

Entered by Board Secretary

AGENDA ITEM 21 BOARD NOTING PAPER	
To:	Board
From:	Ping Sim, Transport Safety Technical Lead
Reviewed:	Teresa Burnett, General Manager Transport Safety Dean Kimpton, Chief Executive Officer
Date:	19 June 2024
Title:	Road Safety Deep Dive

Aronga / Purpose

1. To provide a road safety deep dive for board members in advance of a similar presentation to the Transport and Infrastructure Committee (TIC) at a forthcoming meeting.

Te tūhonga / Recommendation

That the Auckland Transport Board (board):

- a) Provide feedback on the attached draft road safety deep dive presentation.

Te horopaki / Background

2. A programme of strategic deep dives are planned with the TIC. The deep dives will take place on a quarterly basis and will be presented to both the board and the TIC.
3. Road safety is as an area of significant interest to the board, members of the public and TIC.
4. In recent months, several TIC members have asked questions on road safety data, speed management and safety near schools. To respond to these comprehensively, a road safety TIC workshop was proposed for March 2024. This was later postponed due to an extraordinary TIC meeting (on the Long Term Plan) being held at that date.

5. The Auckland Plan 2050 has a vision of a safe transport network free from death and serious injury. This deep dive aligns with our ambition of safe journeys for everyone.
6. The term 'Vision Zero' in road safety refers to an approach that started in Sweden which built on the Safe System approach, and added an ethical stance that death and serious injury is not an acceptable price to pay for mobility. The long-term vision of the Auckland Plan aligns with a vision zero approach. The Tāmaki Makaurau Road Safety Governance Group is a partnership-based group who oversee Vision Zero for Tāmaki Makaurau, which was developed following a request from Auckland Council's then Planning Committee to make Auckland a Vision Zero region.
7. The method of delivering on a long term vision of a network free from death and serious injury is the Safe System approach. This is based on accepting that humans and vulnerable and make mistakes so the road system needs to be designed and operated so human error does not lead to death or serious injury.
8. Safety is fundamental to economic growth and productivity. The estimated social cost of road harm is Auckland is \$2 billion/annum. In addition to health and life costs, these crashes significantly disrupt freight and vehicle movements and reduce travel time reliability.

Me mōhio koe / What you need to know

9. The road safety deep dive answers four key questions:
 - a. Where are we now? A current picture of road death and serious injury in Auckland.
 - b. What works in reducing deaths and serious injuries (DSI)?
 - c. What is working? Auckland case studies and success stories.
 - d. What more can be done? Next steps and key opportunities for the future.

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Where are we now? A current picture of road harm in Auckland

10. New Zealand's rate of road deaths is one of the worst in high-income countries. Countries like Australia and United Kingdom significantly outperform New Zealand.
11. In Auckland, the most common time for a DSI to occur is between 2-7pm on a weekday afternoon. 58% of DSI are on 50km/h arterial roads, and with 76% of DSI in 2023 occurred at locations where there have been no serious or fatal injury crashes in the previous 5-year period.
12. More than half of DSI in Auckland involve someone walking, cycling or motorcycling. Two-thirds of fatal and serious crashes in New Zealand do not involve reckless behaviour.

What works in reducing DSI?

13. This section draws on the work of international road safety expert, Soames Job, whose workshop with TIC was postponed. His work on the psychology of road user behaviour shows that while there is a strong evidence base showing what works to change behaviour and save lives and injuries, it is not intuitive nor common sense to many road users.
14. New Zealand data is consistent with international data showing that optimism bias is high on how New Zealanders perceive their own driving behaviour and likelihood of being in a serious crash. 97% of New Zealanders rate their own driving as 'good or excellent' while this drops to 56% when they are asked to rate the driving of other New Zealanders.
15. The Safe System approach is a shift from focusing on fixing the road user to fixing the system, as well as a shift from stopping crashes to stopping deaths and serious injuries. This evidence-based approach has delivered results in countries that have implemented this.
16. A Safe System is proactive, which is a shift from focusing only on locations where a death or serious injury has already occurred to addressing known risks before someone gets hurt. Looking at Auckland data, 76% of fatal and serious injury crashes in 2023 occurred at locations where there had been no fatal or

serious injury crash the previous 5-year period which demonstrates that investment needs to be based on a more proactive approach than only locations with a previous serious crash history. 60% of fatal and serious injury crashes in 2023 occurred at locations where there had been at least one injury crash (including minor injuries) in the previous 5-year period, and this more detailed data set is used in prioritisation of road safety engineering investment.

17. A Safe System requires all parts of the system to work together. Key parts are the roads and roadsides, road users, vehicles, and speed. These all play a part in each death and serious injury. For example, speed is a factor in the outcome of every crash.
18. Road safety is first a system problem then a motivation problem. As a system problem, key factors such as the speed and infrastructure of roads and vehicle technology address road harm. Where these are not yet able to fully address harm, motivation levers for road users to make good choices such as enforcement and fines and penalties are important. It is important to understand that reckless behaviours such as drink-driving and speeding are not skill or knowledge problems, but motivation problems. This underpins why driver skill-based training has been shown not to be effective.

What is working? Auckland case studies and success stories

19. **Fatal crash reporting improvement project.** This project has significantly increased the number of fatal crash reports that are completed within service level agreement timeframes. At the same time lifting the quality of the reports including the standard of writing, use of safe system gap analysis and tracking recommendations through to completion. A maintenance team member now attends each fatal crash site investigation to enable any maintenance actions to be rapidly addressed.
20. **Road safety engineering successes.** In July 2023, the 2021-24 programme was estimated to reduce 57 DSIs and achieve a 34 DSI saving/\$100million, significantly higher than the national programme performance metric of 12-13 DSI savings/\$100million. High risk intersection programme improvements such

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as Glenfield Road and Coronation Road have achieved zero DSI since constructions and positive feedback from customers.

21. Pedestrian crossings. Evaluation of a demonstration project involving raising 37 zebra crossings showed a reduction from 2.4 serious or fatal crashes/year to 0.4 serious or fatal crashes a year with zero serious pedestrian crashes. Initial results from travel time modelling show most travel time delays fall between three and six seconds per raised device.

22. Speed management. Data shows that 24 months after speed changes were made in 2022 there was a 30% reduction in deaths on those roads compared to a 9% increase in deaths in locations where speed limits were not reduced.

23. Lifting deterrence of drink driving. A joint New Zealand Police and AT operation has focused on reducing drink-driving by highlighting the record-breaking levels of breath testing being delivered. Data analysis shows the estimated level of drink-driving in Auckland has decreased in recent years. New Zealand Police have requested a repeat operation, and this is now

What more can be done? Key opportunities for the future

24. The indicative road safety engineering programme, that is subject to funding and prioritisation, for the 24/25 year includes 13 roundabout, 12 signalised intersections and eight signalised crossings.

25. Key opportunities for the future include:

- a. Fit for purpose, risk-based fines and penalties, including demerit points on camera offences.
- b. Road safety marketing and communication supporting general deterrence efforts by New Zealand Police.
- c. Increase automated enforcement, including a more rapid and larger scale camera programme delivery in Auckland regulatory change to allow phone and seatbelt camera enforcement.
- d. Auckland to have sufficient funding and ability to deliver evidence-based safety interventions on the road corridor that work for Auckland.

- e. Auckland to retain ability to listen and respond to community requests for speed management, including near schools.
- f. Strengthening relationships with schools and marae by having specific funding for responsive safety requests.




Ā muri ake nei / Next steps

26. Following edits made in response to board feedback, the road safety deep dive will be discussed at a TIC workshop and then presented at a TIC meeting (to be scheduled).

Te whakapiringa / Attachment

Attachment #	Description
1	Draft road safety deep dive presentation.

