Showcasing safe Movement & Place

Acknowledgement of Country

Roads Australia acknowledges Aboriginal and Torres Strait Islanders as the Traditional Owners and Custodians of this land and waterways.

We acknowledge and pay respect to their ancestors and Elders both past and present.

Roads Australia is committed to reconciliation amongst all Australians.

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Executive summary

At Roads Australia we are committed to identifying and advocating for the critical interventions required to save lives and prevent injuries on our roads.

We recognise the pain caused by the loss of each person killed in a crash and share our condolences with those who have been affected by road death and trauma.

Death and injury caused by motor vehicle crashes is the world's fifth leading cause of mortality and morbidity.[1] The number of lives lost on our roads is more than a statistic. Each person killed on our roads is a family member, a friend, a colleague and part of a community.

This report uses case studies to share and promote leading practice for safe streets and roads – using the Movement and Place Framework.

The report has three sections:

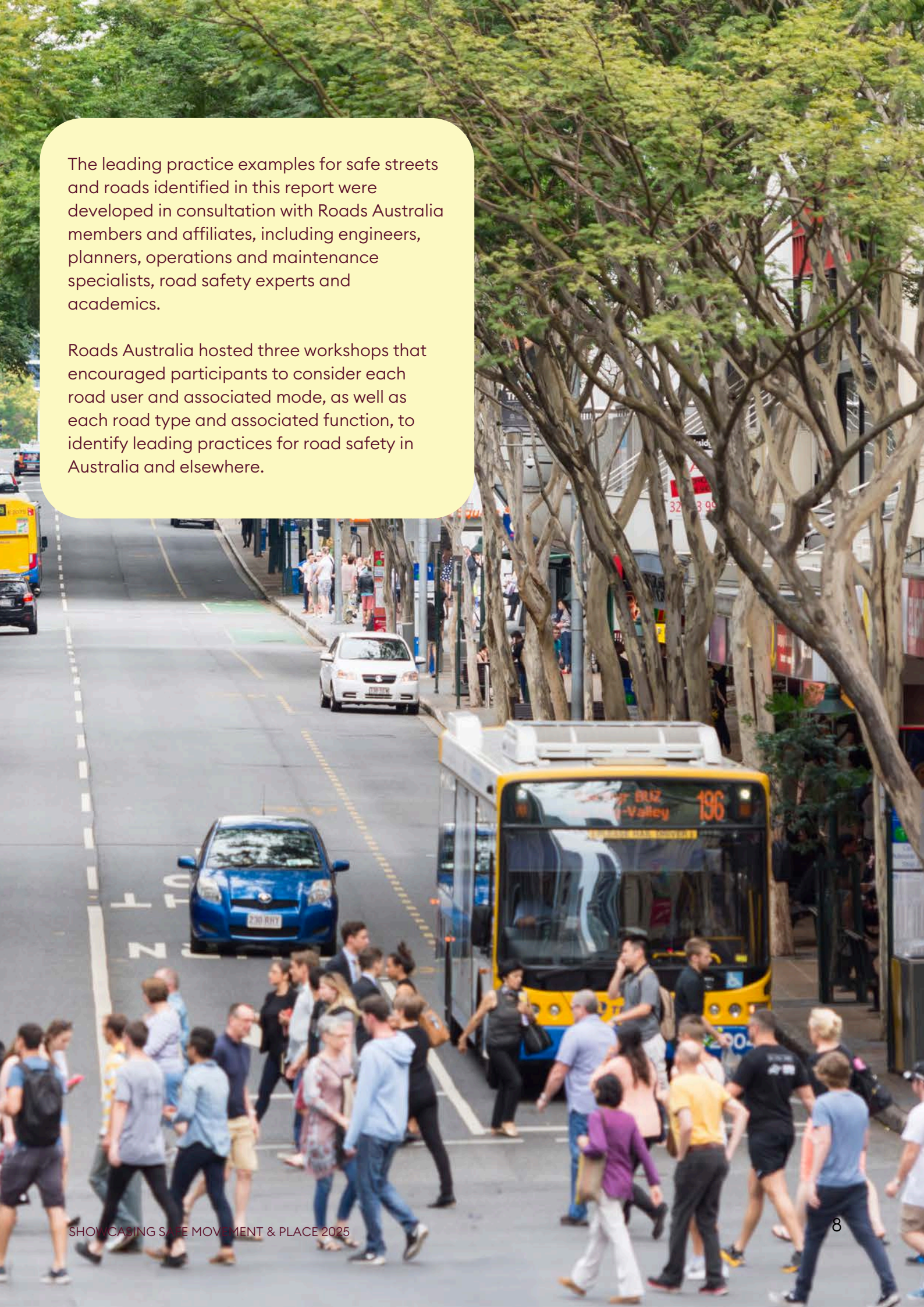
1. Showcasing safe place
2. Showcasing safe movement and place
3. Showcasing safe movement

Our intention is to encourage greater adoption of safety initiatives and safer speeds, as well as greater investment in safer infrastructure, to avoid injuries and save lives on our roads.

We recognise that there is no silver bullet for increasing road safety and achieving Vision Zero. To reach Vision Zero we need to implement a suite of safety initiatives and counter measures – not all of which are documented in this report.

We apply the Movement and Place Framework to match the right measure to the right road. This approach builds on our 2024 report, Accelerating Australia's road safety goals, which identified five key ways to reduce death and trauma on our roads:

- Recognise the role infrastructure plays to ensure design standards minimise risk.
- Manage road function to safely cater for different uses and users by applying a movement and place framework.
- Match the right countermeasure to the right road to ensure policy and legislative interventions match the road type and function e.g. slower speeds on local streets.
- Use real-time data and advanced technologies to better understand road-use and provide evidence-based measures to treat high-risk areas.
- Advance education and capability uplift to ensure industry and government are updated in line with the latest in road safety research, evidence, and effective interventions.



The leading practice examples for safe streets and roads identified in this report were developed in consultation with Roads Australia members and affiliates, including engineers, planners, operations and maintenance specialists, road safety experts and academics.

Roads Australia hosted three workshops that encouraged participants to consider each road user and associated mode, as well as each road type and associated function, to identify leading practices for road safety in Australia and elsewhere.

Balancing Movement and Place

Movement and Place is a well-established framework in Australia and internationally. It recognises streets and roads as both transport corridors (movement) and destinations in their own right (place). By identifying the priorities of each function, the framework helps guide decisions on design and investment.

Streets and roads with a place function should be designed, or where feasible retrofitted, to prioritise the safety and movement of people on foot, whereas streets and roads with a movement function should be designed, or where feasible retrofitted, to ensure safe connectivity for vehicles, public transport and freight.

Residential streets, high streets, town- or city-centres and shared-streets should all be designed and regulated with place functionality. These streets and roads serve as destinations that support social, cultural, economic, and recreational activities. They are spaces where people live, gather, shop, dine, work, or spend time.

It is worth highlighting that sometimes roads designed for a movement function pass through places. For example, an arterial road adjacent to a shopping centre or recreational facility. Despite an intersecting movement and place function these locations often remain designed for the efficiency of vehicle traffic, which ultimately compromises on safety.

In locations where movement and place functions intersect, the safest approach is to prioritise the place function.

This may mean implementing changes such as shorter wait-times at signalised intersections to reduce the likelihood of jaywalking, lowering the speed limit for a certain portion of the road – just as we do in school zones – and or lane-narrowing to dissuade speeding vehicles.

Roads and streets that are designed with place functionality have the dual benefit of creating attractive places for people while also increasing safety. Slowing down vehicle traffic and prioritising people on foot reduces the risk and severity of crashes between all road users and modes, ultimately saving lives and avoiding injuries on our roads.

As Movement and Place has become the dominant framework for road and street planning and design, jurisdictions should consider whether their existing categorisation of roads remains fit for purpose. A review and update of road categorisation to align with Movement and Place may help designers, planners and decision makers to implement safety initiatives across the road network.

Image source: Emily Godfrey for Visit Victoria

Road safety in Australia's cities and regions

The Federal Government has a target of reducing deaths on our roads by 50 per cent from a 2018-2020 baseline by 2030. We are not on track to reach that target, with 1,296 deaths on our roads in the 12 months to April 2024 and a rising number of lives lost over the past five years.[2]

We analyse road deaths in Australia's major cities and regions, looking at the percentage of deaths that occur on each road type, in each posted speed limit zone, and each of the predominant crash types. The data highlights that a significant portion of road deaths occur in areas with a place function, particularly within our major cities but also within our regions.

Local streets are where roughly a quarter of all road deaths occur. In major cities, 40 per cent of all road deaths occur on arterial roads, which sometimes double as high streets, and a quarter of all road deaths are pedestrians.

This shows there is a significant opportunity to reduce road death and serious injury in areas with a high place functionality through safer speeds, traffic calming and other interventions.

While the proportion of deaths that occur in each posted speed limit zone may correlate with the proportional share of each speed limited zone, it is well established that there is a direct relationship between speed, safe stopping distance and crash severity.

Australia's default speed limit of 50 km/h is therefore at odds with the place function and safety of our local roads and streets.

If a person on foot is hit by a car at 50km/h there is a 90% chance of death, at 40km/h this drops to 40% and at 30km/h it's 10%.[3]

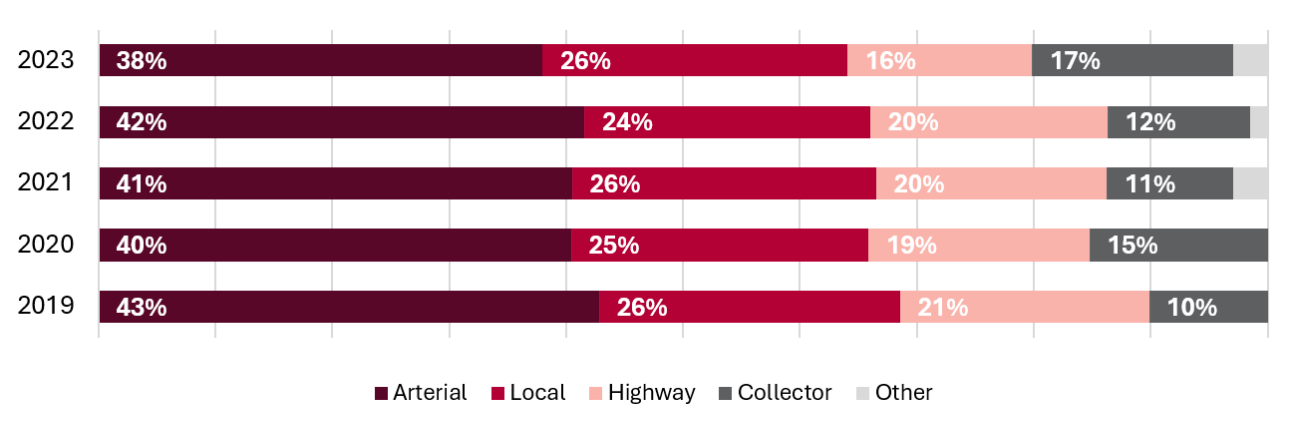
With speed being such a significant factor in the likelihood of pedestrians being killed or seriously injured in a crash, it is critical that streets and roads with a place function have safe speed limits and are designed with traffic calming and speed management measures that further reduce the likelihood of speeding.

