Submission No 287

INQUIRY INTO THE IMPACT OF ROAD SAFETY BEHAVIOURS ON VULNERABLE ROAD USERS

Organisation: Victorian Government Road Safety Partners

Date Received: 18 July 2023

Legislative Assembly Economy and Infrastructure Committee Inquiry into the impact of road safety behaviours on vulnerable road users

Victorian Government Road Safety Partners Submission

18 July 2023

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List of Abbreviations

ADRs – Australian Design Rules

ADTV – Alcohol and drug testing vehicle (formally referred to as 'Booze Buses')

AEB – Autonomous Emergency Braking

ANCAP – Australasian New Car Assessment Program

BAC – Blood Alcohol Concentration

CALD - Culturally and Linguistically Diverse

CBD – Central Business District

CHO – Chief Health Officer

COVID – Coronavirus disease

CREP – Child Restraint Evaluation Program

DCA – Definitions for Classifying Accidents

DH – Department of Health

DJCS – Department of Justice and Community Safety

DLS – Driver Licensing System

DTP – Department of Transport and Planning

EBT – Evidential Breath Test

ECIS – Enhanced Crash Investigation Study

ED – Emergency Department

FSI – Fatal and Serious Injury

GLS – Graduated Licensing System

km/h – Kilometres per hour

LDW – Lane Departure Warning

LGA – Local Government Area

LKA – Lane Keep Assist

LPTO – Learner Permit Test Online

LSS – Lane Support System

M&P – Movement and Place

MAIS – Maximum Abbreviated Injury Scale

MCE – Mobile Camera Expansion

MDMA – 3,4-Methylenedioxymethamphetamine

MMD – Motorised Mobility Device

MUARC – Monash University Accident Research Centre

NTC – National Transport Commission

PBT – Preliminary Breath Test

POFT – Preliminary Oral Fluid Test

PT – Public Transport

RCIS – Road Crash Information System

RDT – Roadside Drug Testing

RPC – Road Policing Command

SCC – Strategic Cycling Corridor

SLRSP – Safer Local Roads and Street Program

SRTS – Safe Routes to School

TAC – Transport Accident Commission

THC – delta-9-tetrahydrocannabinol

TIA – Transport Integration Act

TIS – Traffic Incident System

UCSR – Used Car Safety Rating

VAED – Victorian Admitted Episode Dataset

VEMD – Victorian Emergency Minimum Dataset

VIFM – Victorian Institute of Forensic Medicine

VISU – Victorian Injury Surveillance Unit

VRU – Vulnerable Road User

YTD – Year to Date

Definitions

COVID-19: Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus.

- **COVID-19 years:** Unless otherwise specified, throughout this submission and for the purposes of analysis and discussion, the term COVID-19 period or COVID-19 years refers to the period of time commencing January 2020 to December 2021.
- **Pre-COVID-19:** The time period up to and including December 2019.
- **Post-COVID-19:** The time period commencing January 2022 onwards.

Table 1: Time periods relative to the COVID-19 pandemic (used by the DTP)

Pre-COVID-19	COVID-19	Post-COVID-19
Up to and including Dec 2019	Jan 2020 to Dec 2021	Jan 2022 onwards

Pedestrians: Under the Road Rules pedestrians are people:

- on foot
- on wheeled devices such as scooters (human powered and low-powered e-scooters), skateboards, rollerblades, wheelchairs, and motorised mobility devices
- pushing a bicycle.[1]

Cyclists: a person riding a bicycle (with 2 or more wheels that is built to be propelled partly or wholly by human power, by a belt, chain, or gears, including a:

- pedi-cab, penny-farthing, tricycle
- power-assisted pedal cycle (e-bicycle)

Motorcyclists: a person riding a motor vehicle with two wheels**,** including:

- a two wheeled motor vehicle with a side car attached to it that is supported by a third wheel
- a motor vehicle with three wheels that is ridden in the same way as a motor vehicle with two wheels

Motorised mobility device: powered wheelchair or mobility scooter

e-scooter:

- a vehicle that transports a person while the person is standing
- has two wheels (one in front of the other)
- has a footboard between the front and rear wheels
- is steered by means of a handlebar
- has a maximum speed capability of 25 km/h when ridden on level ground
- can be propelled by one or both of the following:
    - one or more electric motors
    - a person pushing on foot against the ground.

[1] *Pedestrians*. https://www.vicroads.vic.gov.au/safety-and-road-rules/road-rules/a-to-z-of-road-rules/pedestrians

Road Safety Partners: Victoria's Road Safety Partners include:

- Department of Transport and Planning – Road Safety Victoria
- Transport Accident Commission
- Department of Justice and Community Safety
- Victoria Police
- Department of Health

Vulnerable road users: See Section 1.1, p. 13.

Police reported injury severity levels:

- Fatalities – dies within 30 days of a road crash
- Serious injuries – Police reported hospital admission injury
- Minor injuries – Police reported as minor injury, not requiring hospital admission

Executive summary

The Victorian Government Road Safety Partners'[2] (Partners) submission to the Economy and Infrastructure Committee's Inquiry into the impact of road safety behaviours on vulnerable road users 2023, reflects insights based on the most current data and addresses four key questions:

- What changes in road safety behaviours have been observed from 2020 onwards?
- If changes have been observed, what is shaping these changes?
- How have these changes impacted vulnerable road users, including pedestrians, cyclists, motorcycle riders, children, older people, and mobility device users?
- How can the above information be used to improve road safety?

This submission provides background information and responses to these questions from the Terms of Reference. While this Inquiry is examining behaviour of road users, the Partners emphasise behaviour is just one component of a successful program to reduce road trauma. A holistic approach to road safety, addressing known, new, and emerging issues identified by data through research and evaluation, is critical to reducing trauma and reaching the State's road safety targets among all road user groups including vulnerable road users.

Driving this is the *Victorian Road Safety Strategy 2021-2030*. The Strategy adopts *Safe System* thinking, which highlights the need to invest and jointly focus across multiple areas of road safety - safe people, safe vehicles, safe speeds, and safe roads.

Acknowledging the Inquiry is investigating the impact of road safety behaviours on vulnerable road users, alongside basic human error, the most common behavioural factors contributing to road fatalities are drugs (30%), speeding (26%), non-seatbelt wearing (24%), fatigue (22%), alcohol (19%), and distraction (11%).

These and other factors such as transport mode and vehicle choice are examined, including whether there have been any observable differences during and post-COVID-19. Current and future Partner initiatives targeting these road user behaviours, especially regarding vulnerable road users are also discussed. The vulnerable road users highlighted include pedestrians, e-scooter users, motorised mobility device users, cyclists, motorcyclists, children (7 years and younger) and youth (8 years and older), young drivers (18-25 years), and older road users (65 years and older).

Some of the key observations from the information and data incudes:

- There were considerable changes in transport mode (driving, public transport, walking and cycling) usage during COVID-19. Post-COVID-19 transport mode usage (e.g. public transport) has shifted back towards pre-COVID-19 patterns but has not quite returned to what they were.
- Some risk-taking behaviours (e.g. speeding) increased during COVID-19.
- Walking and cycling volumes reduced during COVID-19, but patterns have changed post-COVID-19 to more off-peak cycling and walking.
- DTP Road Crash Information System (RCIS) reported fatal and serious injury cycling crashes reduced during COVID-19, but there was an increase in cycling related hospital admissions.
- E-scooter usage and emergency department presentations involving e-scooters increased during and post-COVID-19. This is most likely due to increased exposure resulting from the introduction of the e-scooter trial and private ownership.

[2] Department of Transport and Planning; Transport Accident Commission; Department of Justice and Community Safety; Victoria Police; and Department of Health

- DTP RCIS reported serious injury and hospital admissions information for 2022 is not yet complete, impacting post-COVID-19 data. Therefore, not enough information exists to make strong conclusions regarding the impact of COVID-19 on road safety.

It is well recognised that road user behaviour directly influences the risk of crashes, however, success is best realised by focusing on all aspects of the system including behaviour change.

The Safe System approach prioritises those most vulnerable to death or serious injury by seeking to prevent a collision or manage crash forces below the threshold level at which death or serious injury becomes likely. The single most important factor in reducing injuries to vulnerable road users are travel speeds, and resultant impact speeds, especially at those locations where the mix of vulnerable road users is high. The Safe System approach is an internationally recognised and evidence-based framework allowing decision makers to look holistically across the road transport system to maximise safety for all road users.

Stakeholder feedback to the Victoria's Road Safety Partners often centres around a perceived change in road user behaviour regarding vulnerable road users. Currently, the data available in the post-COVID-19 period is insufficient to ascertain whether observed and anecdotal changes in peoples' behaviours during the COVID-19 pandemic have had a lasting impact on road safety risk for all road users, including vulnerable road users.

Conclusion

It is well recognised, that poor road user behaviour is a key contributor to trauma experienced by vulnerable road users – and that remains the case in current road trauma trends. However, to fully understand the impact of road safety behaviours post COVID-19 on vulnerable road users more data is required in order to provide Government with evidence-based policy responses.

Trends show that during COVID-19 there were considerable changes in transport mode usage. Since COVID-19 restrictions were lifted, transport mode usage has shifted back towards pre-COVID-19 levels, but not back to similar patterns. While shifts in mode usage can have impacts on road safety and vulnerable road users, more data is required before a conclusion can be drawn on the changes in road safety behaviours affecting vulnerable road users resulting from COVID-19.

The data and insights presented highlight how the transport system can be influenced by activities and issues in the public health system and potentially other areas of public policy. Therefore, when planning and operating a transport system, it cannot be viewed in isolation. However, when addressing the safety of the transport system, the key considerations of the Safe System approach to road safety do not change regardless of whether other factors are present. The Safe System principles of managing crash forces, and accommodating the inevitable mistakes that humans make, remain at the centre of road safety policy and decision making.

1 Introduction

The Victorian Government Road Safety Partners (Partners) welcome the opportunity to contribute to the Economy and Infrastructure Committee's (The Committee) Inquiry into the impact of road safety behaviours on vulnerable road users. Victoria's Road Safety Partners include:

- Department of Transport and Planning (DTP) Road Safety Victoria (RSV)
- Transport Accident Commission (TAC)
- Department of Justice and Community Safety (DJCS)
- Victoria Police
- Department of Health (DH)

This submission reflects the collective insight from across the Road Safety Partners on the Inquiry's Terms of Reference based on the most currently available data.

1.1 The Terms of Reference

The Committee will investigate how road safety behaviours have changed during and after COVID-19 and consider the impact these changes have had on vulnerable road users (VRUs), such as cyclists, pedestrians, motorcyclists, children aged 7 years and under, older people and mobility device users.

The Partners acknowledge that this Inquiry was established to investigate the impact of road safety behaviours on VRUs. Research and data indicate that behavioural factors related to speed, alcohol, drugs, distraction, and fatigue can increase the risk of a collision, and together, the Partners have been working towards changing those behaviours by developing and implementing evidence-informed road safety policies and programs. However, behaviour change can be challenging, expensive and time consuming to achieve at a population level, for any public health issue, including road safety.

A holistic approach to road safety, addressing known, new, and emerging issues identified by data through research and evaluation, is critical to reducing trauma and reaching the State's trauma reduction targets among all road user groups including vulnerable road users.

2 Background – Road Safety in Victoria

Victoria has long been recognised as a leader in road safety across the globe. The State has a track record of leading the introduction of lifesaving road safety policies and behavioural change programs (see Figure 1) including mandating seatbelts (1970), legislating random breath testing (1976), introducing speed cameras (1986), mandating bicycle helmets (1990), introducing random roadside drug testing (2004), and implementing a motorcycle graduated licensing system (2016) - all supported by effective TAC public education and engagement campaigns (since 1989). As a result, Victoria has successfully achieved a steady reduction in lives lost over decades. But these reductions have plateaued in recent years and an increase in road trauma is being seen among certain road user groups, including pedestrians and motorcyclists.

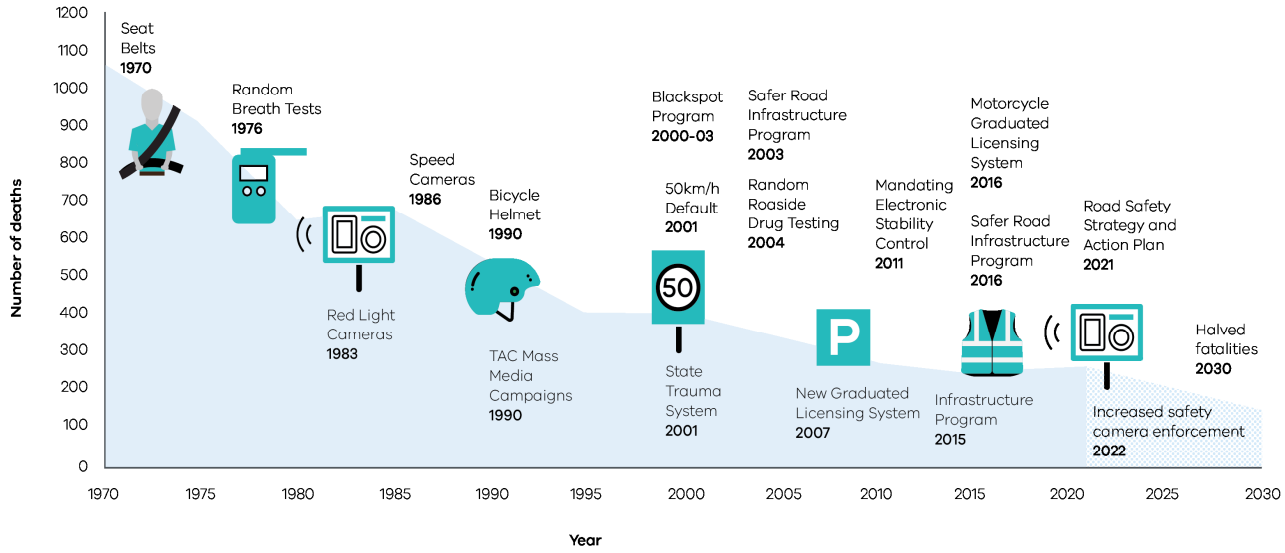

Figure 1: Current state of Road Safety programs and policies

2.1 A partnership approach

Road safety is a concern beyond the road network and must be achieved through a holistic approach that incorporates enforcement and justice; health and wellbeing; work, health and safety. Therefore, addressing the road safety needs of all Victorians requires a shared responsibility to ensure a collective response across government, stakeholders and the community. The successes that Victoria has seen over the past decades has been driven by a strong road safety partnership with a shared vision to reduce road trauma in Victoria, recognising that community acceptance is critical to this.

RSV, within DTP is the lead agency for road safety in Victoria. Recognising that road safety requires united endeavours and collaborative efforts, RSV works in close partnership with the other Partners and stakeholders to achieve desired road safety outcomes. The level of cooperation between these Partners is unique and serves to build an evidence-based approach to road safety policy and decision making. It is therefore usual that the Partners collectively respond to Parliamentary Inquiries and the recommendations from those inquiries (see Appendix 1 for the response status to the previous Inquiry into the increase in Victoria's road toll 2019).

2.2 The Safe System approach

In Victoria, the Partners have adopted a system-based view called the Safe System Approach to road safety, on which the State's Road Safety Strategy is built.

The Safe System approach is recommended by the World Health Organisation (WHO) which calls on governments to prioritise and implement this integrated approach.[3] It has been adopted by the best performing road safety jurisdictions around the world as the key to achieving the long-term vision of zero road trauma.

The *National Road Safety Strategy 2021-2030* continues the Federal and State/Territory Governments' commitment to the Safe System approach of strengthening the elements of safe roads, safe vehicles, safe people and safe speeds (See Figure 2).

[3] *Global Plan for Decade of Action 2021 – 2030.* https://cdn.who.int/media/docs/default-source/documents/health-topics/road-traffic-injuries/global-plan-for-road-safety.pdf

Figure 2: Safe System approach on which Australia's National Road Safety Strategy is based[4].

The Safe System recognises that all elements of the road transport system need to work together to protect road users. It is underpinned by the following principles:

- people make mistakes
- people have a limited tolerance to crash forces which cause serious trauma
- roads, roadsides, and vehicles need to be designed to minimise crashes or reduce those crash forces if one occurs
- road safety is a shared responsibility. Road users have obligations to comply with road rules and use the road responsibly. However, road managers and vehicle manufacturers are also responsible for finding solutions that ensure crashes can be avoided and are forgiving.

There are four overarching pillars of the Safe System that prevent crashes or influence road safety outcomes. These are safe roads, safe vehicles, safe speeds at which people travel, and safe road user behaviour. Post-crash care, when a crash occurs, is also recognised as an important part of the system. While this Inquiry is focussed on road safety behaviours as contributing to road trauma, recognition that the pillars all function together to form and operate as a system needs to be maintained to achieve the greatest road safety gains.

Behaviour change plays a very important role in road safety, and it is acknowledged that behaviours are exhibited within the context of the system in which people are operating. If the system can be adjusted, then desirable behaviours may naturally follow without relying on individual decision making of road users, or the impact of poor behaviours can be minimised.

[4] Figure obtained *from* Green, D. and Lewis, K. 2017. *Guide to Traffic Management Part 13: Road Environment Safety*. Austroads Report AGTM13-17, pg. 10 of 89. Sydney, NSW. Available at: https://austroads.com.au/publications/traffic-management/agtm27/media/AGTM13-17_Guide_to_Traffic_Management_Part_13_Road_Environment_Safety.pdf

The Enhanced Crash Investigation Study (ECIS)[5], undertaken by the Monash University Accident Research Centre (MUARC), provides strong support for looking at the system as a whole. Over eight years, the ECIS examined more than 400 serious injury crashes in minute detail to gain an in-depth understanding of all factors that can contribute to crashes where someone is seriously injured.

One ECIS study showed that a proportion of drivers who were not engaging in unsafe or illegal behaviours at the time of their crash were still seriously injured. This is because other elements of the system failed to protect them i.e. environmental speed settings, vehicle safety technologies, or road design. Even for 'safe drivers', there are fundamental weaknesses in the road transport system exposing them to serious injury in the event of a crash.

The ECIS research report highlighted the important role of total safe system design and that there are interdependencies of all elements of the road transport system. Importantly the report confirms that in creating a safe transport system, one system element cannot be traded off against another. Slippage in the performance of any of the system elements would likely lead to an increase in the number of road users sustaining serious injury. It is asserted that adopting a systems approach is necessary to achieve reductions in the number of people seriously injured or killed on Victorian roads.

2.3 Victoria's Road Safety Strategy

Driving the Road Safety Partnership approach is the *Victorian Road Safety Strategy 2021-2030*[6]. Underpinned by the Safe System Approach, the strategy aims to create a safer road environment and reduce the opportunity for and impacts of poor decision making. It seeks to establish Victoria's 10-year vision for road safety of a 50 per cent reduction in road deaths by 2030, outlining the aim to achieve the maximum trauma reductions by planning for, and progressively eliminating, the cost of human error through reducing the underlying risk across the road network. Consistent with national and global road safety targets, the longer-term vision articulated in the strategy is to achieve zero road trauma by 2050.

The Strategy focuses on:

- supporting and enforcing safer driver behaviour
- removing unsafe vehicles from our roads
- vulnerable and unprotected road users
- improving safety on high-speed roads and at intersections and reducing the underlying risk
- increasing safety for those using the road for work or at work and
- recognising the importance of post-crash care.

The Strategy lists nine key levers of change that are necessary to help address different aspects of the road network as a whole system, these being:

- Policy development
- Safer vehicles
- Safer travel speeds
- Infrastructure improvements
- Enforcement
- Innovation and technology

[5] Fitzharris, MP, Corben, B, Lenne, MG, Pok Arundell, T, Peiris, S, Liu, S, Stephens, A, Fitzgerald, M, Judson, R, Bowman, DM, Gabler, HC, Morris, A, Tingvall, C. (2022). *Overview and analysis of serious injury crashes – crash types, injury outcomes and contributing factors, ECIS Report 1*. Monash University Accident Research Centre, Report 346; Clayton.

[6] *Victorian Road Safety Strategy 2021-2023.* Road safety | Department of Transport and Planning (dtp.vic.gov.au)

- Public information campaigns
- Data and research and
- Education programs.

2.4 Vulnerable road users

The first focus of the Terms of Reference was the potential impact of behaviour change on the safety of VRUs. The collective term 'vulnerable road users' can be used to describe different road users. For the purposes of this inquiry, VRUs in this Submission have been split into two categories, these being:

1. VRUs whose vulnerability is due to being fully exposed to crash forces when an impact occurs. Crash protection systems which are typically available to vehicle occupants, and which would absorb a significant amount of energy in the event of an impact are not available to these VRUs who include:
   - Pedestrians
   - Motorcyclists
   - Cyclists
   - E-scooter users
   - Motorised mobility device users[7]
2. VRUs whose vulnerability is due to their age and stage of development, increased fragility or frailty, or their lack of experience, including:
   - Children (7 years and younger) and youth (8 years and older)
   - Young drivers (aged 18-25 years)
   - Older road users (65 years and older)

One reason 'vulnerable and unprotected road users' have been identified as a strategic focus area is that while vehicle safety technologies are rapidly improving safety outcomes for vehicle occupants, improvements in safety are less progressive for other road users. The Partners will be considering how best to progress VRU safety in the proposal put to Government for the second action plan under the *Victorian Road Safety Strategy 2021-2030*.

In addition to the *Victorian Road Safety Strategy 2021-2030*, there are several other Government strategies and policies that can impact on walking and cycling in Victoria and therefore the safety of active transport users (e.g. Climate Change Strategy 2021; Victorian Cycling Strategy 2018-2028; Victorian Public Health and Wellbeing Plan 2019-2023). These policies need to be considered when planning and developing strategies to reduce road trauma among these road user groups (see Appendix 3).

2.5 COVID-19 impacts in Victoria

The second key focus of the Terms of Reference was how road safety behaviours have changed during and after COVID-19.[8]

Restriction of population movement

COVID-19 presented society and governments globally with an unprecedented public health emergency. The Victorian Government's response to COVID-19 was led in the interests of population health and wellbeing. Working from home became normal for those that could, and social movement restrictions forced families to use local streets and parks.

[7] See Definitions section for extended description of 'pedestrians' (p.6)
[8] See Definitions section for COVID-19 time periods (p.6)

Consumer behaviour in delivery of goods and services

Across Australia during COVID-19 there was an increase in online shopping and food and drink delivery. While growth tapered off in mid-2020, it did not return to pre-COVID-19 levels, suggesting it had become regular practice for consumers. Notably, this online shopping growth was largest in Victoria. Between 2019 and 2020, the Australian online food ordering and delivery market increased from a $560.9 million industry to one worth $717.8 million[9]. This has implications for road safety and those for whom the road is a workplace, including those whose vehicle (including motorcycle, bicycle and e-bicycle) is used for work. Changes in this environment mean that gig and delivery economies (riding or driving for work) is on the increase.

Police reported crashes (between 1 January 2016 – 30 April 2021) see Appendix 4, Table 7, indicates that of the 19,707 cyclists or motorcyclists injured, 686 riders were at work at the time of injury. Of these, three were fatalities. The number of riders injured whilst working has steadily increased each year, from 93 in 2016 to 170 in 2020. Through linkage of hospital and police reported crash data, it is understood that there is about 40 per cent under-reporting of cyclist crashes to police[10].

The *Victorian Road Safety Strategy 2021-2030* identifies VRUs and those using the road *for work* and *at work* as strategic focus areas. DTP and TAC are undertaking a Gig Economy Bicycle and Motorcycle Rider Safety project. It aims to better understand what impacts the safety of riders in this on-demand workforce and what actions will effectively maximise improvements to their safe road use. The industry often attracts international students or newly arrived migrants who may be unfamiliar with Australian roads and road users.

Alcohol and drug use patterns during COVID

While a definitive analysis has not yet been produced, studies indicate Victorians' alcohol and drug use changed during COVID-19. Alcohol consumption increased or stayed the same for some groups[11,12,13] and possibly spiking as restrictions eased.[14] Illicit drugs data indicates a complex interplay between supply and demand factors, including temporarily disrupted access to drug supplies.[15,16]

In broad terms, it is not yet understood that any of the observed COVID-19 changes to alcohol or drug use patterns will remain or have ongoing road safety implications. The National Drug Strategy Household Survey 2022 (to be published later this year)[17] is expected to indicate whether there have been any marked shifts in long-term alcohol and drug use trends since COVID-19.

2.5.1 Victoria Police's response to COVID-19

Victoria Police's role evolved over the duration of COVID-19. Coupled with the Victorian bushfires (2019-20), COVID-19 impacted Victoria Police's capacity, well into 2022. Due to changes in tasking and the reprioritisation of roles and responsibilities in response to these events, its road safety enforcement role and its performance against reporting measures, initiatives and projects were affected. Victoria Police's working environment changed to comply with the Chief Health Officer

[9] Ibis World, Online food ordering and delivery platforms in Australia, market size 2021-2028
[10] Noting this is no obligation to report all matters to police.
[11] https://www.sciencedirect.com/science/article/pii/S0306460322002052
[12] https://onlinelibrary.wiley.com/doi/full/10.1111/dar.13686
[13] https://onlinelibrary.wiley.com/doi/full/10.1111/dar.13602
[14] https://www.sciencedirect.com/science/article/pii/S0048969723034691
[15] https://www.sciencedirect.com/science/article/pii/S0955395923000257
[16] https://www.sciencedirect.com/science/article/pii/S0955395923000257
[17] A triennial survey operated by the Australian Institute of Health and Welfare

(CHO) directives as a priority, ensuring the health and safety of employees and the wider community in response to COVID-19. These changes are evidenced by temporary changes to their operations during COVID-19 including[18]:

- the redirection of the alcohol and drug testing vehicle fleet (ADTV or 'booze buses') to support the management of vehicle checkpoints
- Operation Sentinel – support compliance with CHO directives through checks of people and businesses, to provide community reassurance and patrol the state's borders
- Operation Tidewatch – supervise and enforce Hotel Quarantine
- Operation Guardian – support compliance with CHO directives concerning the movement of persons from restricted areas
- Operation Watch – maintain public order and amenity while providing responses to protests
- establishing the Exposure Risk Assessment and Management Team to support the organisation through various waves and sharp surges in cases.

2.5.2 Road safety enforcement during COVID-19

The perception by an individual that they face a high risk of being caught by police for doing the wrong thing, is one of the greatest motivators for behavioural change in road safety. Traffic enforcement uses behaviour-change techniques and deterrence theory[19] to help prevent risk taking and unsafe behaviours and to influence road users to behave more safely.

Although required to makes changes to the way it deployed its resources, Victoria Police continued to play a critical role in road safety through highly visible and sustained enforcement within the parameters of the CHO directives. With fewer people on the roads, and appropriate resources being allocated to ensure the health and safety of Victorians, Victoria Police continued its work with its Partners and the community to keep Victorian road users safe, from the effects of COVID-19 and from trauma that continued to occur on the road network.

Victoria Police identified that despite the lockdowns, holidays continued to be high risk periods on the road. Consequently, road policing operations were conducted throughout COVID-19, to deter impaired and fatigued driving, speeding, driver distraction, non-use of seatbelts, and targeting poor heavy vehicle driver and motorcycle rider behaviour.

The reduction in road safety offence detection observed during COVID-19 was attributable to the reduced traffic volumes due to lockdown requirements.

Many COVID-19 impacts on Victoria Police resulted from meeting community safety and OHS requirements, especially needing to alter the drug and alcohol testing approach to ensure operations minimised the spread of COVID-19. This ultimately affected the mass testing conducted by the ADTVs across the state which impacted operations from March 2020 until October 2021 significantly reducing the number of alcohol breath tests conducted. However, Preliminary Breath Testing (PBT) and Roadside Drug Testing (RDT) continued using mobile police vehicles with additional safety procedures[20].

[18] There were other operations which occurred through the period in support of the CHO directions and road safety requirements

[19] Deterrence Theory: National road safety strategy - https://www.roadsafety.gov.au/nrss/fact-sheets/enforcement

[20] Despite the easing of restrictions, police members were given instructions to ensure they were taking precautions to stay safe and remain fit for work, as well as protecting the community. Victoria Police

2.5.3 Other observations

Other consequences of COVID-19 were observed which could have contributed to road safety outcomes. For example, there were increases in domestic violence cases, particularly during early lockdown phases[21] and increases in attacks on healthcare workers[22]. Risk taking was also seen to increase during COVID-19.[23]

The impact of behaviours on road safety were observed through the road safety camera system which indicated that a number of individuals engaged in high-risk behaviours with multiple examples of extreme high range speeding detected. It is likely that a combination of empty roads, reduced visible police presence and a general increase in aggression and risk taking contributed to these behaviours.

2.5.4 Public education

During 2020 and 2021, COVID-19 restrictions also impacted on the ability of TAC to develop and produce road safety public education campaigns. Typically, three to five new public education campaigns are launched each year. However, during this time, only three campaigns were able to be made. One of these was a Summer campaign focusing on illegal behaviours, another encouraged the use of protective clothing for motorcyclists and the third promoted the safe passing distance rules for cyclists.

It is difficult to ascertain what impact the reduced public education campaigns had on the safety of VRUs. However, evaluations of motorcycle protective clothing (see Section 3.2.3.1, p. 47) and safe passing distance campaigns (see Section 3.2.2.1, p. 45) have shown positive outcomes.

2.5.5 Impact on the delivery of education programs

Some of the Victorian Government education and licensing programs only operated in a limited capacity during COVID-19, particularly with the public health orders restricting travel. This meant that young drivers had delayed or varied access to available programs and opportunities. For example:

- Road Smart supports Victoria's Graduated Licensing System (GLS) and is designed to build the knowledge, skills and behaviours of Year 10 students (or equivalent). During COVID-19, the in-class component of the program, was transitioned online enabling the program to continue operating during school closures and lockdowns. Despite the challenges, Road Smart reached over 50,000 students throughout COVID-19
- The L2P learner mentor program observed significant impacts during and for at least 12 months after re-opening from COVID-19 restrictions. Issues included learners, mentors and L2P Coordinators acquiring the COVID-19 and the flu virus; loss of mentors due to COVID-19 related challenges; drive schools were significantly backlogged because of the demand coming out of lockdowns.

continued to monitor public health information and Chief Health Officer directions and in the event of a localised COVID-19 outbreak, ADTVs would not deploy into the affected location.

[21] Domestic Violence During the COVID-19 Pandemic: A Systematic Review, 2023; Kourti et al, Trauma, *Violence & Abuse* (journal)

[22] The impact of COVID-19 pandemic on temporal trends of workplace violence against healthcare workers in the emergency department, 2022; Brigo et al, *Health Policy* (journal)

[23] Tsai CI, Zeng Y. Risky but alluring: Severe COVID-19 pandemic influence increases risk taking. *J Exp Psychol Appl. 2021 Dec;27(4):*679-694. doi: 10.1037/xap0000380. PMID: 35073131.

- COVID-19 restricted opportunities for learners to get supervised driving practice. Learners under 21 years could not accumulate the 120 supervised driving hours required to sit a licence test.

See Section 3.2.4.1, p.49 for more information about these programs

2.6 Research into the impact of COVID-19 on road trauma

In 2021, the Road Safety Partnership commissioned Monash University Accident Research Centre (MUARC) to examine the impact of COVID-19 on road trauma in Victoria[24].

To do this, MUARC analysed a wide range of data including:

- Road network traffic data
- Fixed digital road safety camera data
- Mobile speed camera data
- Police reported crash data linked to TAC claims data
- Roadside alcohol and drug testing data
- Road infrastructure investment data
- Victorian hospital admission and Emergency Department presentation data.

MUARC found that reductions in exposure (i.e. less traffic on the roads) did not directly translate to reductions in road trauma. Increases in some high-risk driving behaviours, including excessive speeding, drink driving and drug driving over COVID-19 added to the evidence that suggests such risk-taking behaviours have contributed to higher levels of road trauma than might have been expected based on changes to exposure alone.

MUARC also contends that reduced roadside alcohol testing during COVID-19 (as Police resources were diverted to other COVID-19-related priorities) resulted in an increase in the forecast fatalities. In the report MUARC highlighted that it was therefore critical to get roadside alcohol testing activities back to pre-COVID-19 levels if alcohol-related road trauma was to be reduced. Victoria Police is now working towards returning roadside alcohol testing back to pre-COVID-19 levels.

3 Responses to the Inquiry terms of reference

The Partners have gathered significant amounts of data and insights from multiple sources to try to understand the impacts of the COVID-19 on road safety behaviours. While there is some emerging data for a short period of time post-COVID-19, it will be a number of years before the extent of the impact COVID-19 has had on road safety behaviour and trauma outcomes can be fully understood.

Several data sources were drawn upon to inform this submission (see Appendix 2. Data sources), with other sources of information referenced throughout the document.

This submission addresses the Inquiry terms of reference in two parts:

1. Road safety behaviours during and after COVID-19.
2. Impact of COVID-19 on VRUs and road safety.

3.1 Road safety behaviours during and after COVID-19

The first two questions from the Inquiry terms of reference seek to examine what changes in road safety behaviours have been observed from 2020 onwards, and if there have been changes, what

[24] *Measuring the impact of the COVID-19 pandemic on road safety outcomes in Victoria*, Australia, Monash University Accident Research Centre, May 2022

has shaped them. This part addresses these questions by discussing the following aspects of road user behaviour:

- Transport mode and usage
- Vehicle speeds
- Impairment of road users, i.e. alcohol, drugs, distraction, fatigue, medical/health conditions
- Seatbelt wearing
- Vehicle purchasing.

3.1.1 Transport modes and usage before and after COVID-19

Travel and transport summary
Traffic volumes reduced during COVID-19 but are approaching similar levels to the pre-COVID-19 vehicle kilometres travelled. The reductions observed are most likely due to more people regularly working from home post-COVID-19.

Self-reported transport usage data from early 2023 indicates that car travel and walking are the most common modes of transport. The data also showed that three in five Victorians travel to work, an average of four days a week. Data indicated that one in ten (10%) Victorians reported using an e-scooter or e-bike at least monthly.

Walking volumes (in the City of Melbourne) are lower now compared to pre-COVID-19 (2019) levels except for Sunday, which is busier than pre-COVID-19. The implication is that the city has become increasingly recreational.

Victorian cycling volumes are lower now compared to 2019, An increase in weekend cycling was observed during COVID-19, particularly in 2022, which might indicate more recreational cycling.

Due to the nature of COVID-19 and its impacts on the community through public health orders such as lockdown requirements, the volumes of vehicles travelling on the transport network and the modes of transport used when travel was allowed, changed during COVID-19 and in some instances has not returned to pre-COVID-19 levels. Vehicle volumes and transport choices are examined here because they are good predictors and indicators of road safety risk on the network, particularly relating to VRUs.

3.1.1.1 Traffic volumes

Data from the DTP highlights that traffic volumes have reduced since COVID-19. Figure 3 shows the metropolitan road network utilisation[25] between 17 October 2022 to 6 June 2023 (current) compared to the 2019-2022 monthly average. During COVID-19 the monthly average was less than the current volumes which indicates that overall vehicle kilometres travelled (VKT) reduced during COVID-19 (as expected because of the COVID-19 restrictions). However, the 2023 data is approaching similar levels to the 2019 data. The reductions observed are most likely due to more people regularly working from home post-COVID-19.

[25] Road Network Utilisation is a measure of the total distance travelled by all vehicles on the tracked links of the road network, otherwise referred to as Vehicle Kilometres Travelled (VKT). Please note that data is unavailable for local roads.

