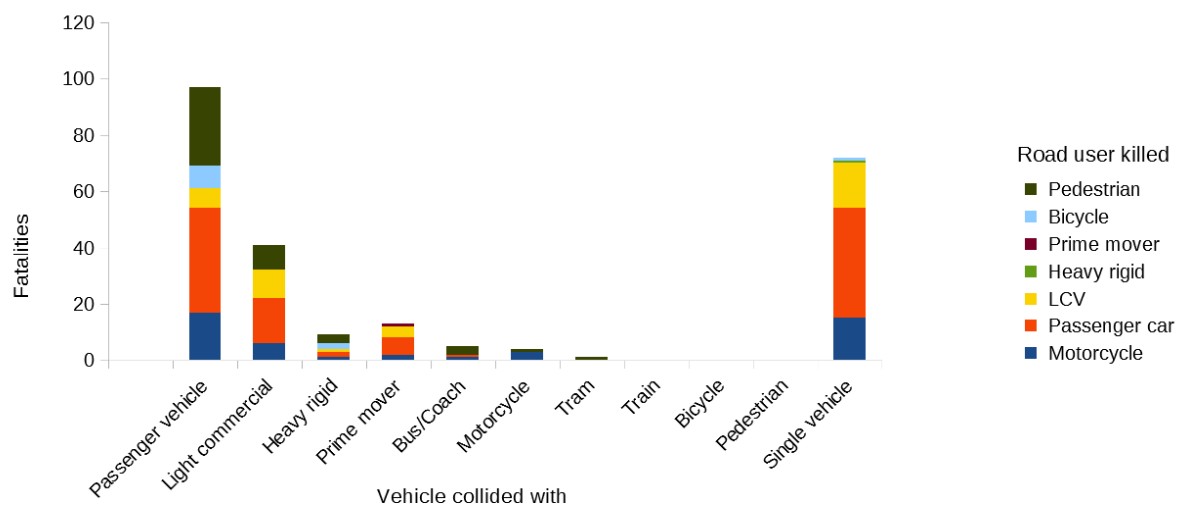
<sup>2</sup> e.g. speed limits, blood alcohol limits, driver testing and licensing, etc.

<sup>3</sup> e.g. helmets, high visibility clothing, etc.

services are available. Therefore we encourage the expansion of regional public transport services so that they offer a genuine option for people at risk of driving when fatigued.

When people switch their travel from private motor vehicle to active or public transport, they reduce the risk they pose to other road users from significant to virtually zero. In a risk management sense, they eliminate risk. Public transport has been long recognised as having lower fatality and injury rates by distance travelled (PTUA 2011). Recent research for Melbourne has shown that “... mode shift from private vehicle travel to public transport travel would result in substantial reductions in the number of total crashes as well as severe crashes” (Truong & Currie 2019, p.7). A road safety strategy that fails to put this evidence into practical action squanders the opportunity to save many lives and avoid multitudinous debilitating injuries.

Although the above-mentioned research into the road safety impacts of public transport in Melbourne did not show safety benefits from mode shift to active transport (Truong & Currie 2019), it acknowledged that Melbourne currently has a relatively hostile environment for walkers and riders compared to cities where modeshift to active transport has been shown to reduce serious crashes (Moeinaddini et al., 2015; Asadi-Shekari et al., 2016). This highlights the vital importance of improving safety for vulnerable road users by adopting approaches that are common in countries such as Denmark and the Netherlands that have much lower fatality and serious injury rates (Küster et al., 2010). Better protecting people who walk or ride will ensure that such people are rewarded rather than penalised for reducing the risk they pose to other road users (Figure 1).