The National Road Safety Strategy Data Hub does not include data on the proportion of all road deaths where speeding was a contributing factor – however some state and territory governments do publish these statistics, which indicate that speeding was involved in ~20-40 per cent of all road deaths – with a majority being between 3-10km/h over the posted limit.

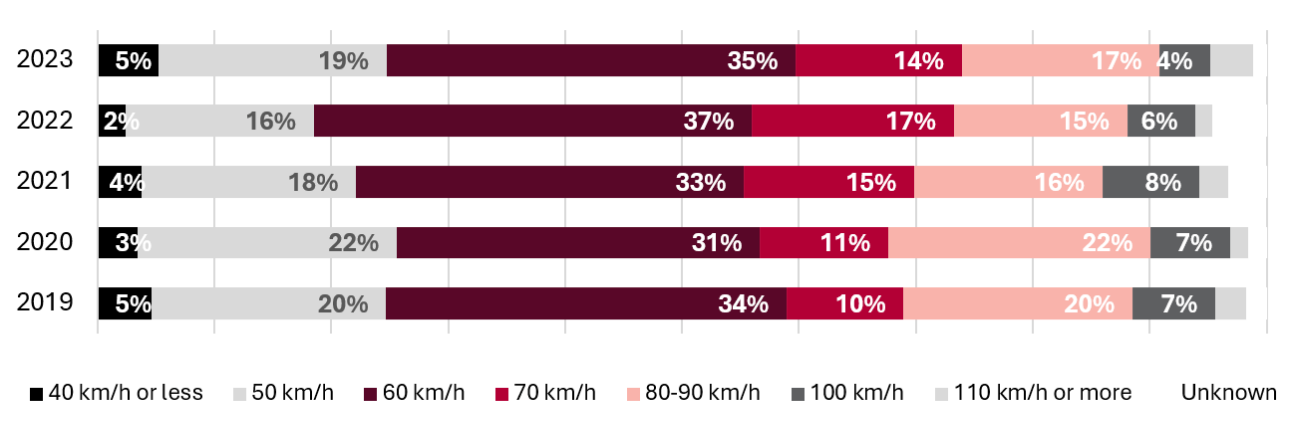
Image source: NCA NewsWire / Adam Yip

Crash data - major cities

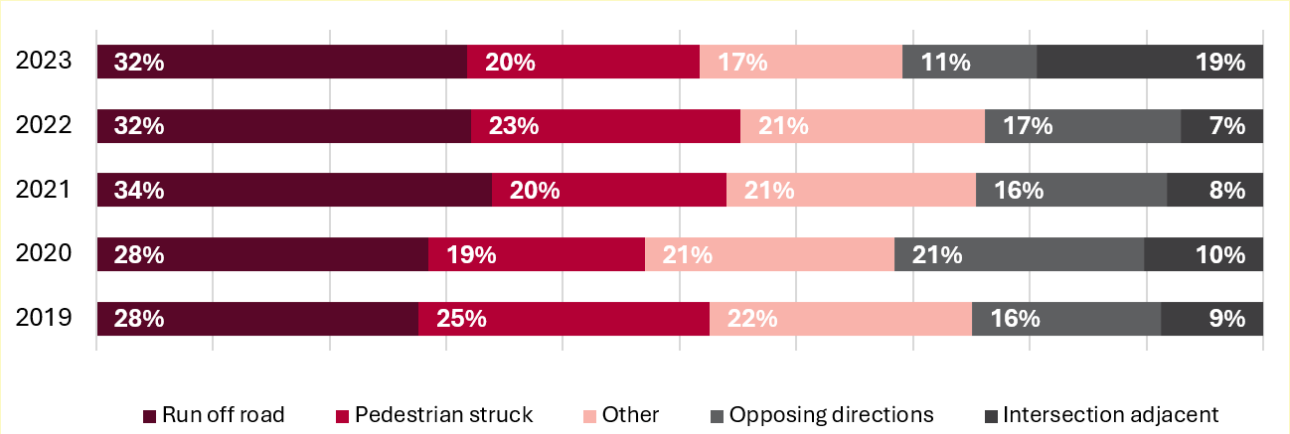
Two thirds of all road deaths in Australia's major cities occur on local and arterial roads
Percentage of annual Australian road deaths by year and road type – major cities



Roughly half of all road deaths in Australia's major cities occur in 50-60 km/h zones
Percentage of annual Australian road deaths by year and posted speed limit – major cities



Almost one quarter of all road deaths in Australia's major cities are pedestrian-struck crashes
Percentage of annual Australian road deaths by year and posted speed limit – major cities



Source: National Road Safety Data Hub *2023 latest available data

Data from regional Australia highlights unique safety challenges on high-speed roads with a dominant movement function. Unlike urban environments, the majority of crashes that cause death and serious injury on regional roads occur in high-speed zones.

Half of all regional road deaths occur in 80–90 km/h zones, reflecting the inherent danger of high-speed environments when combined with limited separation between opposing traffic. At these speeds, the likelihood of fatal outcomes in the event of a crash is extremely high.

Around three-quarters of all road deaths in regional Australia occur on arterial and collector roads. These roads are the backbone of regional connectivity, carrying both passenger vehicles and heavy freight.

However, their dual role exposes them to high crash risks, particularly at intersections and stretches without protective infrastructure.

The dominance of deaths on these roads highlights the pressing need for investment in treatments such as wide centreline markings, overtaking lanes, and channelised intersections to reduce conflict points and improve safety.

The most striking statistic is that half of all regional deaths are caused by run-off-road crashes. These crashes are often the result of fatigue, inattention, or driver error, compounded by narrow lanes and hazardous roadside environments.

Engineering countermeasures have proven highly effective in addressing this risk. For instance, sealed shoulders, safety barriers, and audio-tactile line markings not only prevent vehicles from leaving the road but also provide critical recovery time when drivers make mistakes.

Taken together, the data illustrates that regional road safety is less about managing dense, multimodal environments, as in cities, and more about designing high-speed corridors that reduce the severity of errors.

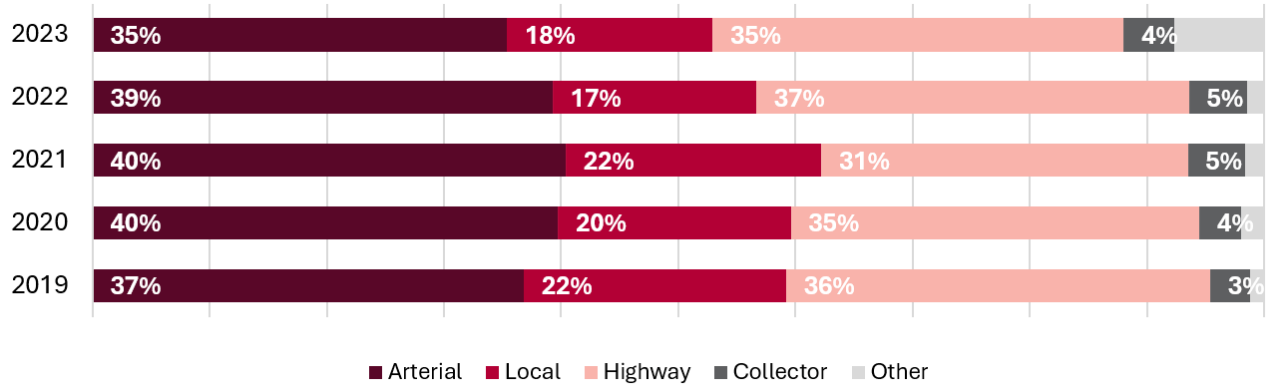
With regional Australia carrying a disproportionate share of the lives lost on our roads, a sustained program of targeted safety upgrades to arterial and collector roads, supported by speed management, is essential if Australia is to make meaningful progress towards its 2030 target.

Image source: ABC News

Crash data - regional

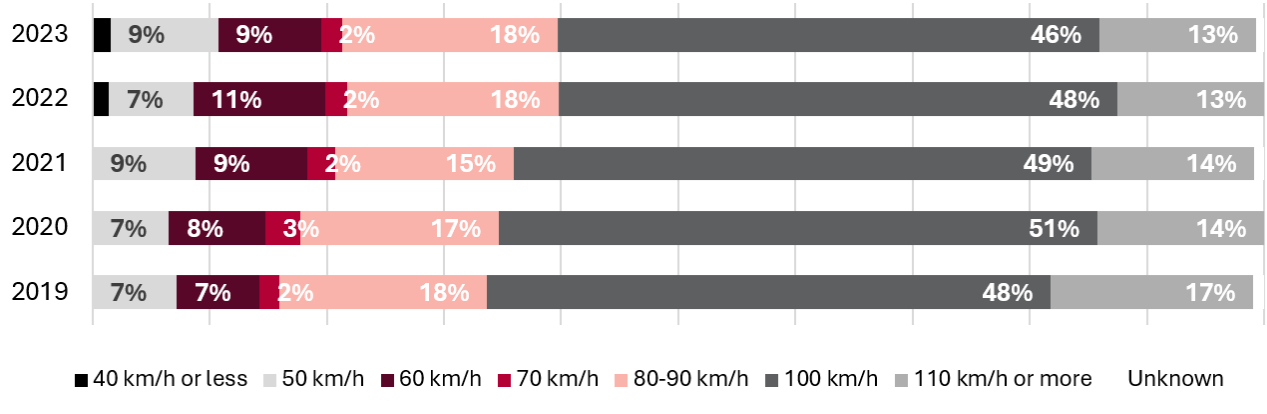
Around 3/4 of road deaths in Australia's regions occur on arterial and collector roads

