

Road to Zero for the Waikato 2020

- Transport safety challenges we face

- A Waikato region evidence base
- Interventions information and case studies

This document is a shared evidence base for transport safety for the Waikato region, prepared on behalf of regional partners by Waikato Regional Council. It is a companion document to 'Road to Zero for the Waikato 2020' Strategic Direction 2020-2030 and Strategic Plan 2020-2024.

This is a live document which may be updated from time to time. We are happy to hear of errors, omissions or new material to add. Email the project team at transport@waikatoregion.govt.nz.

The region-specific data/statistics provided in this document has generally been sourced by an analysis of regional crashes commissioned in 2019 with WSP (formerly Opus)¹. The WSP analysis is available to all Regional Road Safety Forum members. Unless otherwise stated, graphics – tables and figures are from the WSP report. Details about the inputs to this analysis are included in 3.3.

¹ WSP 2019 Waikato Region Road Safety Analysis

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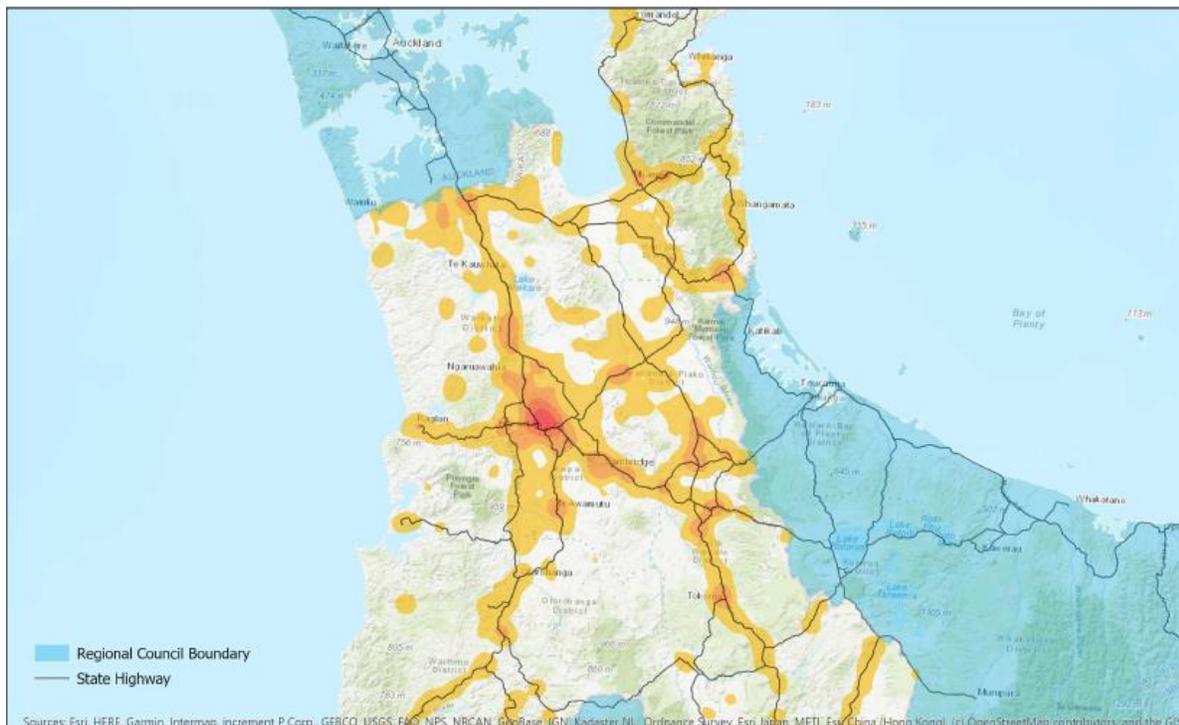
1 SECTION 1: EVIDENCE BASE

1.1 OUR ROAD TRANSPORT NETWORK CHALLENGE

The Waikato region faces a significant and ongoing challenge, with the highest number of road trauma deaths on a per-region basis compared to the rest of New Zealand. From 2009-2018 the Waikato region has had 37,262 reported crashes, including 526 fatal, 2427 serious, 8937 minor and 25,372 non-injury crashes.