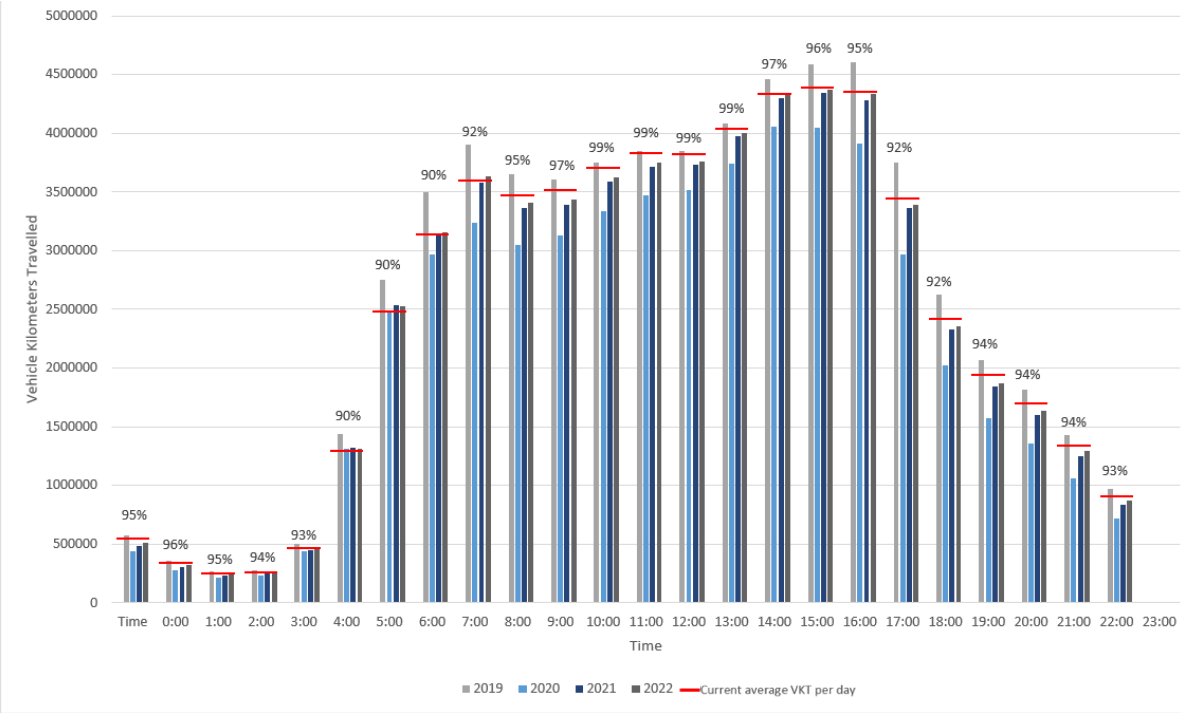

Figure 3. Road network utilisation by hour, between 17 October 2022 to 6 June 2023 (current average) compared to 2019-2022 monthly average day of the week (baseline)[26]

Note: percentages (%) refer to the percentage of the road network utilisation (VKT) across the years of 2020-2023 compared to the baseline VKT in 2019.

3.1.1.2 Transport mode choices

Each month DTP surveys a representative sample of the Victorian population about travel behaviours, perceptions and sentiment towards transport[27]. This involves an online survey and a representative (i.e. age, gender, region) sample size of 1,600. The following data is relevant as it shows how Victorians are reporting they are travelling post-COVID-19.

The most recent quarter of data (Jan-Mar 2023) in Figure 4 shows:

- Car travel and walking are the most common modes of transport - 89 per cent of Victorians drove a car at least weekly and 84 per cent walked at least weekly.
- One in 4 Victorians (26%) used the train, and over one third (37%) used public transport (train, tram, metro bus, regional bus, V/Line train or coach) at least weekly.
- Both tram use and walking have increased significantly from the previous quarter.

[26] DTP Road Network Utilisation Report Data as of 07/06/2023

[27] *Transport tracker data, qtr 3, 22/23*; Department of Transport and planning, prepared by Quantum Market Research for DTP

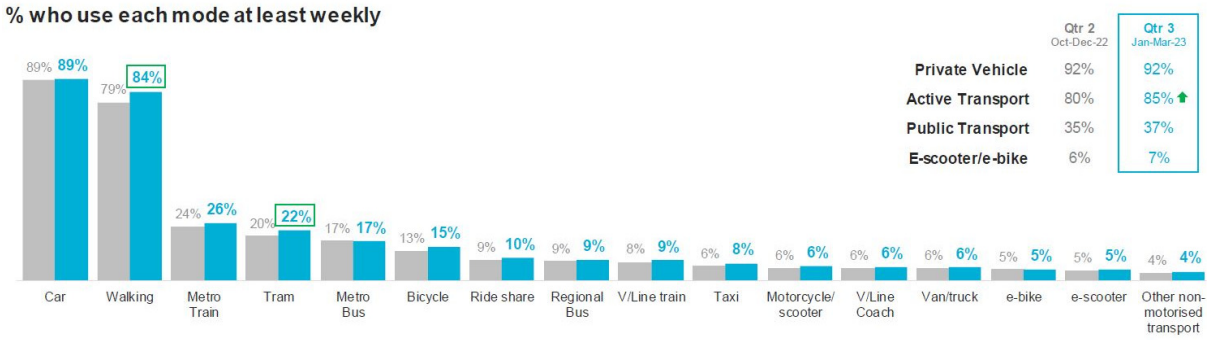

Figure 4. Overview transport usage – Weekly use mode (Jan-Mar 2023).

Among Victorians who travel to work at least weekly, just over one-third take multimodal trips (see Figure 5). Multimodal trips (i.e. those who travel weekly to work will use multiple modes on at least one journey) were significantly more common among:

- 16-24 year olds (44%)
- 30-39 year olds (43%)
- males (39%)
- culturally and linguistically diverse (CALD, 46%)
- those who identify as LGBTIQ+ (45%)
- those who reside in metro areas (40%), particularly Inner Melbourne (52%).

The most common modes used together were:

1. Walk + car.
2. Metro train + tram.
3. Metro train + walk.

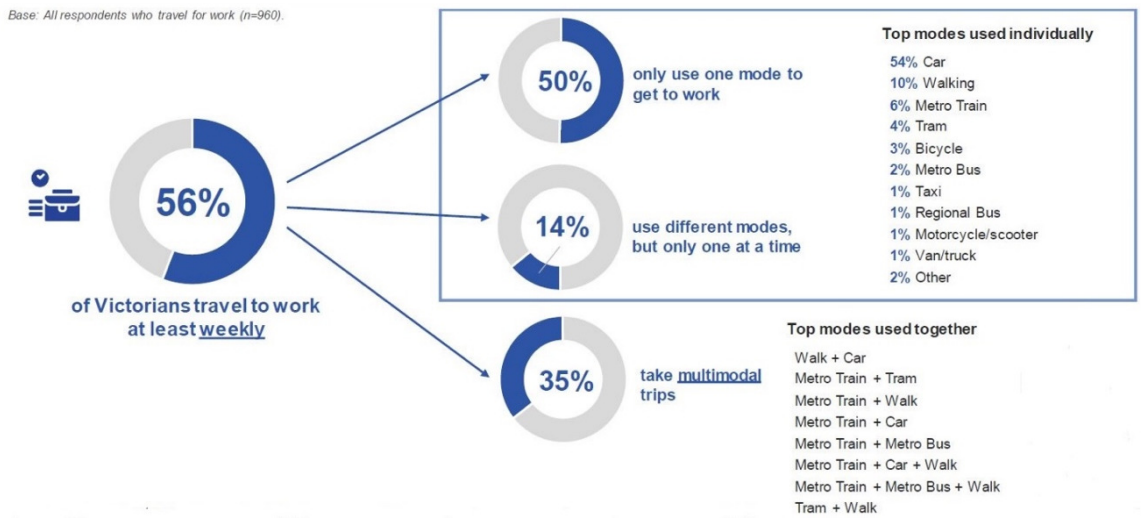

Figure 5. Multimodal usage to work

Figure 6 shows that three in five Victorians travel to work, an average of four days a week. Tram use has increased significantly from the previous quarter. The most common mode used to travel to work was by car (73%), followed by walking (31%).

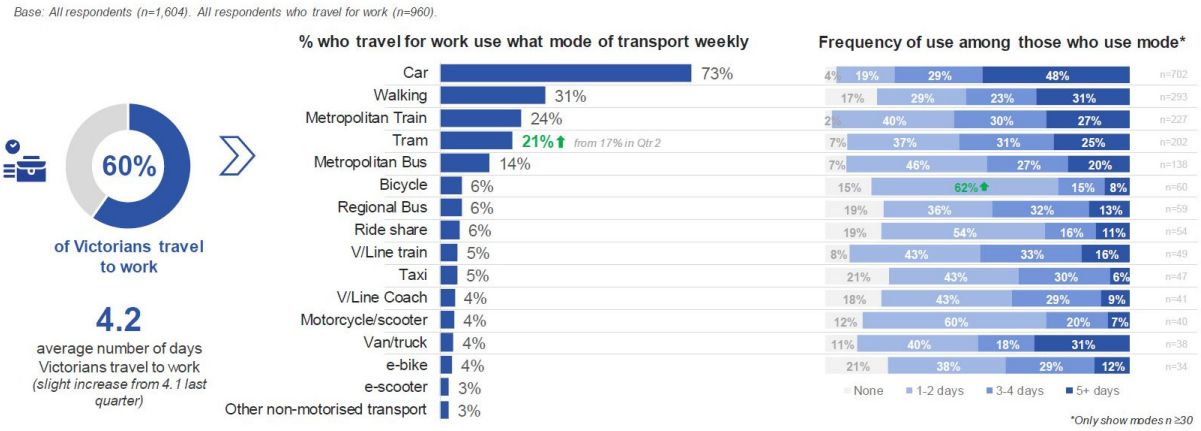

Figure 6. Transport usage to/from work

Public transport usage

Two in five (41%) Victorians surveyed said they wanted to make more use of public transport in the future. This was significantly more than last quarter. With Melbourne's packed calendar of major events during this quarter, a significantly higher proportion of Victorians said they would take the tram (27%) or walk (19%) to major events. The likelihood they would consider using public transport within the next six months for leisure/social (53%), errands/appointments (42%), and work (35%) journeys, all significantly increased this quarter.

Two of the top three reasons for considering future travel to work via public transport were 'push factors' away from driving, that is, avoiding traffic (43%), and avoiding parking difficulties (38%).

e-mobility (personal mobility devices) usage

e-mobility is defined here as using electric propulsion on active transport devices, specifically e-scooters and e-bicycles. E-scooters and e-bicycles are available through hire schemes run by various private operators through local governments. More information about e-scooters is provided in Section 3.2.7.

Recent DTP transport tracker data shows that one in ten (10%) Victorians reported using an e-scooter or e-bike at least monthly. Just under one in ten (7%) Victorians use an e-scooter or e-bike at least weekly. Weekly usage was highest among those living in Inner Melbourne (20%), with usage having increased significantly from 12 per cent last quarter. It is noteworthy that e-scooter usage by couples with children at home, increased during the last quarter from 7 per cent to 11 per cent[28].

Usage of e-scooters was concentrated among males, under 40 year olds, higher income households, and full-time workers. E-scooter users were also more likely to use public transport at least weekly, suggesting some multimodal use occurred.

3.1.2 Speed and Speeding

Speed and speeding summary:

Speed is a significant contributor and a major determinant of injury outcomes from road crashes.

The impact of speed on road trauma can vary depending on where a crash occurs and who is involved in the crash. For example, high speed rural roads present different challenges to lower speed roads in urban environments which have higher proportions of VRUs like cyclists and pedestrians. In 2022, more

[28] *DTP Tracker: Quarter 3 2022/23 (Jan-Mar 2023).* Prepared by Quantum Market Research for the Department of Transport and Planning. Quantum Market Research, South Yarra, Victoria. Pp. 55

than two-thirds of regional fatalities (approximately 88 individuals) occurred in 100-110 km/h zones, demonstrating the role which high speed can play in a crash.

Victorian crash data (2017-2021) identifies that speeding was associated with approximately 26 per cent of fatalities (based on police reports) and 37 per cent of serious injuries (MAIS 3+)[29,30]. These estimates are likely to be conservative given how difficult it is to identify the contribution of speed in fatal and serious injury crashes.

During COVID-19, roads were emptier, and data showed increases in speeding, including a worrying increase in high range speeding. Attitudes captured during the post-COVID-19 period indicate that individuals view speeding as being a low-risk activity compared with other illegal or unsafe behaviours.

While COVID-19 brought about initiatives to encourage more active modes of transport, the new trends also resulted in more VRUs being exposed to more vehicles in high-speed environments.

The human body is highly vulnerable to excessive forces and unlikely to survive an un-cushioned impact at certain speeds. The speed, which determines whether an individual is likely to survive or not, is dictated by numerous factors, including the amount of protection afforded by the surrounding environment, a person's physiological makeup, age, and pre-existing medical conditions. In the case of VRUs, the impacts of a crash are significantly worse due to either direct exposure to the impact (in the case of pedestrians, cyclists, or motorcyclists), or the increased fragility of bones (in the case of young children or older people)[31] [32].

Inherently, vehicles travelling above the posted speed limit have a heightened casualty crash risk. Travelling above the posted speed limit not only increases risk of crash involvement but the risk of injury or death when a crash does occur. The relationship between impact speed and injury severity often draws on findings from the speed risk curves (see Figure 7) presented by Wramborg (2005)[33] which shows fatality risk to pedestrians and vehicle occupants in side and frontal impacts. The science behind these curves has been used to inform policy decisions across the world, including Safe System speed limit settings. According to these curves, there is a relatively small chance of death (10%), for a pedestrian or vehicle occupant, provided that the vehicle impacts:

- A pedestrian at 30 km/h
- Another car at 50 km/h in a side impact (broadside or T-bone crash)
- Another car at 70 km/h in a head-on collision.

[29] Fitzharris, M., Lenné, M. G., Corben, B., Arundell, T. P., Peiris, S., & Lui, S. (2020). *ECIS Report 1. Overview and Analysis of Crash Types, Injury Outcomes and Contributing Factors*. Monash University Accident Research Centre, Report 343. Clayton, Victoria.

[30] The 'Maximum Abbreviated Injury Score' or MAIS is the agreed measure of the road safety partnership for serious injury. It is an internationally used measure of injury severity reflecting threat to life. A MAIS score of 1 is the least serious, and 6 is the most serious. Collectively a MAIS of 3 or above (MAIS 3+) represents the most serious injury cases.

[31] Qinaat Hussain, Hanqin Feng, Raphael Grzebieta, Tom Brijs, Jake Olivier (2019) The relationship between impact speed and the probability of pedestrian fatality during a vehicle-pedestrian crash: A systematic review and meta-analysis, Accident Analysis & Prevention, Volume 129, Pages 241-249, https://doi.org/10.1016/j.aap.2019.05.033

[32] Lubbe, N., Wu, Y., Jeppsson, H., (2022). Safe speeds: fatality and injury risks of pedestrians, cyclists, motrocyclists and car drivers impacting the front of another passenger as a function of closing speed and age. Traffic Safety Research, Volume 2. https://doi.org/10.55329/vfma7555

[33] Wramborg, P. (2005*). A new approach to a safe and sustainable road structure and street design for urban areas.* Road safety on four continents conference, 2005, Warsaw, Poland, Swedish National Road and Transport Research Institute (VTI), Linkoeping, Sweden, 12 pp.

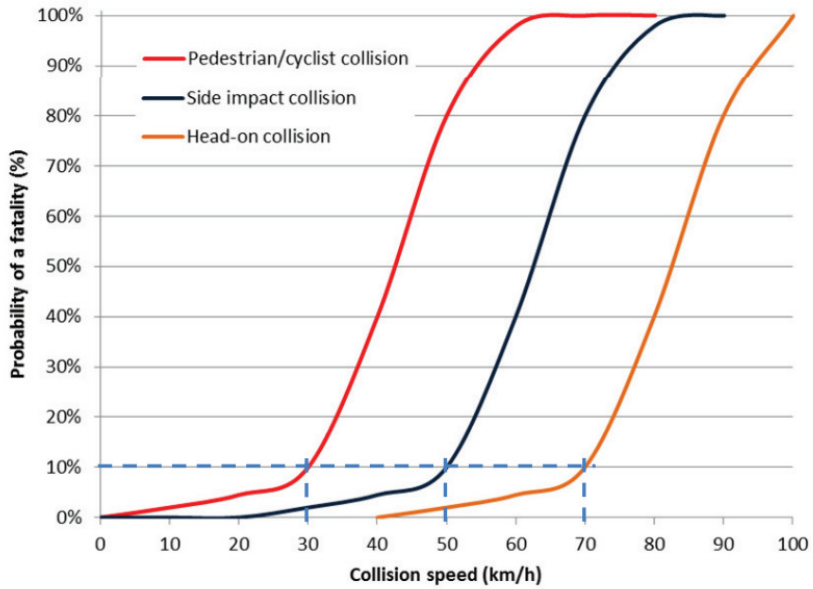

Figure 7. Wramborg's model for fatality probability vs. vehicle collision speeds.[34]

Prior to Wramborg publishing these curves, these injury thresholds were described by other researchers[35] as the '30/50/70' concept and is definitive in identifying injury thresholds. These concepts emphasise that even low speeds will kill or injure VRUs unless vehicles and the road or roadside environment are designed to accommodate the physical vulnerability of less protected road users. A pedestrian or cyclist struck at 50km/h experiences a 90 per cent chance of being killed in the impact compared to a 10 per cent chance of being killed if struck at 30km/h.

Table 2 presents the impact speeds that are likely to be survivable by VRUs in the context of the Victorian transport network. Above these speeds, the chances of survival decrease rapidly[36].

Table 2: Impact speeds in different crash scenarios which are likely to be survivable by vulnerable road users and vehicle occupants.

Crash Type	Impact Speed	Example
Car/Pedestrian or Cyclist	30 km/h	Where there is a mix of VRUs and motor vehicle traffic
Car/motorcyclist		
Car/Pole or Tree	40 km/h	Where unprotected road hazards exist within defined clear zone
Car/Car (Side impact)	50 km/h	Where there is a likelihood of side impact crashes (e.g. intersections or access points)
Car/Car (Head-on)	70 km/h	Where there is no separation between opposing traffic streams

[34] Source: Jurewicz, C., Sobhani, A., Woolley, J., Dutschke, J. & Corben, B. (2016). Exploration of Vehicle Impact Speed – Injury Severity Relationships for Application in Safer Road Design. *Transportation Research Procedia, 14*, 4247-4256.

[35] Tingvall, C., & Haworth, N. (1999, 6-7 September). *Vision Zero: an ethical approach to safety and mobility*. Paper presented at the 6th ITE International Conference Road Safety & Traffic Enforcement: Beyond 2000, Melbourne, Australia

[36] Fildes, B., Langford, J., Andrea, D., Scully, J. 2005. *Balance between Harm Reduction and Mobility in Setting Speed Limits: A Feasibility Study*. Published by Austroads. Austroads Publication No. AP–R272/05. pp. 83

In all road environments VRUs will interact with vehicles. The differential in speed between slow moving VRUs (such as pedestrians) and fast-moving vehicles, means that when a collision occurs, the consequences are often fatal to the VRU. An analysis of VRUs killed by speed zone in Victoria (see Appendix 4. Data Figure 26 to Figure 30) identified that the average number of VRUs such as pedestrians and cyclists being fatally injured by fast-moving traffic has increased more than two-fold in certain speed zones post-COVID-19 (e.g. cyclists fatally injured in 70 km/h and 80 km/h zones).

VRU groups who travel in vehicles such as the elderly, children under the age of 7 years and young drivers are also being killed more frequently in speed zones of 60 km/h or more, highlighting the dangers associated with travelling at high speeds, even for vehicle occupants. While the average number of all VRUs fatally injured (across all groups except for cyclists) during COVID-19 reduced in fatality rate in the higher speed zones compared to pre-COVID-19 fatality rates, the fatality rates post-COVID-19 in higher speed zones are starting to mirror, if not exceed pre-COVID-19 VRU fatality rates. While speed is always a contributing factor in such VRU deaths, the increase in fatality rates post-COVID-19 is potentially indicative of the increased risk-taking behaviour by certain VRU groups.

3.1.2.1 Movement and Place planning

As discussed, VRUs interact with vehicles, often in high-speed environments, on the existing transport network. Speed limits, enforcement and public education campaigns are some strategies to help target this issue. Victoria's Movement and Place framework[37] is another tool that can assist in targeting this problem.

Movement and Place is a planning tool that recognises roads and streets are both for moving and for dwelling (e.g. talking, dining, waiting etc). The framework reports on the performance of a street or roads in terms of its movement, place, environment and safety. The framework acknowledges that VRUs should not mix with vehicles in high-speed vehicle environments and it also provides a means for achieving travel outcomes efficiently and safely. In essence, the framework favours higher speeds only where vehicle movement is high and there is infrastructure to safely support high travel speeds. Lower speeds are encouraged where people live and dwell or where infrastructure cannot support a safe crash outcome.

Movement and Place captures the evolution of road planning in Victoria (see Figure 8). Where once VRUs were mixing with high-speed traffic, the recognition of the vulnerability of various road user groups has brought on a future focused and multi-model approach to network planning where, roads and streets are defined by the context of a local place and are assigned various 'movement' and 'place' classifications.

[37] Movement and Place, DTP, https://dtp.vic.gov.au/about/planning/transport-strategies-and-plans/movement-and-place-in-victoria

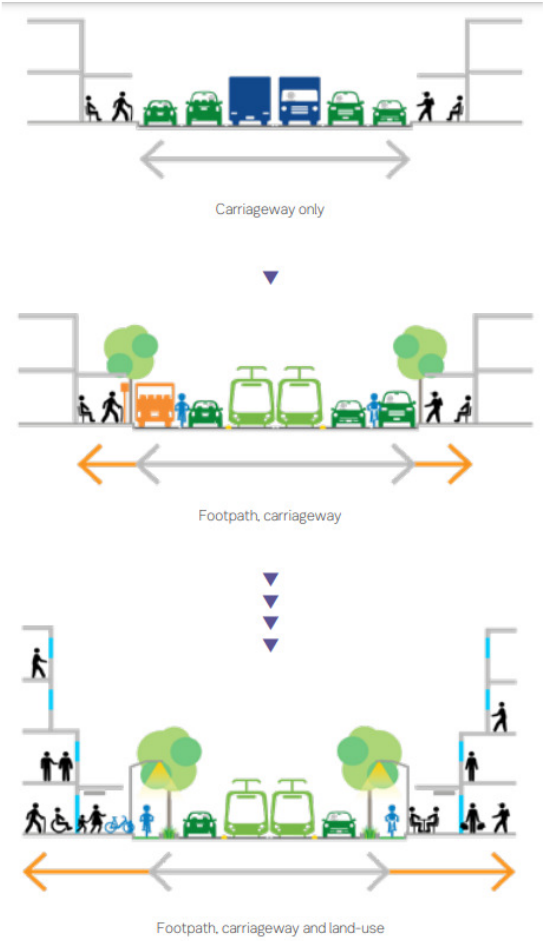

Figure 8. Evolution of the Movement and Place Framework[38]

3.1.2.2 Travel speed during COVID-19

Based on DTP data collected over COVID-19 (2020-2021), travel speeds on the network were observed to be higher than during the pre-COVID-19 period but appear to be reverting to pre-COVID-19 travel speeds post-COVID-19.

Infringement data[39] across the first three quarters of 2020-21 showed that despite Victoria's COVID-19 restrictions, some drivers continued to disregard signed speed limits.

Victoria Police data

The decrease in traffic volume across the State due to stage 4 restrictions, particularly in metropolitan areas, provided opportunities for motorists to speed and brought an increase in detection of offenders. Risk taking behaviour increased among many of those who were using the roads. The following was observed during COVID-19:

- Lives lost and collisions per 10,000 vehicles on the road increased.

[38] *Movement and Place in Victoria*. Published by the Department of Transport and Planning. Feb 2019. State Government of Victoria, Melbourne. Image obtained from p.8

[39] Premier of Victoria, *Victorians Urged To Slow Down As Speed Drives Up Road Deaths*; obtained from https://www.premier.vic.gov.au/victorians-urged-slow-down-speed-drives-road-deaths, 10 September 2021

- The rate of trauma collisions for the traffic volumes in the metropolitan area increased with the second stage 3 restrictions.
- Average network speed increased.
- The speeding non-compliance rate per 1,000 vehicles was higher in 2020 than in 2019.
- High-level speeding, 25 km/h or over increased during the restrictions.
- Extreme speeding during night hours continued despite curfews.
- More high-speed offences shifted from traditional night hours to daytime.
- Police pursuits and ramming incidents increased during the initial COVID-19 restrictions.
- Motorists were exceeding speed limits in 40 km/h zones - likely due to a perception that schools and retail centres were closed, even though many schools remained open for children of essential workers

3.1.2.3 Fixed location and mobile road safety camera data

DJCS[40] data from fixed cameras at highway sites capturing speeding infringements relative to traffic volume showed increases in the speed limit non-compliance rate during COVID-19. Speeding and red light running at intersections also saw increases in the non-compliance rate during COVID-19.

The high non-compliance rate in speeding behaviour and increase in red-light running was likely due to less congestion on the roads during this time, providing vehicles with greater opportunities to travel faster or run red lights. Despite enforcement activity occurring, a perception of a reduced police presence may also have contributed to non-compliance. However, despite the increases seen during COVID-19, trends in non-compliance from speed and red light running at intersections show a downward trend over time, indicating the positive and deterring effects of speed and red-light cameras on driver behaviour.

Speeding detected by mobile speed cameras indicates that infringements increased during COVID-19 however this was largely influenced by the Mobile Camera Expansion Project, which saw a 75 per cent increase of mobile road safety camera deployment (from 9,300hrs to 16,300hrs per month) between 2019 and 2021.

3.1.2.4 Self-reported speeding behaviours and attitudes

The TAC Road Safety Monitor[41] is research conducted with licence holders and registered vehicle owners in Victoria. Having commenced in 2001, the survey is used to track and monitor road user behaviour and attitudes over time and the results are used to inform public education campaigns and policy development.

Respondents were asked how often they intentionally drove 3 km/h or more above the posted speed limit (i.e. low-level speeding), and 10 km/h or more above the limit (i.e. high-level speeding), in three speed limit zones in the last three months (50 km/h, 60 km/h, and 100 km/h).

Two-thirds (64%) of respondents reported driving 3 km/h or more over the speed limit during the previous three months. Despite low level speeding significantly increasing the risk of crashing, the survey results indicated that driving at 3 km/h or more above the limit was perceived as being a comparatively low-risk activity in terms of safety and a normalised behaviour. Respondents viewed driving at 10 km/h above the limit as being less acceptable behaviour. A quarter (26%) of respondents reported intentionally high-level speeding in the previous three months. Figure 9 shows

[40] Department of Justice and Community Safety Road Safety Camera Program data, 2018-2022
[41] Wallis Report: *Road Safety Monitor 2022 - Draft Report*. Transport Accident Commission. Ref: 4951, May 2023. Camberwell, Victoria, Australia

the historical trend for intentionally engaging in low-level speeding. The results from 2022 cannot be directly compared to previous years because of slight differences to the survey questions.

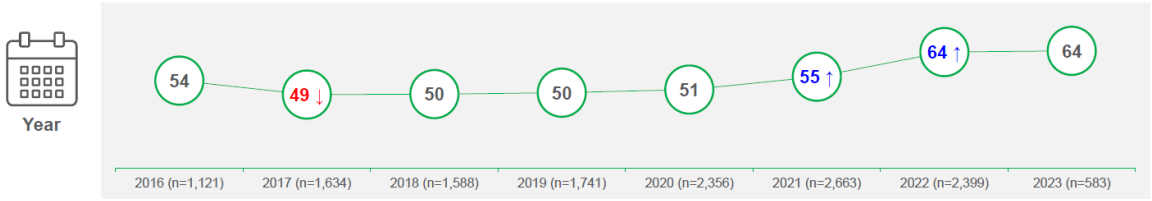

Figure 9. Low-level speeding (3 km/h+) by year: 'ever' at any speed limit (%)

Over time, there has been a noticeable shift in low-level speeding behaviour. The percentage of respondents reporting low-level speeding decreased from 54 per cent in 2016 to 49 per cent in 2017. This prevalence remained stable until 2021, when an increase to 55 per cent was recorded. Although the changes in measurement must be considered, this trend appears to have continued in 2022, with 64 per cent engaging in low-level speeding.

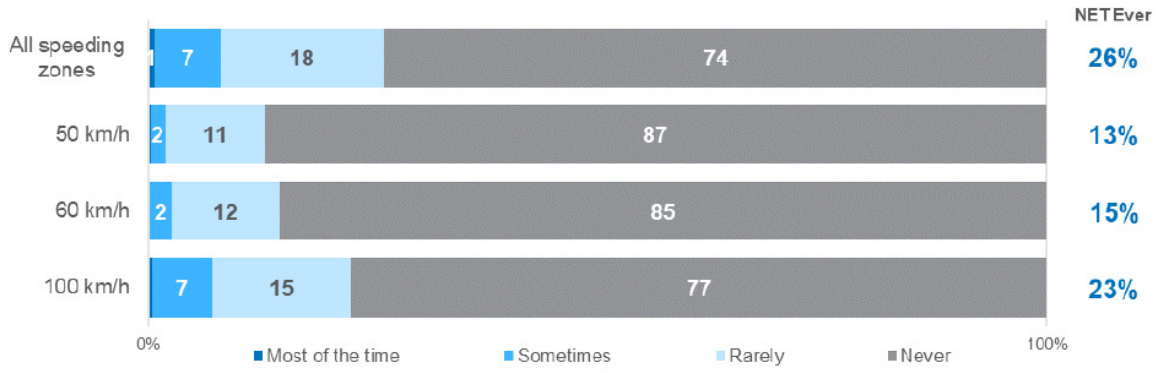

Figure 10. Frequency of intentionally speeding 10km/h over the limit (%)

Drivers' tendency and frequency to engage in high-level speeding was shown to increase on roads with higher speed limits (see Figure 10).

3.1.3 Impairment of road users

Impairment of road users is a significant road safety behavioural issue. Impairment can have several causes including alcohol and drug consumption, distractions, and fatigue. It can lead to poor decision making, decreased performance and focus, induce over-confidence, and reduce reaction times and abilities to perceive and react to hazards in the road environment.

3.1.3.1 Drink driving

Drink driving summary

Victorian crash data (2017-2021) shows that 18 per cent of drivers killed and 14 per cent of hospitalised drivers have an illegal BAC (BAC ≥ 0.05).

In 2022, alcohol was identified as a contributing factor in 21 per cent of fatal crashes. While self-reported data indicate an increased frequency of alcohol consumption during the COVID-19[42], data from the Victorian Institute of Forensic Medicine highlights no increase in alcohol-involved road fatalities during

[42] Biddle, N., Edwards, B., Gray, M., & Sollis, K. (2020). *Alcohol consumption during the COVID-19 period: May 2020*. ANU Centre for Social Research and Methods, Australian National University.

this time. No clear relationship can therefore be drawn regarding alcohol involvement and fatal crashes relative to COVID-19.

While breath testing data cannot be used to verify any potential increase or decrease in drink-driving episodes during or post-COVID-19 (due to a reduced number of alcohol screening tests conducted by Victoria Police during COVID-19), it is possible that restrictions placed on activities typically associated with substance use (e.g. sporting events, pubs, clubs, and work-related functions), may have had positive impacts in reducing drink-driving exposure.

What is unknown and potentially concerning is whether reduced volumes of drink-driving testing during COVID-19 has resulted in a complacency among the public in complying with drink driving legislation. This needs to be monitored, particularly because a number of motorists continue to believe that being in control of a vehicle while over the legal BAC limit is acceptable[43]

Alcohol limits a driver's ability to be in control of their actions. Depending on the amount of alcohol consumed, it can impair a driver's perception of other road users and objects, their vision, reaction time and ability to focus on the driving task.

The number of fatally injured drivers on the road network detected with alcohol in their system is concerning with recent Victorian Institute of Forensic Medicine (VIFM) data showing that 34 drivers (of the 234 road users killed in 2021 on Victorian roads) had alcohol in their system. Of those drivers, 91 per cent (n=31), had a BAC ≥ 0.05 (Figure 11).

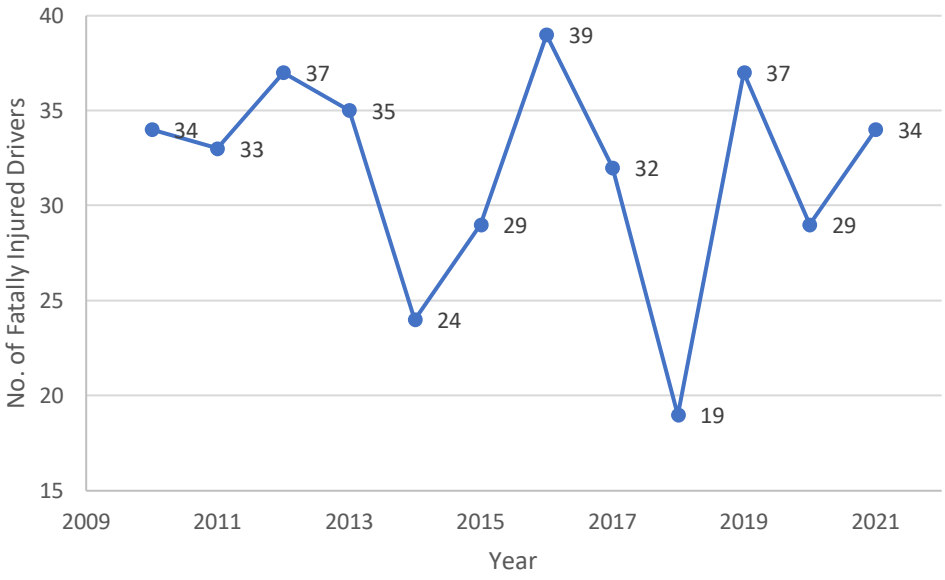

Figure 11. The number of fatally injured drivers in Victoria (2010-2021) with alcohol detected in their system, data from the Victorian Institute of Forensic Medicine [44]

This data focuses only on alcohol use by drivers who were fatally injured in a crash. It is likely that the number of alcohol-impaired drivers seriously injured in collisions is far greater, and further, it does not take account other road users (such as passengers, pedestrians, and cyclists) who may have been killed or injured in crashes involving an alcohol-affected driver. While the number of deaths

[43] Wallis Report: *Road Safety Monitor 2022 - Draft Report*. Transport Accident Commission. Ref: 4951, May 2023. Camberwell, Victoria, Australia, p. 83

[44] Data generated by Gerostamoulos, D., and Di Rago, M. 2022. Victorian Institute of Forensic Medicine based on data collected at the Toxicology Laboratory.

involving alcohol-impaired drivers has fluctuated considerably over the last 10-year period, no obvious trends in fatally injured alcohol-affected drivers relative to COVID-19 can be identified.

Transport-related injury hospitalisation data from the Victorian Injury Surveillance Unit (VISU) (2015-2022) indicated alcohol was involved in 4 per cent of pedestrian admissions, 2 per cent of cyclist admissions, 3 per cent of motorcyclist admissions, and 2 per cent of motorised mobility device and 6 per cent of e-scooter Emergency Department presentations. However, this should be interpreted with caution as hospital data coding for alcohol is limited.

Self-reported drink driving behaviours and attitudes.

The Road Safety Monitor (TAC) reported that 35 per cent of 18–25 year olds, and 39 per cent of 61-90 year old drivers (compared to 43% of 26-39 year old and 46% of 40-60 year old drivers) said they drove after drinking alcohol during the last 12 months (n=2,220). This is particularly concerning given decades of research has demonstrated that novice drivers are at a higher risk than older drivers of being involved in a crash due to their inexperience, poor judgment, risk-taking propensity, and a lack of understanding of the complexities in driving a motor vehicle[45].