Percentage of annual Australian road deaths by year and road type – regional



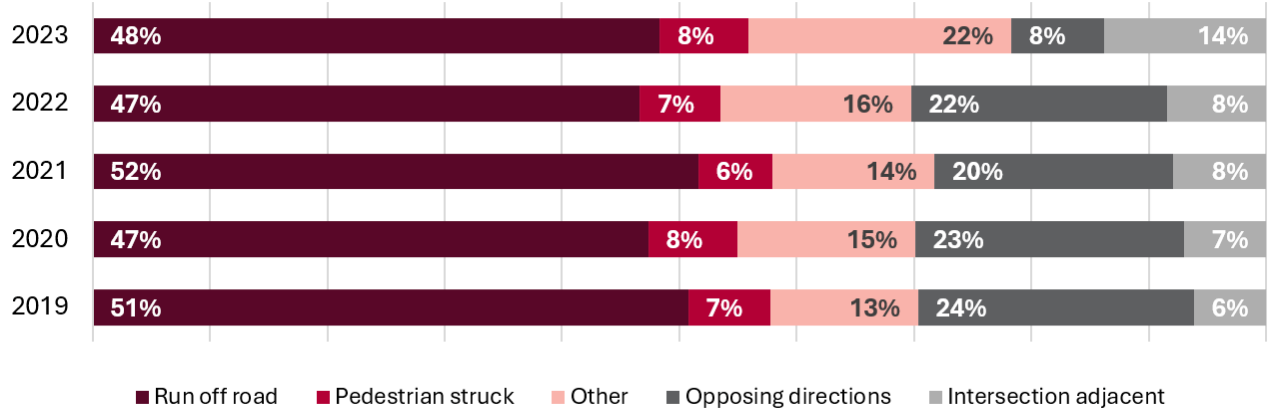
Roughly half of all road deaths in Australia's regions occur in 100 km/h zones

Percentage of annual Australian road deaths by year and posted speed limit - regional



A half of all road deaths in Australia's regions are run-off-road crashes

Percentage of annual Australian road deaths by year and crash type - regional



Source: National Road Safety Data Hub *2022 latest available data

Showcasing safe place

This chapter presents key facts and case studies to promote five safety initiatives that can, and in many cases should, be implemented on streets and roads with a dominant place function. The case studies are not necessarily unique examples of each initiative presented. The case studies were developed in partnership with Roads Australia's Staying Safe working group.

Reduced speed limits

Reduced speed limits can be implemented by sign-posting speed limited areas, or by reducing the default speed limit – which applies in areas where the speed limit is not sign-posted. Governments should apply a 'right speed for the right environment' logic when assigning speed limits to a given road.

Key facts

- It is estimated there is a 10 per cent chance of being killed if a person walking is struck by a car travelling at 30 km/h, but this rises to over 90 per cent at 50 km/h.[4]

- Wales and London respectively achieved a 23 and 25 per cent decrease in killed or seriously injury crashes by reducing the speed limit from 25-30m/h (40km/h) to 20m/h (32kmh) on most streets – as well as an 18-25 per cent decrease in the total number of crashes.[5, 6]

- 40 different European cities achieved on average a 23 per cent reduction in total crashes, a 37 per cent reduction in killed crashes and a 38 per cent reduction in seriously injured crashes by implementing 30km/h streets.[7]

- Australia has the potential to reduce the annual number of lives lost on our roads by 13 per cent, or $3.5 billion, by introducing 30km/h streets in urban residential areas.[8]

Image source: London World

Case study

SPEED LIMIT REDUCTION IN CAIRNS CBD, QUEENSLAND

Summary

- The speed limit in Cairns CBD was reduced from 50km/h to 40km/h by the Queensland Government in 2019 to address the significant number of killed or seriously injured crashes involving people on foot or bike.

Outcomes

- A 21.6 per cent decrease in killed or seriously injured crashes.
- A 36 per cent decrease in injuries to people on foot or bike.
- In the first six months of operation total crashes in the CBD dropped to a record low.
- An estimated $2.15 million in avoided community costs due to the reduction in crashes.
- Public sentiment changed from resistance in 2013 to neutral post implementation in 2019.

Background

- A state-wide analysis of crashes involving people on foot or bike in 40-60km/h speed limited zones identified Cairns CBD as a high-risk area – with some of the highest rates of road injuries in Queensland.
- Queensland Department of Transport and Main Roads (QTMR) developed a site-pack for Cairns CBD identifying local crash data, survivability research and myth-busting content to support the case for change. They then secured in principle support from local council engineers.
- A local working group was established with business and community representatives. Written endorsements were secured from all working group members and stakeholders including RACQ, local police and the Chamber of Commerce.

For more information

- Queensland Government. 2019. Reduced Speed Limit for Cairns
- Cairns Post. 2021. Council to expand 40km/h speed limit zone in Cairns CBD

Image source: Cairns Post

Image source: Transport for NSW

Congestion charging

Congestion charging is a form of road-user charging for traffic demand management within a specific area, typically in city centres. The aim is to reduce traffic congestion, encourage people to use public transport or other alternatives, and cut pollution. Evidence shows that congestion charging also increases safety through reduced exposure to traffic that results in a reduction in total crashes and killed or seriously injured crashes.

Key facts

- London achieved a 14 per cent reduction in killed or seriously injured crashes within their Congestion Charge zone implemented in 2003.[9]
- New York City achieved a 51 per cent reduction in total crashes, year on year, within the first 12 days of its Congestion Relief zone.[10] Longer-term analysis shows a 16 per cent reduction in total crashes and a 22 per cent reduction in crash-related injuries.[11]

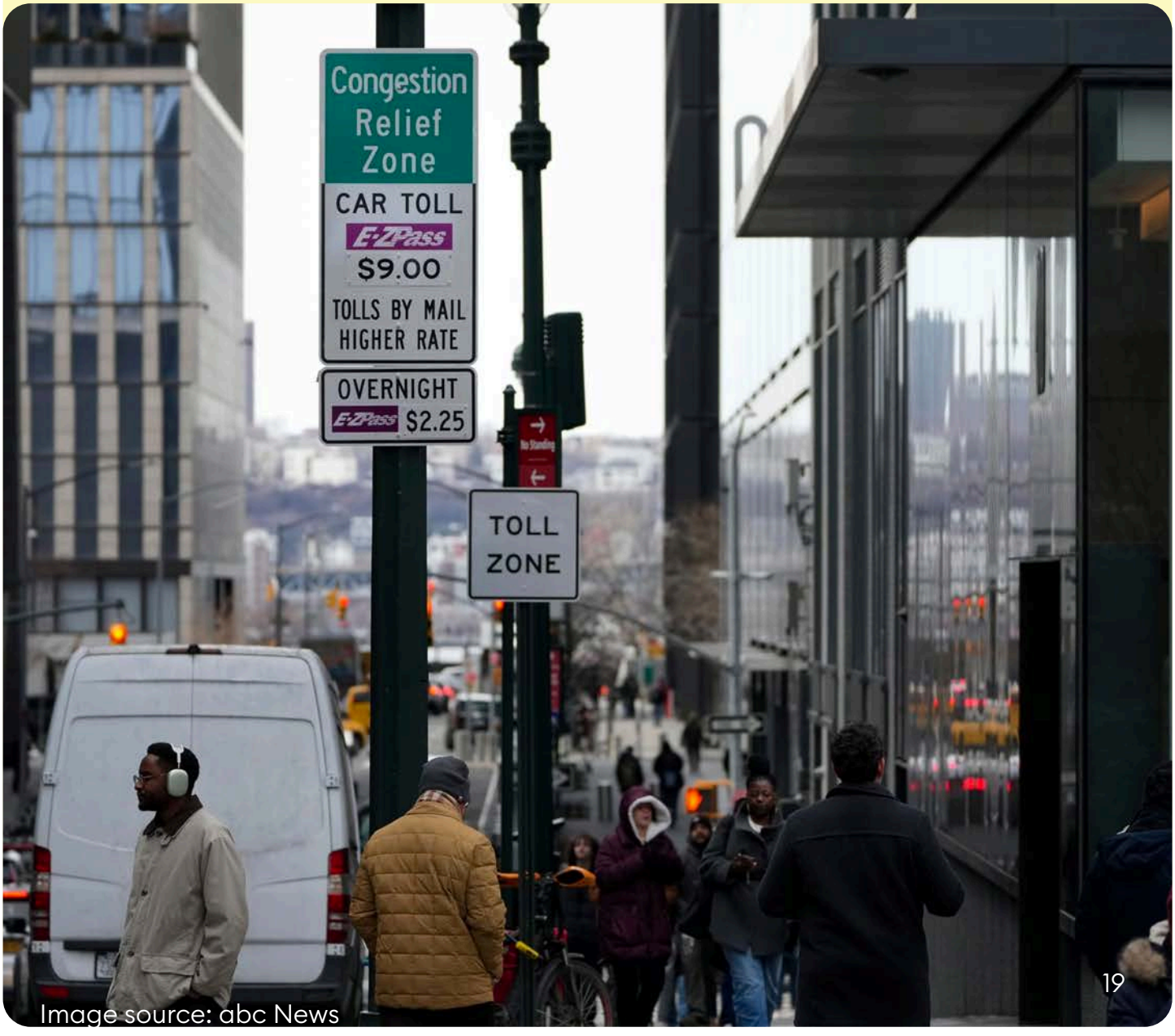


Image source: abc News

Case study

ROAD SAFETY IMPACTS OF CONGESTION-CHARGING, LONDON

Summary

- London introduced one of the world's first major urban congestion charging schemes, applying a fee for vehicles entering a designated central zone during peak hours, in 2003.
- While primarily designed to alleviate severe traffic congestion and improve air quality, the initiative also aimed to create a safer environment for all road users.

Outcomes

- A 14 per cent decrease in killed or seriously injured crashes within the congestion charging zone. This decline was largely attributed to lower traffic volumes and reduced vehicle speeds in the area.
- The reduction in traffic created opportunities to improve infrastructure for non-motorised road users. London authorities expanded pedestrian zones, widened footpaths, and introduced protected cycling routes.
- While the most significant reductions in collisions occurred within the charging zone, some safety benefits were also observed in surrounding areas, as traffic volumes adjusted and more commuters opted for public transport.
- The program led to a 13 per cent decrease in traffic volumes in the targeted area.

Background

- Prior to the implementation of the Congestion Charge zone, central London suffered from chronic traffic congestion, with high volumes of private vehicle trips contributing to elevated rates of crashes, particularly involving vulnerable road users like pedestrians and cyclists.
- The congestion charging scheme was accompanied by a series of complementary measures, including expanded bus services, investments in pedestrian infrastructure, and the introduction of protected cycle lanes.
- London's experience with congestion charging informed the city's wider road safety strategy and supported subsequent policies under its Vision Zero initiative.