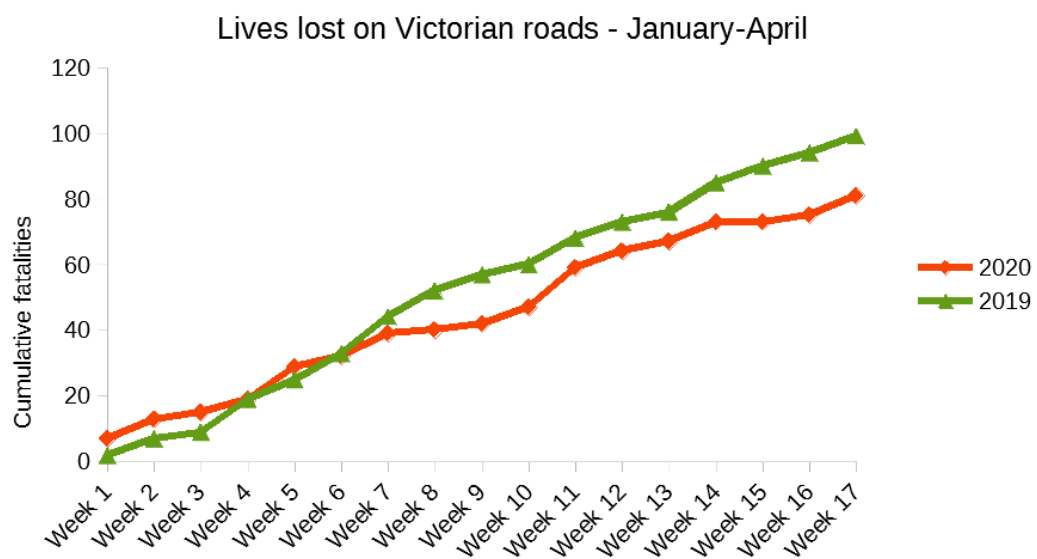


**Figure 1:** Road fatalities in 2018 by type of vehicle collided with. No pedestrians or bicycle riders were killed once collisions with motor vehicles are subtracted, and no road users were killed by collisions with pedestrians or bicycle riders. NB. road users are counted in more than one vehicle collision category where three or more vehicles have collided.

Truong & Currie (2019) also point to stronger benefits for modeshift from car to bus than to train which they attribute to the tendency for some train users to drive to the station versus the close proximity of bus stops to their journey origin. Meanwhile, other research indicates that ride sharing

services may not have the same safety benefit as shifting travel to conventional public transport (Barrios et al., 2020; Bliss 2018). The safety benefits of buses reinforce the need to improve bus services so they can better serve passengers that currently drive to the station and attract trips beyond the rail network that are currently made entirely by car. In addition to the safety benefit, this would have the added benefit of relieving pressure on railway station parking.

At the time of writing, the road safety benefits of reducing private vehicle use are being demonstrated around the world due to restrictions related to the COVID-19 pandemic. For example, crashes and fatalities fell by about half in the first three weeks of California’s shelter-in-place order (Shilling & Waetjen 2020). Closer to home Australia’s road toll plateaued following the imposition of COVID-19 restrictions (Charlwood 2020).



**Figure 2:** After starting this year with more lives lost than 2019, the number of lives lost on Victorian roads in 2020 has fallen well below 2019 since COVID-19 restrictions were put in place. This is despite the tragic loss of four police officers in one incident on the Eastern Freeway in week 17. Source: Transport Accident Commission.

The reduction in vehicle travel (and concomitant decline in exposure to road crash risk) has been so effective in reducing road trauma that it has outweighed an increase in the fatality rate (or level of risk faced when driving) that has resulted from higher risk driving during COVID-19 restrictions (as discussed in Section 5.1). This shows that shifting travel away from private motor vehicles (i.e. risk elimination) can result in a large reduction in road trauma and should be an integral component of any road safety strategy (Litman 2018).

Enabling mode shift from private vehicles to active and public transport also offers numerous co-benefits<sup>4</sup> that are not delivered by restricting attention to purportedly safer roads and cars. Co-benefits of improving the usefulness of active and public transport include reductions in congestion costs (Adler & van Ommeren 2016), improved public health (Beavis & Moodie 2015), lower pollution (Xia et al., 2015; McMahon 2020) and greater social inclusion (Scheurer et al., 2017). This synergy between reducing road crash risk exposure and multiple other areas of public policy makes mode shift a highly effective tool, notwithstanding a tendency for it to be overlooked when such benefits are considered in isolation within individual policy area silos.

### **3 Driver behaviour**

#### **3.1 Driving under the influence of drugs and/or alcohol**

While the introduction of random drug and alcohol testing has improved road safety, driving under the influence continues to be a prominent contributor to road crashes. Efforts to detect, deter and penalise impaired drivers should continue to be a major focus for road safety, informed by the best available evidence on maximising the likelihood of detecting offenders.