Three to six per cent of drivers and motorcycle riders self-reported driving a vehicle while over their legal BAC (Figure 12). No real changes to this trend are observed during or post-COVID-19.

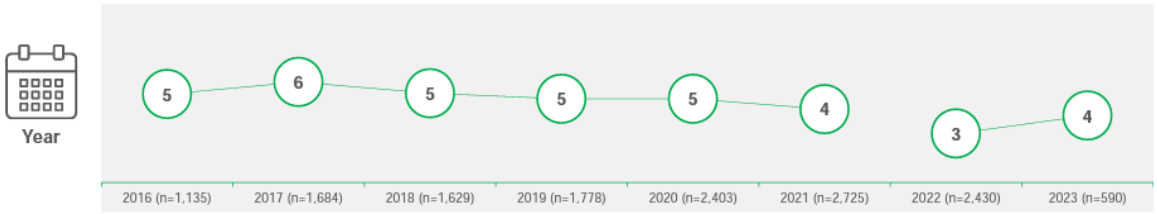

Figure 12. Self-reported behaviour driving over legal BAC in last 12 months, TAC Road Safety Monitor

Estimates from the 2019 National Drug Strategy Household Survey[46] highlighted that the proportion of people who consume alcohol on a daily basis increased with age, with people aged 70 and over, most likely to drink daily (based on 2019 data). This has implications on the safety of these individuals as a road user group.

Drink driving programs and initiatives.

Victoria first introduced random breath testing in 1976. Close to that time about 50 per cent of drivers killed had a BAC over 0.05 in 1977. This dropped to about 25 per cent in the 1990s.

Despite the gains, people believe that they can drive safely after a couple of drinks, but alcohol remains one of the biggest contributors to road trauma in Victoria. In 2021, 21.1 per cent of all driver fatalities had a BAC over at least 0.05.

However, drivers with a BAC at least 0.01 but less than 0.05 comprised 2.5 per cent of all driver fatalities from 2017-2021. Research shows that reducing BAC thresholds has an additional effect of reducing drink driving at higher BAC levels (see Figure *13*).

[45] Romano, E., Fell, J. C., Li, K., Simons-Morton, B. G., & Vaca, F. E. (2021). Alcohol-and speeding-related fatal crashes among novice drivers age 18–20 not fully licensed at the time of the crash. *Drug and alcohol dependence, 218, 108417.*

[46] *National Drug Strategy Household Survey, 2019*. https://www.aihw.gov.au/reports/illicit-use-of-drugs/national-drug-strategy-household-survey-2019/contents/summary

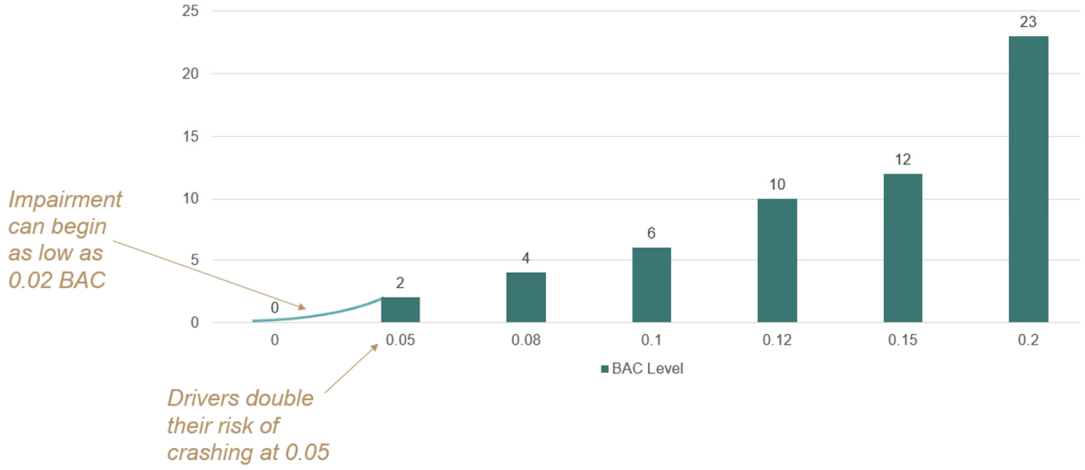

Figure 13. Impairment and relative crash risk [47]

Victoria Police drink driving data

The proportion of injury collisions involving alcohol increased in 2020 compared to 2019. January 2021 saw a high volume of alcohol-involved injury collisions with 63, which is 30.7 per cent higher than the five-year average of 48.2 for January.

Alcohol injury collisions steadied following this spike in January. The combination of increased socialisation and the perceived decline in enforcement following COVID-19 may have led to increased drink driving.

3.1.3.2 Drug driving

Drug driving summary:

Victorian crash data (2017-2021) shows 30 per cent of driver fatalities involved a driver who was detected with drugs (including THC, methylamphetamine or MDMA) in their system at the time of the crash. Drivers who tested positive for methylamphetamine alone, constituted more than 13 per cent of those seriously injured over the same period[48]*. Data from the Victorian Institute of Forensic Medicine highlights a potentially increased prevalence of drug driving. Despite this, fewer than one per cent of drivers admitted to drug-driving.*

Recent trends in drug driving suggest that drug driving will continue to be a significant contributor to road trauma.

Data collected by the VIFM toxicology laboratory and cross-matched with Victoria Police driver data[49], identified that of the 234 drivers fatally injured on the transport network in 2021, 100 tested positive to either drugs or alcohol, with 64 per cent of these drivers (n=64), testing positive for some form of illicit drugs or stimulant. The data, current to 2021 indicates a steady annual rise in fatally injured drivers who are detected with drugs alone in their system (increasing from n=50 in 2013 to n=63 in 2019), with only a small decline during COVID-19 (n=54 in 2020). The final year of available data (2021) shows an increase in the number of drivers killed with drugs in their system being similar to pre-COVID-19 levels (n=64). No post-COVID-19 data was available for analysis.

[47] *Effectiveness of Drink Driving Countermeasures National Policy Framework*, Austroads Research Report AP-R613-20

[48] The detection of illicit drugs (other than methylamphetamine) in seriously injured drivers is unknown

[49] Data generated by Gerostamoulos, D., and Di Rago, M. 2022. Victorian Institute of Forensic Medicine based on data collected at the Toxicology Laboratory

Victoria Police notes that these figures are indicative of drivers detected with drugs including stimulants, benzodiazepines, opioids, antidepressants, and proscribed drugs (such as THC, methylamphetamine and MDMA), highlighting that road users are turning to various impairing substances which cannot always be detected in routine road-side tests.

Data highlights that a large portion of drivers who are killed on the transport network, both at a global and national level, are found with drugs in their system. Despite it being an offence to drive while under the influence of an illicit drug or to drive while being impaired, in Victoria, the proportion of drivers who are fatally injured and detected with illicit drugs (which include amphetamines, ecstasy or MDMA, cocaine, heroin and cannabis –Figure 14) is concerning.

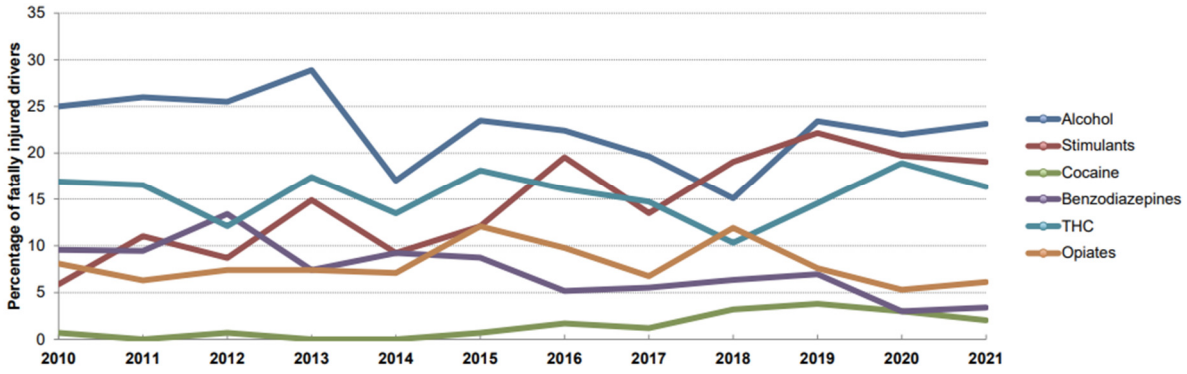

Figure 14: Percentage incidence of drugs in fatally injured drivers 2010 – 2021

Self-reported drug driving behaviours and attitudes

The TAC Road Safety Monitor identified that less than 1 per cent of those who completed the survey said they drove after using drugs during the last 12 months despite 5.2 per cent of respondents (based on n=2,395) noting they had used illegal drugs over the same time period. The survey results also show that when comparing responses from the previous six years, the number of drivers who said that they drove after consuming drugs is decreasing. These figures potentially highlight the increased awareness that drivers are acquiring about the impairing effects of drugs, and dangers associated with drug-impaired driving (see Figure 15).

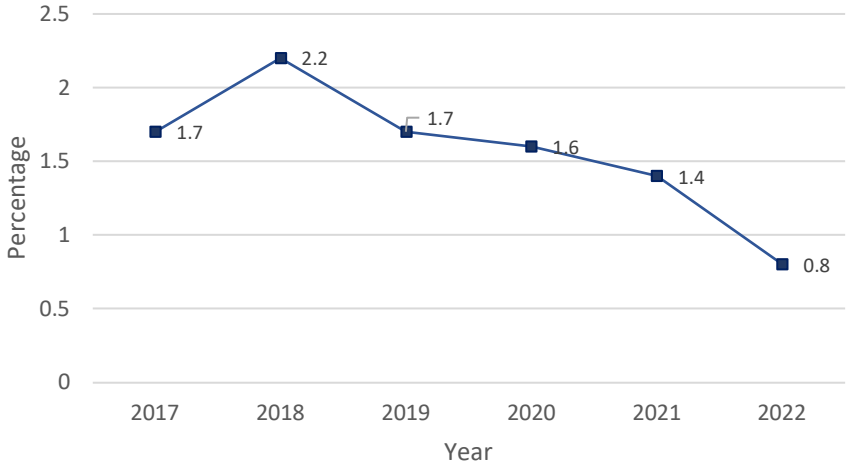

Figure 15. Percentage of drivers who drove 'sometimes' or more often post drug-consumption (reproduced from TAC's Road Safety Monitor 2022, Draft Report)

Victoria Police data.

Despite the reduction in the volume of testing during restrictions, rates of positive tests increased and the number of people detected drug driving during the last lockdown period remained similar to the first lockdown. There was an increase in collisions involving THC, whilst methylamphetamine collisions remained on par with pre-COVID-19 monthly averages, indicating that drug-drivers were less inclined to adhere to CHO directives. The interaction with a range of drivers at vehicle checkpoints that may not have normally drawn police attention resulted in the detection of many first-time drug-driving offenders.

Drug driving programs and initiatives.

Victoria Police has increased its drug testing program significantly over the last few years, from 40,000 tests in 2014 to 150,000 in 2019. In a report published in 2021[50], MUARC modelled an estimate of fatalities and serious injuries that were projected to occur in the absence of the increase in roadside drug testing from 42,000 to 100,000 tests conducted per year. The model projected a saving of around 33 fatalities and around 80 serious injuries relative to (the unobserved) trauma that would have occurred without the increase in roadside drug testing.

Victoria Police officers can require anyone driving or in charge of a motor vehicle to undertake a Preliminary Oral Fluid Test (POFT). POFTs only detect the presence of the Road Safety Act's three proscribed illicit drugs (THC, methylamphetamine, and MDMA). They cannot currently identify:

- other prohibited substances (such as cocaine) or pharmaceuticals (such as prescription medicines)
- if the prescribed illicit drug has impaired the individual's ability to drive.

Additional insight pertaining to cocaine and medicinal cannabis use is presented in Appendix 6.

DTP is in the process of identifying ways to best address drug-driving, acknowledging that both enforcement and behavioural interventions are required for effective management. Both need to be facilitated with rigorous scientific research. As such, work in progress includes:

- Decision support tool for health professionals (point of prescription) – Implementation of tool at the point of prescription and a communications strategy to support clinical decision making that prompts considerations for safe driving.
- Investigation to see if an ocular device can screen for drug impairment at the roadside.
- An updated review of overseas jurisdictional application of THC limits and the association with impaired driving to determine if setting a per se limit can reliably be pursued in an Australian context.
- An initiative is underway to address repeated high-risk drug and alcohol offending as part of the Optimising Therapeutic Pathways for Frequent High Risk Offenders project. This initiative is aimed at drivers and riders who engage repeatedly in dangerous and high-risk unsafe behaviours and who do not respond to current sanctions and countermeasures.

[50] Newstead, S., Cameron, M., Thompson, L., & Clark, B. (2020). *Evaluation of the roadside drug testing expansion and roadside alcohol testing enforcement programs in Victoria*. Report No. 355. Monash University Accident Research Centre, Clayton, Victoria.

3.1.3.3 Distraction

Distraction summary:

Victorian studies based on real-world crashes have identified that inattention is associated with more than 50 per cent of serious injury crashes. Self-reported mobile phone use is quite high, with over 70 per cent admitting to using a mobile phone while driving.

Distractions, whether visual, physical or cognitive, take a driver's (or other road user's) attention away from the driving task (or road), increasing the risk of crash involvement.

1 in 5 pedestrians use their phone while crossing the road. It is observed that pedestrians using a smartphone were more likely than those not using a smartphone while walking to experience a critical event such as nearly hitting another person, vehicle, or object.

Driver Distraction

Driver distraction is a significant concern in road safety. Evidence from research based on vehicle crashes suggest that driver distraction can impair driving ability just as much as alcohol intoxication and fatigue[51,52]. There are typically two categories of distraction which impact driving safety, internal interferences and external interferences. Internal interferences include distractions such as consuming food while driving, smoking, having other thoughts which detract from the driving task, inattentional blindness or being mentally absent from the driving task. External interferences include distractions which are more sporadic in nature, such as phone calls, text messages, navigation devices, responding to passengers or focusing on distracting activities external to the vehicles, such as on-road incidents. These distractions, whether visual, physical or cognitive, take a driver's attention away from the driving task, increasing the risk of crash involvement.

Victorian studies based on real-world crashes have identified that inattention is associated with more than 50 per cent of serious injury crashes (n=856, 2000 to 2011)[53], while a more recent Victorian study found near-identical results (n=400, 49% were due to inattention)[54]. The latter study found that when the sources of inattention were considered closely, more than 50 per cent originated from external interferences such as in-vehicle distractions, mobile phone use and passenger interactions.

Distracted drivers are a particular hazard for VRUs. Taking eyes off the road for two seconds or more doubles a driver's crash risk. At 50kmh a driver will travel 28 metres in two seconds, that's about the length of a cricket pitch[55].

Driver distraction caused by mobile phones

While studies have indicated that the prevalence of moderate to severe nomophobia (defined as the anxiety associated with the idea of being without a mobile phone or the inability to use it) is 70 per

[51] Chen, Z., Wu, C., Zhong, M., Lyu, N., & Huang, Z. (2015). Identification of common features of vehicle motion under drowsy/distracted driving: A case study in Wuhan, China. *Accident Analysis & Prevention, 81*, 251-259.
[52] Qin, L., Li, Z. R., Chen, Z., Bill, M. A., & Noyce, D. A. (2019). Understanding driver distractions in fatal crashes: An exploratory empirical analysis. *Journal of Safety Research, 69,* 23-31.
[53] Beanland, V., Fitzharris, M., Young, K. L., & Lenné, M. G. (2013). Driver inattention and driver distraction in serious casualty crashes: Data from the Australian National Crash In-depth Study. *Accident Analysis & Prevention, 54*, 99-107.
[54] Fitzharris MP, Pok Arundell, T., Corben, B., Lenne MG., Liu S., Peiris, S., Stephens, A., Bowman DM., Morris, A. and Tingvall C. (2022). *Identification of countermeasures to address serious injury crashes, ECIS Report 4.* Monash University Accident Research Centre, Report 346. Clayton.
[55] Transport Accident Commission, Victoria. *Distracted Driving.* https://www.tac.vic.gov.au/road-safety/staying-safe/distracted-driving, Accessed 18 June 2023.

cent, and severe nomophobia is approximately 21 per cent[56], how nomophobia manifests on the road network is difficult to quantify. Individuals who do suffer from attachment with their mobile devices are 85 per cent more likely to engage in illegal phone use while driving[57], increasing the risk of being involved in a crash[58].

Distracted driving programs and initiatives

Having commenced in March 2023, new mobile phone and seatbelt detection cameras are now operating across the Victorian road network. The Victorian Government invested $33.7 million as part of the *Victorian Road Safety Strategy 2021-2030* to introduce the new camera technology, which is estimated to prevent 95 crashes that result in injury or death per year. Initially two mobile phone and seatbelt detection camera trailer systems were rolled out, with plans to deploy additional trailers from mid-2023 onwards. In their full capacity, the cameras will be deployed to more than 200 locations in rural and metropolitan areas throughout Victoria.

From 31 March 2023, the new camera technology was rolled out for a three-month Advisory Letter period. During this three-month period, drivers who are detected with distracted driving and/or seatbelt offences were sent an Advisory Letter to alert them to the detection. No infringements were issued during this period. As at 9 June 2023, 6,597 Advisory Letters were sent out for driver seatbelt offences (59.5%), driver portable device offences (38.7%), and passenger seatbelt offences (10.8%). The Advisory Letter period concluded on 30 June 2023. From 1 July 2023, enforcement and issuing of infringements commenced for offences detected by these cameras.

To support the rollout of the mobile phone and seatbelt detection cameras, the TAC launched a public education campaign to remind motorists that the cameras are operating, while new driver distraction road rules were introduced in April 2023 to regulate the use of a range of portable, mountable, wearable and inbuilt devices while driving a vehicle or riding a motorcycle[59].

Self-reported distracted driving behaviours and attitudes

The TAC Road Safety Monitor identified that 72 per cent of drivers admitted using a handheld mobile phone while driving, including to use an app', make or receive a phone call, or to send or receive a text message. The level of distracted driving, according to the report, remains relatively similar during the years investigated, with those under the age of 40 years, being more likely to say they engaged with a phone while driving compared to their older counterparts. Driving while using a mobile phone was perceived to be almost as dangerous as driving with an illegal blood alcohol level, but it was undertaken more frequently.

Pedestrian Distraction

Pedestrian distraction is an emerging issue, particularly with the increase in smartphone use. A study undertaken by MUARC[60] identified that there is a negative impact from smartphone use on pedestrian safety. The study highlighted that countermeasures could be implemented through

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[56] Humood, A., Altooq, N., Altamimi, A., Almoosawi, H., Alzafiri, M., Bragazzi, N. L., ... & Jahrami, H. (2021). The prevalence of nomophobia by population and by research tool: a systematic review, meta-analysis, and meta-regression. *Psych*, *3*(2), 249-258.

[57] Kaviani, F., Young, K. L., & Koppel, S. (2022). Using nomophobia severity to predict illegal smartphone use while driving. *Computers in Human Behavior Reports*, *6*, 100190.

[58] Owens, J. M., Dingus, T. A., Guo, F., Fang, Y., Perez, M., & McClafferty, J. (2018). *Crash risk of cell phone use while driving: A case-crossover analysis of naturalistic driving data.*

[59] *New Victorian Road Rules 2023*. https://www.vicroads.vic.gov.au/safety-and-road-rules/new-vic-road-rules-2023

[60] Osborne R, Horberry T, and Young K (2020), *Pedestrian distraction from smartphones,* Monash University Accident Research Centre, Report 349.

education campaigns, infrastructure improvements, or through regulation/legislation. The study found that, on average 20 per cent of pedestrians were using their smartphones while crossing a road in the city. It was observed that pedestrians using a smartphone were more likely to experience a critical event (such as nearly hitting another person, vehicle, or object).

Cyclist Distraction

Distraction is an emerging risk factor for cycling safety[61]. International research[62] [63] indicates that the use of electronic devices is prevalent among cyclists. Like drivers, cyclists engage in a range of potentially distracting, non-cycling tasks such as using hand-held electronic devices, listening to music, and talking to other cyclists while riding.

However, there is little known about the prevalence of Australian cyclists' engagement in potentially distracting tasks. An Australian study in 2020 into cyclist distraction[64], examined the prevalence of Australian cyclists engaging in potentially distracting tasks. Cyclists self-reported their levels of engagement in these tasks was low, particularly for technology-based tasks, with the average cyclist self reporting that they never or hardly ever engaged in these tasks.

Another study, focusing on driver distraction in the US in 2022[65], reported that participants who drive in the gig economy had higher adjusted odds of engaging in "modern" device-based distractions enabled by smartphones (e.g., making video calls, watching videos, using social media) than other drivers, which potentially has implications for cyclists and other gig economy riders too.

3.1.3.4 Fatigue

Fatigue summary:

Driver fatigue is thought to contribute to approximately one-fifth of crashes in Victoria, with 37 per cent of drivers admitting to being in control of a vehicle while tired[66].

Victorian crash data shows that on average pre-COVID-19, of all transport-related casualties, 22.8 per cent of people killed and 9.3 per cent who were seriously injured, were affected by fatigue[67]. These figures decreased over COVID-19 to 17.9 per cent and 8.3 per cent respectively.

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[61] Useche SA, Alonso F, Montoro L, Esteban C. 2018. Distraction of cyclists: how does it influence their risky behaviors and traffic crashes? *PeerJ 6:e5616* https://doi.org/10.7717/peerj.5616

[62] C. Goldenbeld, M. Houtenbos, E. Ehlers, D. De Waard, (2012) The use and risk of portable electronic devices while cycling among different age groups, *Journal of Safety Research, Volume 43*, Issue 1, Pages 1-8, https://doi.org/10.1016/j.jsr.2011.08.007.

[63] Katja Kircher, Christer Ahlstrom, Lisa Palmqvist, Emeli Adell, (2015) Bicyclists' speed adaptation strategies when conducting self-paced vs. system-paced smartphone tasks in traffic, *Transportation Research Part F: Traffic Psychology and Behaviour, Volume 28*,Pages 55-64, ISSN 1369-8478, https://doi.org/10.1016/j.trf.2014.11.006.

[64] Kristie L. Young, Amanda N. Stephens, Steve O'Hern, Sjaan Koppel, (2020) Australian cyclists' engagement in secondary tasks, *Journal of Transport & Health*, Volume 16

[65] Cox, Aimee E., Cicchino, Jessica B., Reagan, Ian J., Zuby, David S., (2022), *Prevalence of distracted driving by driver characteristics in the United States,* Insurance Institute for Highway Safety

[66] Transport Accident Commission, Victoria. *Tired driving*, Accessible at https://www.tac.vic.gov.au/road-safety/staying-safe/tired-driving, 16 June 2023

[67] Based on Police member's opinion of cause and particular crash configurations and crash times which insinuate the involvement of fatigue related driving

Fatigue related crash trends could not be identified for post-COVID-19, but it is more than likely that with travel and work patterns returning to pre-COVID-19 levels, that fatigued driving and associated risks will become more prevalent.

Research demonstrates that impairment from excessive tiredness is equivalent to driving with an illegal blood alcohol concentration. Therefore, the TAC Pause Stop initiative (conducted in partnership with Victoria State Emergency Services, VICSES) and public education campaigns are timely for raising awareness of the increased risks of tired driving.

Driving when tired or drowsy, thought to account for up to 20 per cent of all road crashes[68], is a high-risk behaviour. Research has identified that driving while sleep deprived is equivalent to driving with an illegal blood alcohol concentration, highlighting the impairment induced by tiredness (see Table 3). Drowsy driving is primarily caused by insufficient sleep. In particular, it can result from:

- Sleep deprivation.[69]
- Sleep restriction.[70]
- Driving at times when you are normally asleep.
- A sleep disorder such as sleep apnoea.
- Any of the above exacerbated by the effects of alcohol and/or some medications or drugs.

Table 3: Research by Lamond and Dawson (1999) which equates tired driving to blood alcohol impaired driving[71]

Hours of wakefulness	Equivalent BAC
17	0.05
22	0.08
24	0.10

Fatigue is a major contributor to crashes in Victoria. If a driver falls asleep for just four seconds while travelling at a speed of 100 km/h, the car will have gone 111 metres without the driver being in control. After being awake for 17 hours drivers will be impaired to the same level as someone with a BAC of 0.05.[72]

Self-reported tired driving behaviours and attitudes

TAC Road Safety Monitor data reported on tired driving (fatigue) and found that one-in-five (20%) respondents drove while very tired (so tired they struggled to keep their eyes open). Respondents who avoid fatigued driving understand the high perceived crash risk and have higher levels of self-control over the behaviour.

[68] Connor, J., Norton, R., Ameratunga, S, Robinson E, Civil I, Dunn R, Bailey J, Jackson R 2002, 'Driver sleepiness and risk of serious injury to car occupants: population-based case control study', *British Medical Journal*, 324(7346):1125.
[69] Alvaro, P, Jackson, M, Berlowitz, D, Swan, P & Howard, M 2016, 'Prolonged Eyelid Closure Episodes during Sleep Deprivation in Professional Drivers', *Journal of Clinical Sleep Medicine*, vol. 12, no. 8, pp. 1099-1103.
[70] AAA Foundation for Traffic Safety 2016, *Acute Sleep Deprivation and Risk of Motor Vehicle Crash Involvement*. Washington, USA.
[71] Lamond, N., & Dawson, D. (1999). Quantifying the performance impairment associated with fatigue. *Journal of sleep research, 8(4)*, 255-262.
[72] Figures obtained from the Transport Accident Commission (accessed, 13/06/2023), https://www.tac.vic.gov.au/road-safety/staying-safe/tired-driving

Fatigue programs and initiatives

Unlike alcohol and speed, there is currently no objective roadside test for fatigue, which limits the ability to establish countermeasures. A roadside test for fatigue would be a potentially powerful tool in deterring drivers from driving while fatigued and detecting impaired drivers before a crash occurs.

DTP is currently investigating the feasibility of establishing a roadside detection test for driver fatigue. If successful, it is anticipated that driver fatigue monitoring can be used to deter and detect drivers from driving while fatigued.

In addition, the role of vehicle technology to detect driver fatigue is an emerging technology which has the potential to reduce the incidence of fatigue-related road trauma.

3.1.4 Impairment due to medical/health conditions

Driving is a complex task requiring good vision, judgement, perception, cognition, and physical abilities. Victoria's licensing system is based on national fitness to drive guidelines[73] as medical conditions and disability may impair a person's ability to drive at any age. A condition of being licensed to drive is that all motorists in Victoria are required by law to advise VicRoads of any serious, permanent or long term illness, disability, medical condition or injury that may impair their ability to drive safely.

Medical/health impairment programs

Victoria's licensing medical review process assesses and monitors drivers with reported medical conditions. During COVID-19, VicRoads delayed the medical reporting requirement for private light vehicle drivers with known medical conditions that are deemed to be low risk by approximately 12-18 months to reduce the pressure on Victoria's health network. All other cases such as new notifications, subsequent requests and commercial standard requests continued during COVID-19. The medical reporting process for the drivers in this category have returned to normal, with ongoing reviews scheduled in accordance with the national guidelines. VicRoads provides a number of resources and guidance for motorists and health professionals to help support drivers to know when their medical condition may affect their driving, and the reporting requirements to VicRoads.

In consultation with health professional and consumer reference groups, VicRoads has also produced resources to support drivers to remain driving safely by self-regulating their driving if they, for example, begin to feel less comfortable driving at night[74].

3.1.5 Seatbelt use

Seatbelt summary:

Victorian fatal road crash data (2012-2021) shows that 17 per cent of vehicle occupants were not wearing a restraint or wearing an improperly fitted restraint when they crashed. Restraint use was classified as being unknown or inappropriate for 24 per cent of vehicle occupants. In comparison, over the same time period, 8 per cent of cyclists, motorcyclists and pillion passengers failed to wear a helmet.

Of the 24 children killed over this period, under the age of seven (where a restraint appropriate for size and age must be used), one child was found not to have been wearing a restraint, but restraint use for 12 children were unknown.

[73] Austroads, 2022, Assessing Fitness to Drive, https://austroads.com.au/drivers-and-vehicles/assessing-fitness-to-drive

[74] *Health and driving,* https://www.vicroads.vic.gov.au/licences/health-and-driving

Of the 629 children over this period who were seriously injured in a road crash, 10 per cent were found to be wearing no restraint or an ill-fitting restraint. Most recent survey results indicate that 2.3 per cent of drivers and 3.6 per cent of passengers admitted to travelling without a seatbelt.

Victorian fatal crash data from 2022 and 2023 (year to date figures) indicate a decrease in seatbelt compliance post-COVID-19, with 24 per cent of those killed (where restraint use was known), identified as being unrestrained.

Victoria was the first jurisdiction in the world to mandate the wearing of seatbelts. Since 1970 seatbelts have been required by law in cars in Victoria and have reduced the risk of serious or fatal injury by 50 per cent. It is a legal requirement to wear a seatbelt or appropriate restraint. This includes by children, the elderly and pregnant women.

Where known, around one-quarter of vehicle occupants who are killed were not wearing a seatbelt, with 15 people so far this year (2023) killed while not wearing a seatbelt. Research has shown that people who are involved in fatal or serious injuries who are not wearing a seatbelt are more likely to be engaging in other high-risk behaviours like speeding and drink/drug driving[75].

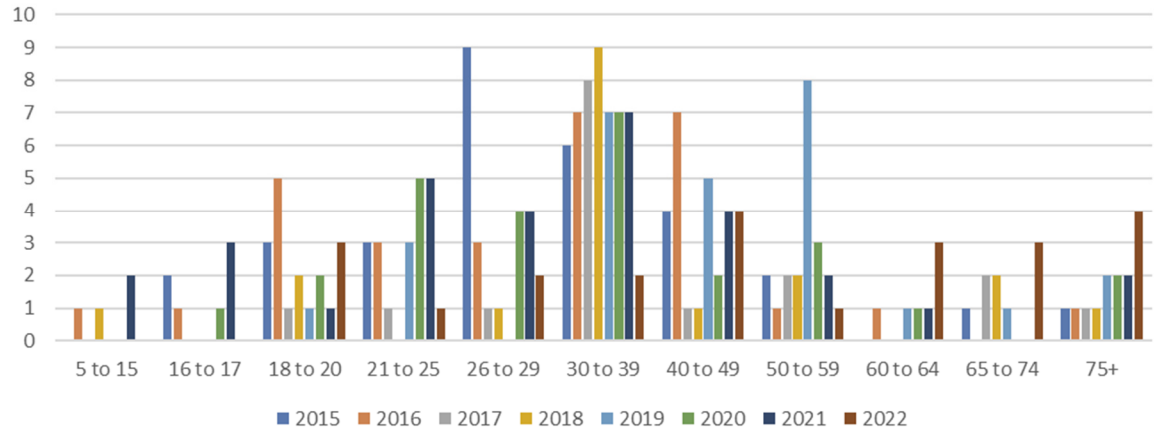

Figure 16. Vehicle occupant fatalities where a seatbelt was not worn by age range

Figure 16 shows fatalities for the years 2015 to 2022 for occupants who were not wearing a seatbelt, by age group. They show:

- Those aged 30 to 39 showed the highest proportions for not wearing seatbelts.
- 2022 saw a higher proportion of older people not wearing seatbelts.
- Those aged 5 to 15 had the lowest number of 'seatbelt not worn' fatalities.

Seatbelt programs and initiatives

In addition to the rollout of the mobile phone and seatbelt detection cameras (refer section 3.1.3.3), DTP is currently reviewing seatbelt requirements for children on buses following the incident involving a school bus transporting children from Exford Primary School on 16 May 2023. The review will consider the relevant legislative and regulatory requirements, operational policies and contractual requirements, and monitoring and enforcement measures.

[75] Raftery, SJ., Wundersitz, LN (2011) *No restraint? Understanding differences in seat belt use between fatal crashes and observational surveys*, Centre for Automotive Safety Research

3.1.6 Vehicle design and purchasing choices

The Safe Vehicles pillar of the Safe System provides practical opportunities to improve road safety by improving the design of vehicles. A certain number of safety features are particularly relevant to VRUs. In Victoria, several initiatives (outlined below) are advancing the rate that vehicle improvements occur, as well as the adoption of those improvements into the circulating vehicle fleet.

COVID-19 had a number of adverse effects on advancements which were being made in achieving road safety through the sale of vehicles (used and new), fitted with advanced technologies. The COVID-19 restrictions and global parts shortage made it difficult to source and view vehicles. The minimum price of some new small vehicles (base models) increased by 52 per cent between 2019 and 2023. The used car market was also influenced by COVID-19, with used car prices 51 per cent higher than pre-COVID-19 levels[76].

3.1.6.1 Vehicle safety programs and initiatives

Current vehicle safety programs and initiatives include:

- The Australasian New Car Assessment Program (ANCAP)[77] – ANCAP is an independent vehicle safety rating system of 0 to 5 stars. Technologies that have safety advantages for VRU exist and are considered by the program.[78]
- Australian vehicle safety standards – The Commonwealth Government regulates the motor vehicle safety standards in Australia through the Australian Design Rules (ADRs). The ADRs specify the minimum safety requirements that a motor vehicle must meet before it can be imported or sold in the market.
- Unsafe to Safe – The DTP Unsafe to safe program is an initiative under the *Victorian Road Safety Action Plan 2021-2023*[79] investing $6.9 million in a targeted trial that provides financial incentive of $5000 to up to 1000 young regional Victorian vehicle owners to scrap their old, unsafe vehicles and replace them with vehicles less than ten years old with a high safety rating.
- CLOCS-A program – Construction Logistics and Community Safety Australia is based on research findings that a disproportionate number of VRUs (including cyclists) were involved in serious collisions with heavy vehicles. It aims to reduce the incidence of crashes between heavy vehicles and VRUs. The DTP is a supporting partner in this program.
- 'How Safe is Your Car?' website – The TAC 'How Safe is Your Car?' website encourages the purchase of safe vehicles and educates consumers on the benefits of vehicle safety (www.howsafeisyourcar.com.au). The website provides consumers with independent safety information displaying ANCAP ratings and Used Car Safety Ratings (UCSR).

3.2 Impact of COVID-19 on vulnerable road users and road safety

The remaining questions from the terms of reference focus on identifying whether any changes in road safety behaviours during, and post-COVID-19, have impacted VRUs, and whether any of this information can be used to improve road safety.

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[76] Costello, M. *Used car prices to keep falling, utes in particular – study*. Published by CarExpert, 2 May 2023. Accessible at https://www.carexpert.com.au/car-news/used-car-prices-to-keep-falling-utes-in-particular-study

[77] *ANCAP*. https://www.ancap.com.au/about-ancap

[78] ANCAP (2022). *ANCAP builds on test and rating criteria for 2023*. https://www.ancap.com.au/media-and-gallery/media-releases/ancap-builds-on-test-and-rating-criteria-for-2023

[79] *Victorian Road Safety Action Plan 2021-2023*. https://dtp.vic.gov.au/getting-around/roads/safer-roads-in-our-hands#actionplan

For each of the VRU groups, this section will provide a summary of the DTP RCIS crash data, hospital admissions, Emergency Department presentation data (where available) and volume data (where available) to provide a picture of what has happened during COVID-19 and beyond. The data charts and tables are provided in Appendix 4. Also included are current initiatives that are currently being implemented or planned to address the safety of these road user groups.