For more information

- Ding, H et al. 2021. Affected area and residual period of London Congestion Charging scheme on road safety, Transport Policy, Vol 100
- Transport for London. 2023. Congestion Charge marks 20 years of keeping London moving sustainably
- Singichetti, B et al. 2021. Congestion Pricing Policies and Safety Implications: a Scoping Review, Journal of Urban Health

Image source: Manchester Evening News

Gateway treatments

Gateway treatments are used to mark the transition point from a higher speed to lower speed environments, such as when entering a town centre or local residential streets. Gateway treatments can include the use of raised pavements, speed signs, lighting, coloured or textured pavements and lane narrowing to slow vehicle speeds.

Key facts

- Gateway treatments can achieve a 25 per cent reduction in killed or seriously injured crashes.[12, 13]
- Gateway treatments can achieve a 35 per cent reduction in killed or seriously injured crashes when they include road narrowing.[14]
- Gateway treatments can achieve up to a 15 km/h reduction in mean speed.

Image source: Street Strong

Case study

CASE STUDY: RURAL-URBAN GATEWAY TREATMENTS, NEW ZEALAND

Summary

- A study of 102 rural-urban gateway treatments in New Zealand was undertaken to assess changes in crash frequency and severity attributable to the implementation of gateways.

Outcomes

- Evaluation of before and after crashes at treatment and control sites showed a 26 per cent reduction in total crashes as a result of gateway treatment implementation across New Zealand.
- There was a 23 per cent reduction in crashes causing death or serious injury.
- Where gateway treatments included lane narrowing, there was 35 per cent reduction in total crashes.

Background

- The risk of crashes and the severity of impacts can be moderated by threshold platforms or gateways that help to slow turning vehicles into or out of the local side-street.
- Pedestrians crossing local side-streets are exposed to the systemic risk of being struck by left- or right-turning traffic off the higher speed, higher volume road.
- A corresponding form of systemic risk for cyclists involves motorists turning right into or leaving local side-streets without giving way to approaching cyclists on the main street.
- Gateway treatments can ensure that pedestrian movement is given greater prominence and ease of use for pedestrians walking along the main street. This is achieved by virtue of the continuity of footpath level afforded by the basic design.
- At locations of high pedestrian and/or vehicle volumes, a wombat crossing (with static signing only) can be added to prioritise pedestrian crossing movements (see next example).

References

- Makwasha, T & Turner B. 2013. Evaluating the use of rural-urban gateway treatments in New Zealand, Journal of the Australian College of Road Safety, Vol 24, Issue 4

Image source:IRAP Road Safety Toolkit

Image source: Brisbane City Council

Wombat crossings

Wombat crossings are effectively a standard pedestrian (zebra) crossing on a raised platform, which is normally similar in height to the existing footpath and kerb. The raised crossing serves the purpose of slowing vehicles as does a speed hump or platform. Wombat crossings also increase the visibility of people crossing the road due to the increased height.

Key facts

- Wombat crossings have achieved a 67 per cent reduction in killed or seriously injured crashes, and a 61 per cent reduction in total crashes, at intersections where they were implemented in Australia.[15]
- Wombat crossings are designed to slow vehicle speeds, so any impacts are within limits of human tolerance.[16]
- Wombat crossings reduce travel speed by 6.5km/h in 50km/h speed limited zones.[17]

Image source: Safe Systems Solutions

Case study

WILLOUGHBY CITY COUNCIL SCHOOL CHILDREN SAFETY WOMBAT CROSSING PROGRAM, NEW SOUTH WALES

Summary

- Willoughby City Council's program installed 12 raised 'wombat' pedestrian crossings with a 25km/h speed limit, including upgrades to 10 existing crossings and two new crossings, over an 18-month period.

Outcomes

- New or upgraded crossings were installed adjacent to schools, or on routes used by children to walk or ride to school – as part of a broader program to get kids active while ensuring safety.
- The Council received a Highly Commended Award for Excellence in Road Safety Engineering at the Institute of Public Works Engineering Australasia NSW Conference in 2023.

Background

- Willoughby City Council's School Children Safety Wombat Crossing Program was funded through the Federal Stimulus School Zone Infrastructure Program, with funding of $1.95 million received from both NSW state and federal governments.
- This program of work was delivered over 18 months with extensive community and stakeholder engagement throughout to ensure effective project delivery and positive safety outcomes.

For more information

- Willoughby City Council. 2025. Walking and riding to school: Resilient Willoughby Primary Schools Active Travel Program
- Austroads. 2023. Guide to Road Design Part 4: Intersections and Crossings - General, Section 8.2.5
- Austroads. 2020. Guide to Traffic Management Part 8 Local Street Management, Section 8.2.7

Image source: Willoughby City Council

Image source: Manly Observer

AI Smart Pedestrian Signals

AI Smart Pedestrian Signals use AI algorithms, thermal imaging and 5G to detect and accommodate people crossing the road at signalised crossings. The Smart Signals increase the green pedestrian light when needed, making crossing safer and more inclusive, especially for seniors, children, and individuals with disability.

Key facts

- In Dubai, since implementing Smart Pedestrian Signals there have been zero reported crashes involving pedestrians at the 27 treated signalised crossings.

Image source: Time Out Dubai

Case study

AI SMART PEDESTRIAN SIGNAL, DUBAI

Summary

- Dubai has implemented an AI Smart Pedestrian Signal system to 27 high-risk signalised crossings to enhance pedestrian safety.
- The system utilises AI algorithms and thermal cameras to detect pedestrians, cyclists, and other vulnerable road users, adjusting signal timings in real-time to accommodate varying pedestrian speeds.

Outcomes

- By detecting and accommodating the needs of seniors, children, and individuals with disabilities, the crossings promote safety, inclusivity and accessibility.
- The system collects valuable data on pedestrian and traffic patterns, aiding future urban planning and infrastructure development.
- Since implementation, there have been zero reported crashes involving pedestrians at the treated crossings.

Background

- Deployment of AI-Powered Crossings was initiated by Dubai Silicon Oasis in collaboration with AI analytics firm Derq.
- The Roads and Transport Authority of Dubai expanded the Smart Pedestrian Signal system to 27 high-risk locations across the city.
- The implementation aligns with the Dubai 2040 Urban Master Plan, aiming to create a smart, sustainable, and pedestrian-friendly city.
- Locations were selected based on criteria such as pedestrian accident rates, proximity to schools, and absence of pedestrian bridges, ensuring the technology addresses areas with the greatest need.
- The crossings are equipped with 5G connectivity, enabling real-time data collection, remote operation, and potential communication with connected vehicles for enhanced safety.

For more information

- Arabian Business. 2025. Dubai RTA completes Phase Two of smart pedestrian signal installation at 27 sites
- Derq. 2023. DIEZ and Derq Launch AI-Powered Smart Pedestrian Crossing System in DSO
- Mair, F. 2025. How Dubai is using AI to make crossing the road easier and safer, Timeout
- Gulf News. 2023. Dubai gets 10 additional safer, smarter pedestrian signals

Image source: Willoughby City Council

Image source: Time Out Dubai

Showcasing safe movement and place

This chapter presents key facts and case studies to promote five safety initiatives that can, and in many cases should, be implemented on streets and roads where place functionality intersects or overlaps with movement functionality. The case studies are not necessarily unique examples of each initiative presented. The case studies were developed in partnership with Roads Australia's Staying Safe working group.

Short pedestrian wait-time at signalised crossings

Short pedestrian wait-time at signalised crossings refers to the amount of time people walking have to wait to cross the road at an intersection with traffic lights. Shorter wait times can be achieved by reducing traffic signal phases, increasing the length of time the green pedestrian signal is displayed during a traffic phase, or by implementing technology that prioritises green pedestrian signals, such as in the case study below.

Key facts

- Various studies have shown that shorter pedestrian wait-times at signalised crossings reduce the likelihood of people walking across the road against a signal, which ultimately improves safety.[18, 19, 20, 21]
- Studies show that a wait-time of more than 30 seconds significantly increases the likelihood of crossing violations. [22, 23]

Image source: City of Perth

Case study

GREEN PERSON AUTHORITY SIGNALS, LONDON

Summary

- Transport for London trialed Green Person Authority signals at 18 intersections in 2021.
- The signals give priority to people walking, showing them a continuous green signal until a vehicle approaching is detected.
- The success of the trial led to its permanent application and expansion to an additional 18 intersections.

Outcomes

- Data showed Green Person Authority signals made walking safer and easier.
- By reducing the wait time for a green signal, the total time saved by all pedestrians at the average crossing in the trial was 1.3 hours a day.
- Compliance with traffic signals by people walking increased by 13 per cent, reducing the risk of collisions.
- The impact to general traffic was around 2 seconds per vehicle trip, which had no significant impact on traffic.

Background

- A number of factors influenced signal locations, including high pedestrian activity and proximity to shopping centres, public transport stations and schools.
- Increasing safety for people walking is part of the Mayor of London's Vision Zero commitment.
- The initiative also aligns with Transport for London's Healthy Streets Approach, which is directed through the Greater London Authority's transport strategy.
- The range of initiatives Transport for London have introduced to make walking easier and safer has increased the number of walking trips by 31 per cent.

For more information

- Transport for London. 2022. New TfL data shows success of innovative 'pedestrian priority' traffic signals
- London Road Safety Council. 2021. Pedestrian priority introduced at crossings in London

Image source: My London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Press the button and
in crossing area.

Mode-separated routes

Mode-separated routes are roads or streets where different types of modes are physically separated from one another, usually by design elements like kerbs, medians, bollards, or even dedicated paths and lanes. Mode-separated routes can also be achieved by regulating a street or road for certain modes, such as pedestrianised streets, bus-only streets, and bike and bus only streets. The goal is to reduce conflicts, improve safety, and boost the efficiency of each mode.

Key facts

- Bicycle separated routes in New York City, London, Toronto and Vancouver led to a 40-80 per cent reduction in the risk of killed or seriously injured crashes. [24, 25, 26]
- Bus Rapid Transit routes in Bogota account for only 2 per cent of the city's total collisions. [27]
- Mode-shift, from passenger vehicles to active and public transport is highly likely to reduce road deaths and trauma, as fewer passenger vehicles on the road will decrease the risk of collisions – and active and public transport modes are safer than passenger vehicles. [28]

Image source: Royal Borough of Greenwich

Case study

CASE STUDY: CYCLE SUPERHIGHWAYS, LONDON

Summary

- Originally implemented in 2010 as painted lanes, London's eight Cycle Superhighways evolved to become mode-separated routes for bikes and buses only – by repurposing existing roads and streets – as part of the city's Vision Zero strategy, adopted in 2018.

Outcomes

- Killed or Seriously Injured collisions for cyclists fell by ~40 pe cent along upgraded sections of CS3.
- The number of people riding a bike increased dramatically, with CS3 showing an 83 per cent increase and CS7 a 46 per cent increase after implementation.
- Safety per bicycle trip improved, despite the surge in numbers – which increased the public perception of safety, encouraging use by a wide range of riders, including older adults and families.