As stated above (Section 2), avoided driving is implicit in the objective of reducing drink driving, and success in this regard will depend to an extent on the availability of alternative transport. An extensive public transport network with ubiquitous staffing can provide a safe alternative to driving for people with low-range blood alcohol concentrations and therefore reduce the temptation to get behind the wheel.

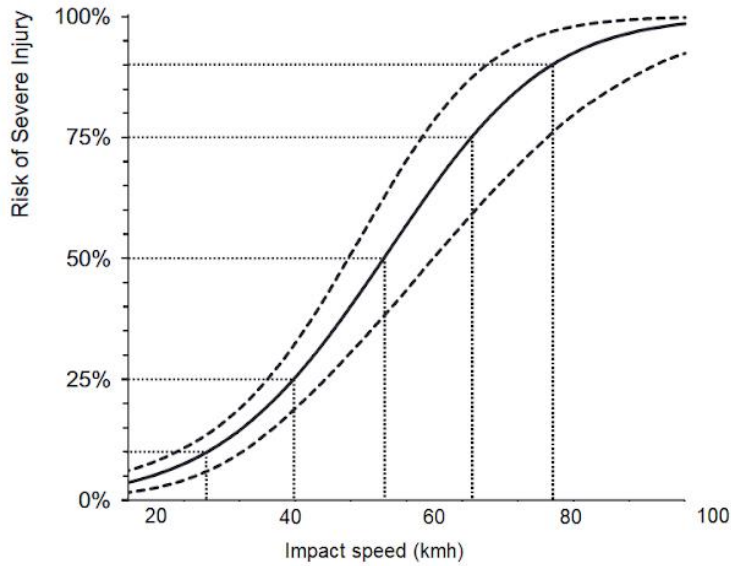
Higher level or ongoing offending is further addressed below (Section 3.4).

#### **3.2 Speed**

Lower urban speed limits and enforcement by speed cameras have both contributed to safer driving, however there is potential to improve further. While crashes between vehicles and pedestrians in the Melbourne CBD fell by over one third when speed limits were reduced to 40km/h, default urban speed limits elsewhere are still generally set above the inflection point at which the risk of serious injury or death starts to increase rapidly (Figure 3). This indicates a need to streamline the ability of local governments to reduce speed limits in response to local conditions. Reducing these limits would improve actual road safety as well as the perception of safety among people who are currently deterred from using active transport by fast local traffic (Jacobsen et al., 2009). Encouraging mode shift to active transport through safer speed limits could therefore achieve a double dividend of reducing collisions and lowering the speed of impacts that do occur, thereby reducing both the likelihood and consequence aspects of risk.

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<sup>4</sup> A co-benefit is a positive side-effect or incidental beneficial outcome that was generally not the primary objective of an action or measure. For example, giving up smoking primarily for health reasons may have a co-benefit of saving money.



**Figure 3:** Risk of severe injury to pedestrians in relation to vehicle impact speed (Tefft 2013, p.875).

Enforcement of speed limits is clearly a fundamental element in their effectiveness. Detection and penalisation of speeding drivers is needed to deter driving over the speed limit. Speed cameras have proven to be highly effective in this regard (Victorian Auditor-General, 2011). However revealing the location of enforcement cameras reduces their effectiveness, so we support the current policy of not publishing their locations. We encourage Victoria Police to aim for wide spatial and temporal distribution of enforcement camera operations to ensure drivers behave in the expectation that there could be a road safety camera anywhere, anytime.

### 3.3 Distracted driving

Smart phones do have a legitimate role while travelling, including navigation by the driver (provided the device is mounted appropriately) and general use by passengers. Thus disabling phones while moving may not be an ideal response to misuse. However the inappropriate use of mobile devices in motor vehicles is clearly a very serious risk factor, and should be subject to similar compliance and enforcement measures to those discussed above for other traffic infringements, along with emerging technologies to detect distracted driving (Basford 2020).