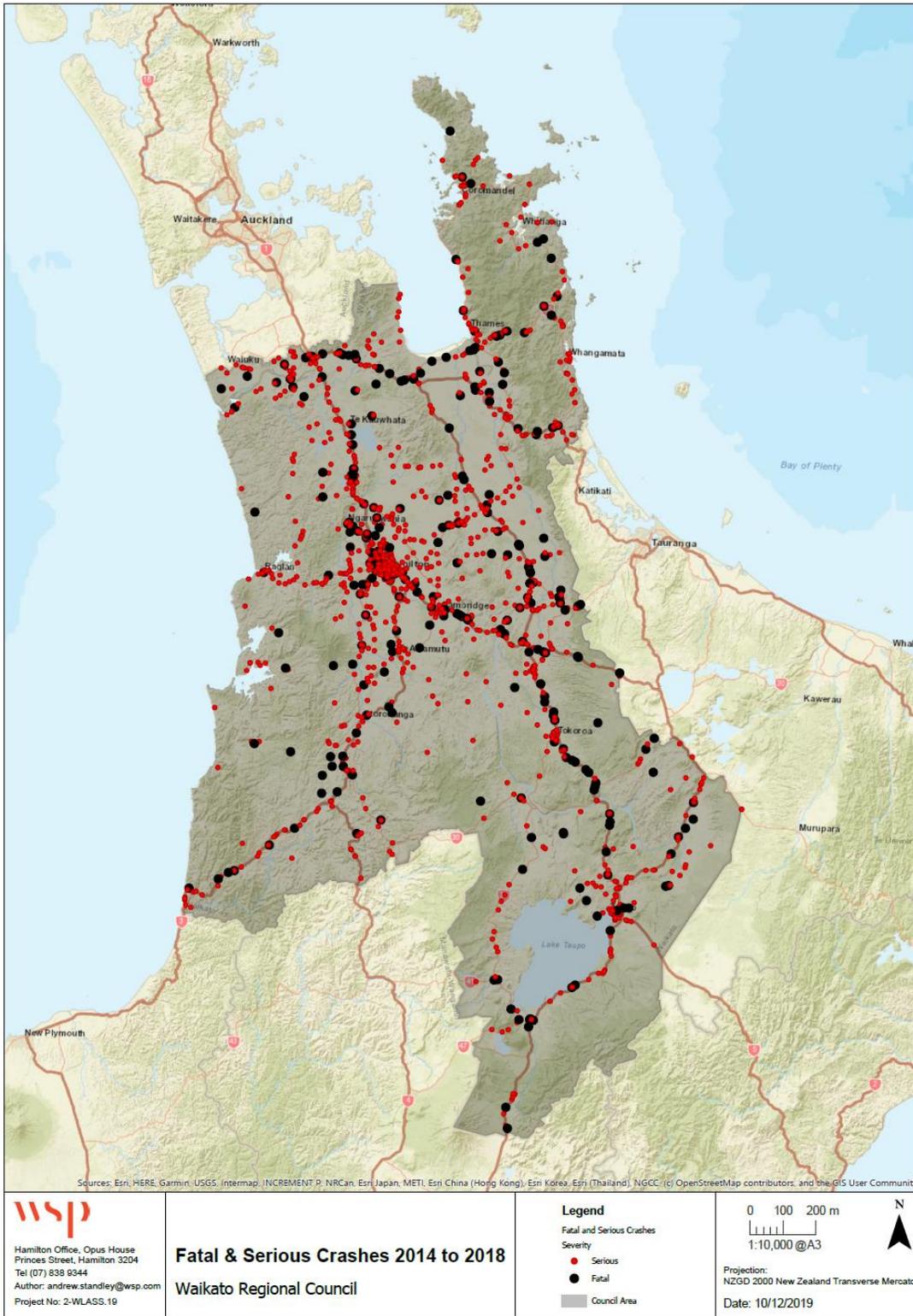
These crashes have resulted in 615 lost mothers, fathers and children in the community and a further 3097 more seriously injured². The regional distribution of victims is shown in Figure 1-1 and Figure 1-2 below as a heat map and as individual death and serious injury crashes (DSI).