Background

- Initiated by Mayor Boris Johnson in 2010, the original 12-route plan focused on radial commuter routes.
- Early routes like CS2 and CS7 were criticised for poor safety, prompting a shift to higher design standards under Mayor Sadiq Khan.
- From 2015, TfL began to redesign the network using Vision Zero principles that focused on collision data, high-risk junctions and moving away from infrastructure that served only confident riders. This included implementing mode-separated routes, lower speeds, and signalised bicycle crossings.

For more information

- Transport for London. 2011. Barclays Cycle Superhighways Evaluation of Pilot Routes 3 and 7
- Transport for London. 2018. Cycle Safety Action Plan
- Transport for London. 2018. Vision Zero Action Plan

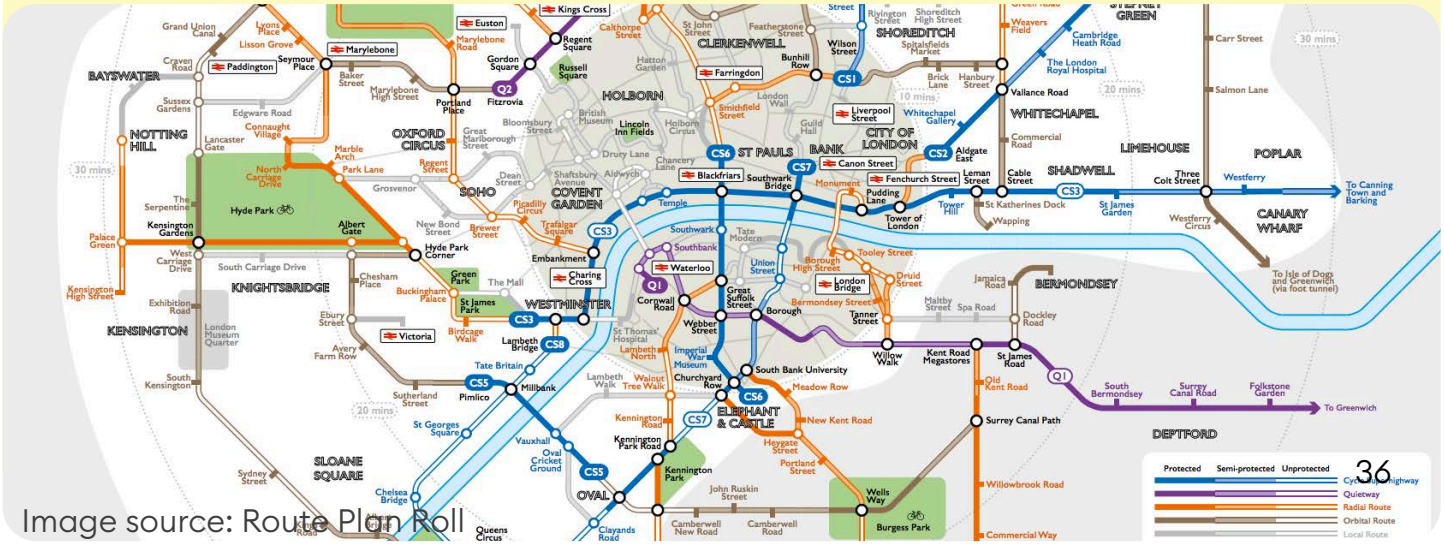

Image source: Route Plan Roll

Image source: Lonely Planet

Truck restrictions

Truck restrictions refer to specific routes or times of day where trucks – sometimes of a specified weight limit – are not allowed, to increase safety and improve the street environment.

Key facts

- Truck curfews and route-bans in Melbourne are monitored and enforced by the National Heavy Vehicle Regulator.
- An on-the-spot fine for disobeying a 'no trucks' signs (Road Rule 104) applies.

Image source: Victoria's Big Build

Case study

LOCAL ROAD TRUCK BANS, MELBOURNE

Summary

- The Victorian Government implemented school-hour truck bans on key roads in Melbourne's Inner West, including Somerville Road, Francis Street, and Moore Street in September 2022.
- These bans aimed to enhance safety around schools during peak times. The restrictions prohibited trucks from operating between 8:00–9:30 am and 2:30–4:00 pm on school days.

Potential outcomes

- 24/7 no-truck zones on six major roads, supported by smart camera enforcement.
- The introduction of 24/7 truck bans is expected to remove over 9,000 trucks daily from local streets in the inner west.
- The bans aim to improve safety, reduce noise, and significantly enhance air quality for local communities.

Background

- Residents in Melbourne's inner west have long expressed concerns about heavy truck traffic on residential streets, particularly regarding safety and environmental impacts.
- Prior to the 24/7 bans, truck curfews were in place on several roads, restricting truck movements during nighttime hours and school times.
- The opening of the West Gate Tunnel will provide an alternative route for trucks, facilitating the implementation of permanent truck bans on local roads.

For more information

- Victorian Government. 2023. Your guide to truck curfews in the inner west
- Victorian Infrastructure Delivery Authority. 2018. New tunnel to deliver 24/7 truck bans
- Big Rigs. 2022. Locals continue campaign to get trucks off their streets
- Premier of Victoria. 2025. Major Milestone For No-Truck Zones In Melbourne's West

Image source: Fully Loaded

Image source: Truck Sales

Safer vehicle technology and design

Vehicle safety regulation refers to the design and technology safety requirements of new vehicles. Each country has its own vehicle safety standards, and some have more regulations than others. In Australia, the federal government should accelerate the adoption of proven technology in the Australian Design Rules.

Key facts

- Intelligent Speed Assistance systems help prevent speeding-related accidents by monitoring and regulating a vehicle's speed.[29]
- Autonomous Emergency Braking systems detect potential collisions and automatically apply brakes to avoid or mitigate impacts.[30]
- Lane Keeping Assist systems help prevent unintentional lane departures, reducing the risk of collisions. [31]
- Driver Drowsiness Attention Warning systems assess a driver's level of alertness and issue warnings when necessary, helping to prevent accidents caused by drowsy driving. [32]
- Enlarged Head Impact Protection Zones designs enhance the protection of road users, such as pedestrians and cyclists, by mitigating potential injuries in the event of a collision.[33]
- Greater bonnet sloping reduces the severity of injuries to pedestrians in collisions.[34]

Image source: Euro NCAP

Case study

CASE STUDY: GENERAL SAFETY REGULATION, EUROPEAN UNION

Summary

- ·The General Safety Regulation (EU) 2019/2144, also called GSR II, was adopted on 27 November 2019 and applies from 6 July 2022 for new vehicle types, and from 7 July 2024 for all new vehicles (EU Regulation 2019/2144, Article 24).
- It mandates a suite of advanced vehicle safety features for passenger cars, vans, trucks and buses, including:
  - Intelligent Speed Assistance (ISA)
  - Autonomous Emergency Braking (AEB)
  - Lane Keeping Assist
  - Driver Drowsiness and Attention Warning
  - Reversing detection systems
  - Event Data Recorders (EDRs)
  - Enlarged head impact protection zones for pedestrians and cyclists
  - Greater bonnet sloping to reduce leg and torso impact
- The regulation supports the EU Vision Zero target to eliminate road deaths by 2050.

Potential outcomes

- The European Commission projects that the GSR II will prevent at least 140,000 serious injuries across the EU by 2038 (European Commission Press Release, 17 May 2018).

Background

- Early assessments show increased preparedness of vehicle manufacturers, with many already including these features in premium models.
- GSR II builds on the original General Safety Regulation (EC) No 661/2009, updating it to reflect new technologies and increased urban vulnerability.
- Developed as part of the EU Road Safety Policy Framework 2021–2030, targeting a 50 per cent reduction in fatalities and serious injuries by 2030 (EU Road Safety Policy Framework, SWD(2019) 283).
- Aligns with UNECE vehicle regulations, especially those under WP.29, contributing to global harmonisation of safety standards (UNECE WP.29 Info).

For more information

- European Union. 2025. Protection of pedestrians and vulnerable road users
- European Commission. 2025. Mobility & Transport - Road Safety
- European Union. 2024. Regulation (EU) 2019/2144
- European Commission. 2018. Europe on the Move: Commission completes its agenda for safe, clean and connected mobility

Image source: Forbes

Narrow lanes and small corner radii

Narrow lanes and small corner radii refer to the width of traffic lanes and the angle of corners. While narrow lanes and small corner radii are now internationally recognised as safer (on urban roads), many of our urban streets and roads were built prior to this understanding and were designed with the assumption that wider is safer. This means traffic calming measures to narrow lanes or corner radii often need to be retrofitted. Sometimes safe lane widths and corner radii need to be balanced with the need for bus or emergency vehicle access.[35]

Key facts

- Narrow traffic lanes have the effect of slowing motorised vehicles down while decreasing crossing distances for people on foot.
- Narrowing a traffic lane from 3.7-2.7m can reduce the frequency of crashes by 33 per cent.[36]
- Small corner radii have the effect of slowing motorised vehicles down while turning, making it easier for people to cross the road safely.
- Reducing corner radii from 12m-3m can decrease the frequency of crashes by 39 per cent.[37]