With mobile devices now an integral part of daily work and social life, the problem of driver distraction could arguably be viewed as inappropriate transport mode choice by a mobile device user. Smartphone use while on public transport clearly does not present the same safety risk as its use in private motor vehicles. There are signs that “digital natives” are shunning car use in part because it entails putting aside their technology during the journey (Maynard 2014; Delbosch et al., 2019a). Public transport use while engaging with technology therefore represents responsible behaviour, in contrast to driving while distracted, and should be recognised as a positive measure to reduce risk (Ahmed 2018). Continued investment in public transport service availability and quality can enable and reinforce responsible mode choice by mobile device users.

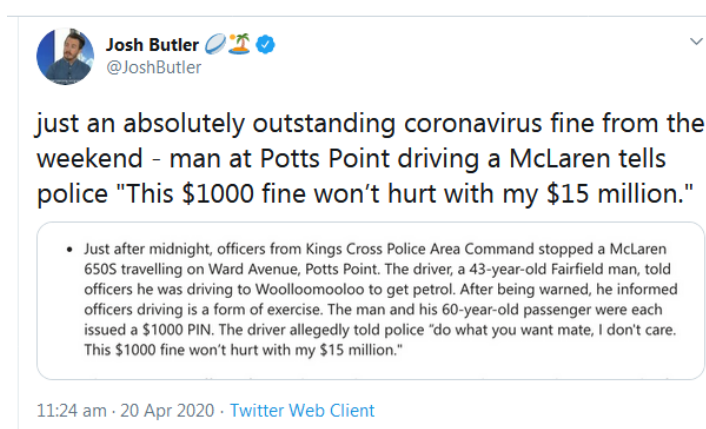
## 3.4 Improving driver behaviour

### 3.4.1 Compliance measures

Driving too fast, distracted driving and driving under the influence underlie much of the road trauma in Victoria. Successfully addressing these behaviours would allow dramatic reductions in death and injury.

The demerit point system is a useful principle for the identification and penalisation of high-risk drivers, however it can be undermined by fraud<sup>5</sup>. Thus the adequacy of speed and distracted driving enforcement measures depend upon the integrity of the demerit point system. While we do not wish to be prescriptive about the nature of compliance measures undertaken to minimise demerit point fraud, we do hope that these activities are adequately resourced and have best-practice investigation tools at their disposal. We suggest the Committee may wish to seek assurances of this from the relevant agencies.

The nature of some demerit point fraud indicates that fines at their current levels are much less of a deterrent to high-risk behaviour than the prospect of loss of licence. On top of demonstrating the need to minimise demerit fraud, this suggests that fines are currently an inadequate deterrent for some drivers. Consideration could be given to setting fines according to ability to pay, along the lines of the Finnish example, so that their deterrent value is preserved for high income drivers (McKenna 2018). A given fine amount could result in severe financial distress for some members of the community (Spiers Williams & Gilbert 2011), while failing to act as a deterrent for more privileged members of society (Figure 4). Means-based fines could offer an equitable way to ensure fines carry comparable deterrent value for all road users. In addition, the use of vehicle impounding and crushing could be expanded beyond the certain sub-set of one-off high risk actions to include patterns of high-risk behaviour, particularly repeated unlicensed driving and drink driving.



**Figure 4:** Existing fines may lack deterrent value for high income offenders. Source: <https://twitter.com/JoshButler/status/1252045487147896832>

<sup>5</sup> e.g. <https://www.abc.net.au/news/2014-09-19/16-arrested-in-melbourne-over-cash-for-demerit-points-scam/5754808>



Once again, compliance measures such as licence suspension and vehicle impounding are premised on avoided driving to reduce risks to other road users. To ensure offenders are still able to access employment, etc without reverting to dangerous behaviours such as unlicensed driving, alternative transport options need to be in place. Good quality active and public transport networks can facilitate the diversion of high risk drivers away from driving without the broader negative social consequences of loss of employment, etc. Mandated purchase of a Myki Pass by disqualified drivers may also help to ensure that the marginal cost of an individual journey does not favour unlicensed driving over safer alternatives.