Te pou whenua tuinga / Document ownership

Submitted by	Recommended by	Approved for submission
Ping Sim Transport Safety Technical Lead	Teresa Burnett General Manager Transport Safety	Dean Kimpton Chief Executive
		

Road Safety Deep Dive



Board meeting
25 June 2024



Purpose and outline

The purpose of this engagement is to:

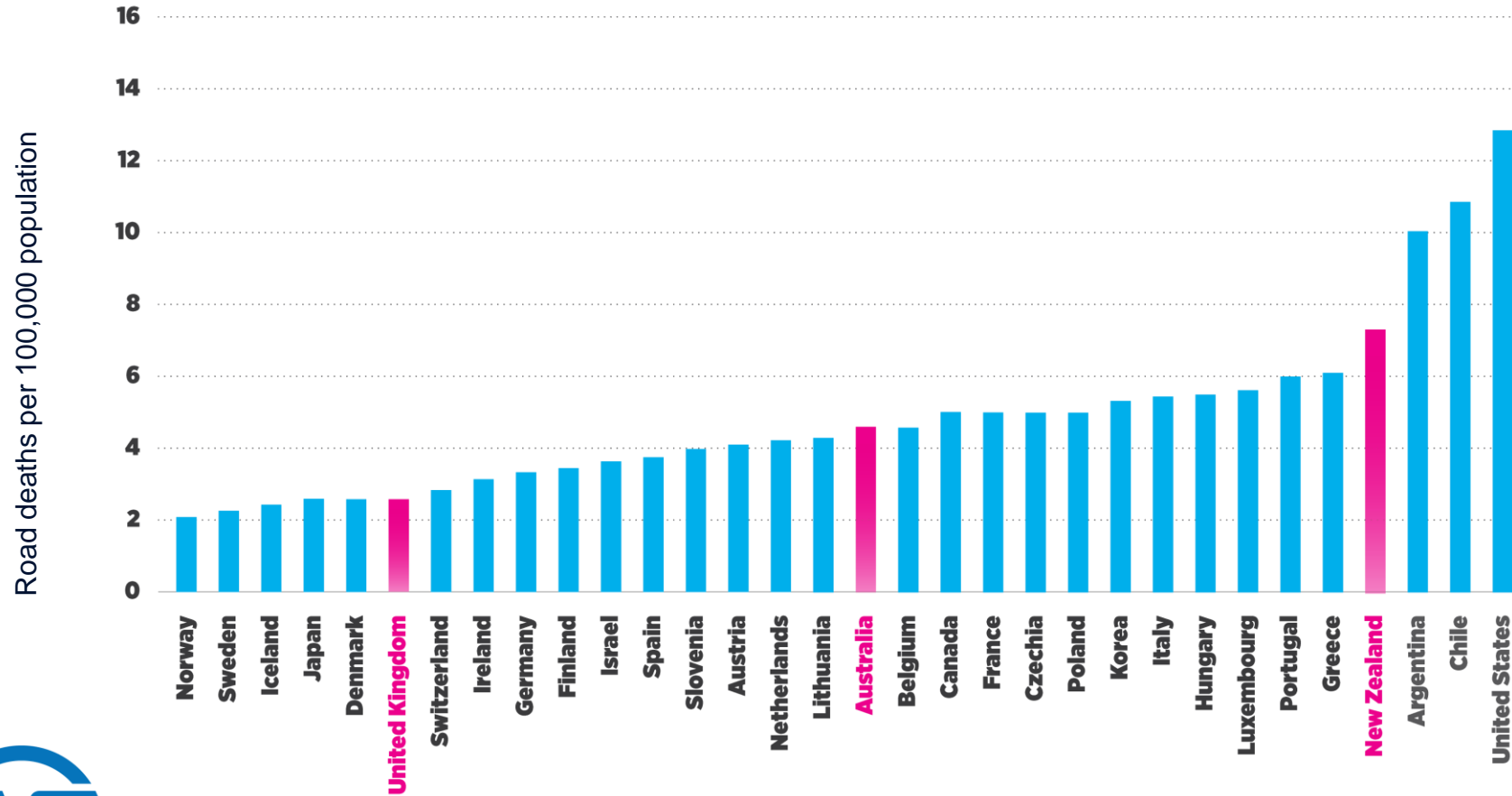
1. Where we are now? A current picture of road harm in Auckland
2. What works in reducing deaths and serious injuries?
3. What is working? Auckland case studies and success stories
4. Looking ahead: Key opportunities for the future



Where are we now?



New Zealand's rate of road deaths one of the worst in high-income countries



Source:
International Transport Forum's Road Safety Annual Report 2023. Only countries categorised as high-income by the World Bank in 2022 have been included.



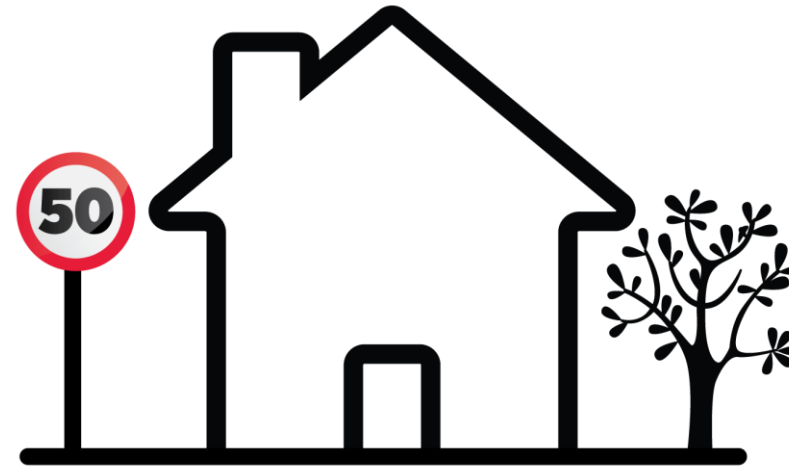
A typical Auckland road death or serious injury

When?



- 2-7 pm on a weekday

Where?

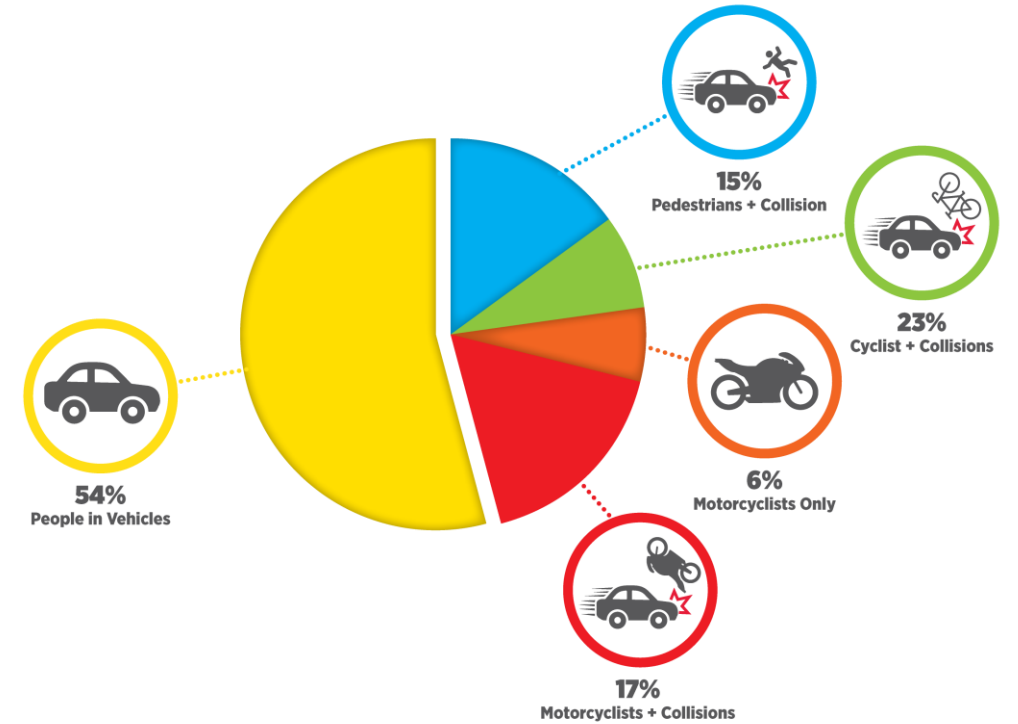
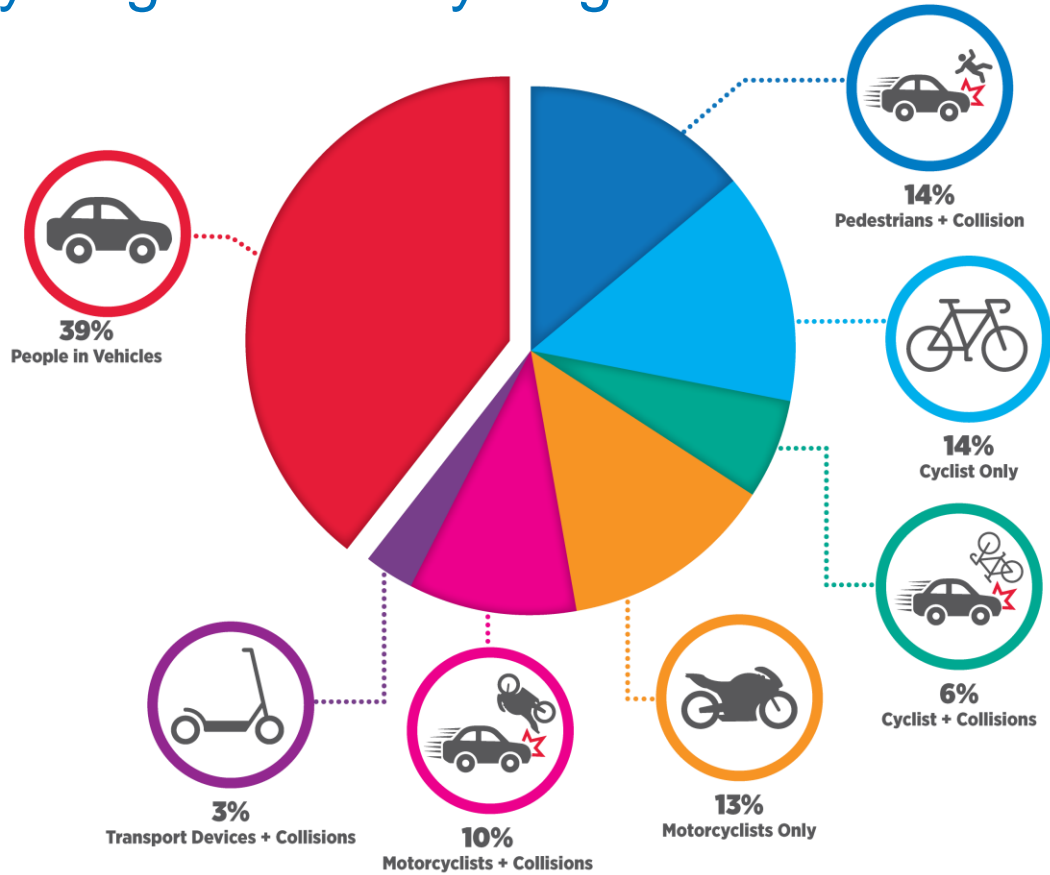