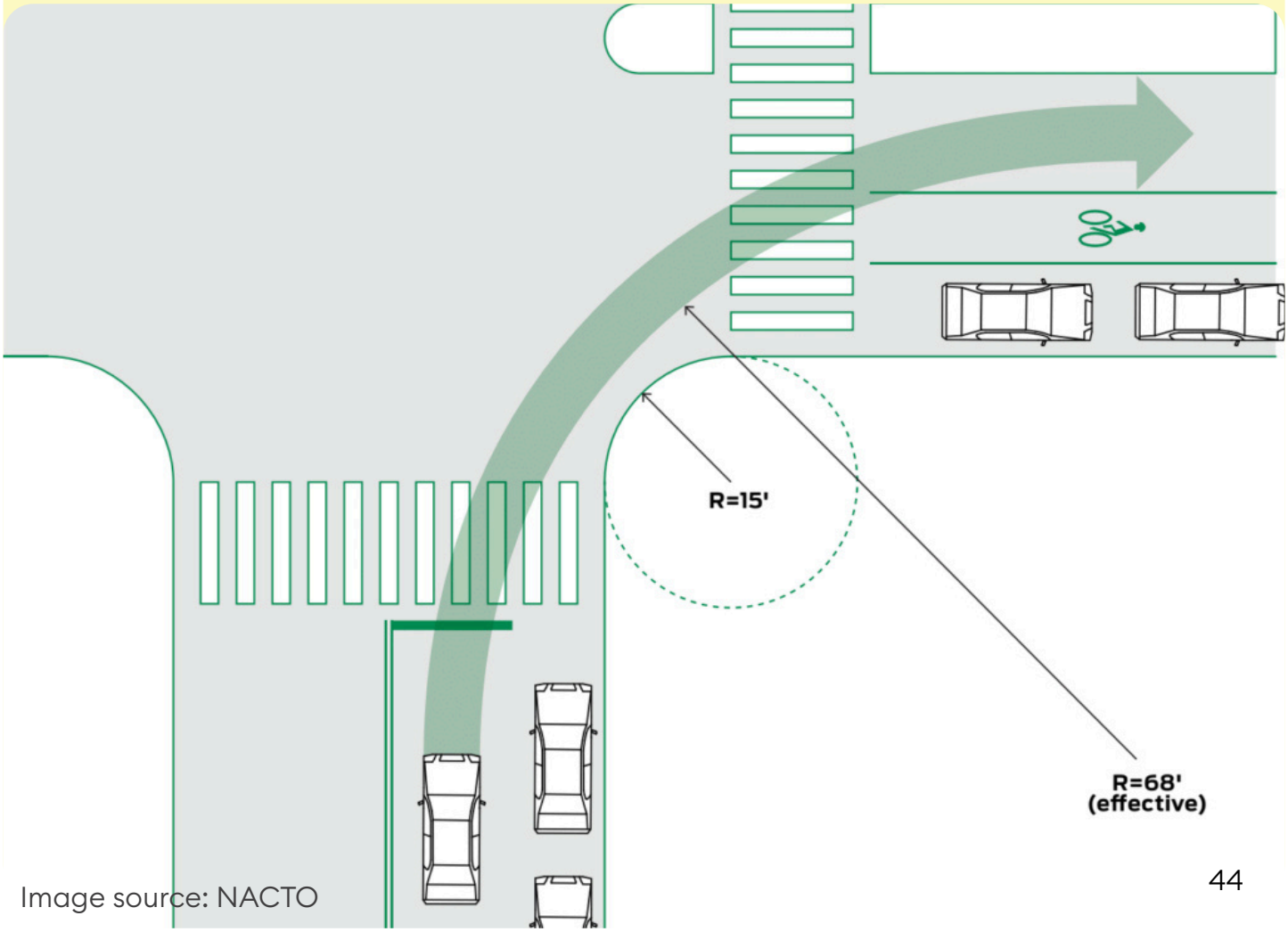

Image source: NACTO

Case study

NATIONAL INVESTIGATIONS ON LANE WIDTH AND CORNER RADII, USA

Summary

- Two comprehensive U.S. studies on the safety impact of lane width and corner radii respectively, found that narrower lanes and smaller corner radii increase the safety of vulnerable road users.

Outcomes

- Narrowing travel lanes from 3.7m to 2.7 is linked to a 33 per cent reduction in the frequency of non-intersection crashes.
- The safety benefits of lane narrowing are more pronounced in areas with lower speed limits and less traffic.
- A decrease in corner radius from 12m to 3m is linked to a 39 per cent decrease in the frequency of crashes.
- Implementing tighter corner radii reduces turning speeds, thereby lowering pedestrian exposure time and enhancing safety.

Background

- Unsatisfied with the lack of comprehensive empirical evidence on the safety of narrow traffic lanes in urban environments, the John Hopkins Bloomberg School of Public Health studied more than 1,000 streets and roads across the United States of America to determine the safety impact of narrow lanes, particularly for people walking and cycling.
- With rising pedestrian deaths in urban areas, the U.S Department of Transportation undertook a study to determine the safety effectiveness of low- to medium-cost pedestrian engineering countermeasures, such as corner radii, in reducing non-motorist fatalities and injuries at controlled and uncontrolled intersections.

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- John Hopkins Bloomberg School of Public Health. 2023. A National Investigation on the Impacts of Lane Width on Traffic Safety: Narrowing Travel Lanes as an Opportunity to Promote Biking and Pedestrian Facilities Within the Existing Roadway Infrastructure

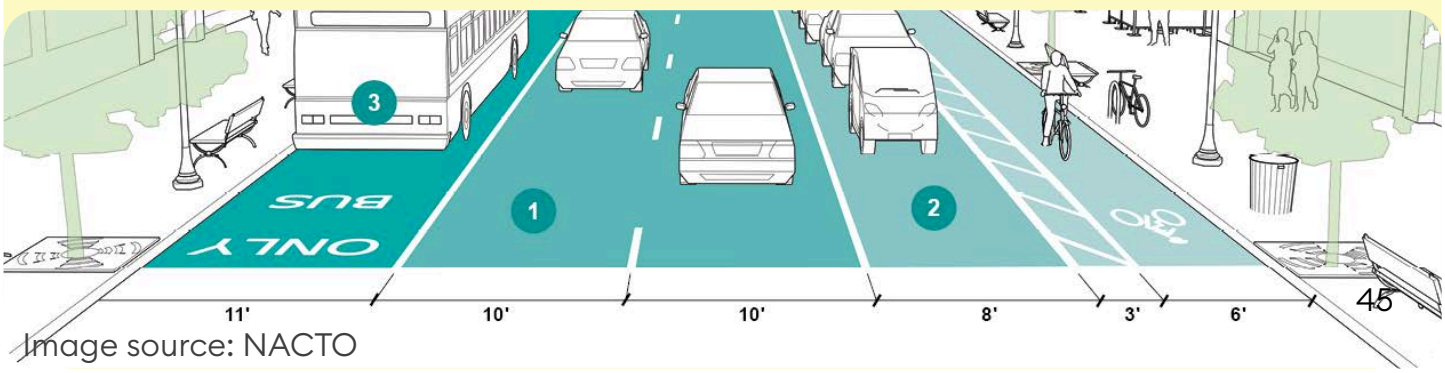

Image source: NACTO

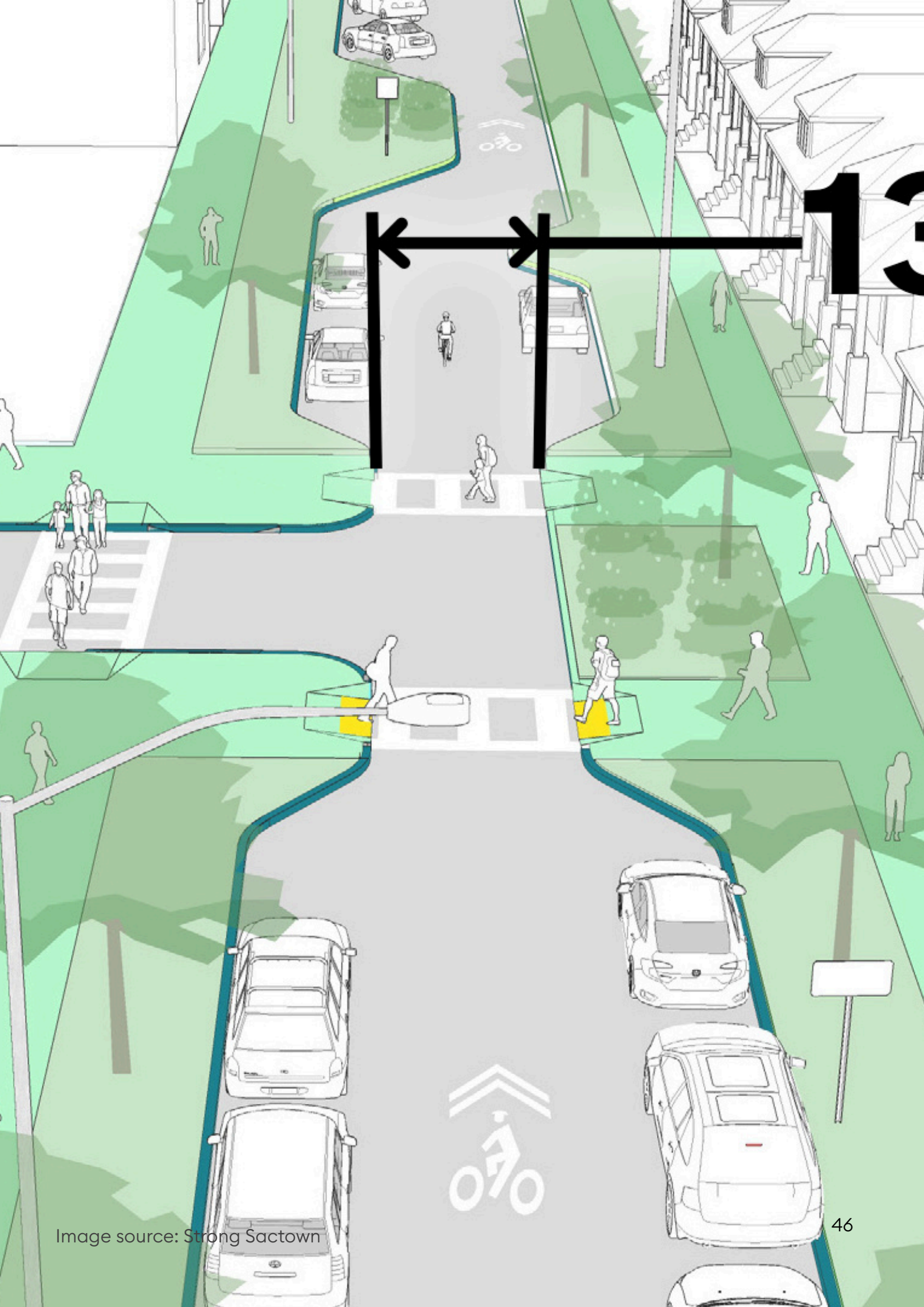

Image source: Strong Sactown

Showcasing safe movement

This chapter presents key facts and case studies to promote five safety initiatives that can, and in many cases should, be implemented on streets and roads with a dominant movement function. The case studies are not necessarily unique examples of each initiative presented. The case studies were developed in partnership with Roads Australia's Staying Safe working group.

Mode shift

The term ‘mode shift’ is used to describe a change in the percentage of people travelling by a certain transport mode. It is typically referred to as meaning a shift away from the predominate use of private vehicles, towards other modes such as public transport, walking and biking. Mode shift has many commonly cited benefits, such as reduced congestion and pollution, better public health and better public places. However, it is less commonly cited for its road safety benefits.