Figure 1-1 Heat map of road trauma deaths and serious injuries in the Waikato region, 2009-2018. Source WSP



² WSP 2019 Waikato Region Road Safety Analysis 2019 Update

Figure 1-2. Map showing each road trauma death and serious injury in the Waikato region 2009-2018.



The Social Cost of Deaths and Serious Injuries

Deaths and serious injuries are a heavy burden on society as the community deals with the loss of loved ones or are faced with the long road to recovery. The Ministry of Transport (MOT) quantifies the statistical value of life and estimates the average social cost per fatality at \$4.37 million. For nonfatal injuries, the updated average social cost is estimated at \$458,400 per serious injury and \$24,700 per minor injury³.

MOT understand that all crashes are not reported to the police and therefore scale up their estimates. With such an adjustment, the social cost estimates increase to \$791,000 per reported serious injury and \$84,000 per reported minor injury.

The updated average social cost is estimated at \$5.07 million per fatal crash, \$525,600 per serious crash, \$29,900 per minor crash (or \$926,000 per reported serious crash and \$107,000 per reported minor crash, after considering reporting rate adjustment). Because each crash can result in multiple injuries of various severity, the average social cost per crash is higher than the average social cost per injury in all cases.

Applying the crash values, the estimated social costs from 2009 -2018 to the Waikato is \$5,870,481,000 which accounts for the unreported crashes⁴.

1.2 A REAL HUMAN COST – THE PEOPLE BEHIND THE NUMBERS

At times statistics and numbers struggle to showcase the real pain and suffering each death and serious injury represents to the wider community. In each additional road trauma statistic, there is a unique and individual story to tell. Mary Anne and Ash have generously shared their experiences. They are two of hundreds who are seriously injured every year in the Waikato region.

Mary Anne's Story

I am very lucky to still be here to tell my story. I was in a road traffic crash, received multiple injuries and spent nearly three months in hospital. My recovery is ongoing more than a year later and I live with the lasting effects of trauma.

I sustained severe internal injuries, including a kidney injury and many broken bones. I required several emergency surgeries, including the removal of a fist sized piece of my liver! I had to be intubated several times in ICU due to breathing difficulties.

The crash turned our whole world upside down and the impact on my family has been enormous. We live rurally and they travelled every day to see me, not knowing what state they'd find me in. My husband and

³ 2019 figures

⁴ at June 2018 prices

⁴ MoT 2018 Social cost of road crashes and injuries. Retrieved from <https://www.transport.govt.nz/mot-resources/road-safety-resources/roadcrashstatistics/social-cost-of-road-crashes-and-injuries/report-overview/>

⁴ WSP 2019 Waikato Region Road Safety Analysis 2019 Update

family were so focussed on me that they neglected their own wellbeing. The emotional toll it took on them to watch me going through that was huge. It was particularly hard for them when I was in surgery as they didn't know if I would be ok. The doctor's kept telling my family that I had a long recovery ahead.

The crash also took a financial toll on us as family had to take time off work to visit me. The whole experience was frustrating and really tough. Everyone was so tired and drained by the time discharge came around and I am so grateful that they were there every step of my journey. It is amazing to look back and realise how far I've come. Even small things were affected, including things we take for granted like being able to write. I had to learn to write all over again.

I don't dwell on this time of my life, unless it is having a conversation with people. I bless every day, how lucky am I to tell the story.

(Courtesy Midland Trauma)

Ash's Story

On 5 March 2019, I left work heading home biking along the cycleway down Te Rapa Straight, Hamilton. A car parked on the cycle way opened his door right on me. I'm usually really careful because I know how dangerous roads can be but I didn't see this fella, he just opened his door onto a 60km busy road, which struck me, I bounced off the door into an oncoming car going past which also run me over.

I don't remember anything at all from this day. I had seven broken ribs, both of my shoulder blades were broken and I was in a coma from a head injury.

I was in Waikato hospital ICU for about 10 days and had surgery to stabilise my ribs so I could manage breathing better. I have flashback memories only after the first couple of weeks.

Those early days were perhaps the hardest on my family. Not knowing how I was going to be, the time off work required to support me and meet with doctors. Managing our children and their anxieties, not to mention the everyday life stuff that continues while basically your world has slammed to a stop.