- 50 km/h road
- Close to home
- No crash history



Sources: WHEN: The most common time for Auckland deaths or serious injuries from 2019-2023 Crash Analysis System data. **WHERE:** 58% of Auckland DSI from 2019-2023 was on 50km/hr roads, Crash Analysis System. Burdett, B, Starkey, N and Charlton, S. 2017. The close to home effect in road crashes. This University of Waikato research shows New Zealanders are more likely to be injured close to home, with roads within 11 km of home accounting for half of all travel and 62% of all crashes. Safety Science vol 98. 76% of fatal and serious injury crashes in Auckland in 2023 occurred at locations where there have been no serious or fatal injury crashes in the previous 5-year period.

Who: More than half of deaths and serious injuries involve someone walking, cycling or motorcycling



Ministry of Health overnight hospitalisations

Crash Analysis System serious injuries

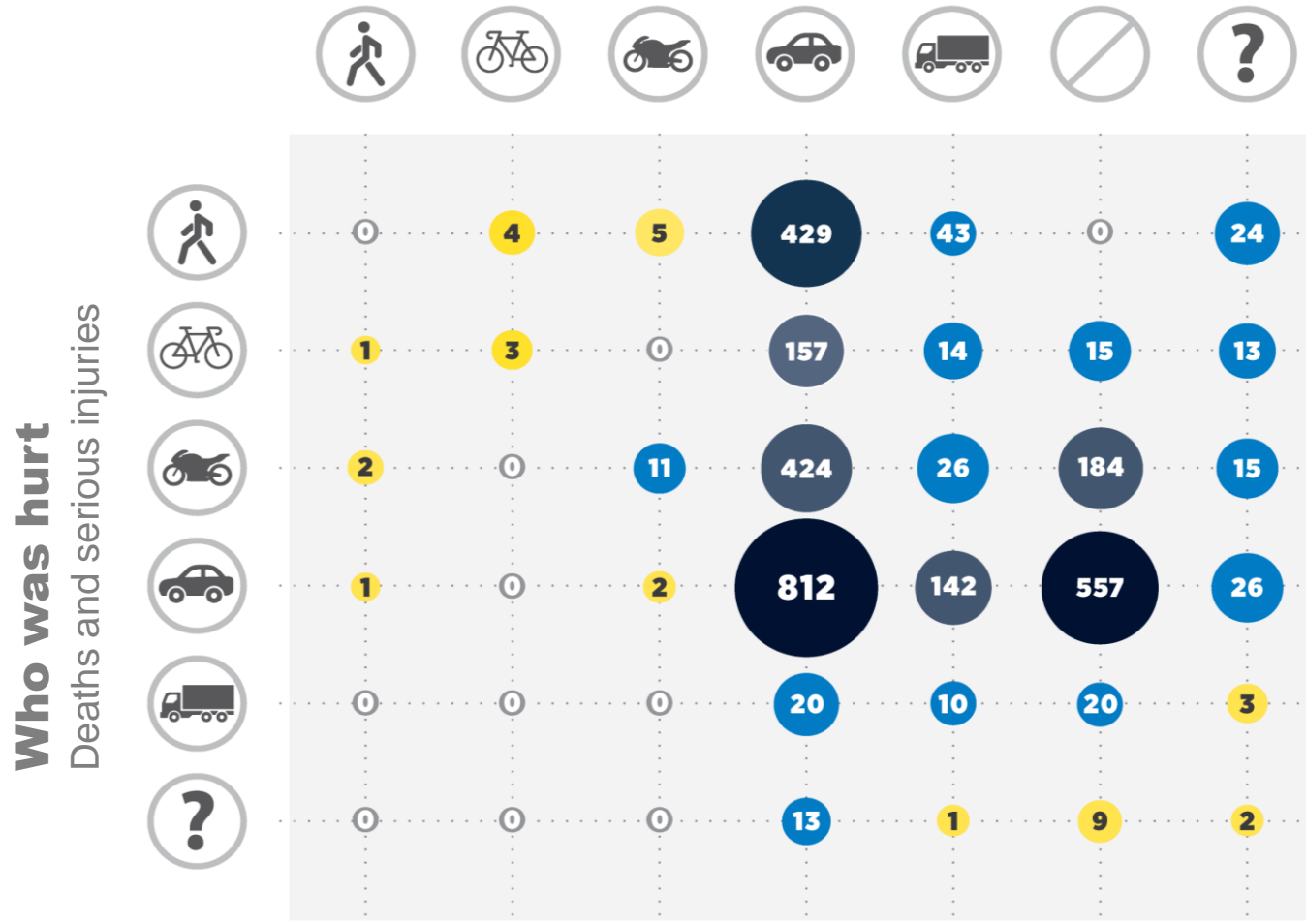


Source: Koorey, G. 2021. Safety of people traveling outside vehicles deep dive 2021. Proportion of 2,457 serious injuries recorded in CAS over a four-year time period (2016-19). Proportion of 8,514 serious injuries recorded by MoH for a four-year time period (2016-19), when including pedestrian only harm. Note pedestrian only overnight hospitalisations are not shown to provide a more consistent comparison between the two data sources.

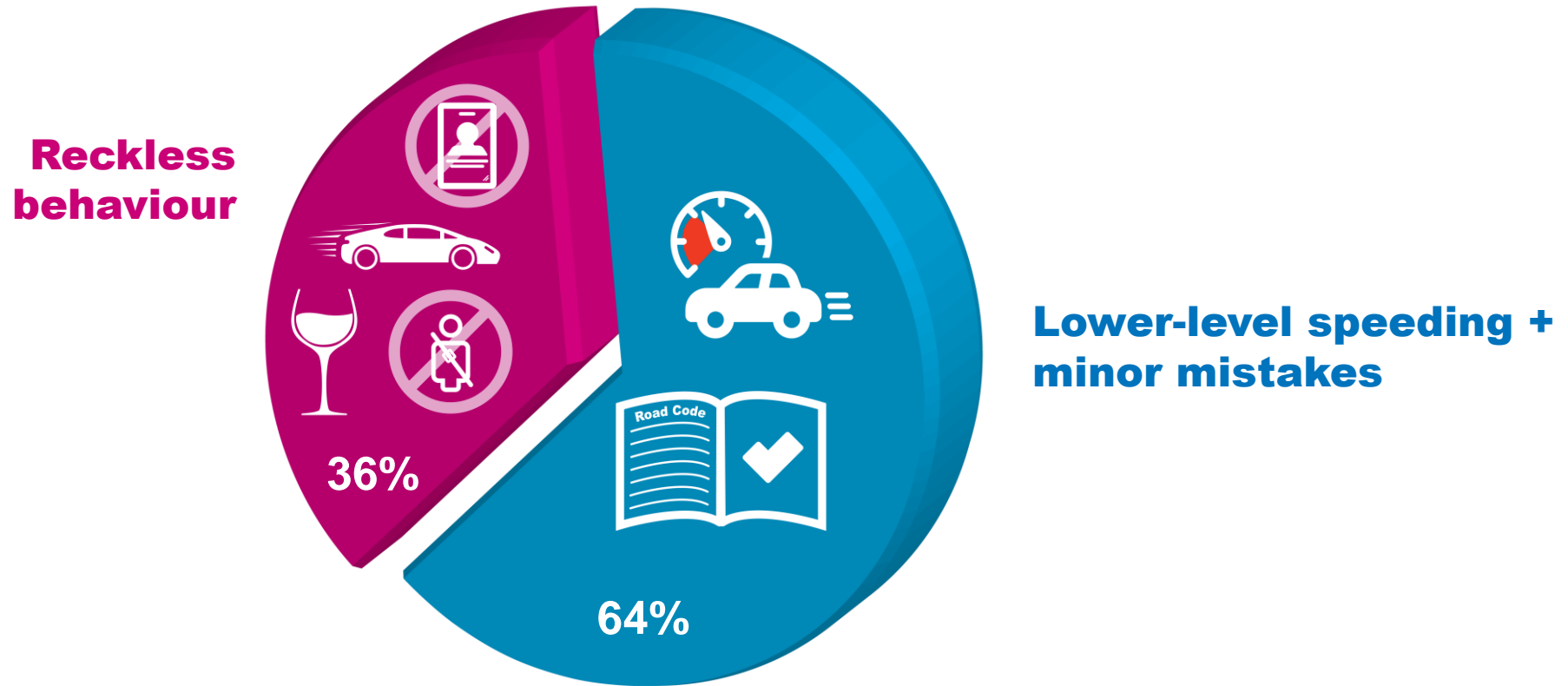
Who gets hurt and who is involved:

Auckland deaths and serious injuries 2019-2023

Who was involved



Two thirds of fatal or serious crashes do not involve reckless behaviour



Types of fatal and serious injury crashes

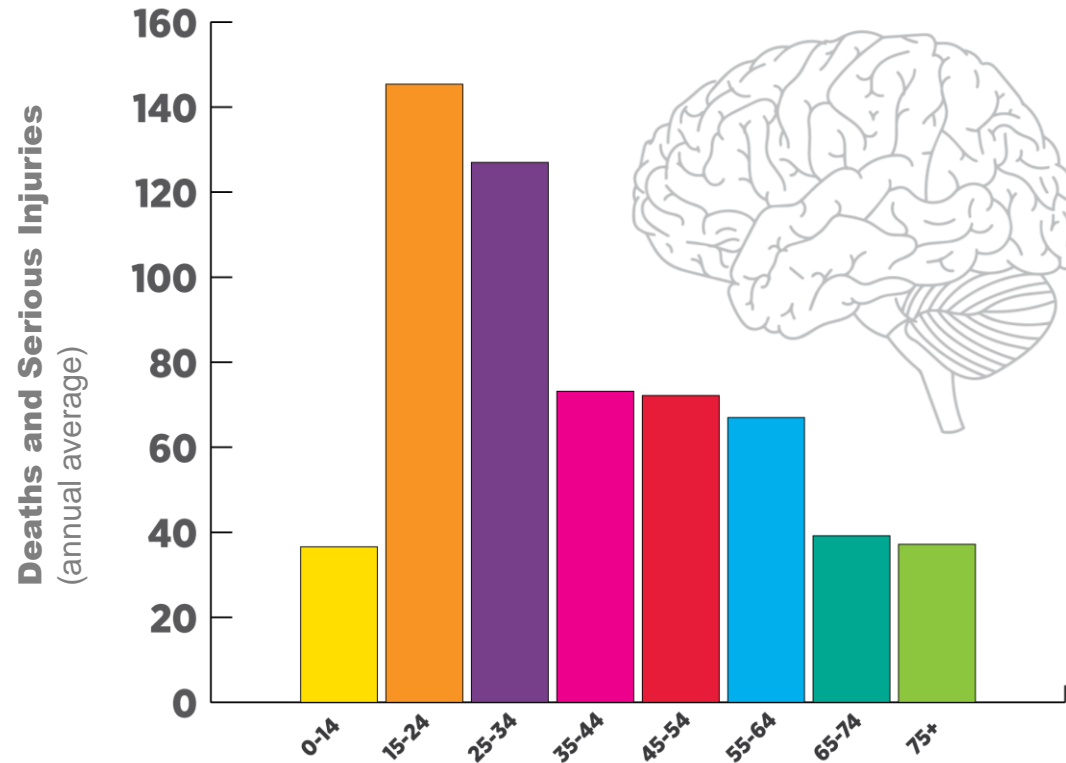


Source: Mackie, H. W., P. Gulliver, R. A. Scott, L. Hirsch, S. Ameratunga and J. de Pont (2017). Serious injury crashes: How do they differ from fatal crashes? What is the nature of injuries resulting from them? Auckland, New Zealand: Mackie Research, The University of Auckland, and TERNZ prepared for the AA Research Council. Following publication, the numbers for combined death and serious injury results have been provided by the author. Acknowledgement of review by Soames Job, CEO Global Road Safety Solutions.

Young people get hurt at the highest rate on Auckland's roads

The brain finishes developing and maturing in the mid-to-late 20s. The part of the brain behind the forehead, called the prefrontal cortex, is one of the last parts to mature. This area is responsible for controlling impulse leading to making better decisions. Transport related harm is the second leading cause of death for young New Zealanders.

DSI Casualties by Age Group: 2019 to 2023



Source: The Teen Brain: 7 Things to Know National Institute of Mental Health, NIH Publication No. 23-MH-8078 Revised 2023. Figure.NZ Main causes of death by age group sourced from Ministry of Health data.



What works in reducing deaths and serious injuries?



“A great deal is known about what works and what does not, to change road user behaviour and to save lives and injuries. It’s NOT common sense. It’s NOT as we see ourselves.”

Soames Job, CEO Global Road Safety Solutions



How we see ourselves and others on the road

How New Zealanders rate their own driving behaviour



How New Zealanders rate the driving behaviour of others in New Zealand



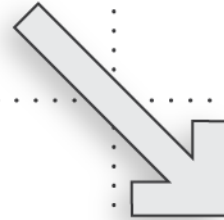
Source: Public Perceptions of NZ Road Safety: Penalties and Enforcement. July 2021

Safe System focuses on the system for injury prevention



Fix the Road User
(Road User Responsibility)

Stop the Crashes



Fix the Road System
(Designer /Operator Responsibility)



Stop the Injuries and Deaths

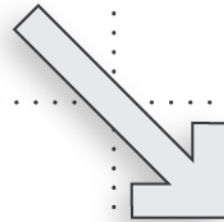
Acknowledgement: Based on diagram by SOAMES JOB - CEO, Global Road Safety Solutions Pty Ltd.

Safety System



Fix the Road User
(Road User Responsibility)

Stop the Crashes



Fix the Road System
New Zealand



Stop the Injuries and Deaths

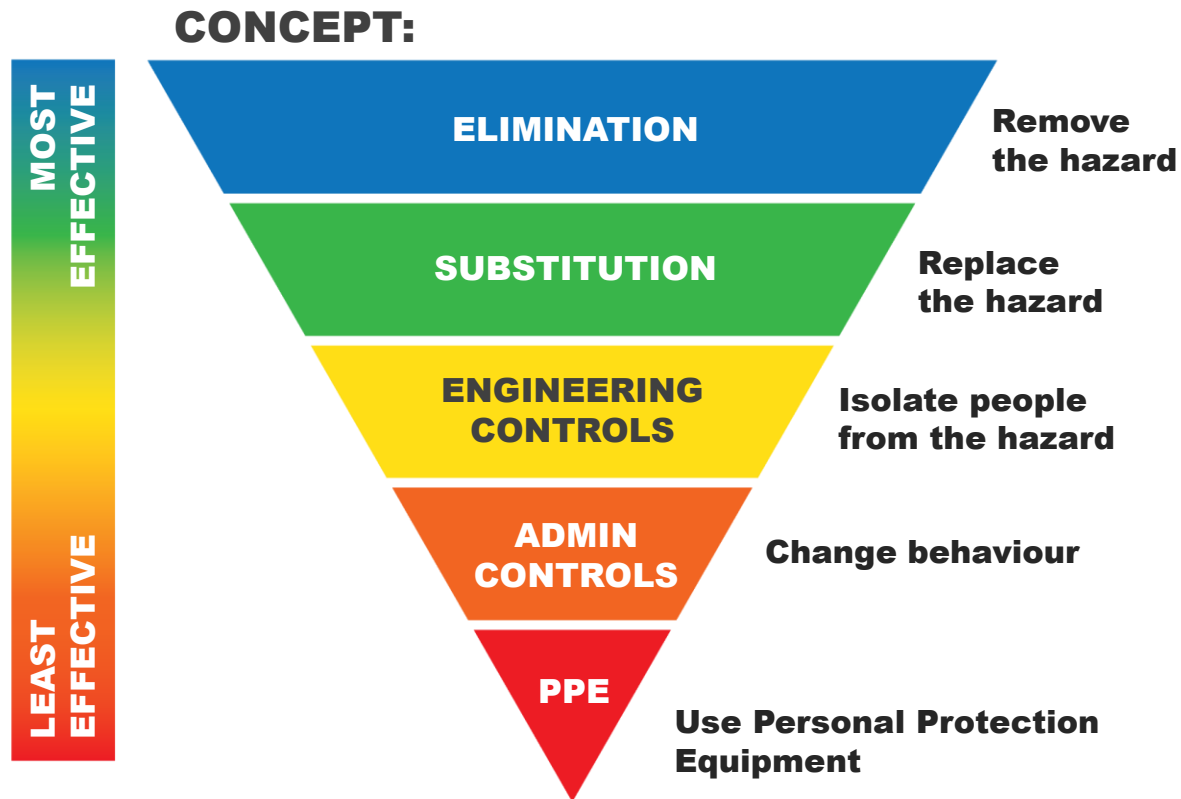
Acknowledgement: Based on diagram by SOAMES JOB - CEO, Global Road Safety Solutions Pty Ltd.