Key facts

- A study of more than 1,600 cities around the world found that cities with highest rates of public transport use had the lowest rates of road traffic injury. [38]
- Decreasing total per-capita vehicle-kilometres-travelled correlates with a reduction in total per-capita crash casualties – for all road users. [39]
- Evidence from Australia, New Zealand, Canada, the USA and Europe shows that when rates of people walking and cycling increase, the rate of crashes causing injury or death to people walking or cycling do not increase proportionately. While the number of crashes increase, the rate of crashes by mode tends to decrease. This statistical relationship has been termed ‘safety in numbers’. [40]
- While public transport is the safest mode, research finds the real and perceived safety risks for walking and cycling is one of the greatest barriers preventing mode shift. This highlights the need to implement safer speeds and safer infrastructure to realise the full benefit of mode shift. [41]

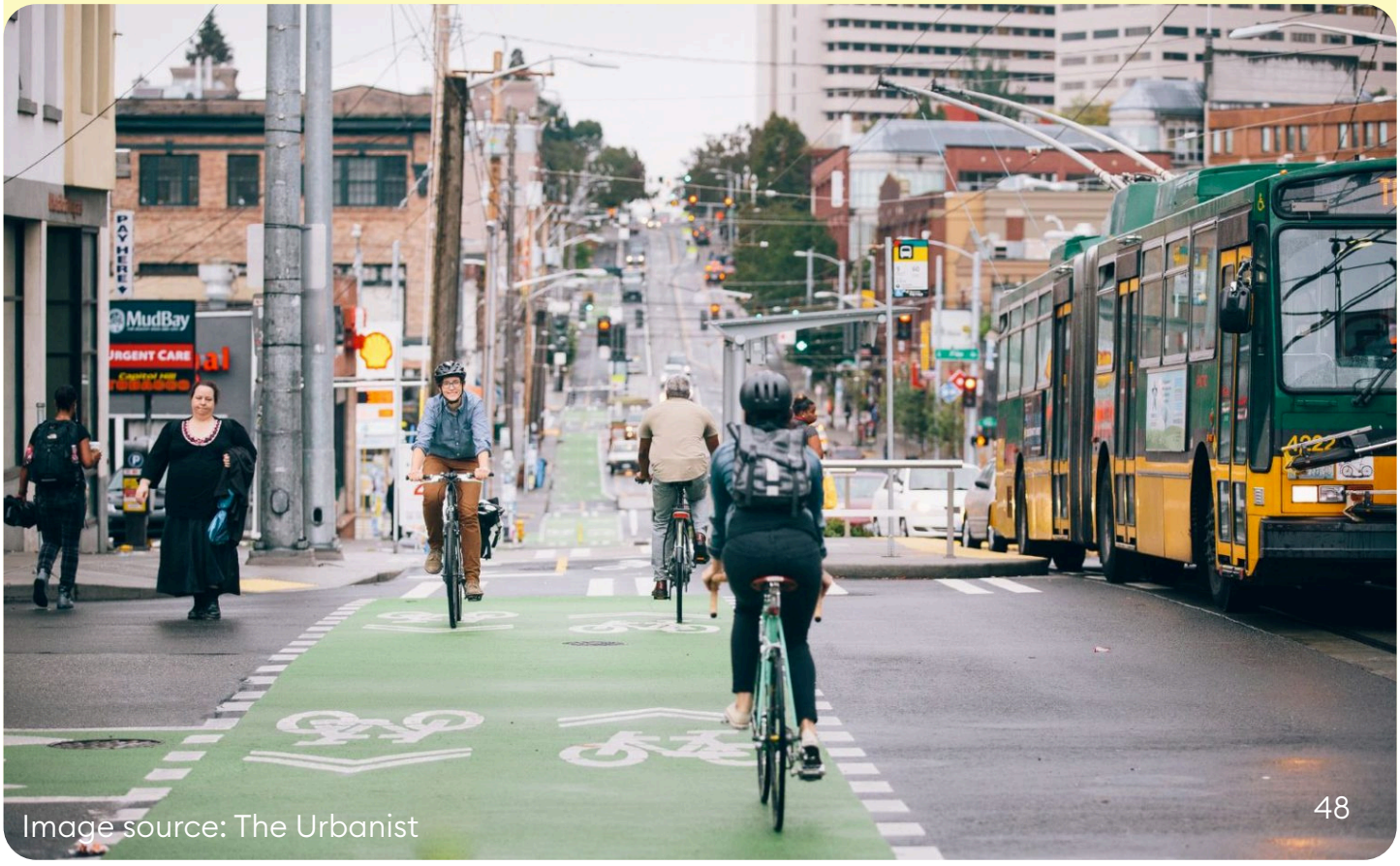

Image source: The Urbanist

Case study

MODELLING THE MACROSCOPIC SAFETY IMPACTS OF PUBLIC TRANSPORT, MELBOURNE

Summary

- A study modelling the effects of commuting by public transport on road safety in Melbourne found that public transport should be considered and used as a road safety solution.
- A random effect negative binomial (RENB) and a conditional autoregressive (CAR) model are used to explore links between total and severe crash data to commuting mode shares.

Outcomes

- Results show the great potential of public transport as a road safety solution.
- It is evident that mode shift from private vehicle to public transport (i.e. train, tram, and bus), for commuting would reduce not only total crashes, but also severe crashes.
- The study found that a percentage point increase in the proportion of people commuting by train would reduce the number of total crashes by 2.2 and severe crashes by 0.86, holding all other variables constant.
- Commuting by bus was found to have a larger effect, with a percentage point increase in the proportion commuting by bus reducing total crashes by 5.7 and severe crashes by 1.8

Background

- In macroscopic safety studies, road safety measures (such as crashes and crash casualties) are aggregated at a certain spatial unit (such as statistical areas, counties, and traffic analysis zones) and analysed in relation to zonal or area-wide characteristics. This enables the consideration of road safety from a comprehensive network-wide perspective.
- This study utilised crash data in Greater Melbourne, Victoria, Australia between 2014 and 2018. The number of total crashes and the number of severe crashes (fatal or serious injury) were aggregated at statistical areas level 2 (SA2s).
- The study highlights that the potential road safety benefit of public transport is largely ignored in Australian transport policies, road safety action plans, and the Safe System vision statements.

For more information

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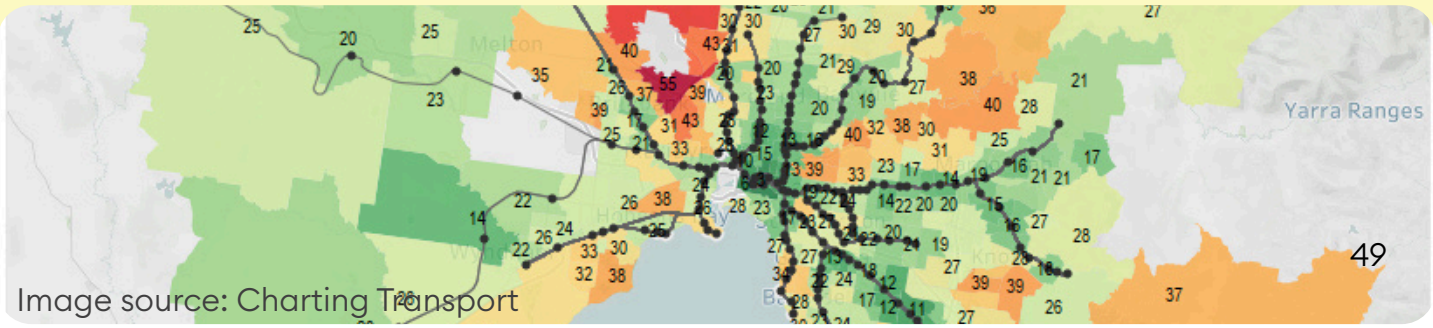

Image source: Charting Transport

Image source: Grattan Institute

Separated bike lanes

Separated bike lanes are dedicated cycling paths physically divided from motor traffic by barriers, kerbs, or buffers. They reduce conflicts between cyclists and vehicles, minimise crash risks, and provide predictable, safe spaces for riders. This separation improves comfort, visibility, and confidence, encouraging more people to cycle safely and consistently.

Key facts

- 200 kms of separated cycle lanes were built in Seville, Spain, between 2006 and 2011. During this time cycling increased by around four per cent while the cycling injury rate dropped from 1.82 per 100,000 trips to 0.55 – and deaths and serious injuries almost halved. [42]
- 65 miles of separated cycle lanes were built in New York City, USA, between 2014 and 2022, as part of their Vision Zero Strategy. Along with the cycling infrastructure, the default speed limit was lowered from 30 to 25 mph, and more than 400 safety reengineering projects were undertaken. During this time overall traffic deaths decreased by 26 per cent, and pedestrian and cyclist deaths and serious injuries reduced by 60 per cent. [43]
- Originally implemented in 2010 as painted lanes, London's eight Cycle Superhighways evolved to become mode-separated routes for bikes and buses only – by repurposing existing roads and streets – as part of the city's Vision Zero strategy, adopted in 2018. Killed or Seriously Injured collisions for cyclists fell by ~40 per cent along upgraded sections of CS3. The number of people riding a bike increased dramatically, with CS3 showing an 83 per cent increase and CS7 a 46 per cent increase after implementation. [44]

Image source: NYC DOT

Case study

CYCLING PLANNING BY SPEED AND SEPARATION, DENMARK

Summary

- Danish Road Standards set out guidance for cycling to be either separated from, or integrated with, general traffic depending on the speed limit.
  - If the speed limit is 60 km/h or more guidelines recommend separated cycleways
  - If the speed limit is 30 km/h or lower guidelines recommend integrating cycling with general traffic
  - If the speed limit is 40 or 50 km/h the guidelines vary, depending on accident pattern, traffic volume and the number of junctions

Outcomes

- The Danish Road Directorate found a 50 per cent reduction in bike related accidents in rural areas where bike lanes or tracks are implemented
- Denmark had 2.6 road deaths per 100,000 people in 2023, compared to Australia which had 4.9 in 2025
- Between 1990 and 2012 Denmark decreased road fatalities by more than 70 per cent

Background

- Planning and designing for bicycle traffic in both rural and urban areas has been an integrated part of the road planning and design process in Denmark since the 1980s
- Danish Road Standards apply to all types of roads and to all roads authorities
- There are few mandatory rules, the Standards are mostly Guidelines and Best Practice

For more information

- Gaardbo, A. 2016. Cycling and safety measures in Danish Road Standards, Vekdirektoratet (Danish Road Directorate)
- Andersen, T. 2025. Planning cycling infrastructure: segregation and integration, Cycling Embassy of Denmark
- Thoem, J. 2025. What makes Copenhagen the world's most bicycled friendly capital? Visit Copenhagen
- International Transport Forum. 2024. Road Safety Country Profile: Denmark 2023, Road Safety Data

Image source: Cycling Embassy of Denmark

Image source: Supercykelstier

Reduced speeds through intersections

Reduced speed limits through intersections is safe because it lowers the likelihood and severity of crashes. Slower speeds give drivers more time to react, improve visibility of other road users, and increase stopping distances. This particularly protects pedestrians and cyclists, who are most vulnerable in intersection-related collisions.