It is important to recognise that the Road Safety Partnership operates on an evidence-based approach to road safety, where policies and decisions are made based on reliable and valid data. In many cases it requires many years of data to be collected to provide data that has the statistical significance on which to make recommendations and decisions. When considering post-COVID-19 data, in most cases not enough information exists to make strong conclusions regarding the impact of COVID-19 on road safety.

3.2.1 Pedestrians

Walking plays a key role in Victoria's transport system, both as a healthy behaviour and as a necessary component of travel. It is a healthy, convenient and accessible way to get around and it contributes to the prosperity of our local precincts and regional economies. Importantly, without walking, our transport system stops. DTP's vision for walking in Victoria is about getting more Victorians walking, more of the time.

During COVID-19, it was observed there were fewer people walking (as reported in Melbourne CBD, Appendix 4, Figure 42) and less pedestrian FSIs (see Appendix 4. Data, Figure 18 to Figure 21 and Figure 31 to Figure 38, and hospital admission data, Appendix 4. Data, Figure 39) compared to pre-COVID-19 levels. Walking volumes in the CBD have increased again post-COVID-19 but showing different patterns; there are lower numbers walking on a weekday and more walking on the weekends, perhaps reflective of fewer people travelling into the CBD for work. On a per year average basis, pedestrian fatalities reduced 20% during COVID-19. Fatalities then increased by almost 50% post-COVID-19 (see Appendix 4. Data, Figure 31). This should be interpreted with caution as data are limited for post-COVID-19 years and trends are not yet evident.

In reviewing the pedestrian *Definitions for Classifying Accidents (DCA)*[80] codes, see Table 5, it was observed that pedestrian fatalities while 'playing, lying, working or standing on the carriageway' increased during COVID-19, and pedestrian fatalities while 'on footpath struck by vehicle entering/leaving driveway' also increased during COVID-19. This may suggest that the exposure of people working on roads was more (as they may have been essential workers) and more people were out and about walking on their local streets (and footpaths), increasing their exposure during COVID-19.

DTP RCIS crash data on pedestrians involved in collisions with other road users identified that vehicle operators colliding with pedestrians (with FSI outcomes) were mostly drivers, with only few cyclists and motorcyclists involved. The average number of vehicles involved in collisions with FSI pedestrians was substantially lower during the COVID-19 period (average 403 per year) than during pre-COVID-19 (average 593 per year). The most common vehicle involved was a light vehicle (which didn't change during COVID-19 or post-COVID-19).

Figure 40 shows that more males than females were admitted to hospital. Pedestrian-related injury ED presentations (VISU, VEMD data) for the period January 2017 to December 2021 were analysed, and it was observed that in 2020 there were less ED presentations for all age groups but that in 2021

[80] Definitions for Classifying Accidents (DCA) codes is a coding system used in Victoria to categorise crash types in a consistent manner. They are used to describe the event of the crash and to help identify crash patterns.

they had increased. 18-34 olds were had a higher number of ED presentations in 2020 and 2021, see Figure 41.

3.2.1.1 Walking policies, projects and programs

DTP Safer Pedestrian Infrastructure Program Overview

The Victorian Government is investing $23 million to make pedestrians safer at locations and along routes with high pedestrian numbers and a high-risk of pedestrian crashes, including routes to school. Projects and individual treatments need to demonstrate a high level of Safe System alignment.[81]

Safe routes to school

DTP encourages local councils and schools to use a *Safe Routes to School* (SRTS) approach to improve road safety around pick up and drop off times, and create safe walking, cycling and scooting routes to school to encourage active travel. Successful SRTS projects will include a mix of improvements – engineering, education, engagement and enforcement – to improve road safety and increase active travel to school.[82]

Walkable Communities Framework

DTP is currently developing a Walkable Communities Framework, which will bring together policies that call for greater rates of walking, reflecting the importance of walkable neighbourhoods to a productive, sustainable, inclusive and liveable Victoria. The framework sets out a strategic approach to guide decisions and coordinate actions to increase walking. It is also relevant to ensure that Victoria meets its commitment to reduce carbon emissions and mitigate climate change.

Austroads project – Keeping people safe when walking – data, evidence and interventions

This Austroads project aims to "review travel and trauma data to better understand the ways pedestrians are at risk and identify the data required to support investment in safer walking. The project will also assess pedestrian safety strategies and interventions to progress, develop pedestrian safety guidance and support jurisdiction planning to eliminate pedestrian death and serious injury"[83]. DTP is a member of the project working group.

Safe Local Roads and Streets Program

The TAC is investing $210 million over four years to support Local Government to plan for, design, and deliver safe system infrastructure treatments that will address their highest risk roads, intersections, and precincts. The Program will be delivered in partnership with DTP, TAC and Local Governments and commence in July 2023.

This program will make substantial progress in transitioning towards a Safe System compliant environment for pedestrians. It will deliver projects with high Safe System alignment, achieved through the implementation of treatments that separate potential conflicts or by managing impact speeds to a safe system level through traffic calming initiatives and safer travel speeds.

3.2.2 Cyclists

Cycling patterns changed during COVID-19 and some of those patterns are still evident post-COVID-19 Figure 50). During COVID-19 there was an increase in cycling-related injury hospital admissions

[81] *Pedestrian Safety Program*. https://dtp.vic.gov.au/getting-around/roads/safe-pedestrian-program.
[82] *Safe Routes to School.* https://www.vicroads.vic.gov.au/safety-and-road-rules/pedestrian-safety/safe-routes-to-school
[83] Austroads project: Keeping people safe when walking; https://austroads.com.au/latest-news/austroads-new-project-will-determine-effective-interventions-to-reduce-pedestrian-trauma

(see Appendix 4. Data, Figure 49). DTP RCIS data indicated a reduction in cycling crashes (See Figure 18 to Figure 21 and Figure 43 to Figure 47), likely because there were less bicycle crashes involving a motor vehicle as a result of fewer vehicles using the roads.

Despite the overall reduction, DTP RCIS FSIs increased for cyclists between 5 to 15 years (21.2% pre-COVID-19 to 27% during COVID-19) and cyclists aged 50+ on a per year average (e.g. for cyclists aged 60-74, increased from 57% to 75%). FSIs for cyclists aged 75+ showed the largest increase on average (from 8.6% to 19%). Fatalities pre, during and post-COVID-19 all remained relatively similar. Male FSIs are much higher than females, and this remained similar during and post-COVID-19 too. This should be interpreted with caution as data are limited for post-COVID-19 years and trends are not yet evident.

Cycling injury related hospital admissions during COVID-19 also showed an increase in all age groups, most notably in children under 15 years of age and in adult cyclists 45 years or older (see Appendix 4. Data, Figure 48), and males were more likely to be admitted to hospital with a cycling related injury (Figure 49).

Compared to 2019, weekday and weekend cycling commuter and recreational sites were less busy. During COVID-19 there was more weekend cycling. This pattern has continued post-COVID-19 in 2022, which suggests increased recreational cycling and decreased commuter cycling post-COVID-19 (which suggests fewer people are commuting to work every day) (Figure 50).

The demand for bicycles increased during COVID-19, with bicycle imports to Australia increasing 46% from around 1.2 million to 1.7 million[84] between mid-2019 and mid-2021.

In reviewing the cyclist DCA codes it was noteworthy that 'vehicle off footpath strikes vehicle on carriageway' increased during COVID-19, suggesting that more cyclists may have been cycling on their local streets and along the footpath, see Table 6.

DTP RCIS data identified that it was mostly driver of vehicles colliding with cyclists. The average number of vehicles involved in collisions with FSI cyclists was substantially lower during the COVID-19 period (average 363 per year) than during pre-COVID-19 (average 384.4 per year). There were increases for collisions with station wagons (95 average pre-COVID-19 to 111.5 average during COVID-19), utes (35.5 average pre-COVID-19 to 40.5 during COVID-19) and light commercial vehicles (4.2 average pre-COVID-19 to 10.5 average during COVID-19). The number of collisions with heavy vehicles was slightly higher during the COVID-19 period (average 16) than during the pre-COVID-19 period (average 14).

3.2.2.1 Cycling projects and programs

Pop up bike lanes

The Victorian Government is investing $15.9 million to deliver improved active transport links to help relieve congestion on roads and transport networks. The project is trialling up to 100 kilometres of new and improved pop-up bike routes across key inner-Melbourne suburbs to make it easier and safer for people to ride to and from the CBD, including: Maribyrnong, Moonee Valley, Darebin, Yarra and Port Phillip local councils.[85] These safety and amenity measures provided a level of separation between bikes and all other motor vehicles.[86] Evaluation undertaken with cyclists indicate cyclists

[84] We Ride Australia, 2021, The Australian Cycling Economy Report, prepared by EY
[85] *Pop-up bike lanes program.* https://www.vicroads.vic.gov.au/traffic-and-road-use/cycling/pop-up-bike-lanes
[86] *Pop-up bike lane signage and wayfinding quantitative report*, commissioned by DTP, prepared by Bastion, April 2023.

who use the lanes have had a positive experience and would like them to be expanded and made permanent.

St Kilda Road bike lanes

The Victorian government has committed $30.5 million to build new bike lanes that physically separate drivers and bike riders to make St Kilda Road safer. The work will be completed by late 2023. St Kilda Road is Victoria's busiest tram corridor and one of Melbourne's most active cycling routes with 3,500 bike riders currently using St Kilda Road each day. The new separated bike lanes will aim to eliminate the risk of bike riders being struck by car doors and reduce the risk of crashes.[87]

Strategic cycling corridors

Strategic Cycling Corridors (SCC) are important transport routes for cycling. The *Victorian Cycling Strategy 2019-2028*[88] prioritises SCCs for investment to deliver safer, more direct cycling into and across Melbourne and Victoria. The network supports the needs of commuter trips (to work or education) and other important trips, such as to stations, shops or schools. It links up important destinations, including central Melbourne city, employment and activity centres, and other destinations of metropolitan and regional significance.

Cycling Safety Education

The Victorian Government Bike Ed program[89] provides children and adults the opportunity to learn about safe riding behaviours, road rules and riding in a shared environment. Bike Ed uses practical lessons to build the skills of riders progressively from the early years of primary school through to secondary school. It integrates with the Victorian Curriculum and has been specifically developed to be delivered in Victorian schools. Community Road Safety Grants provide schools, councils and community groups with funding to support the delivery of Bike Ed across the state.

The TAC and DTP recently re-developed Bike Ed resources. The new resources are now available for use by primary and secondary schools. Teacher and school resources about cycling safety are freely available from the Road Safety Education Victoria website.[90]

Through the TAC's Road to Zero Education Complex, secondary students in Years 9-11 can undertake a free excursion which enables students to create their own health communication focusing on safe cycling. Each year, the Road to Zero Team at the Melbourne Museum conducts a school holiday program activity based on safe helmet wearing targeting primary school aged children and their parents.

The Starting Out Safely Program is delivered by the Early Learning Association of Australia. The Program provides lessons, resources and professional development to the early childhood education sector about road safety.

The TAC provided funding to The Amy Gillett Foundation in 2022 to support the development of guidelines and education resources for traffic engineers in designing cycling safety infrastructure.

Safer Roads Program

The Safer Roads Program has delivered infrastructure projects to support cyclist safety by investing in road safety infrastructure treatments that separate potential conflicts with vehicles, or by

[87] *St Kilda Road Bike Lanes.* https://bigbuild.vic.gov.au/projects/mrpv/st-kilda-road-bike-lanes
[88] *Walking and cycling*. https://dtp.vic.gov.au/getting-around/walking-and-cycling
[89] *Bike Ed.* https://www.vicroads.vic.gov.au/safety-and-road-rules/road-safety-education/primary-schools/bike-ed-program
[90] Road Safety Education website: www.roadsafetyeducation.vic.gov.au

managing impact speeds to a Safe System level through traffic calming initiatives and safer travel speeds. The Program has invested $70 million to specifically improve cyclist safety and mobility on routes with a high concentration of cyclist serious casualties. The Program has delivered 11 projects over multiple sites across the State. These projects make substantial progress in transitioning towards a Safe System compliant environment for cyclists.

Treatments delivered as part of the Program have included separated paths on-road and off-road, on-road marked bicycle lanes, improved warning signage and delineation, speed limit reductions with supporting traffic calming treatments, and intersection treatments that provide separated bicycle lanes, or exclusive bicycle movements at traffic signals.

Safe Local Roads and Streets Program

The above-mentioned TAC and DTP program (see p. 45) will make substantial progress in transitioning towards a Safe System compliant environment for cyclists. It will deliver projects with high Safe System alignment, achieved through the implementation of treatments that separate potential conflicts or by managing impact speeds to a safe system level through traffic calming initiatives and safer travel speeds.

Public Education

The TAC developed the 'Drivers, give the space to ride safe' public education campaign to raise awareness of the need for motorists to allow a safe passing distance when overtaking cyclists on the road. The campaign was initially developed and put to market in 2017 and 2018 and was re-run between February and May in 2021 to inform the community of the new mandatory minimum passing distances which came into effect on 26 April 2021.

The TAC used a range of communication channels to implement the campaign. Evaluation indicates this campaign performed strongly, meeting the objective of increasing awareness of the new law, with 62 per cent of respondents understanding the law (higher than the norm of 43%).

TAC Partnerships

The TAC proactively engages various organisations through its partnership programs to promote road safety. The TAC has partnered with Cycling Australia and Amy Gillet Foundation in the past and is currently the major partner of the Cadel Evans Great Road Race. The race provides the TAC with the opportunity to speak to cyclists and deliver messages to ensure their safety on the road. In addition to the international telecast and media attention, the event in 2023 attracted more than 100,000 fans. The TAC is also the naming partner of the 'People's Ride', which is a recreational community ride. The event goes over three days and attracts the world's best men and women's cycling teams who compete in the UCI World Tour events, as well as an event for families and the People's Ride.

Previously, the TAC provided support to the Amy Gillett Foundation's 'Gran Fondo' Great Ocean Road ride. In 2018-19, the TAC also supported the foundation's annual 'Safer Together' competition, which invited the community to develop a social media video with a road safety theme. The TAC provided $10,000 to the Amy Gillett Foundation to promote the competition and invested a further $25,000 in the promotion of the winning video.

The Light Insights Trial

In 2021, the TAC launched the Light Insights Trial (LiT) in Victoria, which aimed to investigate the potential of innovative bicycle light technology to increase cycling and enhance cyclist safety. The trial enlisted a diverse group of 800 cyclists to use a See. Sense smart bicycle light for 12 months. The

trial was delivered in partnership through the iMOVE CRC funding model and received funding from TAC, Deakin University, and iMOVE CRC.

At the end of the trial, an evaluation was undertaken to establish if ongoing investment in this area is justified, and it was concluded that 'The Light Insights Trial has delivered significant benefits and insights that provide a strong foundation for the case to extend and expand the trial.'

As a part of the continued program the TAC aims to expand activities to consider:

- Better access to data for road safety partners and LGAs to support cycling strategies, planning and infrastructure.
- Utilising the established LiT cycling group as a 'mobile' focus group to provide input and feedback on cycling projects and infrastructure.
- Enable researchers, primarily universities, to have access to the data set to undertake research into cyclist safety.

3.2.3 Motorcycle riders

In 2022 motorcyclist fatalities accounted for 24 per cent of total lives lost (see Appendix 4. Data, Figure 51 and Figure 52). During COVID-19 (2-year average of 2020-21) they represented 17 per cent of total lives lost and in pre-COVID-19 (2015-2019) they were 16 per cent of total lives lost. Motorcycle serious injuries have remained steady over pre-COVID-10 (15% of total serious injuries), COVID-19 (16% of total serious injuries) (see Figure 53).

DTP RCIS data for fatalities and serious injuries by crash type showed that *side impact at intersection* fatalities increased during COVID-19 but are back to a similar pre-COVID-19 percentage in 2022. *Head on* fatalities reduced during and post-COVID-19 (Table 8). Serious injury crash types were very similar pre and during COVID-19. The most common serious injury crash type was identified as *loss of control* and *run off road* (Table 9).

DTP RCIS crash data had identified that vehicle operators colliding with motorcyclists (with FSI outcomes) were mostly drivers, with only few motorcyclists to motorcyclist collisions. The average number of vehicles involved in collisions with FSI motorcyclists was substantially lower during COVID-19 period than during pre-COVID-19 average. The most common vehicle involved in a motorcyclist fatality was a light vehicle (which didn't change during COVID-19 or post-COVID-19).

Motorcycle injury related hospital admissions remained similar pre and during COVID-19 (see Appendix 4. Data, Figure 54). The age and gender of the motorcyclists were very similar too, with the majority of motorcyclists admitted to hospital being male and aged between 18-64.

Motorcycling has gained popularity recently (post-COVID-19) where there has been a significant increase in sales[91] of new motorcycles and the number of Victorians applying for a motorcycle licence. This suggests a possible increase in motorcycle related trauma is yet to appear in post-COVID-19 data and road safety measures targeting motorcyclists will be important to implement and sustain.

3.2.3.1 Motorcycle projects and programs

Motorcycle crash card

RSV designed and distributed a motorcycle CRASH card which includes vital personal and medical information which can be easily accessed by emergency personnel and first responders in the case of a motorcycle crash. At the end of 2022, RSV delivered 100,000 Crash Cards to riders, which they can

[91] *FCAI releases motorcycle sales for 2021.* https://www.fcai.com.au/news/index/view/news/751

carry inside their helmets. These cards help emergency services to quickly identify the rider or their emergency contact and provide relevant medical details for a more effective and rapid response.

Motorcycle awareness month

The Victorian Government encourages both riders and drivers to look out for each other. In October 2022, the inaugural Motorcyclist Awareness Month was launched urging all road users to look out for each other and share the road safely.

Public education

The TAC developed and launched a motorcycle safety campaign highlighting the importance of wearing protective gear on every ride knowing that the vast majority of motorcyclists owned protective gear but did not always wear it on every ride.

The campaign was developed to:

- encourage greater use of safer motorcycles, helmets, and protective clothing
- increase awareness that by wearing motorcycle protective clothing on all rides, motorcyclists have a better chance of avoiding serious road trauma
- help reduce the severity of injuries for motorcyclists.

The 'Protect your entire body on every ride' campaign was launched in early 2022 and is re-run at key times to coincide with peak motorcycling activity and events.

An evaluation of the campaign found that on the key metric of whether recreational riders self-reported that they wear protective gear 'all the time' rose from 73 per cent in 2020 to 85 per cent in 2022 after the campaign was repeated.

3.2.3.2 Self-reported motorcycle riding behaviour summary

The TAC motorcycle monitor survey in 2022 highlighted that the majority of motorcycle riders reported did not ride if they thought they would be over the legal BAC (98%); 55% reported they had not intentionally been riding over the speed limit in a 60km/h zone and 47% had not intentionally ridden over the speed limit in a 100km/h zone. Eighteen per cent reported riding while very tired, while 83% of motorcyclists reported that drivers were not always aware of motorcyclists (see Appendix 4. Data).

3.2.4 Children and youth

This Road Safety Partnership submission is including all children and youth (aged 0-25 years) in this section, as they are seen as being vulnerable, especially if they are travelling in child car restraints, or using active transport to travel to or from school/education, or as young novice drivers learning to drive.

DTP RCIS reported crash data

DTP RCIS data for all road users aged 0-25 years indicated there were more fatalities pre- and post-COVID-19 for 18-21 years, but no noticeable trends for the other age groups, see Appendix 4. Data, Figure 22, Figure 23 and Figure 55. This should be interpreted with caution as data are limited for post-COVID-19 and trends are not yet evident.

The most common pedestrian age group involved in DTP RCIS reported FSIs was 21-25 year olds (62.8 year average pre-COVID-19; and 46.5 year average during COVID-19); the most common cyclists age group involved in a FSI was the same age group - 21-25 year old (36.2 year average pre-COVID-19; and 29.5 year average during COVID-19).

In reviewing the pedestrian DCA codes it was observed that pedestrian 'near side hit by vehicle from right' was most common for pedestrian fatal and serious injuries aged 0-25 and remained very similar pre-COVID-19 (36.9%) and during COVID-19 (32%). For cyclists aged 0-15 years it was observed that 'vehicle off footpath strikes vehicle on carriageway' increased pre-COVID-19 (31.5%) to during COVID-19 (47.3%) for cyclist FSIs, which may be reflective of more children riding on footpaths (locally) during the COVID-19. The other most common DCA was 'vehicle strikes another vehicle while emerging from driveway' (22.2% pre-COVID-19 to 20% during COVID-19) which is a similar manoeuvre. For cyclists aged 16-25 years, a more common DCA was travelling 'right through' which would be reflective of this age group more likely to be riding on the road (18.9% pre-COVID-19; 13.7% during COVID-19). For young drivers (aged 16-25 years old) it was observed that the most common DCA was 'left off carriageway into object/parked vehicle' (14.1% pre-COVID-19; 14.5% during COVID-19) and 'rear end' (12.1% pre-COVID-19; 13.1% during COVID-19).

Hospital admissions data

According to hospital admissions the most common age group for child and youth was 21-25, see Appendix 4. Data, Table 10 and Figure 56.

Broken down by VRU type the hospital admission (year average) data showed the following:

- Pedestrians aged 21-25 years were most commonly hospitalised, however it reduced from pre-COVID-19 (82) and during COVID-19 (66).
- Cyclists aged 5-25 years increased from pre-COVID-19 (351) to during COVID-19 (507).
- Car passenger hospital admissions aged between 0-25 years were lower during COVID-19 (541) than pre-COVID-19 (613).
- Young driver hospital admissions were similar for those aged 16-20 years pre-COVID-19 (377) to during COVID-19 (365) and slightly lower for those aged 21-25 years during COVID-19 (529) compared to pre-COVID-19 (592).

3.2.4.1 Road safety programs and policies for children and youth

As a result of remote working and learning arrangement during COVID-19, there were several learning cohorts which did not have access to some of these education programs who otherwise would have. The potential impact on the safety of these groups is not known at this stage.

Child restraints

The current laws require children up to the age of four years to be restrained in rearward or forward-facing child restraint, and children from age 4 to at least 7 to be restrained in either forward facing child restraints or booster seats. They also require all children under 4 years to be seated in the rear seat, and only allow children aged 4-7 years to sit in the front seat if the rear seat is full of younger children.

The Australian and New Zealand Standard 1754 is one of the most stringent child restraint standards in the world and requires child restraints to undergo extensive and rigorous crash testing. Restraints that meet the 2010 and 2013 versions of AS/NZS 1754 are legal and can be used in Victoria.

Kidsafe Victoria funded by the Department of Health conduct a child restraint safety program to assist parents and carers to correctly fit and use child car restraints and booster seats to protect children from serious injury and death in the event of a crash. This includes provision of evidence-based information and advice on child car restraints and laws, child car restraint checking program,

find a fitter, and accredited child car restraint fitter training. Kidsafe report anecdotal evidence which suggests that over 70 per cent of child car restraints are incorrectly fitted or used[92].

Mobility and Accessibility for Children in Australia (MACA) Ltd which builds on the Transportation of Children and Youth with Additional Needs (TOCAN), promotes safe restraint models and practices for both typical developing children and children with disabilities and medical conditions.

Road Safety Education

An extensive range of road safety education initiatives that promote road safety for children and youth are currently in use and in development across all stages of child development. Appendix 5 provides a more detailed overview of the school-based programs currently supported by the Road Safety Partners showing:

- Pre-school initiatives: for children and infants aged 0 to 5 years. These are delivered through the Starting Out Safely Program which was developed by early childhood and road safety experts and focuses on child restraint and pedestrian safety.
- Primary school initiatives: a suite of school programs and resources to assist children to become safe and independent road users as pedestrians, cyclists or scooter users. The initiatives also work to eliminate road trauma involving children by promoting the impact of other areas of the safe system – safe vehicles, safe roads and safe speeds.
- Secondary school initiatives: a range of programs and resources are offered in all schools across Victoria which aim to inform and engage students, parents and teachers about safe road use and how to keep themselves, their families and communities safe; and to feel empowered to advocate for improved road safety in and around their schools and local areas.

Learning to drive

Young and maturing drivers (18-25 years) represent 10% of Victoria's licensed drivers, however they are involved in road trauma resulting in 22% of loss of life and 25% of severe injuries in Victoria. Victoria's graduated licensing system (GLS) is designed to help improve the safety of young drivers. In Victoria, new drivers are introduced to driving through progressive stages of being a learner, a P1 probationary driver, a P2 probationary driver and then a fully licensed driver. The GLS provides a structured transition as a new driver's experience and maturity increases. It helps new drivers to be safer by:

- preparing learners for solo driving through an extensive supervised learning period
- testing learners to ensure they can drive safely in everyday traffic
- protecting probationary drivers by keeping them out of higher risk situations
- motivating probationary drivers to drive more safely and within the law.

This ensures that new drivers move through the learner permit and the P1 and P2 probationary licence stages to earn their full driver licence without being exposed to high risk driving situations before they are ready.

Key features of Victoria's GLS include:

- minimum licensing age of 18
- compulsory 120 hours of logged supervised learner driving experience
- a minimum 12-month learner permit period
- a challenging on-road driving test
- a two-stage probationary licence - P1 (minimum one year) and P2 (minimum three years)

[92] Kidsafe, https://www.kidsafevic.com.au/road-safety/free-child-car-restraint-checking-program/

- a peer passenger restriction for P1 drivers
- probationary drivers are prohibited from driving certain vehicles
- a range of educational support measures
- a ban on mobile phone use for all probationary drivers.

Currently the GLS requires learner permit drivers under the age of 21 to complete a compulsory minimum of 120 hours logged, supervised (including 20 hours of night driving). But for learner permit holders over the age of 21 there is no mandatory supervised driving hours practise required, and they do not have a four year period of probationary driving with the associated restrictions (specifically the P1 peer passenger restriction). DTP and TAC are currently undertaking research to understand the road safety benefits of increasing the age limit for learner drivers to complete a compulsory minimum of 120 hours of logged, supervised driving (including 20 hours of night driving) to age 25 years.

The *Learner Permit Test Online* (LPTO) was developed and implemented to reduce COVID-19 impacts and provide online options to make testing more convenient and accessible. It is a competency based online course (designed to be used in place of the in person Learner permit knowledge test). LPTO includes a mix of theory, interactive videos and visual graphics to reinforce road safety messages and help new drivers become safe ones – with mini-quizzes to progressively test learners' knowledge of key road safety issues including speed, drink and drug driving, seatbelts, fatigue, and distractions. The entire course and test takes between four and six hours to complete with prospective learners having 12 months to sit and pass the online test.

Road Rules Education Online is a free, online course designed to help all Victorian drivers update their knowledge of road rules and safe driving behaviours. The course content is similar to modules in the LPTO and has been designed for educational purposes and practice.

The *L2P learner mentor program* is a community-based program developed to assist eligible young Victorian learner drivers between the ages of 16 and 21 years (and in some circumstances, up to 23 years) who do not have access to a supervising driver, or an appropriate vehicle to gain the driving experience required for a probationary licence. The Program is delivered by almost 60 local councils and not-for-profit community agencies across Victoria.

The *Road to Zero* Experience aims to reduce road trauma in pre-learner drivers by building knowledge and awareness that will empower young road users to make safe decisions.

Road Smart Interactive is a new road safety education incursion, for students in Years 9, 10 and 11. Road Smart Interactive uses the latest immersive technology to guide students through a series of experiences that will engage them in thinking about how they can be part of the solution to eliminating road trauma. Road Smart Interactive builds on the Road Smart program and features elements adapted from the Road to Zero Experience at Melbourne Museum.

3.2.5 Senior Victorians

A report by the Commissioner for Senior Victorians in 2020, *Ageing Well in a Changing World*[93] developed after consultation with senior Victorians identified eight attributes of ageing well, one being mobility. A key finding was that seniors identified being able to get around is a major determinant of quality of life, with 92 per cent of seniors rating personal mobility as critical to

[93] *Ageing well in a changing world - A report by the Commissioner for Senior Victorians, 2020.* https://www.seniorsonline.vic.gov.au/services-information/ageing-well-changing-world

health, social wellbeing and independence. Seniors wanted more community transport and initiatives such as dedicated senior's car parking.

The projected growth in Victoria's seniors' population is from 22% (1.5M) in 2021 to 25% in 2046. The sub-group of 80+ year old seniors is growing at a faster rate, from 4.3% (280K) in 2021, projected to double to 7% by 2046[94]. The provision of active and healthy ageing options is therefore increasingly important, provided early so that people can have opportunity to maintain good health and wellbeing, and to maintain mobility and function, including connection to their community and environment with the many quality of life benefits that it provides.

A 2020 MUARC report[95] focused on older adult road user crash risk indicated that, compared to previous generations of older adults in Australia, current and future cohorts are more likely to be licensed to drive, engage in 'active travel' modes (e.g. walking and cycling), travel more frequently, travel greater distances, and have higher expectations with regard to maintaining personal mobility compared to previous generations.

Older drivers are over-represented in serious injury and fatal crashes, primarily due to their increased frailty, reduced bone strength and fracture tolerance when involved in a crash. Frailty, associated with the ageing process, means that older road users are particularly vulnerable because they are more likely to die or experience a serious injury than a younger person involved in the equivalent crash. This trend was present prior to COVID-19, and remains of concern due to the increasing ageing population.

Older adults' (65+ years) increased vulnerability means they are:

- less likely to survive a crash
- more likely to sustain serious injuries or develop severe injury complications
- likely to require a greater extent of rehabilitation than a younger individual sustaining similar injuries.

Additionally, younger (<30) and older (70+) people are more likely to be killed or injured in crashes involving people driving older vehicles. Older vehicles are over-represented in Victorian crash statistics and contribute to more crashes that lead to fatalities and serious injuries.

The emerging evidence indicating the connection between older drivers' inherent vulnerability due to frailty associated with ageing and the increased serious injury risk for drivers of older vehicles indicates a significant increase in vulnerability for the older adult cohort of drivers and passengers.

The 2020 MUARC report mentioned previously indicated that, after driving, walking represents older adults' second most frequent mode of transportation and their preferred recreational activity across Australia. Walking is both important to many older adults to conduct short trips to carry out essential daily tasks, and it has also been shown to be an important factor in older adults' health. Pedestrian safety and the provision of safe walking environments is critically important for all Victorians, and for older adults in particular so that they can remain connected to their communities.

[94] *Ageing Well Action Plan*, Department of Families, Fairness and Housing

[95] Koppel et al., (2020). *Development and Analysis if a comprehensive data system to understand the occurrence, severity and risk factors of older road user crashes*, Monash University Accident Research Centre., https://www.monash.edu/__data/assets/pdf_file/0012/2990766/MUARC-Baseline-Older-Road-User-MUARC-Report-351.pdf

Fitness to drive is of critical importance, and this is particularly for older road users, to support their health and wellbeing, mobility, social connection and participation. The Victorian population is ageing and it is expected to have an increase in licensing rates, including for the 85+ age group. This is expected to lead to an increased in older drivers experiencing chronic health conditions that may impair their driving that are more prevalent with ageing, such as dementia. The Fitness to Drive Standards 2022[96] recognised that dementia is now being diagnosed earlier, and at a stage where sometimes it still may be appropriate for someone to drive with conditions on their licence and with regular monitoring.

3.2.5.1 DTP RCIS reported older road user crash data

DTP RCIS FSIs across all age cohorts were down during COVID-19. FSIs amongst the 75+ age cohort shows a 41 per cent reduction (compared to the pre-COVID-19 average), see Appendix 4. Data, Figure 24 and. Figure 25

In reviewing the pedestrian DCA descriptions it was observed 'pedestrian near side hit by vehicle from the right' was the most common reason for a vehicle collision with a pedestrian aged 65+ resulting in a fatal or serious injury. This was very similar for both pre-COVID-19 and COVID-19.

For older drivers (and older passengers) involved in fatal or serious injury crash, the most common DCA descriptions were 'cross traffic (intersections only)'; 'rear end (vehicles in the same lane)'; and right through. These crash types were very similar for both pre-COVID-19 and COVID-19.

3.2.5.2 Older road user injury related hospital admissions

Pedestrian injury related hospital admissions for 65+ age group were lower during COVID-19 than pre-COVID-19 years. This suggests older people walked less during COVID, which may have been associated with their decisions to reduce risk of COVID-19 infection, increased or existing chronic health conditions, fear of falls and fall-related injury, reduced access and availability of health care, increased social isolation and poorer mental health during COVID-19. However older cyclists (65+ years) injury hospital admissions were higher during COVID-19 years than compared to pre-COVID-19, suggesting some older adults changed their transport mode preference and/or perceived cycling as an opportunity for exercise during COVID-19 restrictions. Older driver and passenger injury related hospital admissions were slightly lower during COVID-19 than pre-COVID-19. Hospital admissions for older motorcycle rider injuries (65+ years) were slightly higher than the pre-COVID-19 levels.

Appendix 4. Data, Figure 57 highlights that 65-74 and 75-84 age group VRU hospital admissions were higher during COVID-19 and pre-COVID-19. However, it also shows that most of the other age groups also had higher hospital admissions during COVID-19.

The previous quarter of data (Oct-Dec 2022) DTP transport tracker report[97] provided some analysis of older road user transport choices. Appendix 4. Data, Table 11 indicated that those aged 65+ were much less likely to use public transport than the total population. Barriers to those aged 65+ using public transport included:

- 35 per cent reported that PT routes don't go where I need to go
- 21 per cent reported they don't live near PT or its not available

[96] Austroads, 2022, Assessing Fitness to Drive, https://austroads.com.au/drivers-and-vehicles/assessing-fitness-to-drive

[97] *DTP transport tracker report (Oct-Dec 2022) Victorians aged 65 and over*, prepared by Quantum Market Research

- 10 per cent reported that access issues/not physically able to use PT was a barrier to them.

3.2.6 Motorised mobility device users (mobility scooters)

The DTP RCIS data does not provide a breakdown of crashes involving motorised mobility device users as they are currently defined as pedestrians. Emergency Department presentations from January 2019 to December 2022 did however provide some insights into trauma related to using a motorised mobility device (see Appendix 4. Data, Table 12 and Figure 58). It was observed that the majority of motorised mobility device users presenting at emergency departments were aged over 55 years and there were more males than females. Pre-COVID-19 and during COVID-19 the counts of Emergency Department presentations remained small and similar.

3.2.6.1 Road safety programs for motorised mobility scooters

Motorised mobility devices can be a valuable mode of transport that can enable users to remain connected to their community when chosen wisely for the needs and abilities of its user, and when the user has training and practice to use it safely. Universally accessible infrastructure and transport can support the user to use a motorised mobility device beyond the local environment, making this mode a good alternative to driving and walking for some.

DTP has developed and published a number of resources to support users of motorised mobility devices, family members, carers and health professionals, including the following:

- Guide to choosing and using mobility scooters and powered wheelchairs
- Fact sheets based on the comprehensive guide to help people through the various steps in choosing and using a motorised mobility device.

Occupational therapists (OTs) are health professionals who have expertise in assessment and training for users of motorised mobility devices. Occupational Therapy Australia (OTA)[98] is the peak professional body representing OTs and they provide both useful information and links for the public to find OTs who specialise in motorised mobility device assessment and training. OTA has collaborated with DTP (and other stakeholders) to develop additional professional development resources to help equip OTs to deliver consistent care and advice for users of motorised mobility devices and powered wheelchairs, and also for them to provide to consumers and other health professionals who can support motorised mobility device users and their families.

3.2.7 e-scooters

3.2.7.1 e-scooter Emergency Department presentations (VEMD)

e-scooter injury related Emergency Department presentations have also increased, from January 2019 to June 2022, corresponding to the police reported casualty crashes, see Appendix 4. Data, Table 13. In 2018 there were 14 Emergency Department presentations, and in 6 months reported in 2022 there were already 204 Emergency Department presentations. The increase is likely indicative of both an increased access or ownership of e-scooters and their use by the community. It was observed that there was a high frequency of ED presentations for e-scooter riders aged 21-44 (31% of the 2022 hospital admissions).