I was in hospital four weeks - that's a long time for anyone to cope but then I had to go to Auckland to have ongoing rehabilitation. Sometimes the traffic was so bad for my partner it would take her 3 hours to get back home. It also was really hard for my family who live in Tauranga and Tokoroa to visit so actually I felt quite isolated. After seven weeks I needed my family, my friends, my house and some sense of normalcy and discharged myself.

I have been told I have come a long way and that I have made a miraculous recovery by my specialists. I am now back working full time, but on a daily basis I still suffer dizziness and balance issues and feel crazy tired at the end of a day. I also had a lot of work pressures in the past few months from my employer where I had to get a lawyer involved to save my job.

One split decision by someone else changed my life so dramatically. Last year, was seriously the worst year of my whole life. Until the cycle lanes/roads can be made much safer for cyclist at this stage I will never envision biking again.

(Courtesy Midland Trauma)

1.3 WHY THE WAIKATO REGION HAS NATIONALLY SIGNIFICANT DEATHS AND SERIOUS INJURIES

The Waikato regional transport network is complex, with key inter-regional high-volume routes, 16 percent of the national state highway network (1,700+ kms) and 10 local Road Controlling Authorities (RCA) with over 10,000 kilometres of local roads. Major national arterials provide links between export industries and international ports, commercial urban hubs and popular tourist and holiday destinations. Traffic volumes are high and traffic movements include short haul, local and long distance inter-regional traffic. Motorised traffic often mixes with vulnerable users in both rural and urban areas which cause conflicts with use.

Key risk factors include the following.

- Active transport – pedestrians and cyclists are extremely vulnerable in a crash and are disproportionately affected by traffic volume increase and vehicle speeds.
- Motorcycling – our proximity to Auckland and increased motorcycling popularity has seen a significant rise in these high-risk activity crashes.
- Road Infrastructure Risk – many state highways and local roads have low KiwiRAP⁵ star rating with relatively lower safety standards than other regions and this combined with high traffic volumes leads to increased crash risk.
- Speed – speed related crashes result from user behaviour or inappropriate or inconsistent speed limits on roads, where the speed limit does not suit the form or function of the road.
- Freight – Waikato roads carry large freight volumes compared to our population and trucks are significantly over-represented in serious and fatal road crashes.
- Vehicle age – the New Zealand fleet is ageing and is not being replaced by enough newer and safer vehicles. Older vehicles have fewer safety features than newer cars and fare badly in crashes. Young drivers are often in older, less safe vehicles.
- High risk behaviour, impairment and inexperience - alcohol and drug driving, inappropriate speeds, not wearing seat belts or helmets, fatigue and distraction all contribute to our fatal and serious crashes. Risks are higher for young drivers and young people walking or biking from lack of experience and higher risk-taking profiles.

The following section of this strategy examines the regional issues in the context of the safe system. The Waikato region-specific data is based on an analysis for the 10-year period from 2009 to 2018⁶.

1.4 INFRASTRUCTURE ISSUES IN THE WAIKATO REGION

In New Zealand, many roads fall short of best practice safety standards, and in the Waikato, this issue is exacerbated by the sheer scale of the network and high traffic volumes on roads with minimal safety infrastructure such as guard rails and wide shoulders.

In 2008, the national KiwiRAP programme was developed to assess the state highway network for crash risk, ranking risk on a 1-5 star basis. The Waikato region has the second highest vehicle kilometres

⁵ KiwiRAP: KiwiRAP is the New Zealand Road Assessment Programme. It is part of the International Road Assessment Programme, otherwise known as iRAP. Star Rating road inspections look at the engineering features of a road (such as lane and shoulder width or presence of safety barriers). Between 1 and 5 Stars are awarded to road links, depending on the level of safety built-in to the road (the higher the star rating, the better the road) http://www.kiwirap.org.nz/about_kiwirap.html

⁶ WSP 2019 Waikato Region Road Safety Analysis

travelled in New Zealand⁷ and in 2010 had nearly double the vehicle kilometres travelled on state highways rated '2 star' than any other region and three times that of Auckland. This means that state highway users in the Waikato continually face higher exposure to the risk of lower standards of road infrastructure than they do in any other region in New Zealand. Upgrading an extensive road network takes time and considerable funding. This information goes a long way to explaining the regional road toll. It is an important piece of information to understand when seeking appropriate regional solutions.