Key facts

- Research by the Monash University Accident Research Centre has found reducing speeds through intersections is the most effective way to reduce the risk of fatal or serious injury crashes at intersections [45]
- At speeds of 100km/h or more, three out of four crashes will result in death or serious injury[46]
- At speeds of 70km/h, in a side impact crash in a safe car, there is an 80 per cent risk of being killed [47]
- In South Australia, about half of all serious casualty crashes in metropolitan areas, and 21 per cent in rural areas, occur at intersections [48]

Image source: City of Onkaparinga

Case study

RURAL JUNCTION ACTIVE WARNING SYSTEM LITE (RJAWS LITE)

Summary

- Rural Junction Active Warning System Lite is for high-speed unsignalized rural intersections
- RJAWS detects approaching vehicles and flashes signalling oncoming drivers to slow down
- By only flashing when cars are approaching, the system is designed to reduce inattention and complacency that can occur with always-flashing alternatives

Outcomes

- RJAWs Lite has been proven to reduce the average speed through intersection by 7km/h
- The system further reduces the likelihood of fatal or serious injury crashes by 26 per cent

Background

- RJAWS Lite was developed and trialled by the University of Adelaide's Centre for Automotive Safety Research
- It is now a recognised safety treatment for regional roads by the South Australia Department of Infrastructure and Transport
- The system costs between $70,000-$100,000, which is far cheaper than building a roundabout or installing a signalised intersection
- The system can easily be relocated, as it is solar powered with no underground cables required

For more information

- The University of Adelaide. 2024. Speed-reducing innovations drive safety on regional roads
- Government of South Australia. 2025. Treatments for High Speed Rural Intersections & T-Intersections
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- City of Onkaparinga. 2025. Road Safety Treatment McLaren Vale

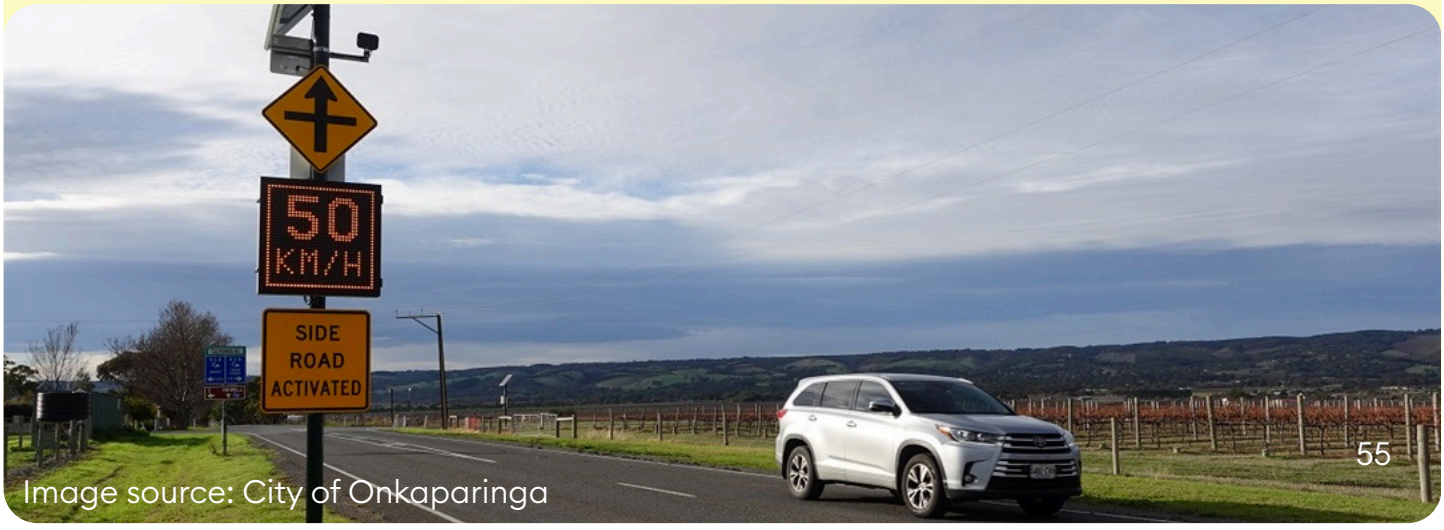

Image source: City of Onkaparinga

Image source: Bundaberg Regional Council

Channelised right turns

Channelised turns use traffic islands, painted lanes, or kerbs to separate turning vehicles from through traffic. They create clearer paths, reduce conflict points, and slow turning speeds. This improves visibility for drivers and lowers crash risk at intersections – particularly unsignalised intersections on rural roads.

Key facts

- International and Australian research has found channelised turns at unsignalised intersections on rural roads reduces crashes by 20-40 per cent [49, 50, 51]

Image source: IRAP Road Safety Toolkit

Case study

CHANNELISED RIGHT TURNS AT RURAL INTERSECTIONS, QUEENSLAND

Summary

- Queensland's Road Safety Policy 2018 set out 13 new safety standards for project managers, engineers and designers to implement
- One of these was to require channelised right turns at unsignalised rural intersections, instead of auxiliary turns – and to replace auxiliary and basic turn treatments with channelised treatments

Outcomes

- A 30 per cent reduction in rear end crashes involving a right turning vehicle at unsignalised intersections on rural roads

Background

- Between 2016-2020, there were 2,516 fatal and serious injury crashes in Queensland involving a right-turning vehicle at unsignalised intersections on rural roads
- Auxiliary turn treatments and basic turn treatments require right-turning vehicles to wait in a moving traffic lane - these types of turning lanes are no longer allowed
- Channelised turning treatments provide a waiting bay, that is not in a moving traffic lane, for turning vehicles

For more information

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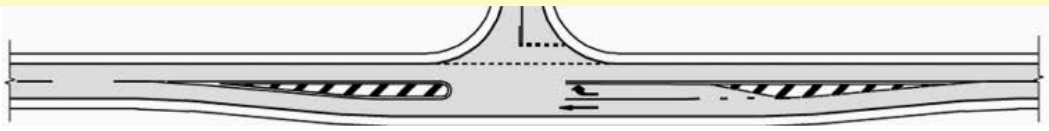

Figure 1: *Typical Channelised Right Turn (CHR) configuration – preferred*

Intersections with Auxiliary Right Turn (AUR) treatments (Figure 2) have a rear-end crash rate on the major leg that is many times higher than CHR treatments.

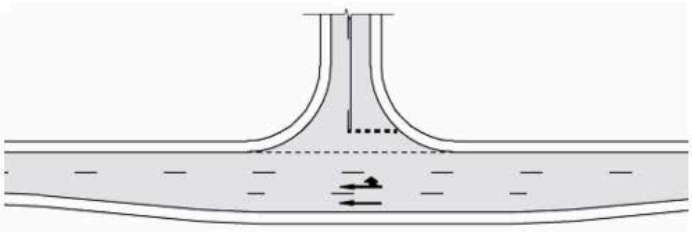

Figure 2: *Typical Auxiliary Right Turn (AUR) configuration*

Basic Right Turn (BAR) treatments (Figure 3) located on major leg intersections have a rear-end vehicle crash rate many times higher than CHR treatments.

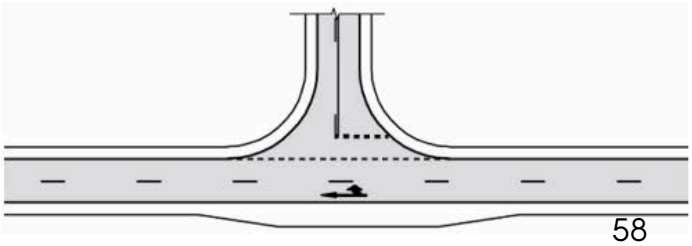

Figure 3: *Typical Basic Right Turn (BAR) configuration*

Image source: Western Australia Government

Overtaking lanes

Overtaking lanes are additional lanes on sections of road that allow faster vehicles to pass slower ones safely. They reduce risky overtaking on single-lane roads and minimise head-on collision and run-off-road crash risks.

Key facts

- An Austroads literature review found overtaking lanes reduce injury crashes by between 20 per cent to 40 per cent [52]
- IRAP also finds overtaking lanes, on high speed roads, will reduce casualties by 25 per cent to 40 per cent [53]
- In Sweden, fatalities on national roads decreased by 77% over a ten year period, with the introduction of 2+1 roads. [54]

Image source: Michelle Kroll

Case study

NEWELL HIGHWAY PROGRAM, NSW

Summary

- The Newell Highway Program Alliance delivered 38 overtaking lanes to improve safety along the Newell Highway
- The 38 overtaking lanes were delivered in four years, from 2019 to 2023

Outcomes

- More overtaking lanes reduces driver frustration and risky behaviour by providing more overtaking opportunities
- This has lowered the risk of head-on and run-off-road crashes

Background

- The $236.8 million program was jointly funded by the Australian Government and the NSW Government
- The Program Alliance was undertaken between Tocumwal and Narrabri along the Newell Highway
- Transport for NSW partnered with BMD and AECOM to form the Newell Highway Program Alliance

For more information

- Transport for NSW. 2024. Newell Highway Program Alliance
- Transport for NSW. 2023. Newell Highway Program Alliance – Completion Community Update
- PWC. 2019. Newell Highway Corridor Strategy

Image source: Transport for NSW

Image source: Queensland Department of Transport and Main Roads

Conclusionary remarks

Australia is not on track to meet its road safety targets, with too many lives lost and communities impacted by preventable tragedies.

Both urban and regional contexts reveal distinct challenges: in cities, pedestrian safety and managing multimodal interactions remain urgent, while in regional areas, high-speed crashes and run-off-road incidents continue to dominate.

By applying the Movement and Place framework, we can create environments where people move efficiently while also being safe.

The initiatives showcased in this report highlight proven solutions that can and should be scaled across Australia.

These case studies demonstrate that change is possible, with measurable reductions in fatalities and serious injuries already achieved in Australia and internationally.

What is needed now is leadership and investment to bring these solutions into mainstream practice.

Importantly, the report reinforces that no single intervention will achieve Vision Zero. Instead, success requires a system-wide approach that matches the right treatment to the right road, leverages technology and data, and prioritises vulnerable road users.

It requires balancing place and movement so that safety is never compromised for efficiency.

Reaching Vision Zero is ambitious, but it is achievable if governments, industry, and communities commit to action. Every death avoided is not just a statistic reduced, but a life saved, a family spared grief, and a community strengthened.

Image source: Simon Wood

Footnotes

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