3.2.7.2 e-scooter trial

The Victorian Government commenced an e-scooter hire trial, in partnership with councils in Ballarat (from December 2021) and the metro region (Cities of Melbourne, Port Phillip and Yarra),

[98] Occupational Therapy Australia, as referenced from https://otaus.com.au/practice-support/areas-of-practice/motorised-mobility-devices

from February 2022. The trial was to understand how e-scooters might be safely used in Victoria. The trial was reported on in March 2023[99] with the following findings:

- The desire to use micro mobility devices including e-scooters is increasing
- Trial was popular with users and some stakeholders
- Private e-scooter ownership (despite being illegal to use on public roads at the time of the trial) was widespread, with approximately 100,000 across the state.

In March 2023, it was reported that over 3.7 million short trips have been taken on e-scooters in Melbourne, alongside more than 200,000 in Ballarat, throughout the trial. Data from the trial shows the main reason people hire a trial e-scooter is for leisure, social outings, commuting or to visit cafes, reducing congestion and carbon emissions – with around 400 tonnes of carbon avoided through e-scooter use.[100]

The Victorian Government has now extended and expanded the trial. e-scooters are now legal across Victoria, including privately owned, for 16 years old and over.

3.2.8 Road safety grants

DTP Community Road Safety Grants

This program provides up to $1.5 million in funding to empower communities to prevent and reduce the number of lives lost and serious injuries on Victoria's roads[101]. The program categories include:

- Safer pedestrians (Safe routes to school, motorised mobility scooters, and walk with care)
- Safer cyclists (Bike Ed)
- Safer drivers and passengers (fatigue, fleet safety, safer driver policy, looking after out mates, road safety for new arrivals, safe driver)
- Roadside signage
- Local road safety innovation for safer cyclists, safer motorcyclists, safer vehicles, and safer drivers and passengers
- The 2023/24 program also includes a pedestrian innovation grant to focus on older pedestrians and urbanised areas.

Local Government Grants Program

The Local Government Grants program encourages local government to address pedestrian and cyclist safety and that align with the Victorian Government's Road Safety Strategy and Action Plan 2021 – 2023 and Safe System principles. The program supports projects that have the potential to reduce, and where possible eliminate, the likelihood of death and serious injury for pedestrians and cyclists in their local area.

Since 2018, the TAC grants has enabled a total of 18 cycling treatments to be implemented and 30 strategies/studies to be completed by Local Government to improve the safety of cyclists

3.2.9 Adapting to COVID-19 measures in other jurisdictions

In April 2020, it was reported that over half of the world's population was under home confinement directives or advice, meaning that mobility dropped for citizens across the world, as their

[99] E-scooters in Victoria – Summary of trial findings March 2023, published https://www.vicroads.vic.gov.au/safety-and-road-rules/e-scooters-in-victoria/e-scooter-trial

[100] Premier of Victoria, obtained from https://www.premier.vic.gov.au/e-scooter-trial-extended-across-victoria, 30 March 2023.

[101] *Community Road Safety Grants Program.* https://www.vicroads.vic.gov.au/safety-and-road-rules/road-safety-programs/vicroads-community-road-safety-grants-program/standard-grants-program

movements and public transport use reduced. Appendix 7 summarises how jurisdictions across Australasia and the world responded and adapted to these conditions and changes.

Many cities rapidly repurposed their streets to provide safe room for pedestrians, cyclists and other forms of light, active mobility. These actions acted as 'safety valves' which made essential travel possible and safe for those displaced from public transport.

What is noteworthy is these initiatives, which significantly improved the safety of VRUs, were rapidly deployed, sometimes overnight, without heavy bureaucratic processes. They were able to be done at relatively low cost, by using existing resources and repurposing of spaces.

To maximise safety in the areas with high concentration of VRUs, authorities often reduced maximum traffic speeds to 30km/h or less, as this is the safe limit for mixed-use roads. Generally, these measures built on established practice to ensure safety for light cycling and walking infrastructure. Other types of measures focused on developing "safe streets" or "slow streets" by giving pedestrians, scooter riders and cyclists priority, banning through traffic and lowering speed limits.

3.3 How the information can be used to improve road safety

Stakeholder feedback to the Partners often centres on perceived changes in road user behaviour around VRUs. However, the Partners operate on an evidence-based approach, where policies and decisions are made based on sound data. In most cases, many years of data are needed to make recommendations. As more data continues to become available, the Partners are still understanding the impact of COVID-19 on road safety.

From longer-term analysis, the Partners understand that the way road users behave directly influences the risks of fatal or serious injury crashes. Therefore, to achieve the Victorian Government's 2030 and 2050 trauma targets, the Partners have adopted the globally recognised Safe System approach. An approach recommended to governments by the WHO for prioritisation and implementation to drive sustainable development.[102]

The Safe System provides a scientifically and evidence-based framework for decision makers to design and operate the road system to modify behaviours for the safety of all road users, or to mitigate the impact of behaviours on road trauma. However, success can only come through holistically addressing the whole road system - roads, vehicles, speeds, and behaviours. Road safety problems cannot be solved by solely targeting behaviour change.

When it comes to considering VRUs, the Safe System is clear - those most vulnerable to being killed and seriously injured, must be prioritized in the road network. The single most important factor in reducing the incidence and severity of injuries to VRUs are travel speeds, and the resultant impact speeds, of vehicles on the network, especially at those locations where the mix of VRUs is expected to be high.

Successive studies have shown that 30km/h is the maximum impact speed for a healthy adult before death or very serious injury becomes increasingly likely. The WHO recommends that in areas where VRUs are typical in the traffic mix, the maximum speed limit should be 30 km/h, unless strong evidence says otherwise. Integrating the Safe System with Movement and Place principles, helps guide a hierarchy for Safe System speed limit setting.

[102] *Global Plan for Decade of Action 2021 – 2030.* https://cdn.who.int/media/docs/default-source/documents/health-topics/road-traffic-injuries/global-plan-for-road-safety.pdf

Given the current road trauma statistics, there is still a long way to achieving the State's trauma reduction targets. However, the Victorian Government's strategic road safety directions are clear[103], and the Partners will continue to focus on all factors that contribute to road trauma.

This includes maintaining and enhancing compliant road user behaviours. Enforcement programs are vital in continuing to deter unsafe behaviours among road users, supported by strong community engagement to increase a culture of safety. This will have direct effects on preventing trauma among VRUs, along with managing environments and places used by VRUs, through safe vehicle travel speeds. The setting and enforcement of safe system speeds, to reduce crashes with VRUs or reduce impact speeds to survivable levels, is critical to reducing trauma among VRUs.

This is particularly important in helping to protect VRUs as the population ages and Victoria looks to increase active transport modes to help meet the required demands on the transport network in 2050 and the Climate Change targets.

4 Conclusion

It is well recognised, that poor road user behaviour is a key contributor to trauma experienced by vulnerable road users – and that remains the case in current road trauma trends. However, to fully understand the impact of road safety behaviours post COVID-19 on vulnerable road users more data is required in order to provide Government with evidence-based policy responses.

Trends show that during COVID-19 there were considerable changes in transport mode usage as the population adapted to state-wide enforced COVID-19 restrictions. Since the lifting of restrictions, transport mode usage again shifted, and while moving closer, these patterns are not back to pre-COVID-19 patterns (e.g. public transport usage). Shifts in transport mode usage can have significant impacts on road safety, in particular VRUs.

The data and insights presented in this submission highlight how the transport system can be influenced by activities and issues in the public health system and potentially other areas of public policy. This is not unexpected given the integral part transport plays in the lives of all Victorians and the economy.

When addressing the safety of the transport system, the key considerations of the Safe System approach to road safety do not change and remain relevant regardless of whether other societal, economic or environmental factors or changes are present. The Safe System principles of managing crash forces, and accommodating the inevitable mistakes that humans make, remain at the centre of road safety policy and decision making.

The current Victorian Road Safety Strategy is founded in evidence and is clear in its goals and objectives. It is supported by regular action plans which help achieve the defined goals and aim to specifically examine and address any known, new and emerging issues identified by data through research and evaluation.

There is a long way to go and there is a much hard work to be done to implement the policies, initiatives and changes that will be required to meet the Government's road safety targets, but the research and modelling by international experts provide the blueprint to achieving them. The Partners are united in working together and with other areas of Government to ensure trauma on Victorian roads is dramatically reduced and ultimately eliminated.

[103] *Victorian Road Safety Strategy 2021-2030*, and associated action plans

4.1 Concluding remarks

The Partners would like to acknowledge the devasting impact road trauma has on individuals, families and the community as a whole, and reiterate their commitment to achieving record road safety benchmarks into the future.

The Partners are using insights gathered as part of this submission, along with other analysis of road safety data to support the development of the Victorian Government's second action plan under the *Victorian Road Safety Strategy 2021-2030*. This will be critical to the achievement of the Government's road safety target of a 50 per cent reduction in fatalities by 2030.

The Partners thank the Committee for the opportunity to contribute to this important Inquiry.

Appendix 1. Previous Parliamentary Inquiry – Increase in Victoria's Road Toll 2019

In October 2021, the Victorian Government tabled its response to the 36 recommendations made by the Legislative Council Economy and Infrastructure Committee's Inquiry into the increase in Victoria's road toll. Of the 36 Recommendations put forward to the Government, 10 were supported in full, 13 were supported in principle, five were supported in part, three were not supported and five were marked as under review.

Recommendations from that Inquiry were grouped into the following sections:

- Victoria's road safety strategy and approach to road safety
- Governance in Victoria's road safety system
- Road standards: design and maintenance
- Speed and road safety
- Data
- Driver training and licensing
- Driver behaviour
- Vehicle safety: standards and technology

Since then, the Road Safety Partners have been monitoring the delivery of the commitments made as part of the Victorian Government's response. While a number of these commitments were able to be delivered within existing budgets, others required new funding. Not all commitments in the Government's response have been funded yet, pushing implementation back on a small number of items.

At June 2023, of the 33 supported recommendations:

- 17 are currently in progress
- Four have been completed
- 12 are yet to commence.

Appendix 2. Data sources

The following data sources which have been made available to the Department of Transport and Planning (DTP) in order to support this submission. DTP would like to acknowledge the relevant data custodians and the contributions made.

- TAC Road Safety Monitor 2022
    - Wallis Report: Road Safety Monitor 2022 -Draft Report. Transport Accident Commission. Ref: 4951, May 2023. Camberwell, Victoria, Australia. pg. 83.
- Victorian Motor Vehicle Accident Fatality Drug Prevalence Figures 2010-2021
    - Data generated by Gerostamoulos, D., and Di Rago, M. 2022. Victorian Institute of Forensic Medicine based on data collected at the Toxicology Laboratory.
- DTP Road Crash Information System (RCIS data): Fatality data (2015-2022) and Serious injury data (2015-2021) drawn from police-reported crashes.
- Department of Justice and Community Safety, Road Safety Camera Program: Fixed and Mobile Camera Analytics July 2017-April 2022.
- Victorian Injury Surveillance Unit: Victorian Admitted Episode Dataset (VAED), January 2015 – June 2022.
- Victorian Injury Surveillance Unit: Victorian Emergency Minimum Dataset (VEMD), January 2015 – June 2022.
- Road network utilisation data, 2019-2023 (vehicle kilometres travelled), from DTP.
- Transport Tracker Data, quarter 3 report, 2022/2023; prepared by Quantum Market Research for DTP.
- City of Melbourne Pedestrian Counting System data (2019-2023), automated pedestrian counting system that collects and disseminates pedestrian traffic data in the Melbourne CBD.
- DTP Bicycle Volume and Speed Data, 2019-2023. Cycling flows in both directions recorded at 42 off-road counter sites and 4 on-road counter sites in metropolitan Melbourne.

Additional information for the road user injury related hospitalisation data

The Victorian Injury Surveillance Unit (VISU) provided data on road user injury related hospital admissions and Emergency Department (ED) presentations, by road user type, age group, sex and region of residence. VISU extracted hospital admissions data from the Victorian Admitted Episodes Dataset (VAED) and ED presentations data from the Victorian Emergency Minimum Dataset (VEMD). The VAED records all hospital admissions in public and private hospitals in the state of Victoria and the VEMD records all presentations to Victorian public hospitals with 24-hour emergency departments.

Hospital admission cases were selected for transport injury based on coding in the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modifications (ICD-10-AM), occurring in the calendar year in the range of January 2015 to June 2022, for sex was male or female, and on-road occurring on the road/street/highway. VRUs were identified by external cause code in the range 'V00'-'"V09' 'pedestrian injured in transport accident or 'V10'-'V19' 'pedal cyclist injured in transport accident' or 'V20'-'V29' 'motorcycle rider injured in transport accident'. The 5th character was used to identify if the vehicle occupant was a driver, passenger or unspecified occupant. Excluded were admissions as a result of transfer from another hospital or due to a statistical separation from the same hospital, and readmissions for day-treatments within 30 days of initial admission.

Emergency Department (ED) presentation cases were selected for principal diagnosis of community injury (S00-T75 in ICD-10-AM), occurring in the calendar year in the range of January 2017 to June 2022, for sex was male or female, occurring on-road on the road/street/highway, and if human intent variable was coded to 'non-intentional harm'. Pedestrians were identified by cause code 'pedestrian'. E-scooter users were identified by text search containing the terms "scooter" and "electric", "e scooter" or "e-scooter" and their variations and derivatives. Mobility scooter users were identified by text search for terms "scooter", "gopher" and "mobility", and if person was aged 60 years and older. ED presentation cases were limited to incidence (excludes return visits and pre-arranged admissions).

Appendix 3. Victorian walking and cycling policies and strategies

Walking and cycling in Victoria is guided by a range of existing policies and legislation. These are outlined below.

Climate Change Strategy 2021 (Vic)[104]	
	The Climate change Strategy 2021 (Vic) has set the goal of 25% of all trips to be by foot of cycle by 2030.
Transport Integration Act (TIA)[105]	
	The Transport Integration Act (TIA) vision statement is that: The Parliament recognises the aspirations of Victorians for an integrated and sustainable transport system that contributes to an inclusive, prosperous and environmentally responsible State.
Plan Melbourne 2017-2050 [106]	
	Plan Melbourne 2017-2050 seeks to deliver an integrated transport system with policies that set out directions to support safe active transport, including: • Support for commuter cycling (policy 3.1.6) • Create pedestrian friendly neighbourhoods (policy 3.3.1) • Create a network on cycling links for local trips (policy 3.3.2) • Improve local transport choices (policy 3.3.3) • Locate schools and other regional facilities near existing public transport and provide safety walking and cycling routes and drop off zones (policy 3.3.4) • Improve neighbourhoods to enable walking and cycling as part of daily life (policy 5.2.1)
Victoria's Living Transport Network[107]	
	Victoria's Living Transport Network is the overarching framework that coordinates the DTP's strategic integrated transport planning. It provides the overarching planning hierarchy aligned from the Transport Integration Act 2010, Plan Melbourne and other government priorities to strategy and planning through to delivery and management.
Victorian Cycling Strategy 2018-2028 [108]	
	The Victorian Cycling Strategy 2018-2028 aims to increase the number, frequency and diversity of Victorian's cycling for transport by: • Investing in a safer, lower-stress, better connected network; • Prioritising strategic cycling corridors; • Making cycling a more inclusive experience. The Cycling Strategy outlines commitments to develop a safer network and priority strategic cycling corridors to balance local trips and commuting journeys.
Department of Education's Active Schools Framework[109]	
	The Department of Education's Active Schools Framework supports a whole school approach to physical activity. There are six priority areas, including active travel. The framework identifies active travel as a key priority for schools to support physical activity through a whole school approach. The Active Schools Toolkit provides examples including encouraging walking and cycling to and from school, supporting the delivery of bicycle education in school, facilities such a bicycle storage, or walk and ride to school infrastructure.

[104] https://www.climatechange.vic.gov.au/victorias-climate-change-strategy
[105] https://www.legislation.vic.gov.au/in-force/acts/transport-integration-act-2010/086
[106] https://www.planmelbourne.vic.gov.au/
[107] https://www.audit.vic.gov.au/report/integrated-transport-planning
[108] https://dtp.vic.gov.au/getting-around/walking-and-cycling
[109] https://www.vic.gov.au/active-schools

Movement and Place Framework 2019 (M&P) [110]	
	The DTP's Movement and Place Framework 2019 (M&P) recognises that streets not only keep people and goods moving, but they are also places for people to live, work and enjoy. Planning for safe and accessible walking and cycling is an important consideration within the framework. Whether they are pedestrians, bike riders or drivers. Movement and Place puts people at the centre of transport planning.
Road Safety Strategy 2021 - 2030[111] and Road Safety Action Plan 2021 - 2023[112]	
	The Road Safety Strategy 2021 - 2030 and Road Safety Action Plan 2021 - 2023 both outline a strong focus on improving safety for vulnerable road users, including pedestrians and bicycle riders. It includes a target of 50 per cent reduction in road deaths by 2030. Actions to improve safety for active transport include provision of safety infrastructure, safer road design and speed limits, land-use strategies, and behaviour change campaigns.
Walkable Communities[113]	
	The DTP strategy for Walkable Communities brings together policies that call for greater rates of walking, reflecting the importance of walkable neighbourhoods to a productive, sustainable, inclusive and liveable Victoria. The strategy sets out a strategic approach to guide decisions and coordinate actions to increase walking. It is also relevant to ensure that the State meets its commitment to reduce carbon emissions and mitigate climate change.
The Victorian Public Health and Wellbeing Plan 2019-2023 (VPHWP)[114]	
	The VPHWP is a requirement of Victoria's *Public Health and Wellbeing Act 2008* to produce a plan every four years and set out an approach to deliver improved public health and wellbeing outcomes for all Victorians. The VPHWP 2019-2023 includes 10 priorities for public health and wellbeing, two of which are particularly aligned with road safety.

[110] https://dtp.vic.gov.au/about/planning/transport-strategies-and-plans/movement-and-place-in-victoria
[111] https://www.tac.vic.gov.au/__data/assets/pdf_file/0020/502166/RoadSafetyStrategy_DEC2020.pdf
[112] https://www.tac.vic.gov.au/__data/assets/pdf_file/0008/539126/2021_Road_Safety_Action_Plan.pdf
[113] https://www.planning.vic.gov.au/guides-and-resources/strategies-and-initiatives/20-minute-neighbourhoods
[114] https://www.health.vic.gov.au/publications/victorian-public-health-and-wellbeing-plan-2019-2023

Appendix 4. Data

Year to date trauma numbers

- As at 18 June 2023, 147 people have been killed on our roads, 36 (or 32.4%) more compared to this time last year and 36 more than the five-year average (2018-2022).
- In 2022, 241 people were killed on our roads, 7 more compared to 2021.
- There are around 5,000 to 6,000 people seriously injured due to road crashes each year. For every person who dies on our roads, another 20 to 30 are hospitalised.

Lives Lost Statistics

- Five-year average: 233 lives lost per year (2018 - 2022). Of the 1,164 fatalities over this period:
    - 507 (44%) aged 50+
    - 860 (74%) were male
    - 189 (16%) were pedestrians
    - 616 (53%) were on rural roads
- 2023 Year-to-date:
    - 56 (38%) were aged 50+
    - 82 (68%) were male
    - 11 (7.5%) were pedestrians
    - 84 (57%) were on rural roads

2022 lives lost

Table 4 provides details on the 2022 police reported lives lost and provides a comparison to 2021 and the five year average (2017 to 2021).

Table 4: Lives lost 2022, compared to 2021 and 5 year average (2017-2021). (Source: RCIS)

Road Users	2022	2021	5 year avg	2022 vs 2021	2022 vs 5-year avg*
Driver	101	115	112	-14	-11
Passenger	26	35	39	-9	-13
Pedestrian	44	29	35	+15	+9
Motorcyclist	57	43	39	+14	+18
Pillion Passenger	1	0	0	0	0
Cyclist	12	12	11	+0	+1
Total	241	234	237	+7	+4

*5-yr avg period: 2017 to 2021

- 241 people were killed in 236 fatal crashes in 2022.
- This is seven higher than 2021, four higher than the five-year average of 237, and below the ten year average of 250.
- Road deaths in 2022 were the fifth lowest since records began in 1924
    1. 2020 – 211
    2. 2018 – 213
    3. 1924 – 224
    4. 2021 – 233
    5. 2022 – 241
- There has been a decline in vehicle occupant deaths and an increase in motorcycle rider and pedestrian deaths in 2022.
- 27% of vehicle occupants were not wearing a seatbelt (where seatbelt status is known)

- While there has been a decline in deaths in Metro Melbourne (105 deaths) compared to 2021, Metro deaths are equal to average.
- Deaths in Regional Victoria were 136, and are slightly above the five year average.
- There was a slight increase in the number of 18-20 year old drivers killed (nine compared to eight in 2021, and an average of eight), a decrease in the number of drivers aged 21-25 killed (nine compared to 15 in 2021, and an average of 13), and a decrease in the number of drivers aged 70+ killed (13 compared to 18 in 2021 and an average of 22).
- Twenty-five vehicle occupants (21 drivers and four passengers) were not wearing a seatbelt at the time of their death. This represents 27% of vehicle occupants where seatbelt status is known.
- 58 motorcycle riders died in 2022. This is higher than 2021 (43) and above the five average and ten-year average of 39, and highest recorded in the last ten years.
    - 22 riders were unlicenced (on average 13 riders are unlicenced)
        - 16 were 40 or under
        - were 25 or under
- Forty four pedestrians were killed on Victorian roads in 2022. This is well above average (35), and considerably higher than both 2020 (30) and 2021 (29)
    - Six pedestrians killed were aged 0-15 (average of two)
    - Nine pedestrians killed were aged 30-49 (average of five)
    - 19 pedestrians killed were aged 60+ (average of 17)

Police reported 2021 serious injuries

- Road trauma in 2020 and 2021 was affected by COVID-19and the restrictions to travel and movement, see Figure 17. The statistics displayed below all should be taken with a note of caution as they reflect extremely unusual patterns of travel exposure and behaviour.
- Of the 4,801 serious injury or fatal crashes in 2021, there were a total of 5,466 people seriously injured in those crashes.
- This is 164 higher than 2020, 911 fewer than the five-year average (2016-2020) of 6,377, and 637 below the ten-year average (2011-2020) of 6103.
- There was a decline in driver serious injuries and an increase in passenger and pedestrian serious injuries in 2021.
- While there was an increase in serious injuries in Metro Melbourne (3,607) compared to 2020, Metro serious injuries were far below the five-year average (4,273).
- Serious injuries in Regional Victoria were 1,857 and were below the five-year average (2,099).
- There was a slight increase in the number of 30-39 year old drivers seriously injured (566 compared to 511 in 2020, and an average of 560), a decrease in the number of drivers aged 18-25 seriously injured (535 compared to 599 in 2020, and an average of 684).
- 838 motorcycle riders were seriously injured in 2021. This is slightly lower than 2020 (840) and above the five-year average of 933 and ten-year average of 909.
- 435 pedestrians were seriously injured on Victorian roads in 2021. This is well below average (581), and considerably higher than 2020 (385).

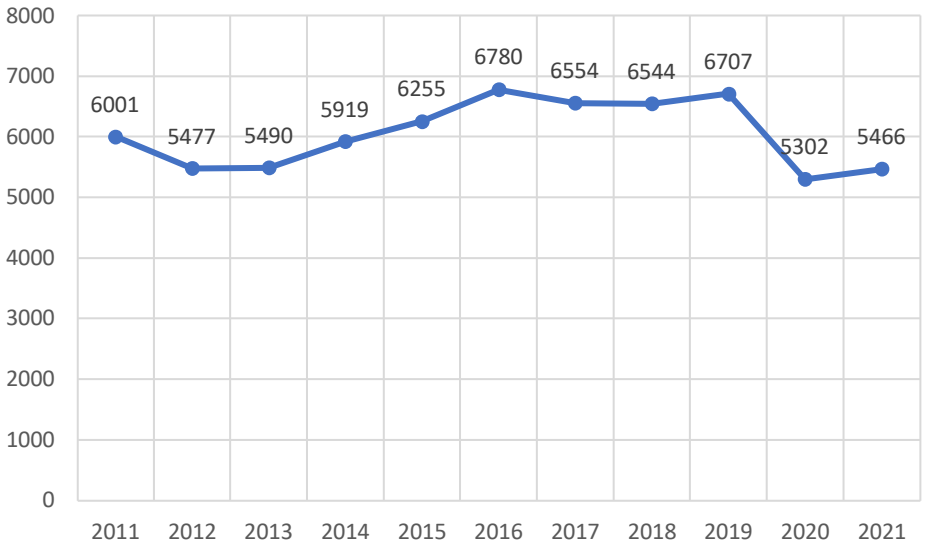

Figure 17. Serious injuries 2011-2021 (Source: RCIS)

Serious injuries – five year average (2015-2019)

- Police reported (RCIS) serious injuries indicated, on average, 6,568 people were seriously injured per year over the five-year period (2015-2019). NB: this five-year average has been provided due to the most recent complete year of serious injuries being 2021, which was during COVID-19.
- This is 1,102 higher than 2021.
- Over the last 10 years from 2012 to 2021, the five years with the highest number of serious injuries were all within the 2015 to 2019 period:
    1. 2016 - 6780
    2. 2019 - 6707
    3. 2017 - 6554
    4. 2018 - 6544
    5. 2015 – 6255
- Drivers (3,355 or 51%) accounted for the greatest number of serious injuries among road users, followed by passengers (1,111 or 17%), motorcyclists (957 or 15%), pedestrians (619 or 9%) and cyclists (462 or 7%).
- The majority of serious injuries occurred in Metro Melbourne, 4,450 (68%).
- Rural Victoria had 2,112 serious injuries (32%).

Lives lost and serious injuries – Pre, during and post-COVID

This section provides an overview (based on the most recently available data) of key observations pertaining to fatalities in 2022. The following provides further analysis of 2022 (post-COVID-19), relative to 2020-21 (COVID-19) and the preceding five-year average 2015-2019 (pre-COVID-19) of both fatalities and serious injuries (noting that the serious injury data is only complete until end of 2021, so we are not able to provide the post-COVID-19 (2022) year for serious injury information.

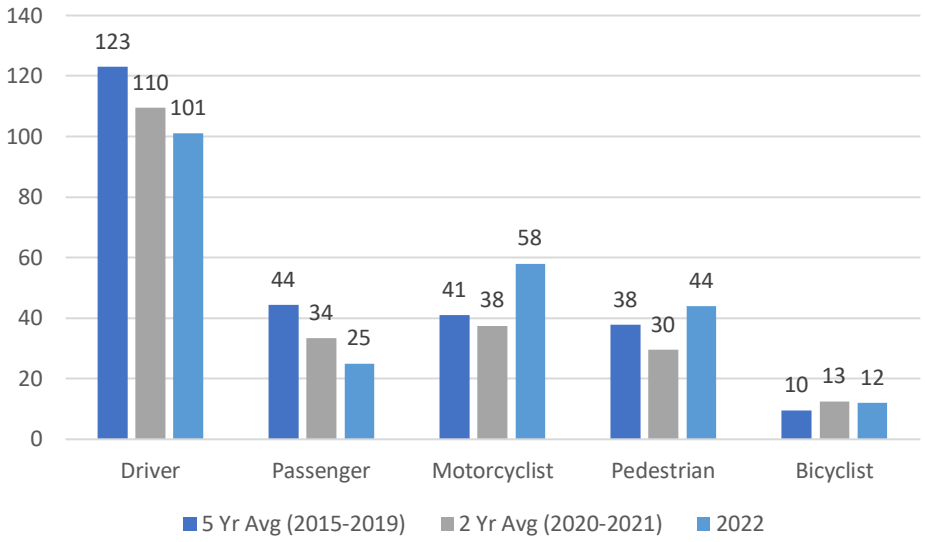

Figure 18. Fatalities by road user, pre-, during and post-COVID-19

Figure 18 shows that drivers and passengers had seen a decrease in fatalities in 2022, compared to both the COVID-19 years (2020-2021) and the pre-COVID-19 (2015-2019) average. Both motorcyclists and pedestrians saw an increase post-COVID-19 and cyclists have remained steady.

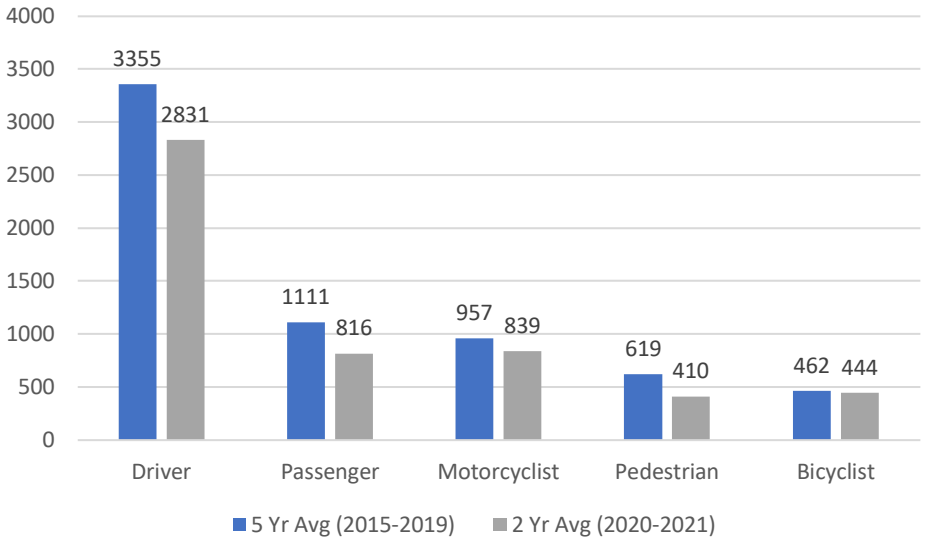

Figure 19. Serious injury by road user, pre- and during COVID-19 (Source: RCIS)

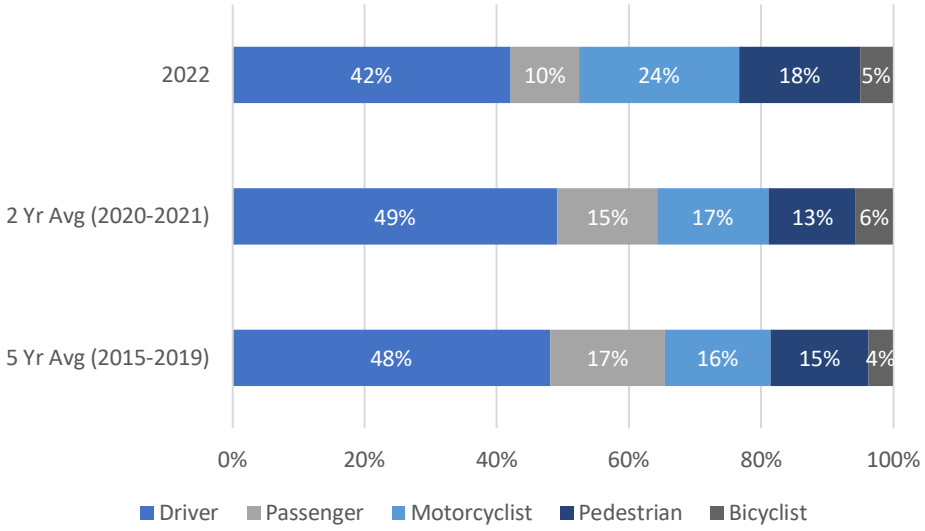

Figure 20. Fatalities by road user (Proportions), pre-, during and post-COVID-19 (Source: RCIS)

Figure 20 shows the proportion of fatalities by road user group comparing 2022, with 2020-2021 and the preceding 5-year average (2015-2019). The proportion of drivers and passengers has decreased compared to COVID-19 and pre-COVID-19 years. Conversely the proportion of motorcyclist and pedestrian fatalities both increased in 2022 compared to the COVID-19 and pre-COVID-19 years.