Safe System approach



Acknowledgement: Adapted from diagram by SOAMES JOB - CEO, Global Road Safety Solutions Pty Ltd.

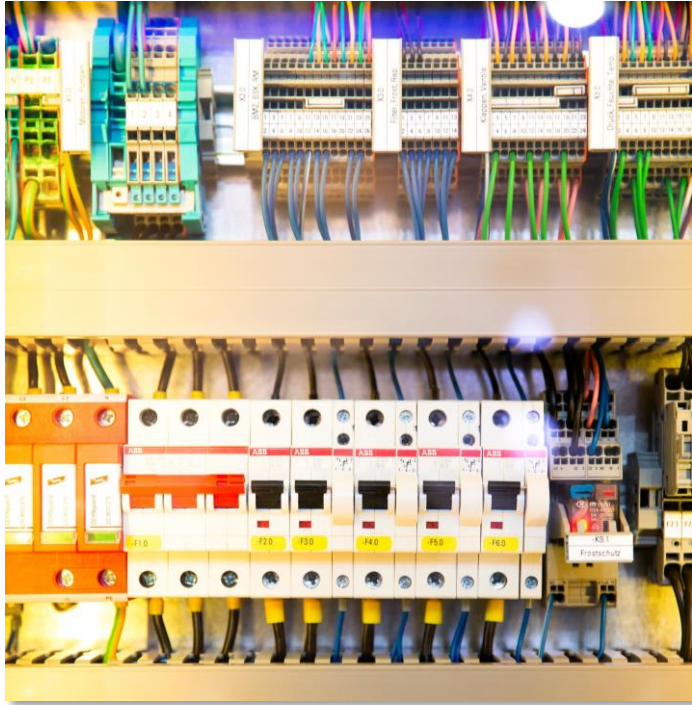
Road safety Hierarchy of Controls



APPLIED TO ROAD SAFETY:



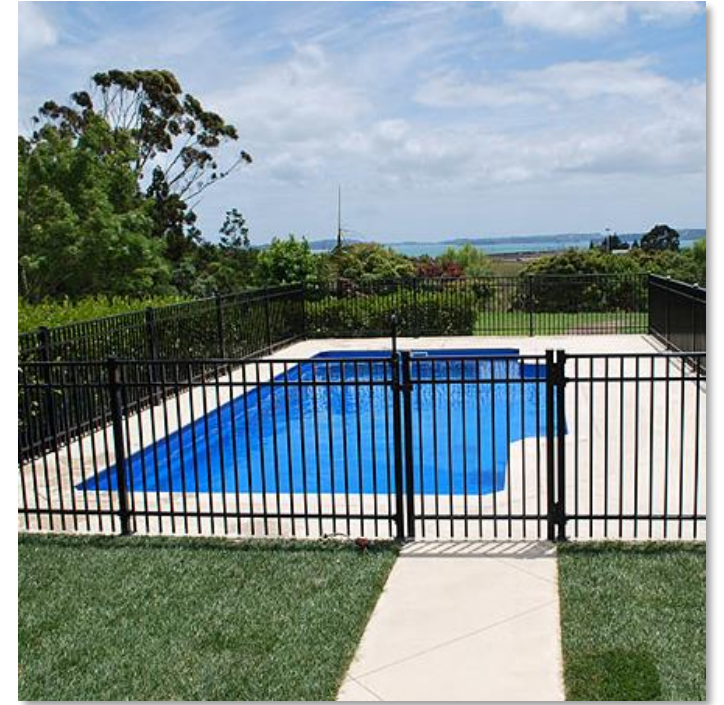
Safety is proactive



Insulated live wires and fuses



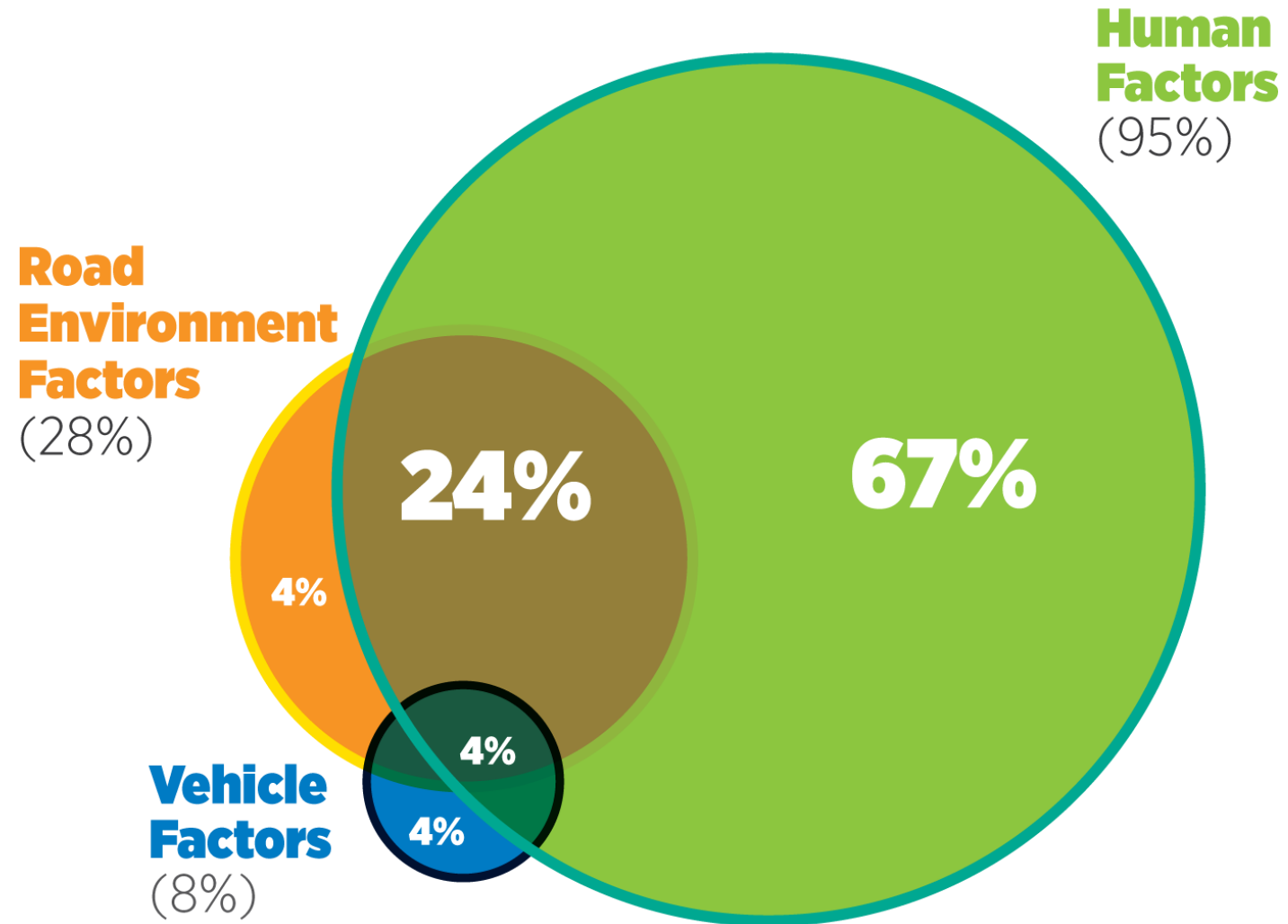
Smoke detector



Pool fences



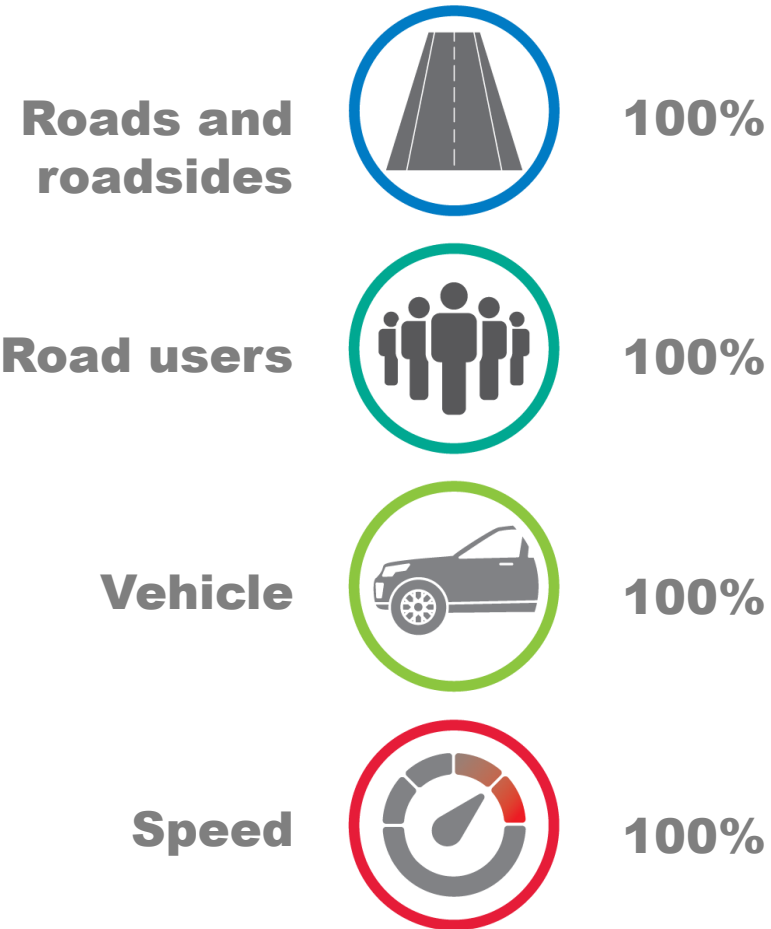
Old approaches to road safety blamed victims



Acknowledgement: Based on diagram by SOAMES JOB - CEO, Global Road Safety Solutions Pty Ltd.

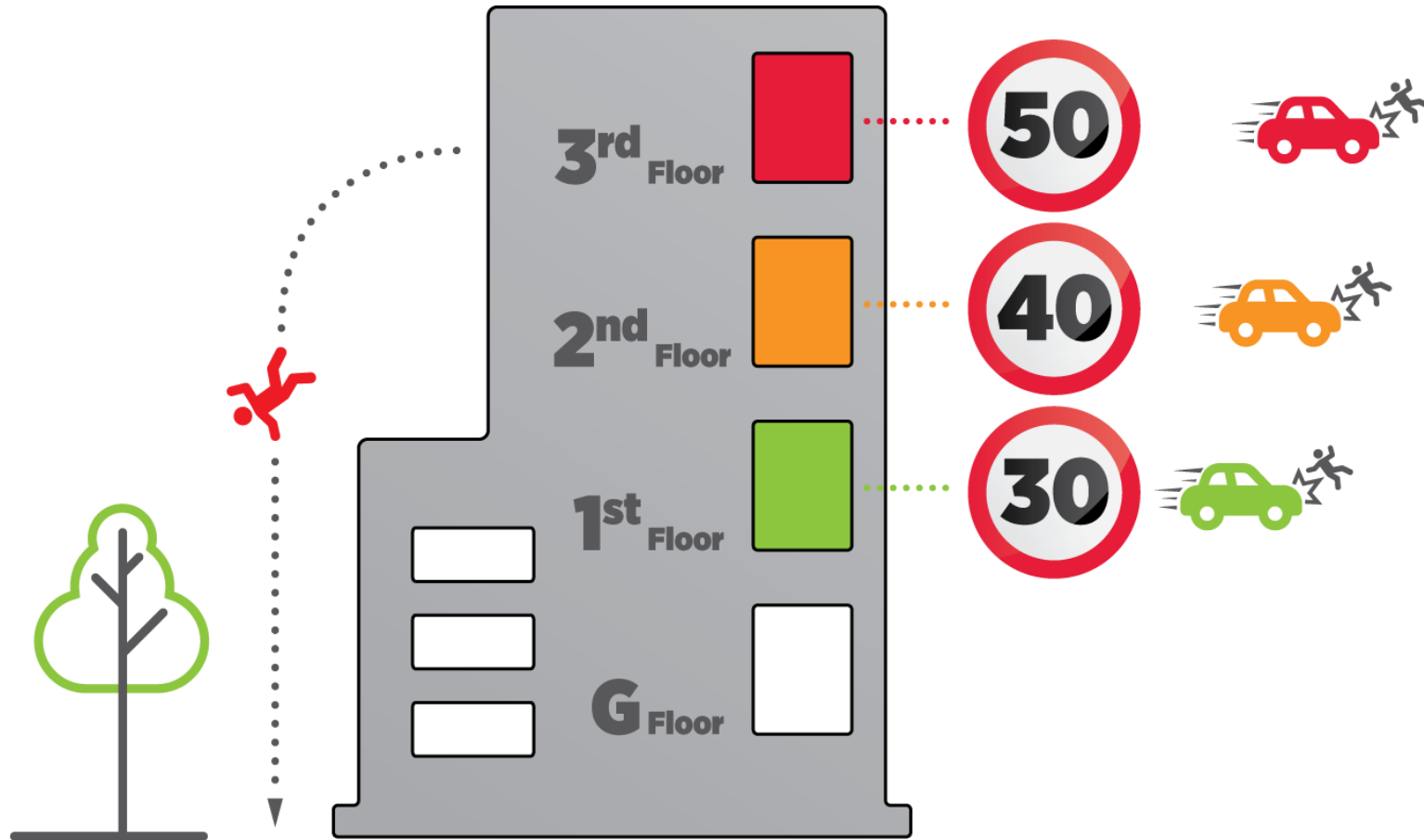
The Safe System is based on scientific reality

Completely fix one, and we fix the whole problem



Acknowledgement: Based on diagram by SOAMES JOB - CEO, Global Road Safety Solutions Pty Ltd.

Speed affects the outcome of every crash



Survivability rates vary based on a number of factors and scenarios. AT takes a preventative approach with respect to the survivability of our most vulnerable road users. Data taken from Research Report AP-R560 published in March 2018 by Austroads – the Association of Australian and New Zealand Road Transport and Traffic Authorities.

What is working?

Case studies, successes and learnings



Fatal crash reporting improvement project



- Tracking recommendations through to completion
- Lifting report writing quality with automation



- Maintenance team at crash site investigation

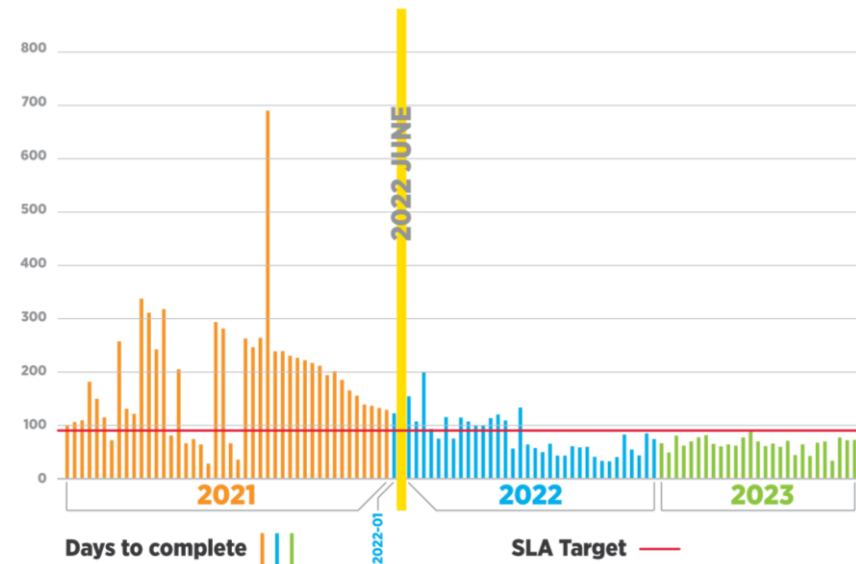
Faster



- Safe system gap analysis



Fatal Crash Investigation & Report Time Frames



- Faster report completion times

Road safety engineering successes

Demonstration project – Evaluation of raising **37** crossings



AT Road safety engineering 21-24 programme summary

- Estimated to have reduced DSIs by 57
- 34 DSI savings/ \$100 million spend
*(compared to NZ programme metric
of 12-13 DSI savings/\$100million)*

Note: This programme snapshot from NZTA was produced around July 2023 and does not take into account changes since then.