In general, there has been an increasing number of crashes and casualties in the region both in number and comparison to population and vehicle kilometres travelled (VKT) in the last five years. The number of casualties has remained largely steady over the 10-year analysis period. However, since 2016 there has been an increasing trend with the highest number of casualties occurring in 2018.

The region is underrepresented for crashes occurring in urban areas and overrepresented in crashes occurring in rural areas compared to its peer group and all New Zealand.⁸ Consistently over the 10 year analysis period over 70% of all high severity crashes occur in rural areas.

Crash movements and causes

The main contributing factor differs when comparing all crashes to fatal and serious injury crashes. The top three crash movements are shown in Table 1-1 and these make up approximately 80% of all crashes. Crash movements reflect where the crash occurred and the main classification of the crash.

Table 1-1. Top three crash movement types for urban and rural areas (2009-2018) by crash area and crash type. F&S means Fatal and Serious crashes or DSI crashes. Source: WSP analysis.

Urban (18,002 Crashes)	Urban (F & S) (857 Crashes)	Rural (19,247 Crashes)	Rural (F & S) (2,096 Crashes)
Intersection (44%)	Intersection (30%)	Lost Control (62%)	Lost Control (51%)
Lost Control (21%)	Pedestrian (21%)	Intersection (12%)	Head on (22%)
Rear End (13%)	Lost Control (28%)	Head on (8%)	Intersection (14%)
Total (78%)	Total (79%)	Total (82%)	Total (87%)

Note: highlighted boxes show over representation compared to Peer and All New Zealand Groups

The main crash cause types differ from urban and rural environments. Many factors are at play in a crash, and investigators determine the key crash cause. Multiple crash factors are why crash statistics do not add up to 100 percent. The top three crash cause types in the Waikato region are presented in

⁷ Auckland had the highest. <http://kiwirap.org.nz/pdf/KIWIRAP%202010%20book%20low%20res.pdf>

⁸ WSP 2019 Waikato Region Road Safety Analysis

Table 1-2.

Table 1-2. Top three crash cause types for urban and rural areas (2009-2018). Source: WSP analysis.

Urban	Urban (F & S)	Rural	Rural (F & S)
Incorrect Lanes or Position (17%)	Poor Observation (19%)	Poor Observation (27%)	Poor Observation (29%)
Failed to Give Way or Stop (27%)	Failed to Give Way or Stop (11%)	Road Factors (32%)	Poor Handling (40%)
Poor Observation (51%)	Alcohol (12%)	Poor Handling (40%)	Alcohol (31%)

Aside from impact with other vehicles, many loss-of-control crashes involve ‘run-off road’ and result in a death or serious injury due to impact with a roadside object such as a tree, power pole or culvert.

Failure to give way at intersections is a factor in up to 11 percent of all urban DSI crashes. Most serious intersection crashes occur at give way controls at intersections with a state highway link. Human error due to a range of factors is a key factor in these types of crashes, but the road environment may not be well designed to support safe choices – for example speeds may be too high, sight lines may be poor, entry to the intersection may not allow time to react to approaching vehicles.

Urban form

Street and road infrastructure can have a profound impact on how we live and how we get about. Poor urban design can create safety issues, exacerbate inequities, create community severance and reduce opportunities for healthy and active environments. Poor design can lead to the following outcomes:

- Not pedestrian, wheel-chair or mobility device friendly – this may mean some people are restricted from leaving their homes
- Unsafe bus stops or road crossings, or a lack of crossing points or lighting
- A lack of consideration of place and the inherent value to communities
- None or inappropriate cycling or walking infrastructure and/or conflict with footpath users through sharing space
- Footpath blockages through signage, driveways, parking, road works, water drainage
- Micro-mobility conflict (mobility scooters, e-scooters, bikes, skateboards) with existing users of footpaths
- Lack of connection to places people want to go, or unclear/unsafe routes
- Increased vehicle congestion and parking demand as residents and visitors do not feel safe walking, cycling or taking public transport.