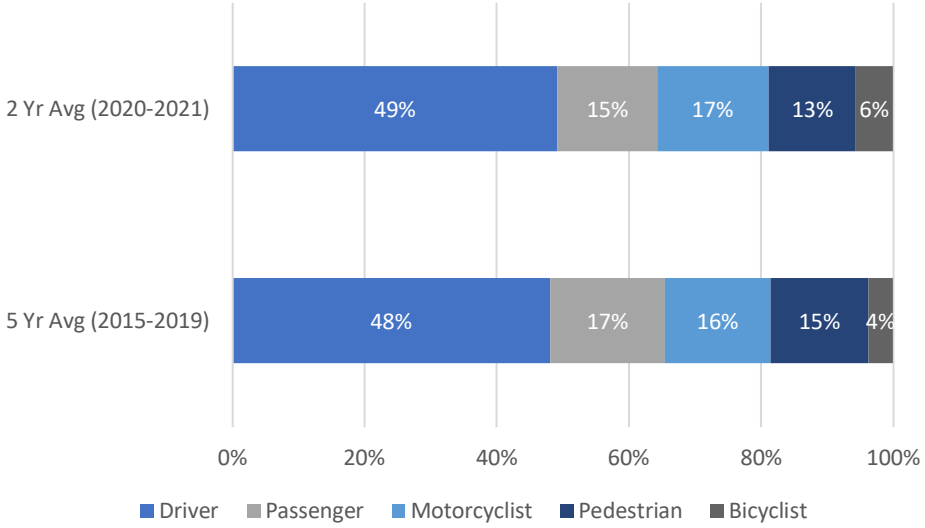

Figure 21. Serious injuries by road user (Proportions), pre- and during COVID-19 (Source: RCIS)

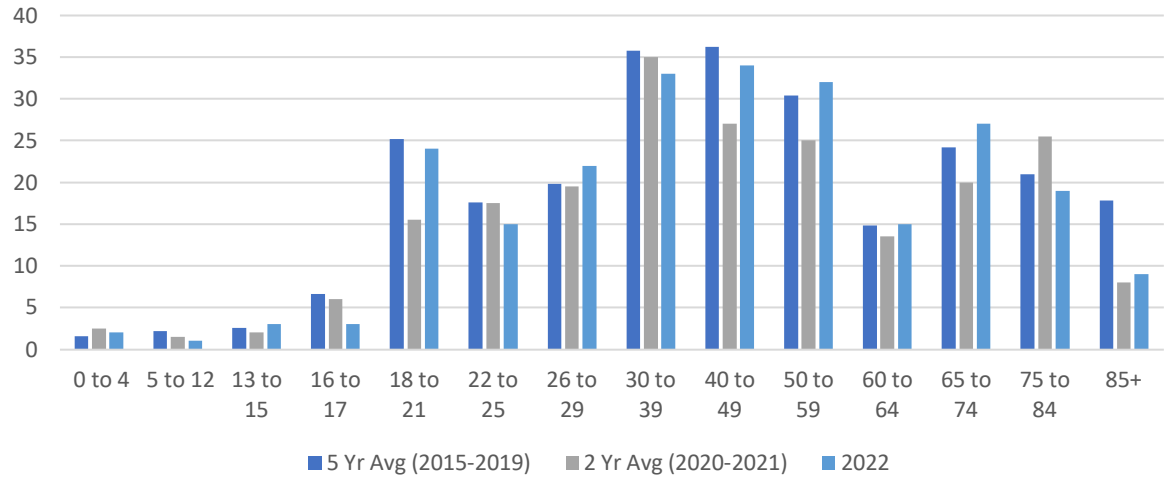

Figure 22. Fatalities by age range, pre-, during and post-COVID-19 (Source: RCIS)

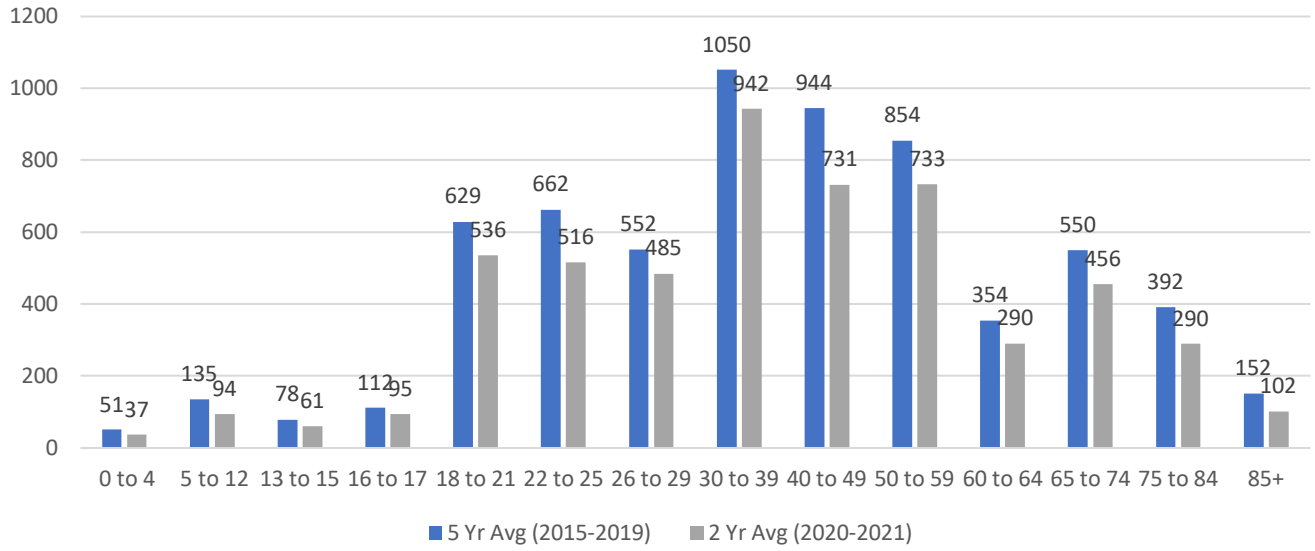

Figure 23. Serious injuries by age range, pre- and during COVID-19 (Source: RCIS)

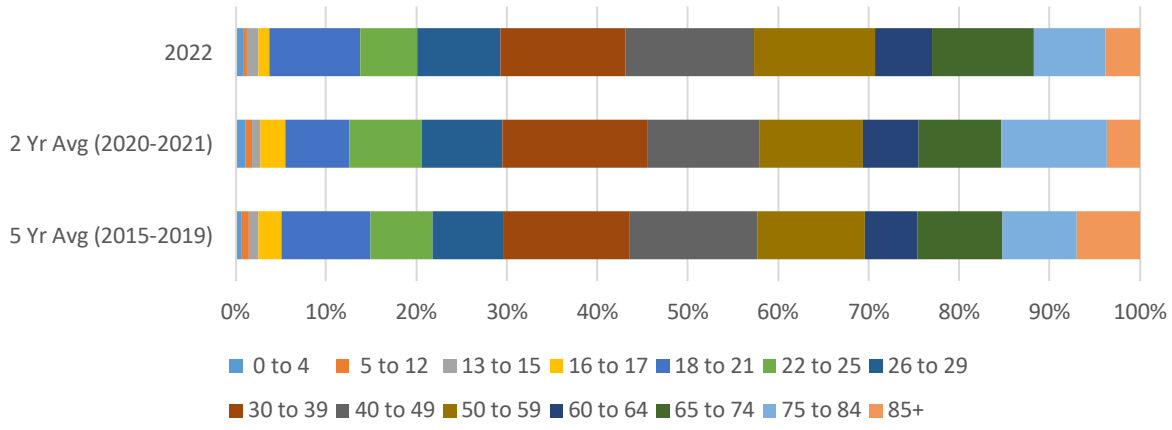

Figure 24. Fatalities by age range (Proportions), pre-, during and post-COVID-19 (Source: RCIS)

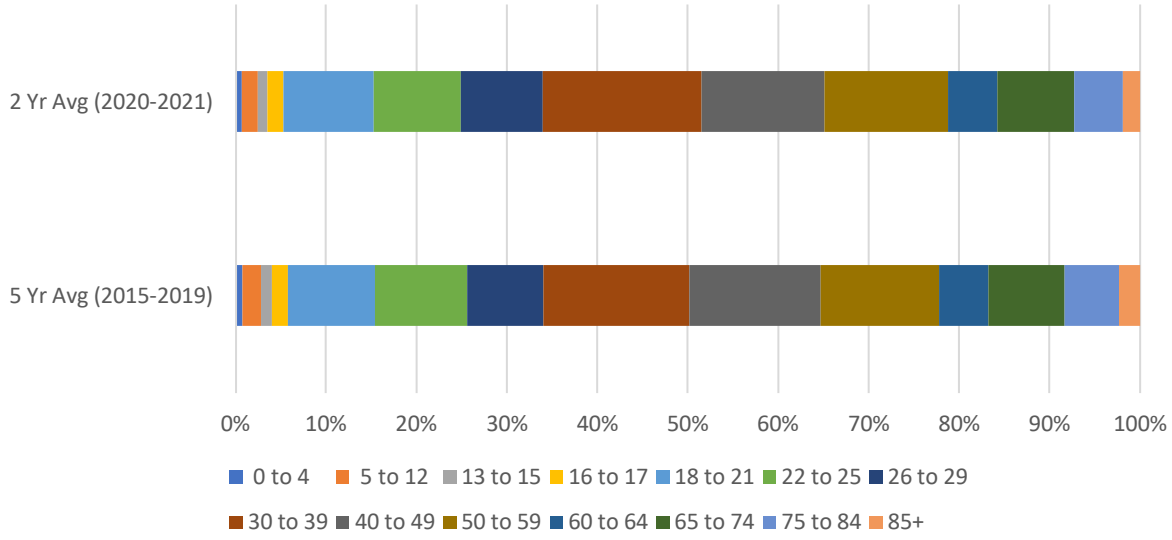

Figure 25. Serious injuries by age range (Proportions), pre- and during COVID-19 (Source: RCIS)

VRU fatalities by speed zone

The following Figures (Figure 26 to Figure 30) identify the number of VRUs killed on Victoria's Road network during the years preceding COVID-19, the COVID-19 period and post-COVID-19. Figure 26 and Figure 28 present the average number of cyclists and pedestrians fatally injured by speed zone respectively, across the three time periods being investigated. Figure 27, Figure 29 and Figure 30 respectively, present the number of children (aged 7 years and under), novice drivers, and older drivers and passengers being killed in high speed zones, highlighting the dangers associated with travelling at high speeds even for vehicle occupants.

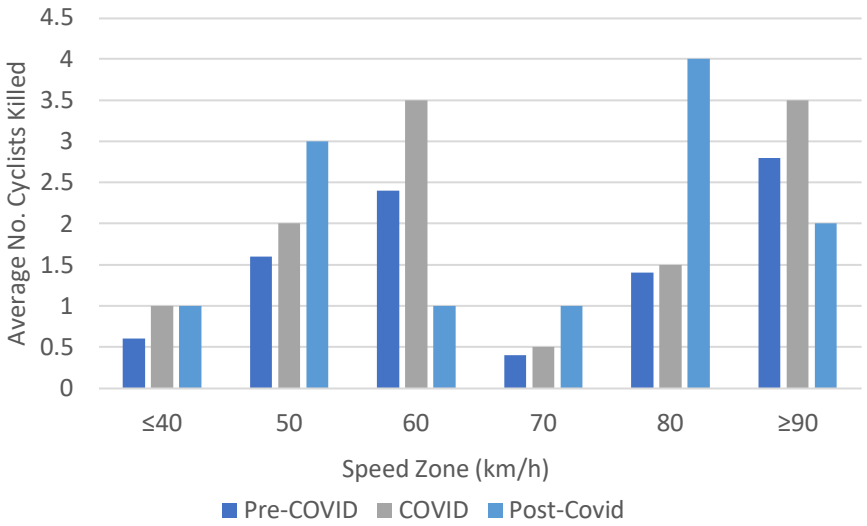

Figure 26. Average number of cyclist fatalities by speed zone, pre-, during and post-COVID-19 (Source: RCIS)

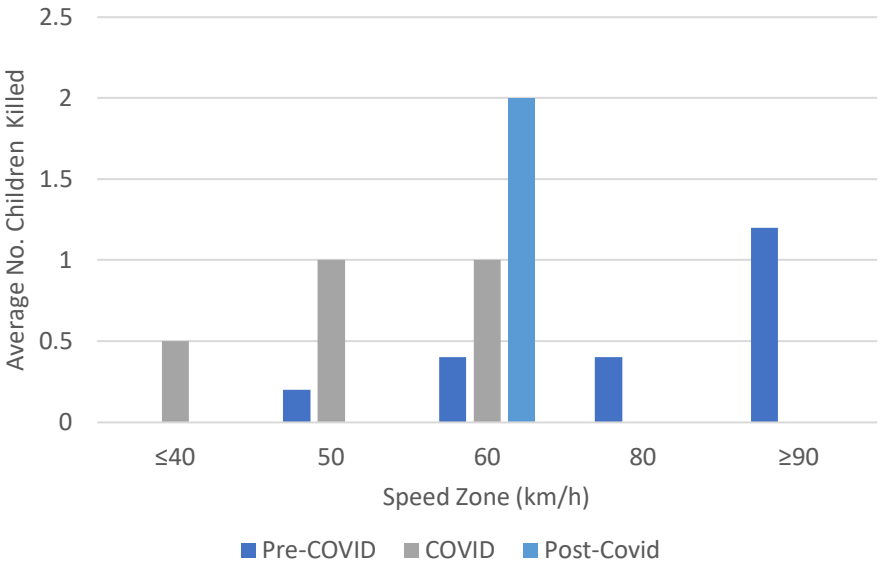

Figure 27. Average number of annual child fatalities (<8 yrs) by speed zone, comparing pre-, during and post-COVID-19 (Source: RCIS)

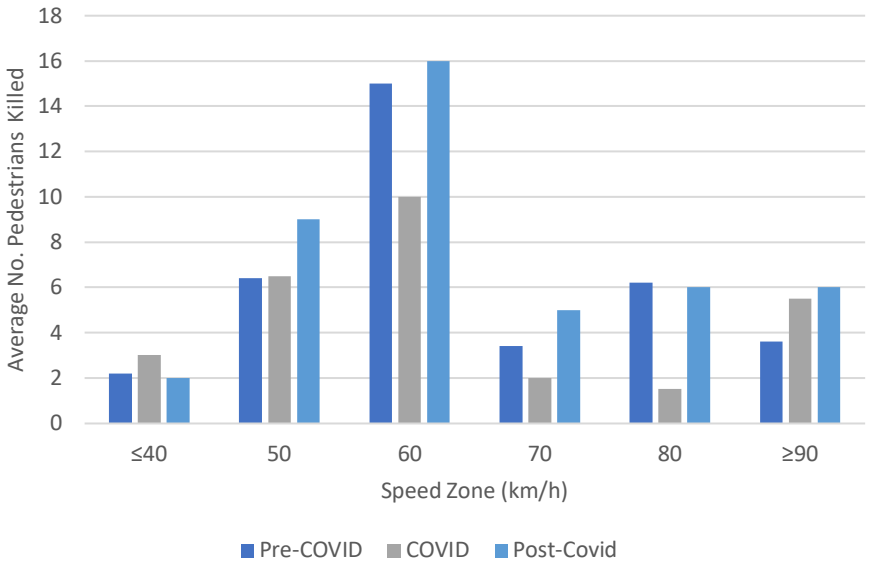

Figure 28. Average number of annual pedestrian fatalities by speed zone, comparing pre-, during and post-COVID-19. (Source: RCIS)

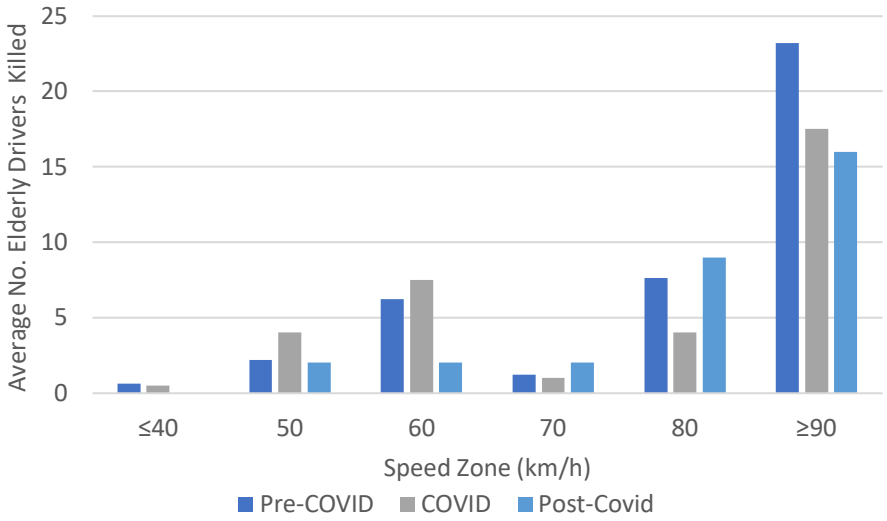

Figure 29. Average number of annual older driver and passenger (65+yrs) fatalities by speed zone, comparing pre-, during and post-COVID-19. (Source: RCIS)

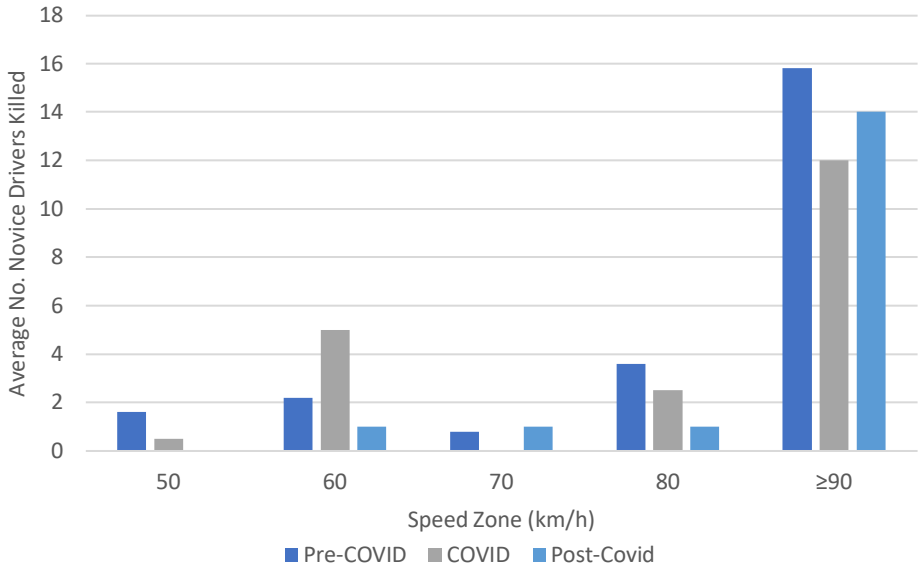

Figure 30. Average number of novice driver (18-25 yrs.) fatalities by speed zone, comparing pre-, during and post-COVID-19 (Source: RCIS)

Pedestrian data

The following section sets out DTP RCIS reported pedestrian related crashes, hospital admissions and emergency department presentations for pedestrians between 2015 and 2022. DTP RCIS reported fatalities are provided up to 2022, DTP RCIS reported serious injuries are provided up to 2021. Hospital admissions data (Victorian Admitted Episode Dataset (VAED)) is provided up to 2021 and emergency presentations (Victorian Emergency Minimum Dataset (VEMD)) is provided for years 2017 to 2021.

DTP RCIS reported crashes

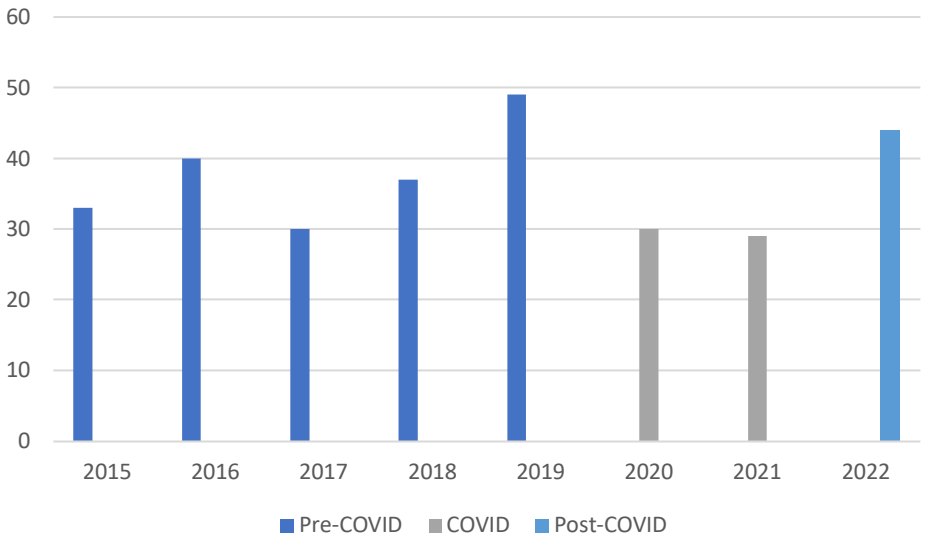

Figure 31. Pedestrian fatalities by year, pre-, during and post-COVID-19 (Source: RCIS)

Figure 31 shows that in 2020 and 2021, fatalities involving a pedestrian reduced 20% during COVID-19, but then post-COVID-19 increased by almost half (note caution must be taken when interpreting these results due to small count size and year to year variation).

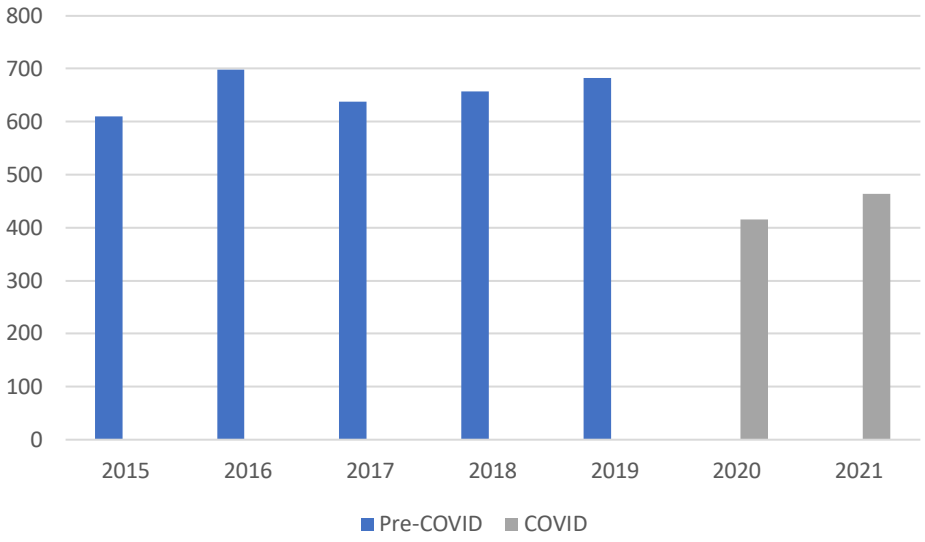

Figure 32. Pedestrian fatal and serious injuries by year, pre- and during COVID-19 (Source: RCIS)

Figure 32 shows that year to year pedestrian FSIs reduced during COVID-19.

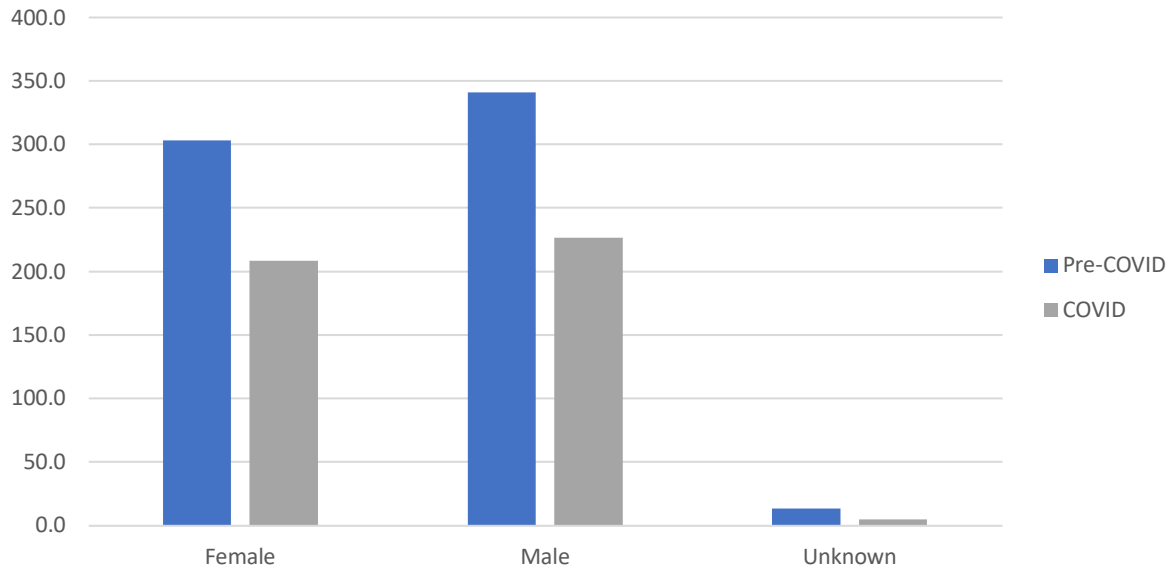

Figure 33. Pedestrian fatal and serious injuries by gender (yearly average), pre- and during COVID-19 (Source: RCIS)

Figure 33 shows FSI by gender and identifies that both male and female FSIs reduced by 30% during COVID-19.

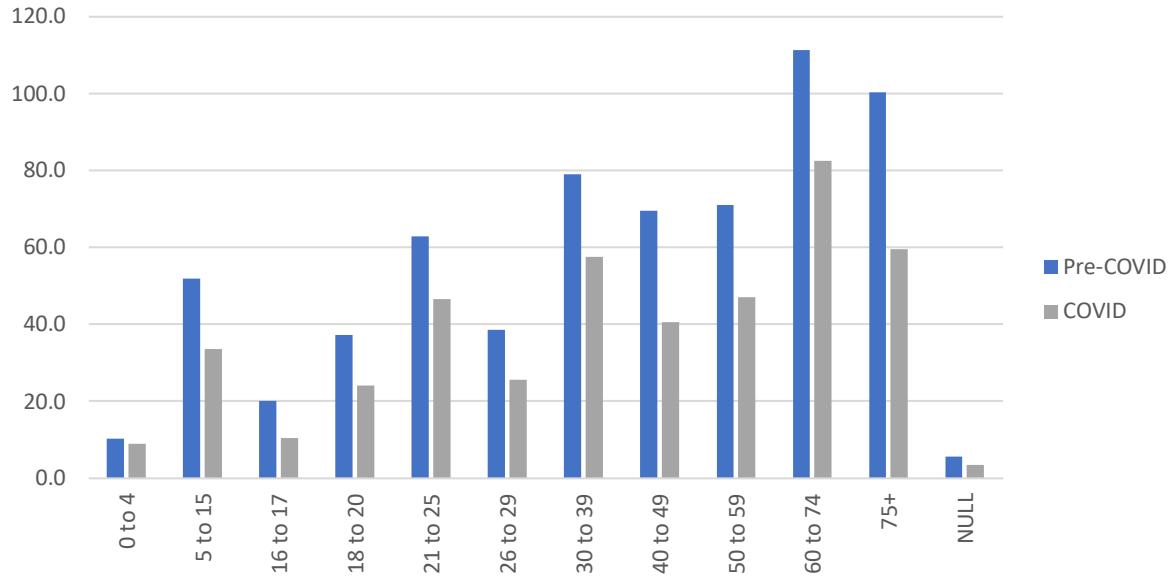

Figure 34. Pedestrian fatal and serious injuries by age range (yearly average), pre- and during COVID-19 (Source: RCIS)

Figure 34 shows that FSIs across all age cohorts were down during COVID-19. The 16 to 17 year old group showed the largest reduction of 50%. FSIs amongst the 75+ age cohort showed a 41% reduction.

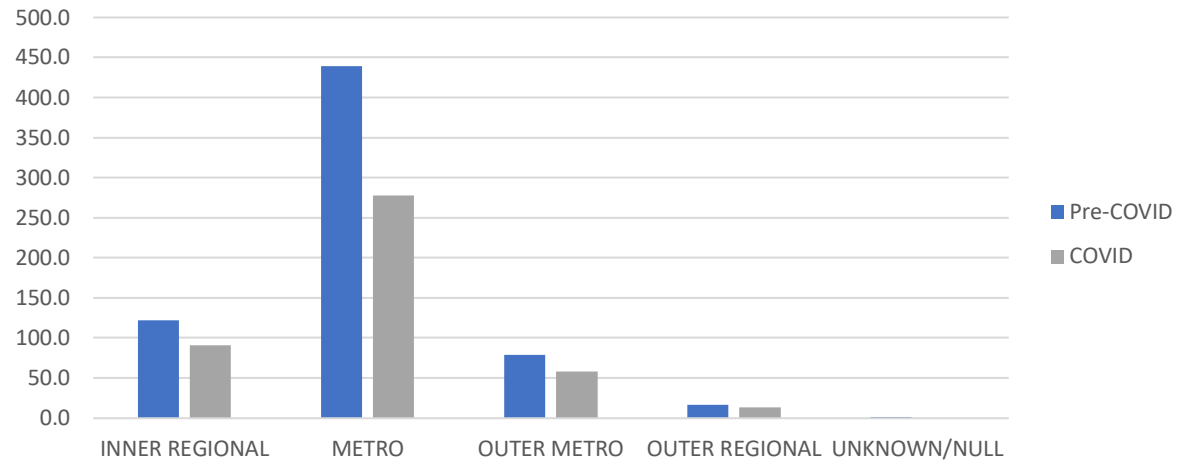

Figure 35. Pedestrians fatal and serious injuries by metro/rural (yearly average), pre- and during COVID-19 (Source: RCIS)

Figure 35 shows FSIs reduced an average of 30% during COVID-19, and FSIs dropped by 37% across the metro area.

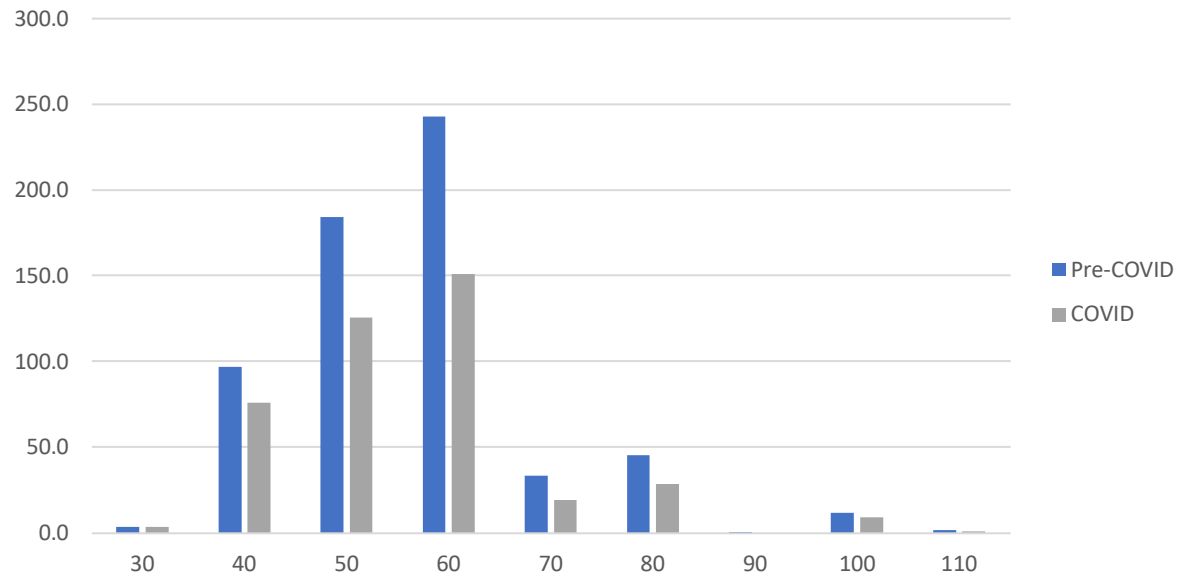

Figure 36. Pedestrian fatal and serious injuries by speed zone (yearly average), pre- and during COVID-19 (Source: RCIS)

Figure 36 shows FSIs reduced across all speed zones during COVID-19. There was a 43% reduction of FSIs across 70k speed zones during COVID-19.

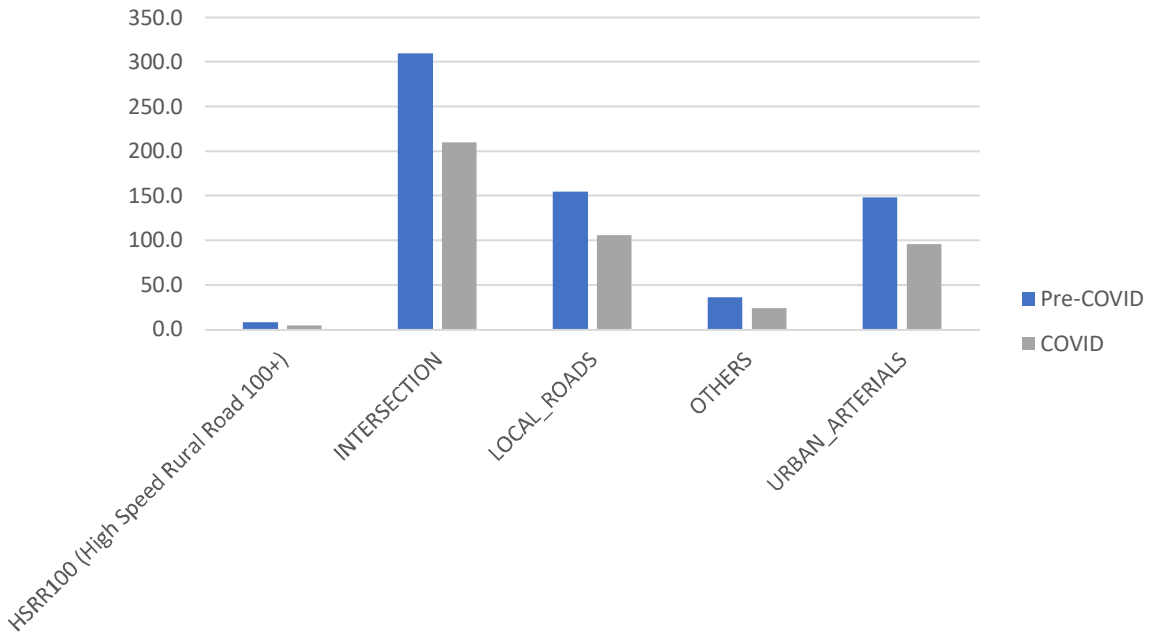

Figure 37. Pedestrian fatal and serious injuries by issue area (yearly average), pre- and during COVID-19 (Source: RCIS)

Figure 37 shows FSIs reduced an average of 35% across all areas. FSIs on high-speed rural roads reduced by 44% (please note count size is much smaller than the remaining issue areas).

Table 5. Pedestrians killed, by DCA (top 10) (Source: RCIS)

	Count			Proportion (%)		
DCA Description	**Pre-COVID-19**	**COVID-19**	**Post-COVID-19**	**Pre-COVID-19**	**COVID-19**	**Post-COVID-19**
Pedestrian near side hit by vehicle from the right (100)	74	15	14	39.2%	25.4%	31.8%
Pedestrian far side hit by vehicle from the left (102)	46	16	13	24.3%	27.1%	29.5%
Pedestrian playing, lying, working, standing on carriageway.	16	8	5	8.5%	13.6%	11.4%
Pedestrian walking with traffic	12	2	3	6.3%	3.4%	6.8%
Pedestrian on footpath struck by vehicle entering/leaving driveway	6	6	0	3.2%	10.2%	0.0%
Pedestrian walking against traffic.	2	4	4	1.1%	6.8%	9.1%
Any manoeuvre involving Pedestrian not included in DCAs	7	1	0	3.7%	1.7%	0.0%
Pedestrian emerges from in front of parked or stationary vehicle	4	1	1	2.1%	1.7%	2.3%
Vehicle strikes pedestrian on footpath, median, traffic island	6	0	0	3.2%	0.0%	0.0%
Parked car run away	4	0	1	2.1%	0.0%	2.3%
Total	**177**	**53**	**41**	**93.7%**	**89.8%**	**93.2%**
Total (All DCA codes)	**189**	**59**	**44**	**100%**	**100%**	**100%**

Table 5 shows:

- FSIs reduced across majority of DCA types.
- FSIs for DCA 100 (Pedestrian near side hit by vehicle from the right) and 102 (Pedestrian far side hit by vehicle from the left) reduced ~38% and 25% respectively.
- Where FSIs increased on a yearly average, the count sizes were too small to make any conclusions.

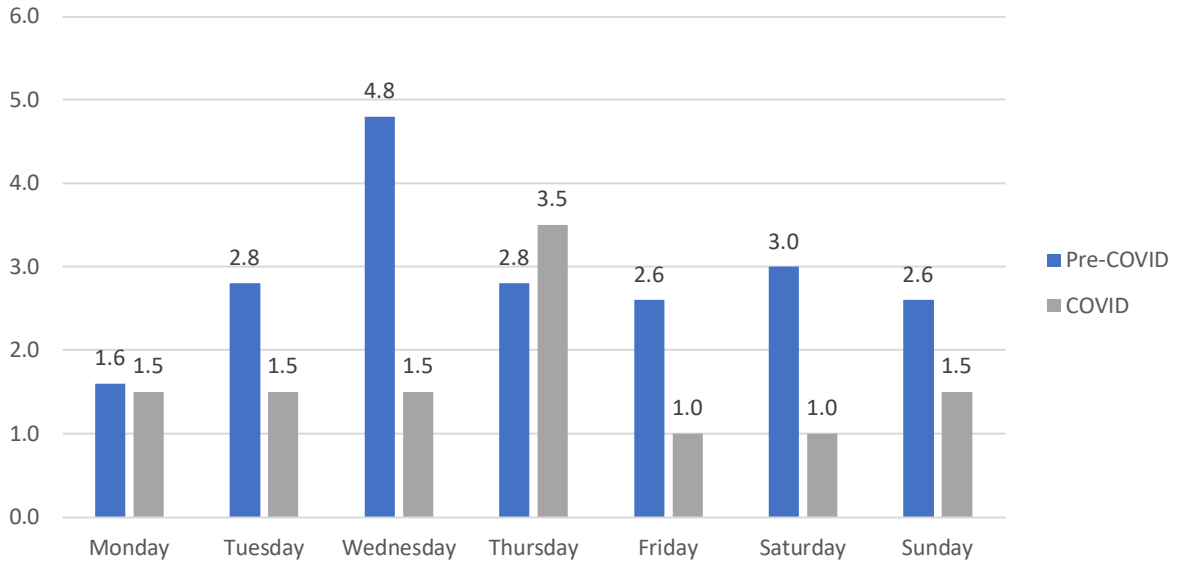

Figure 38. Pedestrian fatal and serious injuries by day of week in Melbourne CBD (yearly average), pre- and during COVID-19 (Source: RCIS)

Pedestrian related Road User Injury Hospitalisation Data

Data used in this analysis includes pedestrian-related injury data by age and year; by road user type and gender; by VRU type and region; and by age group and year.