Before
**2.4 serious or
fatal crashes/year**

After
**0.4 serious or fatal
crashes/year** (Zero pedestrian)

1 Zebra Crossing (at grade)

Safety: From 28% crash *increase* (busy high-speed urban roads) to a positive crash reduction (low-speed roads)

Cost: \$

This crossing is suitable for low-speed roads, however may increase pedestrian DSI when used on busy high-speed roads.

Advantages:

- Gives pedestrians priority, best for roads with 30 km/h or less operating speed.

Disadvantages:

- On multilane or roads operating at more than 30km/h, likely to result in fatal or serious injury (e.g. driver may not notice pedestrian till too late)



2 Raised Zebra Crossing

Safety: 40% DSI reduction

Cost: \$\$

This crossing provides a safe crossing point for people walking.

Advantages:

- Safe system and inclusive design that significantly increases driver give way rates

Disadvantages:

- If poorly constructed may create discomfort for vehicle occupants and increase vehicle noise



3 Signalised Crossing (at grade)

Safety: 20% crash reduction

Cost: \$\$\$

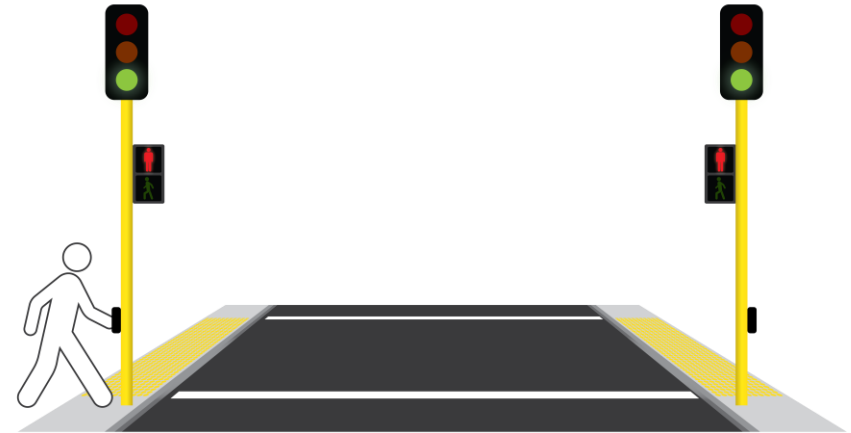
This crossing is safer than an at grade zebra crossing especially on high-speed urban roads.

Advantages:

- Clear time separations support pedestrian safety and vehicle movement

Disadvantages:

- Likely to result in fatal or serious injury (e.g. driver may fail to see red light)
- Expensive and if low level of service may be ignored by pedestrians and/or provide insufficient time to cross



4. Raised signalized crossing

Safety: 40% DSI reduction

Cost: \$\$\$\$

This crossing provides a safe crossing point for people walking and reduces vehicle delay in busy locations.

Advantages:

- Safe system and inclusive design that significantly increases driver signal compliance rates
- Clear time separations support pedestrian safety and vehicle movement

Disadvantages:

- If poorly constructed may create discomfort for vehicle occupants and increase vehicle noise
- Expensive and if low level of service may be ignored by pedestrians and/or provide insufficient time to cross



Travel time delay monitoring



- Initial results from measurement of travel time delay of a sample of raised devices implemented in Auckland, together with travel time modelling indicate that most travel time delays fall between **three and six seconds** per raised device.
- Further analysis is ongoing in this area.



Updating practice notes on raised devices

Draft principles under development

Arterial roads

Frequent and strategic bus network

Level 1 freight network

Strategic freight areas

Emergency lifeline routes

Raised devices not intended to be used on these roads, unless there are exceptional circumstances. For example, locations that have risk factors such as crash risk or high numbers of people around.

Raised device profile to consider emergency services needs and be adjusted on emergency lifeline routes.

Other collector roads

Raised devices may be permitted if they have a softer profile which will provide a partial safety benefit.

Other local roads

Raised device may be permitted with a profile to achieve a mean speed of 30km/h.

Side roads on cycle-ways

Raised devices should be considered as a side road entry treatment, especially with two-way cycleways to reduce vehicle and cyclist speeds at conflict points.



High risk intersection improvements

Glenfield road and Coronation road

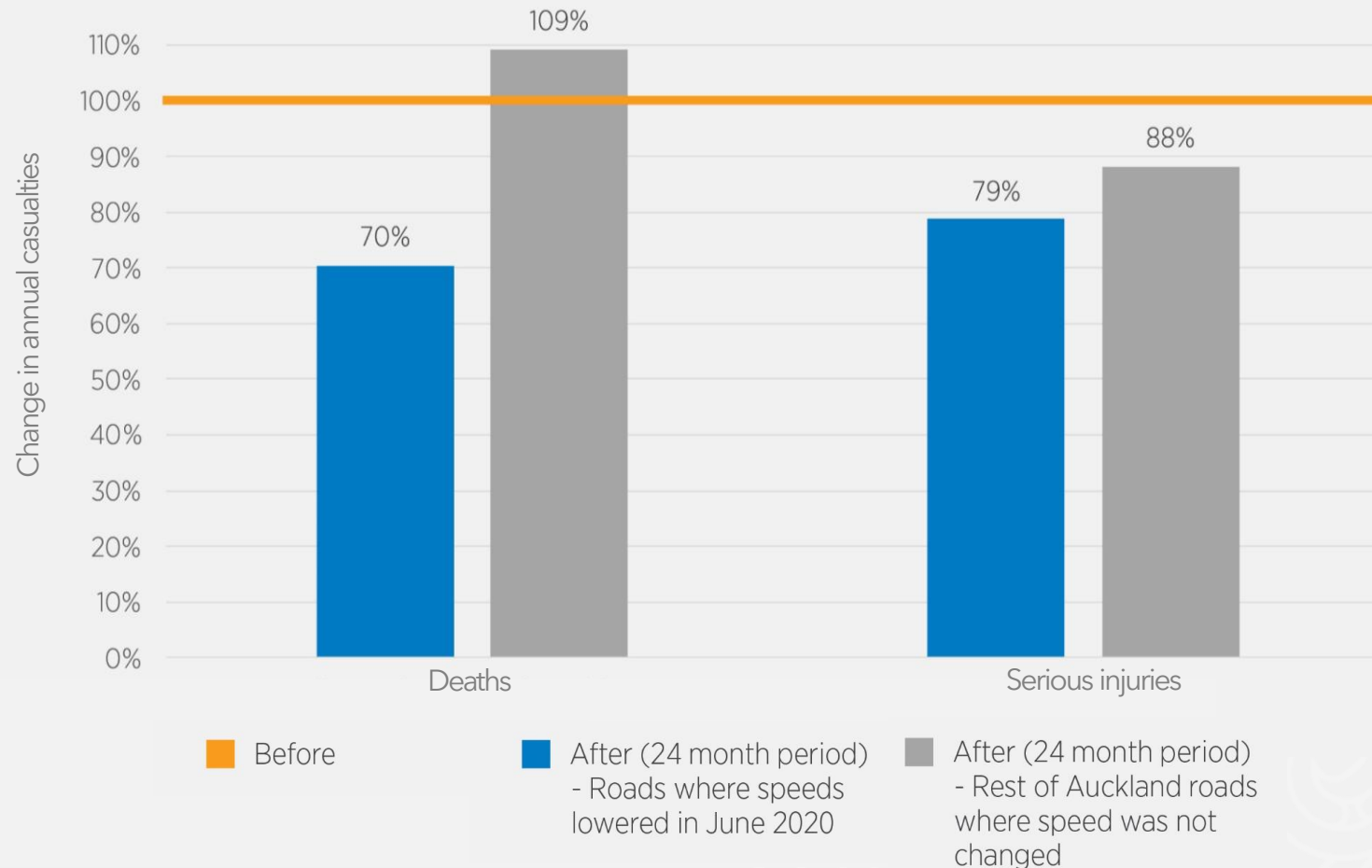
“I actually quite like the new roundabout, and I need to use it to exit my street many times day. If anyone remembers there was always broken glass and plastic parts from headlights, that doesn't exist anymore, so the raised crossing is slowing cars down” – Community member



- Zero crashes since construction completed February 2024
- Average travel time delay 8-9am 16-67 seconds

Speed management

Death and serious injury reduction on Auckland roads with lower speeds – 24 months after results



two in three

residents who have experienced town centre changes say they

support

AT lowering speed limits and using engineering measures across Auckland

Sources:


Abley Safe Speeds Phase 1. 24 Month Interim Evaluation (2022) Death and serious injuries data from June 2020 until June 2022.