### **3.4.2 Insurance**

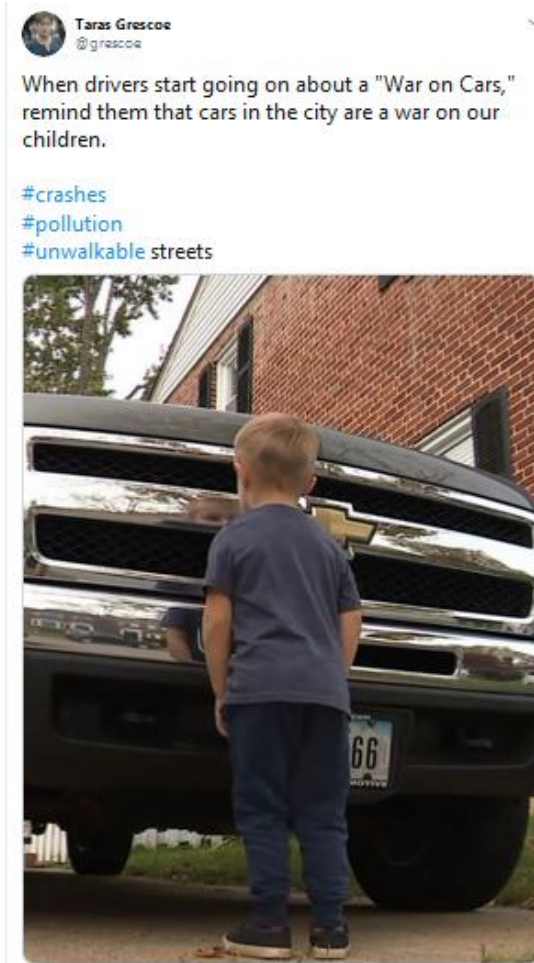
Victoria's system of "no-fault" road trauma compensation provides an important guarantee of acute and ongoing support for victims of road trauma regardless of their means or the insurance status of other parties. This can have a beneficial impact on outcomes for crash victims. However uniform premiums<sup>6</sup> are not necessarily an inherent feature of "no-fault" schemes.

Uniform insurance premiums have the effect of subsidising high-risk drivers and vehicles while taxing lower risk drivers and vehicles, which removes the incentive to choose less aggressive vehicles (Newstead et al., 2004) and to drive them more safely (Tooth 2013). While pricing could be based on driving history such as past insurance claims and traffic infringements, some insurers and jurisdictions are adopting usage based insurance (UBI) products that utilise telematics to effectively adjust pricing in real time. Whether insurers use traditional or emerging tools to assess risk, risk-based pricing reduces the cross-subsidisation of dangerous road use and can lower the overall social cost of road trauma (Weiss et al., 2010).

Adopting a CTP pricing structure that reflects driver and vehicle risk is not mutually exclusive with public ownership of a statutory insurer. In fact, public ownership can facilitate cross-subsidisation where not unduly harmful to road safety objectives (e.g. low income households), along with ongoing funding of the TAC's world-leading awareness campaigns (Lewis et al., 2019).

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<sup>6</sup> Although TAC offers concessions for certain groups and a lower charge for some postcodes, the annual TAC charge does not vary according to driving or claims histories or vehicle "aggressivity", so for the purposes of this submission is considered a "uniform" premium.



a) <https://twitter.com/grescoe/status/1233409841789579266>



b) Toyota Corolla

**Figure 5:** For a given postcode and concession eligibility, the annual TAC charge will be identical for the vehicles shown in (a) which poses a serious risk to other road users, and (b) which has a high ANCAP Vulnerable Road User (VRU) protection rating.

## 4 Vehicle technology

While autonomous vehicles may one day provide a reliably safe mainstream travel option, expectations that this will be soon are being hosed down by industry participants (Boudette 2019; Bayern 2019; Dowling 2019), and road safety strategies should assume that humans will control vehicles for the foreseeable future, albeit with the assistance of some automation technologies. This underlines the importance of measures that reduce risk exposure and consequences as outlined elsewhere in this submission.