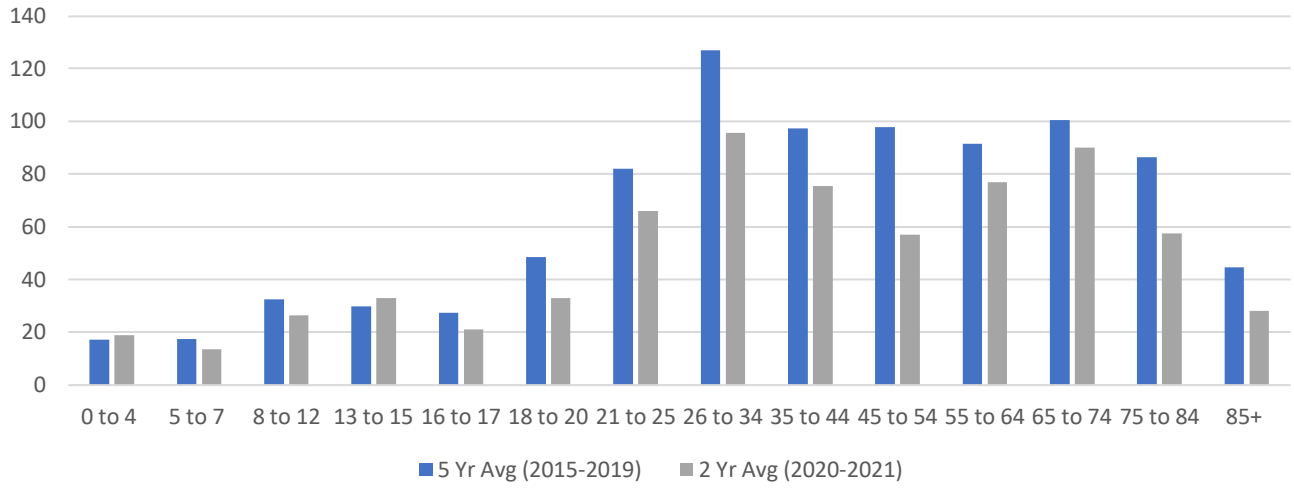

Figure 39. Pedestrian-related injury hospital admissions by age group, pre- and during COVID-19 (Source: VISU, VAED)

Figure 39 shows pedestrian related injury hospital admissions, across all ages, were lower during COVID-19, compared to the pre-COVID-19 average.

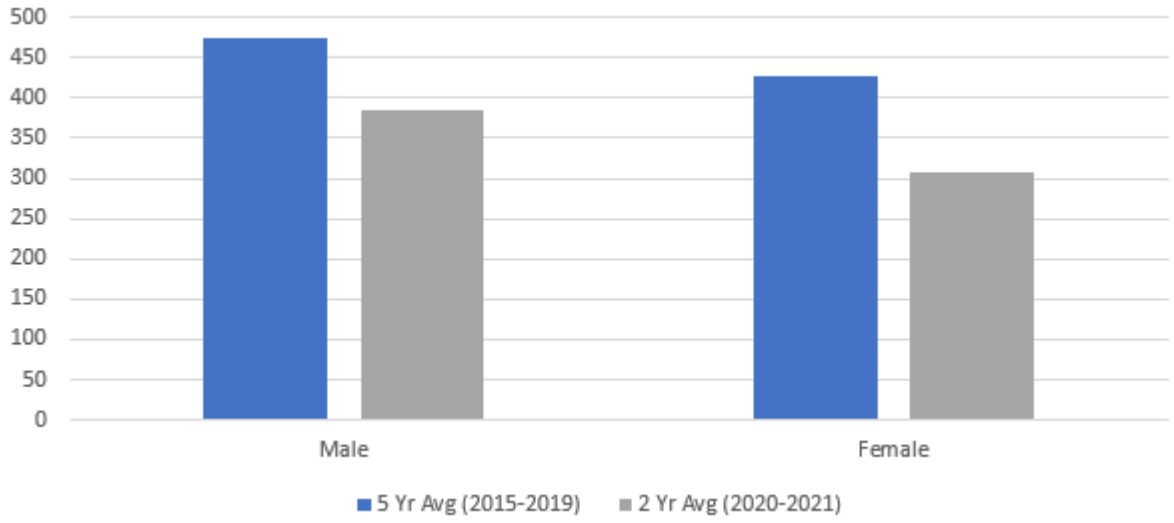

Figure 40. Pedestrian-related injury hospital admissions by sex, pre- and during COVID-19 (Source: VISU, VAED)

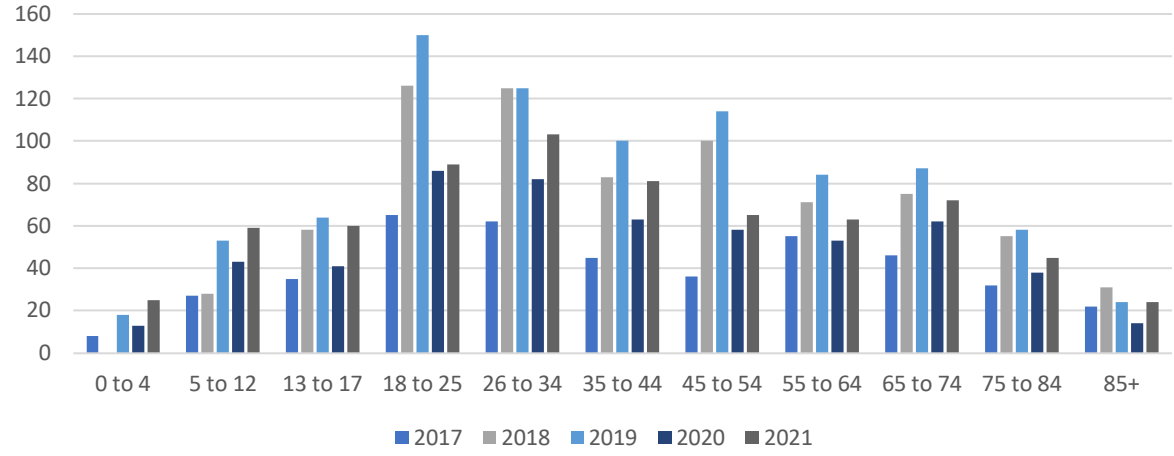

Figure 41. Pedestrian-related injury ED presentations by year and age group. (Source: VISU, VEMD)

Walking trends and volumes

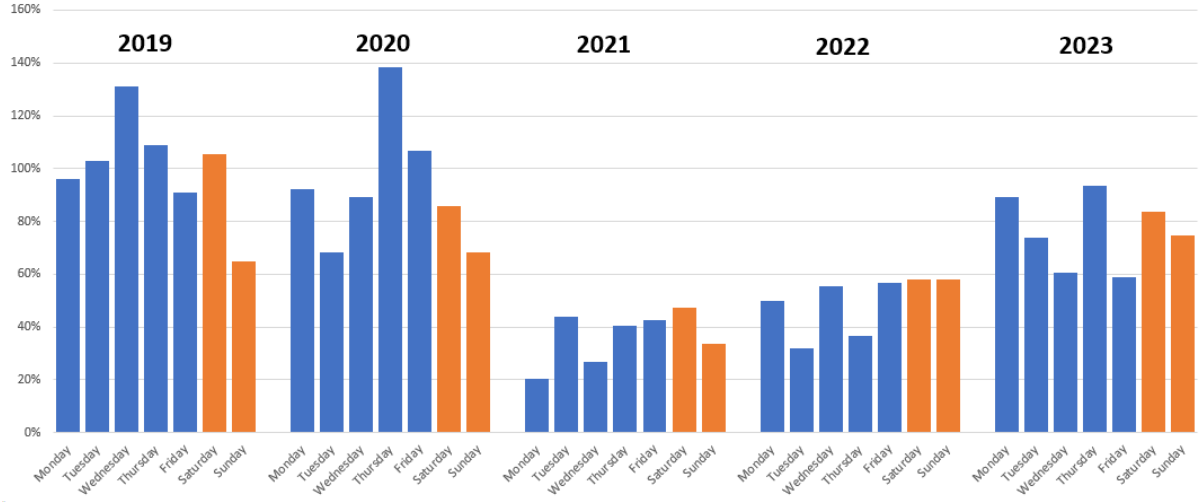

Figure 42. Pedestrian volumes compared to 2019 baseline (February) in Melbourne CBD (Source: City of Melbourne Pedestrian counting system)

Figure 42 includes walking volume data from the Melbourne CBD[115], pedestrian volumes based on average daily volumes in the same calendar month (February) between 2019 and 2023.

Walking data is collected in Melbourne CBD. Compared to pre-COVID-19 (2019) levels, all the days of the week have declined, but weekdays most significantly. Wednesdays and Fridays are the quietest days of the week. Sunday is busier than pre-COVID-19 levels and busier than most of the weekdays. The implication is that the city has become increasingly recreational and likely decreasing in vocational and educational walking. Refer to Figure 4 (pg. 21) showing 84% of people walk at least weekly.

Cycling data

The following section sets out DTP RCIS reported cyclist related crashes, and hospital admissions for cyclists related injury between 2015 and 2022. DTP RCIS reported fatalities are provided up to 2022, DTP RCIS reported serious injuries are provided up to 2021. Hospital admissions data (VAED) is provided up to 2021.

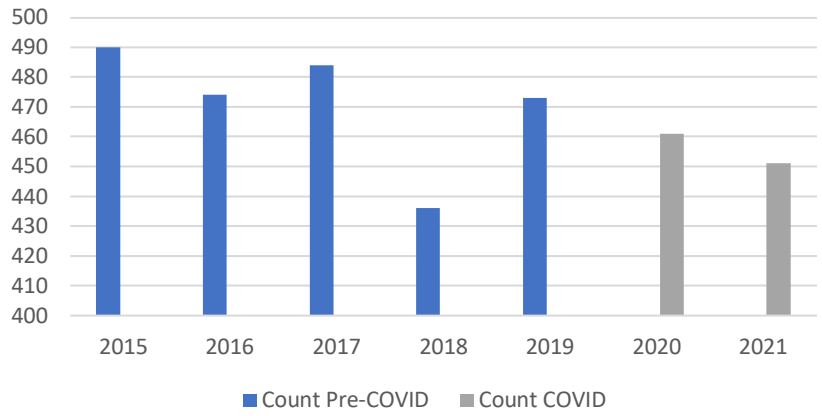

Figure 43. Cyclists fatal and serious injuries by year, pre- and during COVID-19 (Source: RCIS)

[115] *City of Melbourne Pedestrian Counting System* (http://www.pedestrian.melbourne.vic.gov.au/)

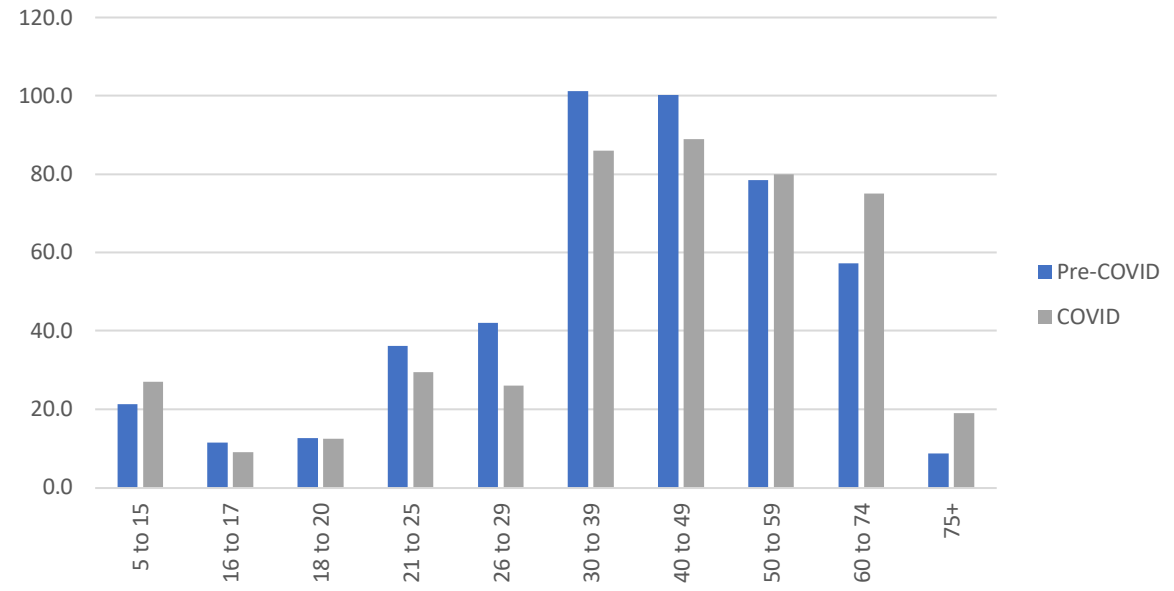

Figure 44. Cyclists fatal and serious injuries by age range (yearly average), pre- and during COVID-19 (Source: RCIS)

Figure 44 shows during COVID-19, FSIs increased for cyclists between 5 to 15 years and cyclists aged 50+ on a per year average. FSIs for cyclists aged 75+ showed the largest increase on average.

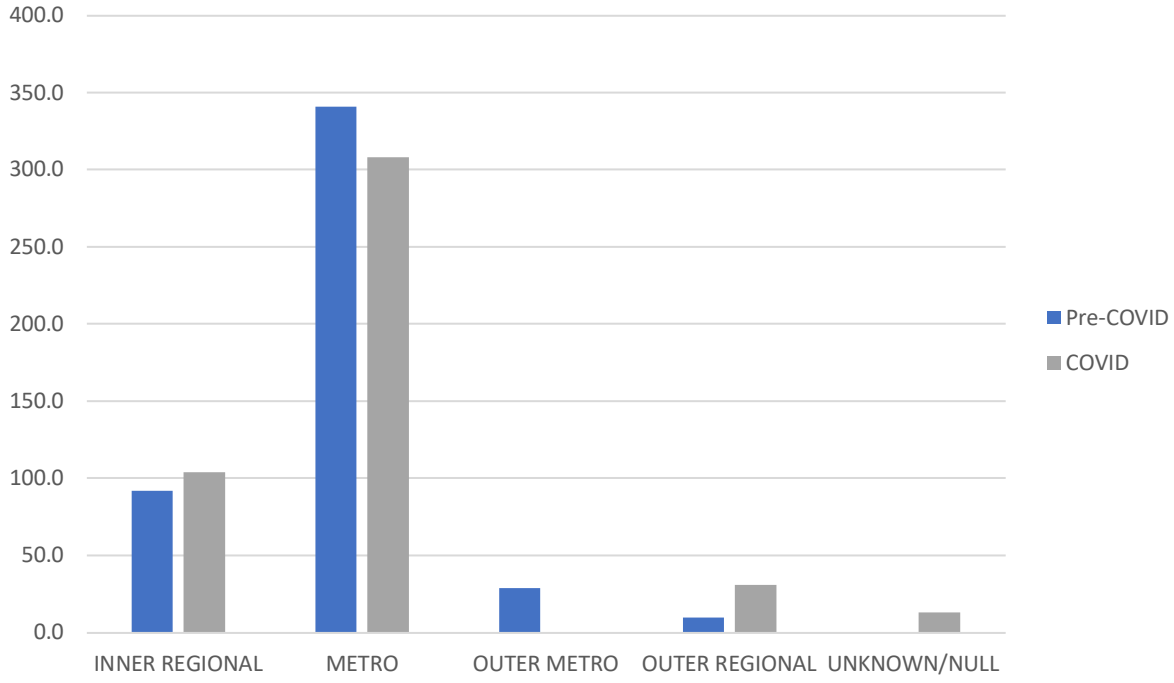

Figure 45. Cyclists fatal and serious injuries by metro/rural (yearly average), pre- and during COVID-19 (Source: RCIS)

Figure 45 shows on a per year average, FSIs in metro/outer metro decreased, whereas FSIs in inner and outer regional areas increased. During COVID-19, there were zero deaths in the outer metro area. On a per year average, FSIs in 50 km/h and 80 km/h speed zones increased by ~17%. 60 km/h zones made up 35-40% of FSIs pre-COVID-19 and during COVID-19.

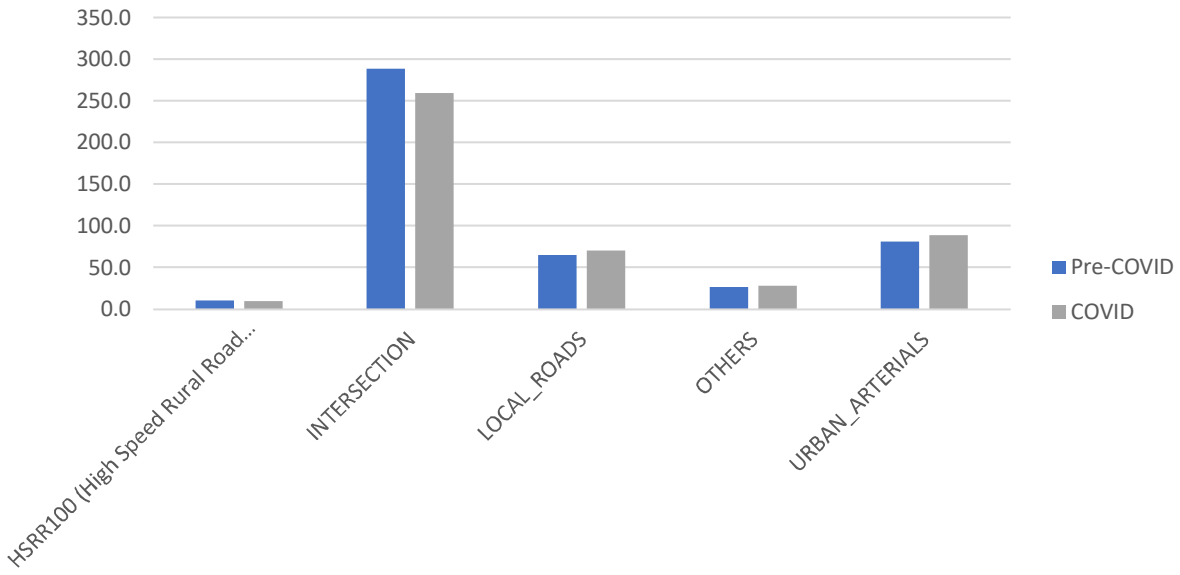

Figure 46. Cyclists fatal and serious injuries by issues area (yearly average), pre- and during COVID-19 (Source: RCIS)

Figure 46. Cyclists shows on a per year average, cyclist FSIs increased very slightly on local roads and urban arterials (7% and 10% respectively). Cyclist FSIs on high speed rural roads (HSRR) remained stable and intersection FSIs dropped slightly (10%).

Table 6. Cyclists killed, by DCA (top 10) (Source: RCIS)

	Count			**Proportion (%)**		
DCA Description	**Pre-COVID-19**	**COVID-19**	**Post-COVID-19**	**Pre-COVID-19**	**COVID-19**	**Post-COVID-19**
Rear end (vehicles in same lane)	11	6	3	22.9%	24.0%	25.0%
Out of control on carriageway (on straight)	4	5	0	8.3%	20.0%	0.0%
Cross traffic (intersections only)	5	0	3	10.4%	0.0%	25.0%
Left turn sideswipe	5	1	0	10.4%	4.0%	0.0%
Vehicle off footpath strikes vehicle on carriageway	2	3	1	4.2%	12.0%	8.3%
Head on (not overtaking)	3	2	0	6.3%	8.0%	0.0%
Lane change left (not overtaking)	1	1	1	2.1%	4.0%	8.3%
Left near (intersections only)	2	1	0	4.2%	4.0%	0.0%
Right through	1	2	0	2.1%	8.0%	0.0%
Other accidents-off straight not included in DCAs 170-175	1	0	1	2.1%	0.0%	8.3%
Total	**35**	**21**	**9**	**72.9%**	**84%**	**75%**
Total (All DCA codes)	**48**	**25**	**12**	**100%**	**100%**	**100%**

Table 6 shows the most common DCAs for FSIs were:

- 'Right through' DCA type crashes made up 16% of all cyclist FSIs pre-COVID-19 and 11% during COVID-19

- There were an average of 74 FSIs per year pre-COVID-19 vs. 48 FSIs a year during COVID-19 - a 35% reduction
- Cyclist FSIs due to cross traffic (intersection only) type crashes were similar pre-COVID-19 and during COVID-19.

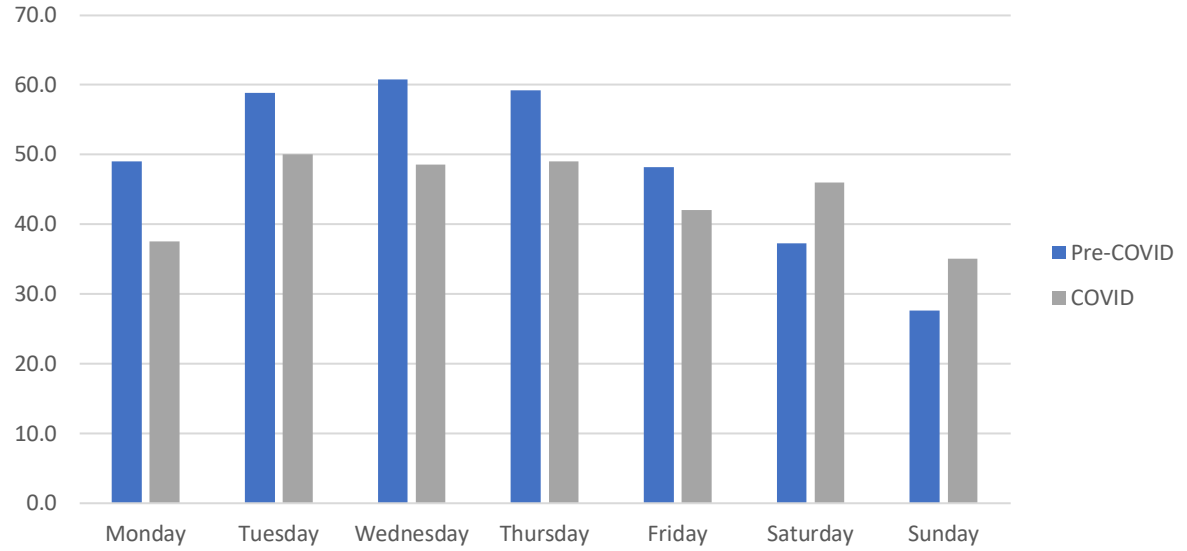

Figure 47. Cyclists fatal and serious injuries by day of week in metropolitan area (yearly average), pre- and during COVID-19 (Source: RCIS)

Cyclist-related injury hospital admission data (VAED)

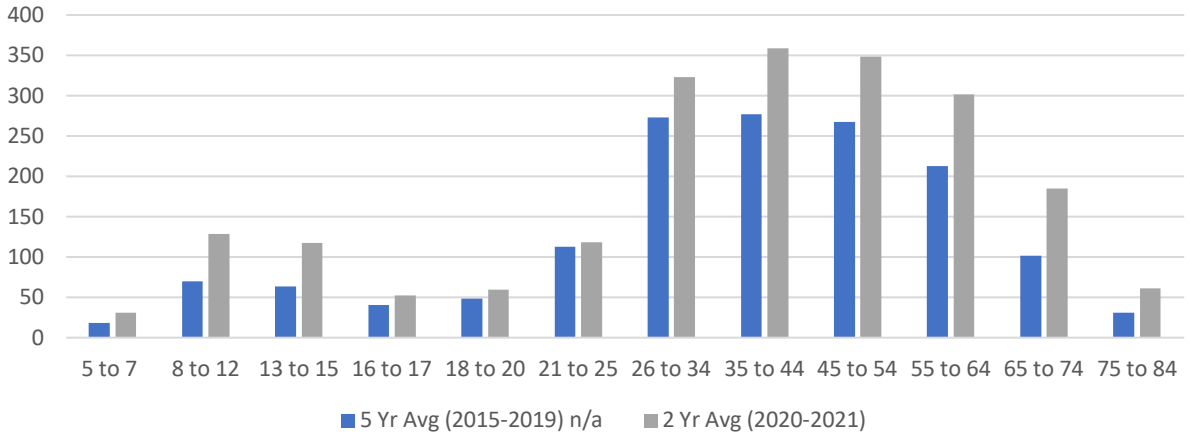

Figure 48. Cyclist-related injury hospital admissions by age group, pre- and during COVID-19 (Source: VISU, VAED)

Figure 48 shows hospital admissions for cyclists increased during COVID-19. This may be reflective of an increase in cycling during COVID-19.

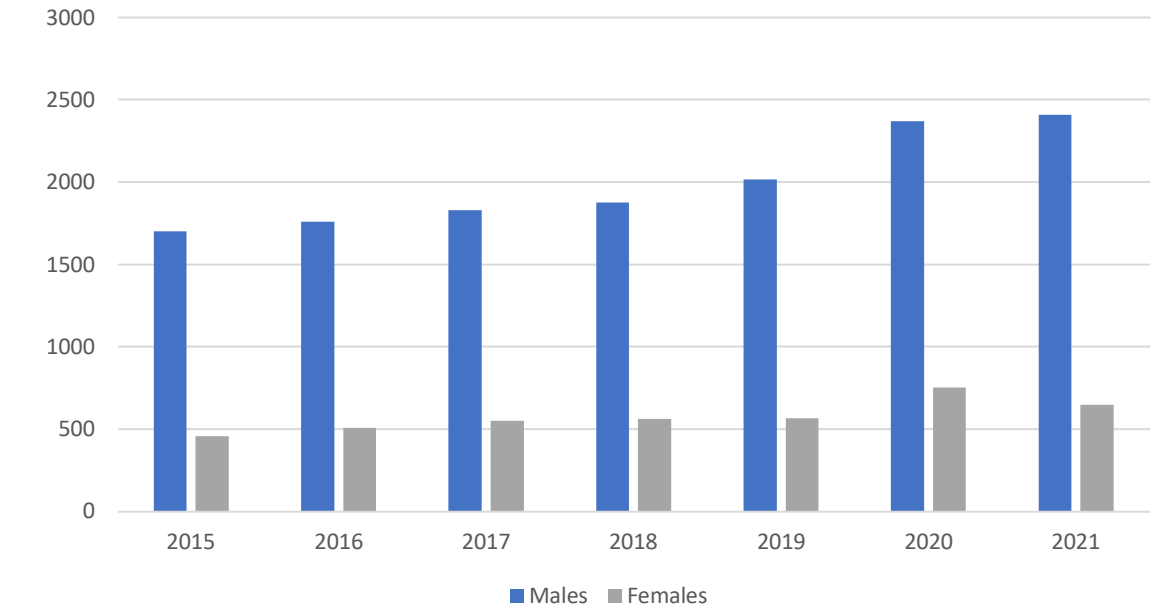

Figure 49. Cyclist-related injury hospital admission by year and sex (Source: VISU, VAED)

Cycling trends and volumes

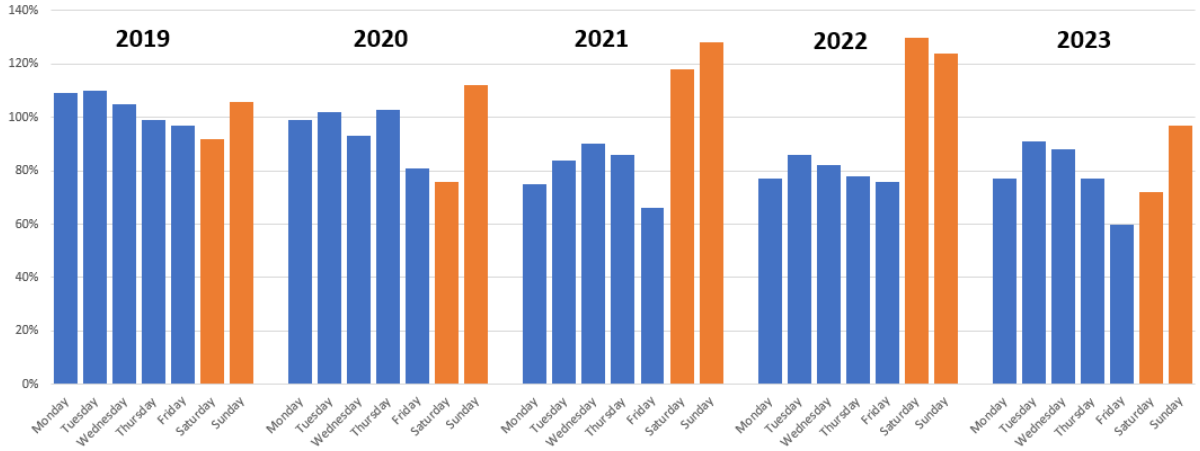

Figure 50. Cycling volumes compared to 2019 baseline (February) – counter sites (Source: DTP Bicycle volume and speed data)

Figure 50 includes cycling volume data from Victoria[116], comparing average daily volumes in the same calendar month (February), between 2019 and 2023. The cycling data is from 42 off-road counter sites and four on-road counter sites of recorded flows in both directions. Compared to 2019, weekday and weekend commuter and recreational sites are less busy but over COVID-19 there was more weekend cycling, particularly in 2022, which might indicate more recreational cycling.

Victoria Police cyclist data

With the introduction of the 5km radius for exercise, cyclists began to engage in "burbing" to maintain long rides while adhering to the COVID-19 restrictions. Burbing involved riding every street within a suburb or their 5km radius. This meant riders were moving away from established cycling infrastructure and onto local streets/roads. Victoria Police were cognisant of increased risk of

[116] DTP Bicycle Volume and Speed Data (https://discover.data.vic.gov.au/dataset/bicycle-volume-and-speed)

collisions with cyclists during this time as drivers were unaccustomed to large volumes of cyclists using these roads and with additional vehicles parking along suburban streets while people worked from home, visibility and reaction times were affected.

Delivery Rider Collisions

Between 1 January 2016 and 30 April 2021, there were a total of 19,707 cyclists or motorcyclists injured in a police-reported collision, see Table 7. *Purpose of journey* was recorded in 80% of cases. The *purpose of journey* code can be used as a proxy measure to identify riders who are working at the time of injury.

Table 7. Cyclists and motorcyclist injuries by purpose of journey and year, as at 30 April 2021 (Source: Road Policing Command, Victoria Police)

Purpose of Journey	2016	2017	2018	2019	2020	2021*	Total
At Work	93	100	124	148	170	51	686
Cyclists	15	25	25	35	47	13	160
Motorcyclist	78	75	99	113	123	38	526
Other *(private, commuting, recreational)*	3,296	2,812	2,496	2,713	2,632	1,066	15,015
Unknown	804	754	726	790	699	233	4006
Total	**4,193**	**3,666**	**3,346**	**3,651**	**3,501**	**1,350**	**19,707**
% of total	2.2%	2.7%	3.7%	4.1%	4.9%	3.8%	3.5%
% where journey purpose known	2.7%	3.4%	4.7%	5.2%	6.1%	4.6%	4.4%

*Note: * as at 30 April 2021.*

Of the 19,707 cyclists or motorcyclists injured, 686 riders were at work at the time of injury. Of the 686, three were fatalities.

The number of riders injured whilst working has steadily increased each year, from 93 in 2016 to 170 in 2020. Analysis of motorcycle collisions involving riders *at work* examined crash times, locations and rider profiles and indicated strong correlation between increased riding and the growing food delivery industry.

Victoria Police recognises that the road is a workplace for many Victorians, including those whose vehicle is used for work and those who drive/ride to facilitate their work. Changes in the gig and delivery economies also means riding (or driving) for work is on the increase. Being on the road for work means these people are more exposed to road related risks.

Anecdotally, the COVID-19 restrictions placed on restaurants increased the number of delivery drivers and riders in metropolitan Melbourne, particularly during the evenings. This increased demand for delivery workers saw a shift towards e-bikes in order to maximise efficiency for riders attempting to complete high volumes of deliveries. The increase of delivery drivers was also being driven by the lack of hospitality work. The over-supply of delivery drivers meant that drivers were under increased pressure to work long hours to compensate for lower pay due to less deliveries per driver. This added a considerable fatigue risk.

The *Victorian Road Safety Strategy 2021-2030* identifies vulnerable road users and those using the road *for work* and *at work* as strategic focus areas. The revised RPC deployment model incorporates tasking to address VRUs throughout the highest risk periods.

Together with its Partners, Victoria Police continue to focus on these *at-risk* cohorts, to identify opportunities to improve their safety through seeking to understand what impacts it.

Motorcycle data

The following section sets out DTP RCIS reported motorcyclist related crashes, and hospital admissions between 2015 and 2022. DTP RCIS reported fatalities are provided up to 2022, DTP RCIS reported serious injuries are provided up to 2021. Hospital admissions data (VAED) is provided up to 2021.