Percentages are at average annual changes. Auckland Transport Town Centre Road Safety Perceptions Survey Research Report 2021.

Lifting general deterrence of drink-driving

Auckland Transport
20 December 2023 · 🌐

With the end of the year fast approaching here's a message from AT and New Zealand Police. The Police will be out in force all through summer with more breath testing than any time in the past 10years! If you're planning a celebration, plan to get home safely. 🚗



0:12 / 1:31

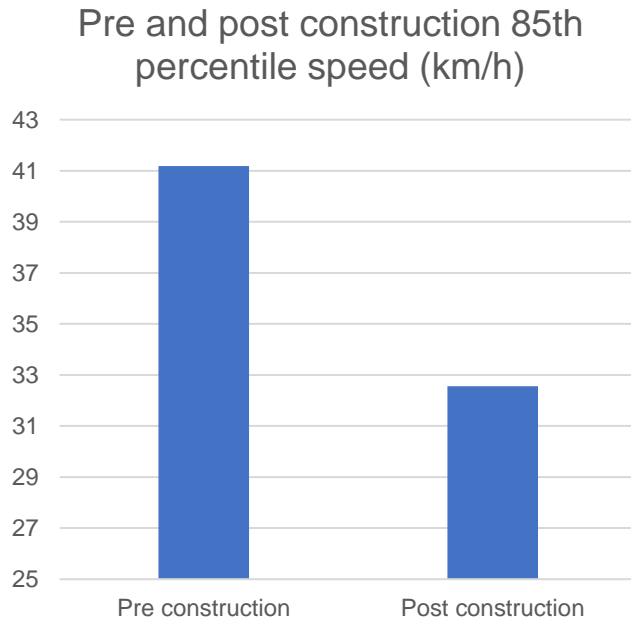


School Speed Management

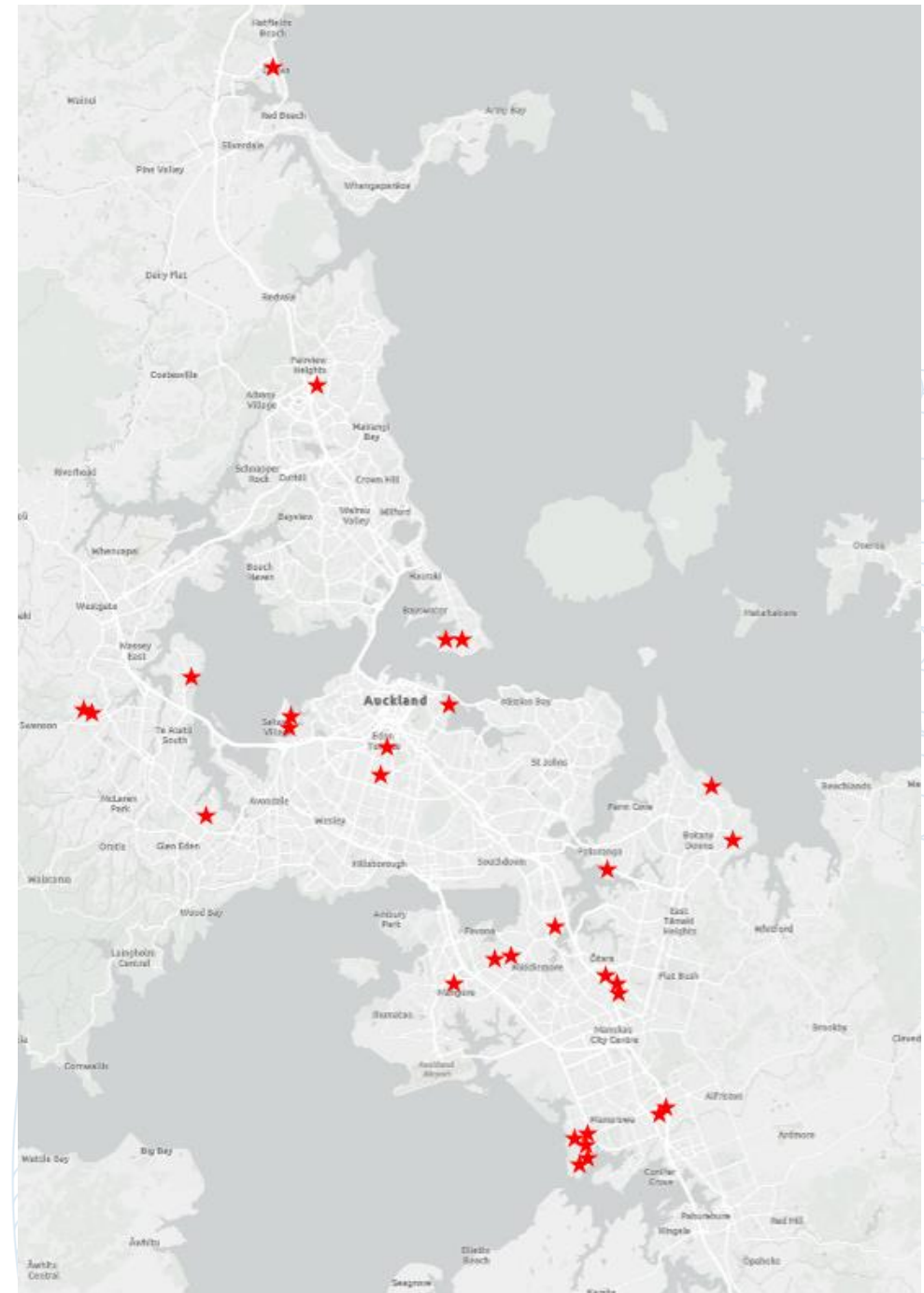
- Pedestrian improvements to support speed limits reductions around schools

What we delivered

- 30 pedestrian improvement projects outside schools between April 2023 and April 2024



- Average reduction in speed from 41km/h to 32km/h near installed crossings.
- School feedback positive so far



Next steps and key Opportunities



Road safety engineering programme

Indicative programme for next 6 – 12 months

What has changed

- **There have been several changes that have impacted delivery and program confirmation**
 - Change in government direction
 - Change in how we are funded
 - Political push back on safe speed and raised devices
 - No confirmation of budget – local or national share
 - Need for greater public support and endorsement

What are we going to be doing

- **We are still committed to delivering road safety across Auckland but need to change approach**
 - Working with the willing
 - Focus on high risk intersections
 - Re-engaging with schools and delivering quick wins
 - Addressing high risk rural corridors
 - Working with maintenance and major projects to look for opportunities to collaborate

What will this look like

- **Programme still to be confirmed but at a high level -**
 - New signalised intersections or roundabouts
 - Rural corridor widening with wide centre lines
 - Introducing safer turning facilities on rural roads
 - Treatment of locations with high numbers of people walking and cycling
 - Delivering safety solutions to schools
 - Speed Limit changes when high value and well supported



Indicative Road Safety Engineering Programme 24/25

PLEASE NOTE THIS IS SUBJECT TO FUNDING AND PRIORITISATION

INTERVENTIONS

- Signalised Crossings
- Signalised Intersections
- Zebra Crossing (low speed environment)
- Audible Tactile Line Markings
- High Friction surfacing
- Rural Intersection Speed Zone
- Raised Pedestrian Crossing
- Roundabouts
- Safety Barrier
- Signage and Road Marking
- Responsive School Safety

NUMBER

- 8
- 12
- 2
- 6
- 3
- 4
- 1
- 13
- 1
- 1
- TBC



Key opportunities for the future

- Fit for purpose, risk-based fines and penalties, including demerit points on camera offences
- Road safety marketing and communication supporting general deterrence efforts by NZ Police
- Increase automated enforcement, including a more rapid and larger scale camera programme delivery in Auckland regulatory change to allow phone and seatbelt camera enforcement
- Auckland to have sufficient funding and ability to deliver evidence-based safety interventions on the road corridor that work for Auckland
- Auckland to retain ability to listen and respond to community requests for speed management, including near schools
- Strengthening relationships with schools and marae by having specific funding for responsive safety requests



Fines and penalties

- Aucklanders have consistently shown their support for more severe penalties, demerit points for a broader range of offences and increased enforcement of high-risk behaviours (speed, impairment, mobile phone use, red light running and seatbelt use)*.
- Most road safety penalties have not been reviewed since 1999, a review was signalled in the 2019 Road to Zero action plan to better align penalties to the risk of the behaviour.
- New Zealand's penalties for driving offences are low in contrast to other countries that have better road safety performance. This influences the behaviour of drivers as the fines do not match the risk of speeding, especially low levels of speeding.

	Speeding 10km or less over the limit	Not wearing a seatbelt
NZ	\$30	\$150
Victoria	\$258	\$415
NSW	\$147	\$417
Sweden	\$316	\$237

All values have been converted to NZD.