The expected net effects of automation technologies are ambiguous due to a range of unintended consequences that have been identified in real-world and simulation research, such as:

- riskier behaviour due to over-reliance on the system (“behavioural adaptation”);
- diminished driver performance upon resuming control after autonomous operation;

- increased driver drowsiness;
  - cyberattacks;
  - increased travel and hence risk exposure; and
  - failure to recognise vulnerable road users or predict their behaviour.
- (Milakis et al., 2017; Litman 2020b)

The evidence of behavioural adaptation to automation technologies mirrors the adoption of more aggressive driving styles in response to other vehicle safety features such as occupant air bags (Sobel & Nesbit 2007; Peterson et al., 1995; Potter 2011). Most pointedly in the context of this inquiry, heightened expectations around the safety benefits from automation may reduce commitment to conventional road safety measures (Lawson 2018). This should not be interpreted as opposition to vehicle safety features on our part, however we do recommend that conventional road safety measures remain the cornerstone of road safety strategies moving forward, along with investment in active and public transport to encourage mode shift so that exposure to road crash risk is reduced.

Similar to incentives for “green” cars (Li & Xing, 2016, pp.8-10; Chandra et al., 2010), there is a risk that incentives for “safe” cars would direct taxpayers’ funds to medium and high income earners to buy private motor vehicles that they would have bought anyway. Given the voluntary nature of incentives (Lee, Kim & Chong 2015), any benefits from the takeup of driver assist technologies could be easily countered by growth of aggressive vehicle types such as US-style pickup trucks shown in Figure 5a (White 2004). A shift in the overall safety of the vehicle fleet may be more effectively achieved through changes to the Australian Design Rules so that safety technologies are required and high risk vehicle types are excluded. In particular, vulnerable road user protection technologies could contribute to reducing the level of road trauma inflicted on these road users, however there is little benefit to car buyers from incorporating these technologies, and car manufacturers will face limited demand from customers for these features. A regulatory requirement for features such as pedestrian airbags and autonomous emergency braking for vulnerable road users is likely to encourage adoption moreso than subsidies for private cars.

## **5 Road design and maintenance**

### **5.1 Design**

A range of research shows drivers tend to adjust their driving according to some assessment of risk or complexity (Fuller 2005). For example, people tend to drive more slowly along narrow roads than wide roads (Godley et al., 2004; Lewis-Evans & Charlton 2006). The tendency to drive less cautiously where the road seems to offer a wide margin for error is another example of behavioural adaptation or “risk compensation” mentioned above (Noland 2003). While supposed safety benefits are sometimes advanced as justification for freeways, the higher speeds can lead to higher severity of crashes that do occur, and the generation of additional traffic creates additional exposure to road crash risk on both the freeway and feeder roads (PTUA 2019; PTUA 2011, p.12).

As a practical and topical example, the wide open roads resulting from COVID-19 restrictions have encouraged an increase in speeding in Australia and around the world. So while the reduction in

driving has generally reduced total road trauma below where it would normally be (Section 2), the roads have become more dangerous per kilometre of driving<sup>7</sup>, and the crashes more serious, which in turn increases the likelihood of serious injury or death (Goodyear 2020; Hu 2020; Jacks 2020; Linton 2020; Ramsay 2020; Wilson 2020a; Wilson 2020b).

The evidence around risk compensation further supports the adoption of “road diets” in a number of jurisdictions around the world<sup>8</sup>. Road diets reconfigure road space to provide visual cues to drivers to take care when driving, and offer vulnerable road users greater protection from traffic. Measures that have been shown to be effective at enhancing safety include curb extensions (midblock or at intersections), speed reductions, speed cushions that accommodate bicycles and wide axle vehicles such as emergency vehicles and buses, raised zebra crossings and widened footpaths (Makwasha et al., 2017; Turner et al., 2017; Reid & Adams 2011).

While segregated bike lanes also show strong safety benefits, unbuffered on-road bike lanes, particularly alongside un-calmed traffic or within the “door zone” of parked cars, do not offer the same level of protection and often create additional risks (DiGioia 2017; Johnson et al., 2013; Schimek 2018). Other infrastructure treatments that can often have ambiguous or harmful effects on vulnerable road user safety include slip lanes, roundabouts, shared paths, unresponsive pedestrian crossing signals and pedestrian fencing (DiGioia 2017; Victoria Walks n.d.). The current deficit in safe cycling infrastructure is particularly limiting for women and families who are deterred more than men by safety concerns (Timperio et al., 2004; Aldred & Dales 2017; Pidd 2018). This raises serious questions about equity in transport planning (Moller 2018).