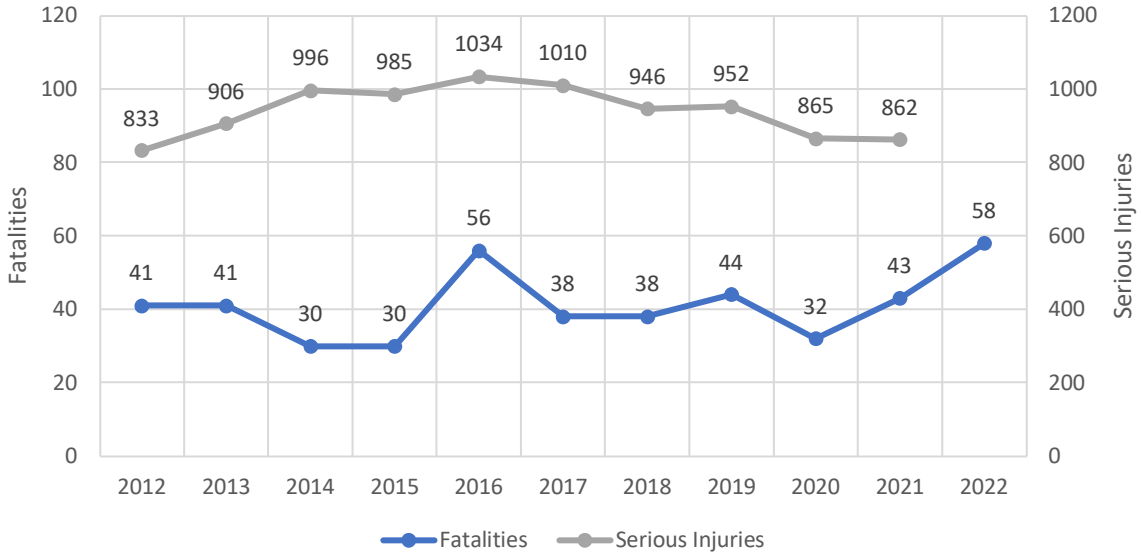

Figure 51. Motorcycle fatal and serious injuries 2012 to 2022 (Source: RCIS)

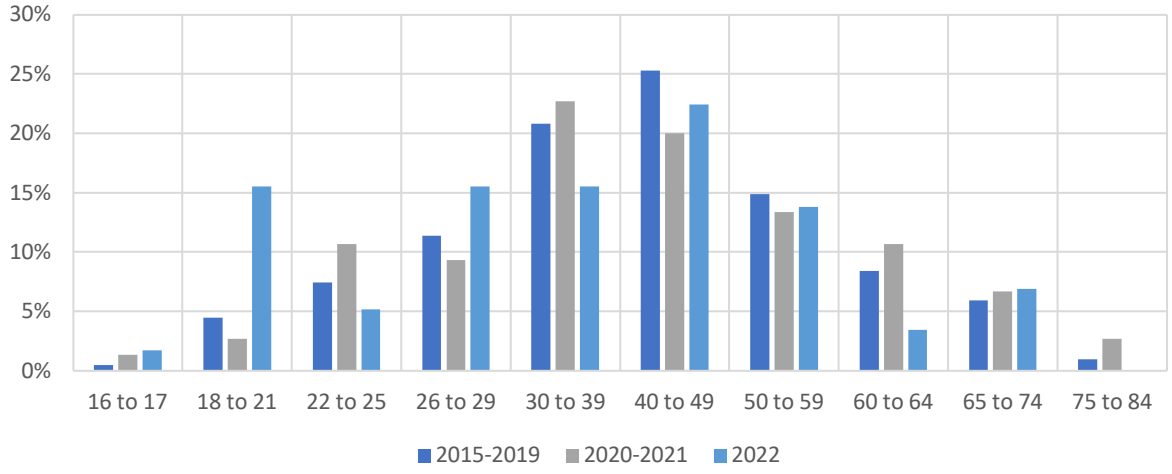

Figure 52. Motorcyclist fatalities by age group (Proportional), pre-, during and post-COVID-19 (Source: RCIS)

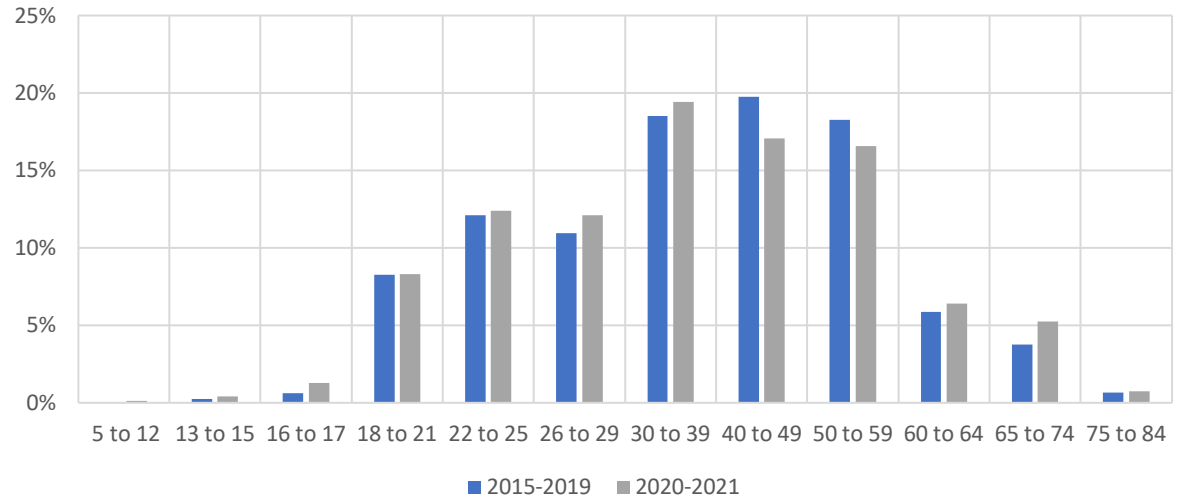

Figure 53. Motorcyclist serious injuries by age group (Proportional), pre- and during COVID-19 (Source: RCIS)

Table 8. Motorcyclist fatalities by top 6 crash types, pre-, during and post-COVID-19 (Source: RCIS)

Fatalities	Count			%		
Crash Type	**2015-2019**	**2020-2021**	**2022**	**2015-2019**	**2020-2021**	**2022**
Run off road	13	15	25	33%	40%	43%
Side impact at intersection	8	11	13	19%	29%	22%
Head on	7	3	4	16%	8%	7%
Overtaking	3	2	2	7%	4%	3%
Rear end	3	1	4	6%	3%	7%
Side swipe / Lane change	2	1	1	5%	1%	2%

Table 9. Motorcyclist serious injuries by top 6 crash types, pre- and during COVID-19 (Source: RCIS)

Serious Injuries	Count		%	
Crash Type	**2015-2019**	**2020-2021**	**2015-2019**	**2020-2021**
Other loss of control	228	221	24%	26%
side impact at intersection	192	151	20%	18%
Run off road	188	182	20%	22%
Rear end	86	62	9%	7%
Side swipe / Lane change	70	40	7%	5%
on path	42	51	4%	6%

Motorcycle-related injury hospital admission data (VAED)

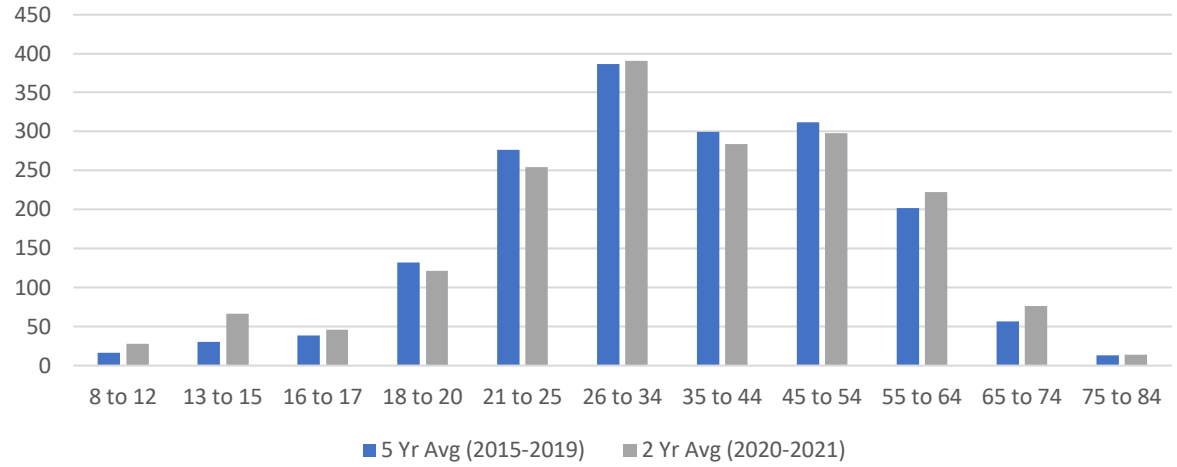

Figure 54. Motorcyclist-related injury hospital admissions by age group, pre- and during COVID-19. (Source: VISU, VAED)

Figure 54 shows that motorcycle-related injury hospital admissions show very similar trends in pre and during COVID-19 averages.

Self-reported motorcyclist behaviours

The TAC undertook a Motorcycle Monitor survey in 2022.[117] The research included a range of topics including travel habits, riding activity, speeding, fatigue, drinking behaviour and attitudes, use of protective gear and other ad hoc topics such as crash history, up-skilling/training and learning to ride experience. Some of the key findings were:

Riding after drinking alcohol:

- The vast majority of riders reported they have not ridden a motorcycle when they knew or thought they were over the legal blood alcohol limit in the last 12 months (98%). Furthermore, the majority (78%) advised they had not ridden a motorcycle after drinking alcohol even when knowing or believing they were under the legal blood alcohol limit. That said, 1-in-5 (20%) said they have ridden at least once when they knew or thought they were under the legal blood alcohol limit – males are more likely than females to have done so (22% vs. 1%).
- In terms of perceptions, most respondents think that riding while over your legal blood alcohol limit is extremely dangerous (87%).
- Riding when you know you are under the legal blood alcohol limit is perceived less dangerous – 1-in-3 (29%) respondents think it is not at all dangerous and 26% think the level of risk is relatively low.

Speeding:

- Respondents were most likely to report speeding behaviours in 100 km/h zones. The majority of respondents who have ridden in the past 12 months said they have not intentionally ridden up to (55%) or more than (64%) 3km/h over the speed limit in a 60 km/h zone and around half said they have not intentionally ridden up to (47%) or more than (51%) 3km/h over the speed limit in a 100 km/h zone.
- In terms of the perceived risk of speeding, half of the respondents (50%) think that riding up to 3km/h over the limit in a 100 km/h zone is not dangerous at all and 42% think the same

[117] *TAC Motorcycle Monitor 2022*, prepared by IPSOS, 6 April 2023

about the 60 km/h zones. Riding more than 3km/h over the limit in a 60km/h zone is more likely to be perceived dangerous, with 3-in-10 (31%) thinking it is extremely dangerous in 60 km/h zones and 1-in-4 (26%) thinking the same in a 100 km/h zone.

Other behaviours when riding a motorcycle:

- Riding without protective gear when going on long trips is the behaviour that most people (97%) avoid doing. Meanwhile, nearly 2-in-10 (16%) said they ride some of the time without protective gear when going for short trips.
- 18% have ridden some of the time while very tired – riders aged 18-25 years are more likely than average to have ridden (some of the time) while very tired (33%).
- 1-in-10 (10%) said they listened to music or talked on a mobile phone using headphones/ Bluetooth or in-helmet system while riding, some of the time.
- In terms of how dangerous these behaviours are perceived, most respondents think that riding without protective gear when going on long trips (91%), short trips (68%), riding while tired (79%) and taking the eyes off the road for two seconds (68%), are all extremely dangerous.
- Meanwhile, the perception that using headphones, Bluetooth or in-helmet systems for listening to music (40%) and talking on a mobile phone (50%) is extremely dangerous tends to be lower, yet most riders avoid doing this.
- There is an overall consensus that the only remedy for feeling tired while riding is to stop and rest – with 95% of respondents agreeing with this statement.

Finally, the perception that drivers are not always aware of motorcyclists when they are driving and that they don't understand what it is like to be a motorcyclist is very high (83% and 90% agree with these statements, respectively), which could potentially be contributing reasons as to why the majority of respondents (68%) agree that sometimes risks need to be taken when riding to avoid a dangerous situation.

Children and youth data

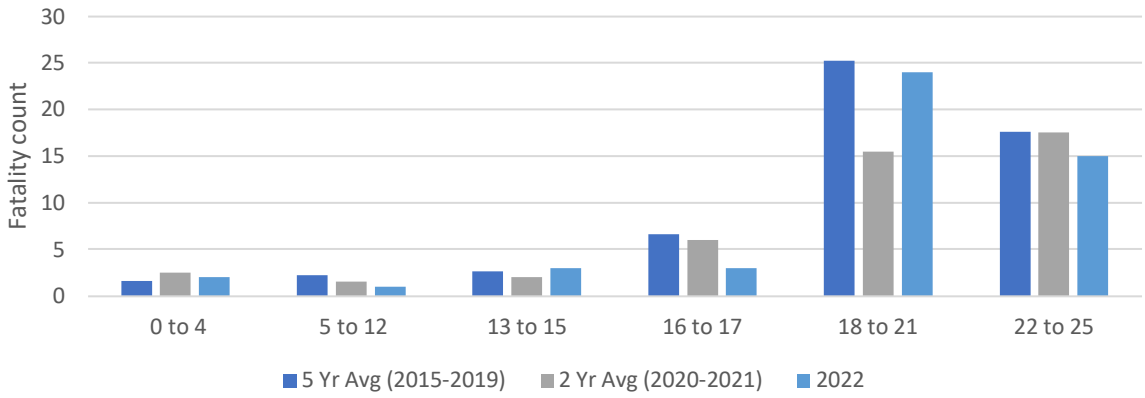

Figure 55: Police reported fatalities by age range (0-25) (Source: RCIS)

Table 10: VRU hospital admissions by age group (0-25 year olds). (Source VISU VAED)

VRUs by age group	**5-year avg (2015-2019)**	**2-year avg (2020-2021)**
0 to 4	38	50
5 to 7	61	77
8 to 12	180	286
13 to 15	179	306
16 to 17	135	166
18 to 20	271	255
21 to 25	563	522

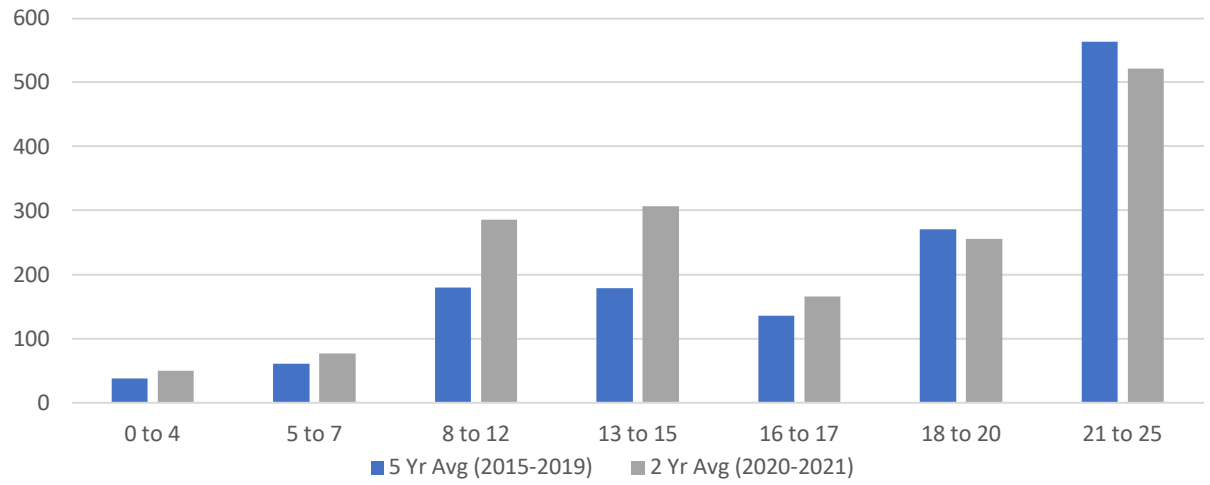

Figure 56: All VRU hospital admissions by age group (0-25 years old). (Source: VISU VAED)

Older road user data

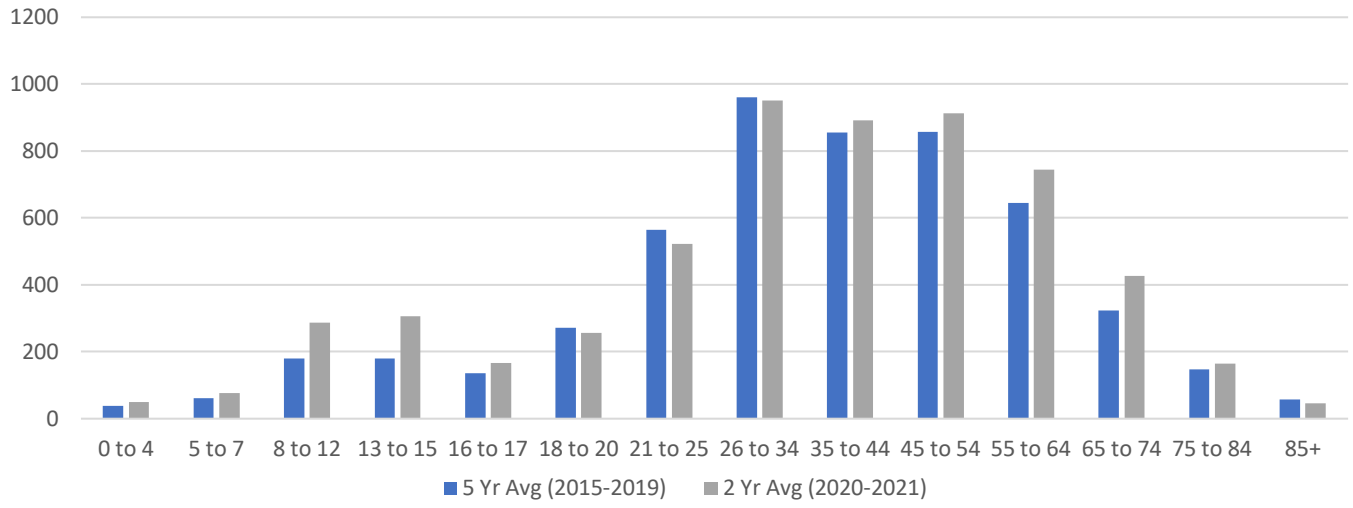

Figure 57: All VRU related injury hospital admissions by age group, pre- and during COVID-19. (Source: VISU, VAED)

Table 11: Transport usage to/from work for Victorians aged 65+ years (Source DTP Transport Tracker)

	Those aged 65+	Total Vic
Private vehicle	96%	95%
Active transport	83%	87%
Public transport	28%	50%
e-scooter / e-bike	2%	9%

Motorised mobility user data

Table 12. Motorised mobility devices related injury Emergency Department presentations by year and age group (Source: VISU, VEMD)

	2015	2016	2017	2018	2019	2020	2021
13 to 15	0	0	*	0	0	0	0
18 to 20	0	0	0	0	0	0	0
35 to 44	0	0	*	*	*	*	*
45 to 54	*	0	*	*	*	*	*
55 to 64	**	11	11	10	12	16	20
65 to 74	12	13	13	18	16	12	19
75 to 84	13	15	21	15	20	18	13
85+	14	16	8	19	16	10	17
Total	39	55	53	62	64	56	69

Note: Small cell counts are suppressed to maintain confidentiality (** = 4 or less).

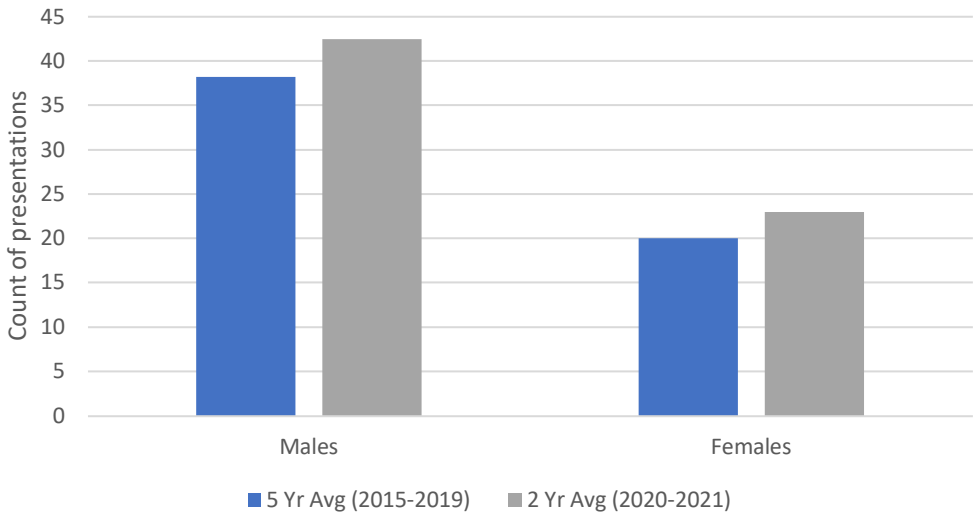

Figure 58: Motorised mobility devices related injury Emergency Department presentations by sex, pre- and during COVID-19. (Source: VISU, VEMD)

e-scooter data

Table 13: Emergency department presentations for injuries relating to e-scooters by year of presentation (Source: VISU, VEMD)

	2016	2017	2018	2019	2020	2021	2022	Total
0 to 4	0	0	0	0	0	0	0	0
5 to 7	0	0	0	*	0	0	*	5
8 to 12	0	*	*	0	*	*	**	16
13 to 15	0	*	*	0	0	*	12	17
16 to 17	0	0	*	0	0	6	6	14
18 to 20	0	0	0	0	0	8	14	22
21 to 25	0	0	0	*	5	11	33	51
26 to 34	*	0	*	*	10	28	64	107
35 to 44	*	0	*	*	*	23	37	72
45 to 54	0	*	*	*	*	9	21	40
55 to 60	0	*	*	0	*	*	6	12
Total	*	*	**14**	**12**	**25**	**94**	**204**	**356**

Note: e-scooters only coded up to 59 years of age; cell values 1-4 have been suppressed in tables with an asterisk (*). Other cells in the same row and/or column may also be suppressed with double asterisk (**) in order to maintain confidentiality.

Appendix 5. Overview of School Based Programs

Pre-School Initiatives

A range of road safety education initiatives that promote road safety for children and infants aged 0 to 5 years is delivered through the Starting Out Safely Program. This Program was developed by early childhood and road safety experts and focuses on child restraint and pedestrian safety.

Initiative	Age Group	Program Type	Description	Status
Professional development	Early childhood educators	Professional development session and resources	Professional development sessions for educators working in early childhood, kindergarten and family day care settings covering good practice road safety education and policies.	Available now
Thingle Toodle Sessions	Pre-school and kindergarten children	In-centre education sessions	Free interactive sessions delivered within early childhood sessions providing developmentally appropriate education sessions. These sessions compliment the professional development provided to educators	Available now
Child restraint and safe transport information	Educators, nurses, social workers	Information sessions	Information sessions delivered to family day care educators, culturally and linguistically diverse parents, carers and support workers, child protection and aboriginal support workers and maternal and child health nurses.	Available now
Community information	Parents/carers	Information and advice	Road safety experts attend a range of community events and expos to speak directly with parents and carers about child restraint safety	Available now

For more information visit www.childroadsafety.org.au

Primary School Initiatives

A suite of school programs and resources are available or in development for primary schools. The main aim of road safety education for primary school children is to assist children to become safe and independent road users as pedestrians, cyclists or scooter users, as well as working to eliminate road trauma involving children by promoting the impact of other areas of the safe system – safe vehicles, safe roads and safe speeds.

Initiative	Age Group	Program Type	Description	Status
Transition to Primary School	Preps and parents	School/Parent Resource	Focus on new prep students and their family's road safety knowledge and skills as they begin school. The program includes resources to teachers, parents and students, incorporated into the school orientation programs.	In development – launch 2024
Bike Ed	Years 1 - 6	Teacher training and resources	Children learn about safe riding behaviours, road rules and riding in a shared environment. It uses practical lessons to ensure riders have the physical abilities to ride safely and older students to ride independently.	Available now
Transition to Secondary School	Year 6 and parents	Teacher and student resources	Program offers lesson plans, information and an optional excursion to help prepare Year 6 students for safe independent and safe travel to secondary school.	In development – launch 2024
Teacher and school leader resources	Prep to Year 6	Resources on new website	School and curriculum-based resources are available on www.roadsafetyeducation.vic.gov.au	Available now
Safe routes to school?	Whole of school community	Information and grant program	Grant program that encourages local councils and schools to improve road safety around pick up and drop off times, create safe walking, cycling and scooting routes to school to encourage active travel.	Available now
Road to Zero School Holiday Programs	Prep – Year 6 children and parents/carers	Interactive activities at Melbourne Museum	Free activities for school age children and their parents are provided every school holidays at Melbourne Museum. These are designed to engage and inform about relevant road safety topics such as helmet wearing, choosing a safe car and pedestrian and cycling safety	Available now

For more information visit www.roadsafetyeducation.vic.gov.au

Secondary School Initiatives

A range of programs and resources are offered to all schools across Victoria which aim to inform and engage students, parents and teachers:

- about safe road use and how to keep themselves, their families and communities safe
- to feel empowered to advocate for improved road safety in and around their schools and local areas.

Initiative	Age Group	Program Type	Description	Status
Transition to Secondary School	Year 7 and parents	School/Parent Resource	Supporting Year 7 students and their family's road safety knowledge and skills before they start secondary school. Program resources will be developed for schools, parents and students to be incorporated into the school orientation sessions.	In development – available 2024
Bike Ed	Years 7 to 8	Teacher training and resources	Children learn about safe riding behaviours, road rules and riding in a shared environment. It uses practical lessons to ensure riders have the physical abilities to ride safely and older students to ride independently.	Available now
Student Advocacy Program	Years 8 to 9	Resources for students and schools	A student program that will encourage schools and students to address local road safety issues through the integration of a student voice. The program will outline how students can advocate for road safety action in their communities.	In development – available 2024
Road Smart Interactive	Years 9 to 11	Student incursion program	This in-school program will engage the whole school community in how to prevent road trauma, using a highly immersive pop-up exhibition that is set up in schools. The program is free and aims is to visit every secondary school every second year.	Available now
Road to Zero	Years 9-10 & VCE	Curriculum based excursion	School groups visit the Road to Zero Education Complex at Melbourne Museum to undertake curriculum based immersive road safety experiences based on the health, science and VCE-M curriculum.	Available now
Vehicle Safety Resource	Year 12 and parents	Interactive digital resource	Initiative to engage students and families to utilise the 'how safe is your car' website and provide a range of resources designed for new probationary drivers and their parents.	In development – available 2024
Teacher and School Leader Resources	Years 7 to 12	Resources on new website	School and curriculum-based resources available for education levels across a range of subject areas housed on www.roadsafetyeducation.vic.gov.au	Available now

For more information visit www.roadsafetyeducation.vic.gov.au

Appendix 6. Drug Use - Supplementary Information

Victoria Police has identified a significant increase in the number of drivers detected positive for specific drugs in blood testing following a collision. The data, identified by Victoria Police highlights a number of concerning trends regarding drug consumption and driving post-COVID-19 and its implications on road safety.

Of particular note is a limited ability to apply a per se limit (akin to BAC) which measures drug thresholds (i.e. THC threshold) in blood indicative of driving impairment level and road safety risk), noting that drugs such as THC are metabolised differently by individuals and the requirement of invasive testing for measurement. Recent research has shown for example, that higher concentrations of THC in blood may be associated with increased levels of impairment; however, this relationship is now well established across all cohorts.[118]

Cocaine Use

Cocaine use in the community has steadily increased over the past five years. The National Drug and Alcohol Research Centre's Household Survey[119] found 5.2% (one in 20) of Victorian survey participants used cocaine in 2019-20, more than double the figure from 2016-17. Wastewater analysis from the Australian Criminal Intelligence Commission, found Victorians ingested 1.2 tonnes of cocaine in 2019-20, an 80% increase on 2016-17.

The subject of cocaine use in the context of drug driving was a key area of discussion in the Parliamentary Inquiry into the increase in Victoria's Road Toll. In its Report (released in March 2021), the Parliamentary Committee concluded that in addition to driver distraction and speeding, the most common contributors to fatalities and serious injuries in Victoria were driving under the influence of alcohol and drugs.

The Committee was informed that other jurisdictions, such as New South Wales, also tested for the presence of cocaine and noted that Victoria had not stated why it did not include testing for cocaine.

In relation to the Committee's observation Road Policing Command advised that current legislation only permitted prosecution for three illicit drugs (THC, Methamphetamine & MDMA or ecstasy). At the time that drug testing was first introduced, there was limited evidence that cocaine was a contributing factor to road trauma, therefore little justification for it to be included. That landscape had now changed with confirmed evidence (in toxicology reports) of the steady increase in cocaine detections within drivers that are injured or killed.

Consequently, the Parliamentary Committee recommended that "the Victorian Government expand its drug testing regime to include testing for cocaine" (Recommendation 29, p.149).

Victoria Police supported this recommendation and has since been working on addressing that recommendation through a project led by RPC. A number of options to include testing for cocaine have been explored and will be presented to the Road Safety Executive Group for consideration.

Medicinal cannabis

Medicinal cannabis prescriptions saw a sharp upwards trend in 2020 and into 2021. Open-source data on the Therapeutic Goods Administration (TGA) website dashboard showed that the TGA

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[118] McCartney, Arkell, Irwin, et al, March 2022. *Are blood and oral fluid THC and metabolite concentrations related to impairment? A meta regression analysis.* Neuroscience & Biobehavioural Reviews.

[119] *National Drug Strategy Household Survey, 2019.* https://www.aihw.gov.au/reports/illicit-use-of-drugs/national-drug-strategy-household-survey-2019/contents/summary

recorded an increase of 142% in Special Access Scheme medicinal cannabis applications with 9,959 recorded in March 2021 compared to 4,133 recorded in May 2020.

The inclusion of THC in some available products means that these products can cause positive detections through roadside testing. Multiple drug drivers have indicated their drug use is related to prescription cannabinoid products indicating that they were choosing to drive despite the possibility that they would test positive for THC.

Cannabis collision trends

Cannabis injury collisions were trending well above the five-year average in 2020-21. To the end of March 2021, 74 injury collisions had involved cannabis compared with the five-year average of 58, which was a 27.6% increase.

Poly-drug use

Poly drug use offending was high during December 2020 and January 2021 as socialisation increased but steadied subsequently, similar to observations for alcohol collisions.

Appendix 7. COVID-19 experiences in other jurisdictions

In early April 2020, it was reported that over half of the World's population was under home confinement directives or advice.[120] In many jurisdictions across Australasia and the World, public authorities were calling on citizens to reduce their movements and public transport use, road traffic and everyday mobility dropped to record low levels as a result.

According to the International Transport Forum (ITF)[121] at the OECD in a COVID-19 transport brief published in May 2020[122], many cities rapidly repurposed their streets to provide safe room for pedestrians, cyclists and other forms of light, active mobility. These "emergency cycle lanes", also "Corona lanes", acted as safety valves which made essential travel possible and safe for those displaced from public transport. These initiatives were also found in cities in Australasia, e.g. Victoria (see Section 3.2.2.1, p. 43), NSW[123], and New Zealand[124].

Unlike more permanent infrastructure, emergency lanes were rapidly deployed, sometimes overnight, without heavy bureaucratic processes. The inspiration for such light individual transport (LIT) infrastructure came from "tactical urbanism" interventions like those that spurred the rapid implementation of Seville's extensive cycling network and the development of New York City's cycling infrastructure.

Such interventions mobilised existing resources such as traffic cones, plastic bollards, construction separators and temporary lane markings. They took advantage of reduced car traffic by reclaiming street space from car parking and travel lanes. Often, pedestrians were given space to walk on the carriageway and in some instances car travel lanes were narrowed.

For these reasons, authorities often reduced maximum traffic speeds to 30km/h or less, as this is the safe limit for mixed-use roads. Generally, these measures built on established practice to ensure safety for light cycling and walking infrastructure. Other types of emergency measures focused on developing "safe streets" or "slow streets" by giving pedestrians, scooter riders and cyclists priority, banning through traffic and lowering speed limits.

Importantly, whether or not they were implemented as a result of COVID, 30km/h speed limits are now a permanent feature of many cities around the world, accepting and implementing the recommendation of the WHO that in urban and built-up areas when vulnerable road users are typical in the traffic mix, that a maximum speed limit of 30 km/h should be established. Jurisdictions which have introduced permanent 30km/h urban speed limits include Brussels, Paris, Bordeaux,

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[120] Sandford, A. & Euronews (3 April 2020). *Coronavirus: Half of humanity now on lockdown as 90 countries call for confinement.* https://www.euronews.com/2020/04/02/coronavirus-in-europe-spain-s-death-toll-hits-10-000-after-record-950-new-deaths-in-24-hou

[121] The International Transport Forum at the OECD is an intergovernmental organisation with 66 member countries. It acts as a think tank for transport policy and organises the Annual Summit of transport ministers. ITF is the only global body that covers all transport modes. The ITF is administratively integrated with the OECD, yet politically autonomous.

[122] ITF (2020). *COVID-19 Transport Brief: Re-spacing Our Cities For Resilience*. https://www.itf-oecd.org/sites/default/files/respacing-cities-resilience-covid-19.pdf, Accessed: 28 June 2023.

[123] *Pop-up transport*. https://www.transport.nsw.gov.au/projects/current-projects/pop-up-transport, Accessed 28 June 2023.

[124] Wild, K. et al. (2020). *Street space reallocation to fight COVID-19: Opportunities and challenges for New Zealand.* https://www.nzta.govt.nz/assets/Roads-and-Rail/innovating-streets/docs/Street-space-reallocation-COVID-19-20201116.pdf, Accessed 28 June 2023.

Strasbourg, Toulouse, Berlin, Milan, Amsterdam, Madrid and other cities across Spain, Bogotá, Colombia, Accra, Ghana and Ho Chi Minh City, Viet Nam[125,126].

In places where cycling was popular and facilities are already present, physical spacing imperatives required the allocation of even more space to cyclists and micromobility, especially at junctions where bunching occurs. Some cities, like Brussels, re-timed traffic lights to give more time for pedestrians and cyclists and avoid crowding at junctions. Turning off traffic lights and enforcing traffic priority rules for shared space to avoid crowding was another option.

First implemented in mid-March 2020 in cities like Berlin, Bogota, Mexico City and New York, emergency LIT infrastructure spread rapidly. More than 150 cities deployed emergency cycling and walking infrastructure as of late April 2020, with many hundreds more planning to do so as confinement eased.

In some cases, the introduction of LIT infrastructure alleviated pressure along vital corridors or improved access to specific destinations like hospitals – as in Berlin, Budapest, Dublin, Grenoble, Montpellier and Tirana. Valencia focused not only on transport corridors but equally on large junctions and squares. To give traffic space to pedestrians, Spain's third-largest city created a set of temporary superblocks.

Other cities aimed to create city- or region-wide networks of emergency cycling and pedestrian infrastructure that facilitated socially-spaced walking and cycling against the backdrop of decreased public transport use. Among these were Auckland, Barcelona, Bogota, the Île-de-France region, Lima, New York City, Quito and Rome. Other cities like Montreal, Oakland, Portland, San Diego, San Francisco and Vienna were creating "slow street"/"safe street" networks that prioritised pedestrians and cyclists and limited car access.

Some cities aimed to deploy all of these and still other measures to radically restructure urban space for a more resilient future. Milan, with its "Strade Aperte" (Open Streets) plan combined the emergency deployment of cycling infrastructure and sidewalk widening, a rapid expansion of 30km/h traffic calmed zones, the pedestrianisation of several plazas alongside, 20km/h shared street zones, parklets and other measures seeking to provide space for physically distanced city living. These measures were linked to longer-term objectives to manage car traffic and provide sustainable travel options for inhabitants.

Brussels fast-tracked the implementation of its "Good Move" mobility plan that combined new walking and cycling infrastructure with neighbourhood traffic-calmed zones. As in other cities, the plan was being rolled out overnight with temporary fixtures. London's "StreetSpace" plan and Paris' COVID-19 response plan envisaged similar, broad and strategic resilience-enhancing actions. Outside of the mobility arena, some cities (like Vilnius) are planned to dedicate street space for outdoor seating to help restaurants and cafes operate within physical distancing constraints. Some regional and national governments actively supported the use of emergency LIT infrastructure.

New Zealand announced significant new funding to help local authorities create emergency walking and cycling infrastructure. The French transport minister tasked a high-level panel to help guide the

[125] WHO (17 May 2021). *Streets for Life campaign calls for 30 km/h urban streets to ensure safe, healthy, green and liveable cities*. https://www.who.int/news/item/17-05-2021-streets-for-life-campaign-calls-for-30-km-h-urban-streets-to-ensure-safe-healthy-green-and-liveable-cities, Accessed 28 June 2023.
[126] Charlton, A. & Schaeffer, J. (31 August, 2021). *Paris cuts speed limit to 30km/h to encourage walking and cycling*. https://www.smh.com.au/world/europe/paris-cuts-speed-limit-to-30km-h-to-encourage-walking-and-cycling-20210831-p58ncd.html?_gl=1. Accessed 28 June 2023.

national roll-out of such infrastructure. This plan included EUR 20 million of emergency funding to help facilitate cycling during the post-confinement phase. Also included was funding for emergency cycle infrastructure and parking, administratively streamlining the creation of emergency cycling infrastructure, EUR 50 maintenance vouchers for used bicycle repair, training for new or hesitant cyclists and co-financing of employer-provided cycling incentives. The United Kingdom relaxed administrative rules so local councils could put into place emergency walking and cycling lanes. Technical guidance was also quickly issued by national governments and regional authorities. For instance, the French Centre for Studies and Expertise on Risks, Mobility, Land Planning and the Environment (CEREMA) developed guidelines for walking and cycling, while in Germany the government of the Land of Berlin published a framework for emergency cycling infrastructure as has the municipality of Quito. Advocacy organisations and others also put out guidance (e.g. Bikeitalia, Mobycon).

End of submission.