Reconfiguration of existing road reserves could allow greater priority to be provided to public transport vehicles, thus increasing the efficiency of operations and their attractiveness to potential users (aiding modeshift objectives referred to above), as well as ensuring greater safety for walkers and riders by increasing space and separation from vehicles. In particularly high pedestrian flow locations there is likely to be great value in excluding cars as has been done in cities where pedestrian fatalities have been practically eliminated (Peters 2020).

## 5.2 Maintenance

Heavy goods vehicles increase the construction cost of roads designed to accommodate them and the amount of road surface damage resulting from their traffic. Both of these factors have negative impacts on state and local government budgets. The resulting road surface damage can also be a safety risk to other road users (Lee et al., 2015). Shifting a greater proportion of freight by rail would reduce costly wear and tear on the road network and have important safety benefits (Deloitte Access Economics 2011). We therefore encourage renewed focus on improving integration with the national rail network through gauge standardisation and addressing the backlog of rail network maintenance across the state (Victorian Auditor-General 2020).

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<sup>7</sup> Since Stage 3 restrictions were introduced in Victoria, road fatalities have fallen by nearly 20% compared to the same period in 2019 (Figure 2), while traffic is reported to have fallen by up to 53% on some roads (Wiggins 2020). A 25% reduction on 2019’s relatively high road toll could achieve the current Victorian Road Safety Strategy target of reducing lives lost to below 200.

<sup>8</sup> [http://www.victoriawalks.org.au/road\\_dieting/](http://www.victoriawalks.org.au/road_dieting/)

## 6 Driver training

Graduated licensing appears to have had some positive effects on road safety, however it is not necessarily a silver bullet solution (Imberger et al., 2017). Attitudes to road safety can start to form in childhood while travelling with parents by car or when using active transport. Walking and riding during childhood and adolescence provide a more participatory opportunity to gain familiarity with road rules, use of the road network and awareness of the needs of vulnerable road users. This can be consolidated by formal bicycle education at school and further reinforced by walking and riding school bus arrangements (van Lierop 2016; Mandic et al., 2018).

Driver attitudes to vulnerable road users can have serious implications for safety whether these attitudes are aggressive or simply careless (Fruhen & Flin 2015; Johnson et al., 2010). In particular, the characterisation of other people as less than human is clearly abhorrent, especially when it drives dangerous behaviour towards them (Delbosc et al., 2019b). These sorts of dangerous and anti-social attitudes and behaviours should be addressed as part of the driver training regime, for example by ensuring appropriate behaviour around vulnerable road users is demonstrated during practical testing, and knowledge is assessed during theoretical testing. Embedding bicycle education into the curriculum and building empathy through public education campaigns can also help to ensure drivers respect the lives of vulnerable road users (Oldmeadow et al., 2019).

The driving experience can change significantly over a driver's life due to changing laws, advances in vehicle technology, and changing driving fitness. Surveys have indicated that many drivers can be unaware of recent changes to road rules (Rissel et al., 2002). At the same time, some older drivers put themselves and other road users in danger when they persist with driving after their driving fitness has deteriorated (Cunningham 2017). Driving competence should be assessed more regularly (e.g. at licence renewal) to ensure drivers stay up-to-date with current rules and unsafe drivers are detected and transitioned to alternative transport. As for other forms of driving that road safety strategies seek to avoid, good quality alternative transport options will make this transition more acceptable to the driver and reduce the temptation to persist driving.

## 7 Data collection

A vehicle that has been driven aggressively will have suffered more wear and tear, and may have suffered one or more collisions. This is relevant information for a prospective used car buyer, but such information is not always freely given. Such a car is also more likely to have incurred traffic fines which could indicate past driving history to a potential buyer. Past fines could also indicate the road user behaviour and hence safety of a rideshare vehicle to potential passengers. Some jurisdictions make traffic violation information freely available which provides greater transparency around the way a vehicle has been driven, and creates an incentive to comply with road rules (Rizzi 2018). Similar information could be made available through DataVic.

While significant data is collected about the scene of road crashes and the people involved, there does not appear to be any data collected about the journey origin and intended destination of vehicles involved. As noted above, mode shift away from private vehicles has the potential to

eliminate a significant amount of risk, however this is dependent upon the availability of alternative transport. Analysis of intended journey origins and destinations could point to needs for improvement of transport alternatives so that dangerous driving can be avoided.

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