People have different lived-experiences of the transport environment and it is an ongoing challenge to understand how transport systems support mobility, participation, and wellbeing of disabled people, older residents and children – and what needs to change⁹.

⁹ Inclusive Streetscapes and transport systems project promoting health and wellbeing, social participation and community resilience. Ministry of Transport research funded by Health Research Council of New Zealand.

1.5 SPEED MANAGEMENT ISSUES IN THE WAIKATO REGION

Speed is perhaps the most complex and least understood component of the safe system. In a road system, speed can be defined in the following ways.

Impact speed – the level of trauma a crash has on a human body is significantly influenced by impact speed. As impact speed increases, the forces that vehicle occupants or people outside of vehicles must absorb in a crash increase dramatically. Occupant and pedestrian protection systems (where available) in vehicles are very effective at low and moderate speeds. However, they cannot adequately protect vehicle occupants from these kinetic forces at high impact speeds. People walking, cycling, wheeling and motorcycling are particularly vulnerable to vehicle impacts at speed which are above the limits of human tolerance. This is clearly outlined in Speed, or driving too fast for the conditions, continues to be a significant contributor to fatal and serious crashes in the Waikato region with a steady trend over 10 years of over 20 percent.

The risk associated with speed is still poorly understood by the general travelling public although there has been progress across several Waikato districts over the last three years. Part of the confusion relates to the different interpretation of 'safe speeds' that has existed between road controlling authorities in the region. Over many years the regional network has been developed by 11 different authorities, each determining their own road hierarchies and speed limits. This has resulted in different speed limits occurring on what appear to be very similar roads in different districts.

The speed differential between different transport modes is also a key risk factor. A common conflict occurs between vehicles and people walking or on bikes. The difference in speed between modes and the visibility of one mode to another impact on outcomes – usually poor for the vulnerable road user. This is one of the reasons that high volume pedestrian/cyclist areas have recommended speeds of 30 km/h and 10 km/h for Shared Spaces.

Figure 1-3Speed, or driving too fast for the conditions, continues to be a significant contributor to fatal and serious crashes in the Waikato region with a steady trend over 10 years of over 20 percent.

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- Figure 1-3.
- **Inappropriate speed** – driving at a speed that is inappropriate for the conditions of the road, even if the speed is within the legal limit. ‘Conditions’ may be fixed or variable and include the physical condition of the road such as surface, width, camber, bends and sight lines as well as traffic and weather. Inappropriate speed can also include driving too slowly for the environment, disrupting traffic flow or creating a hazard. The speed limit in an urban or rural area may have previously been set too high for the current form and function of that part of the road network.
- **Excessive speed** – driving above the speed limit for the road. This may be a deliberate violation or due to inattention, habit, or be influenced by travel speed of surrounding vehicles.

Speed, or driving too fast for the conditions, continues to be a significant contributor to fatal and serious crashes in the Waikato region with a steady trend over 10 years of over 20 percent¹⁰.

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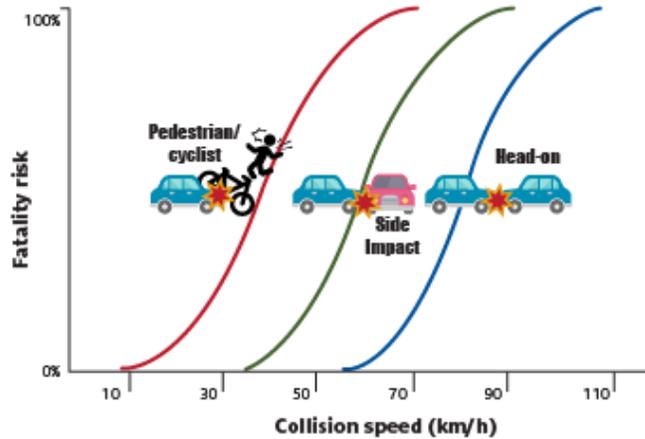
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Figure 1-3: Probability of death occurring at different impact speeds in different types of collisions. Source: Safer journeys for motorcycling on New Zealand roads¹²)

¹⁰ WSP 2019 Waikato Region Road Safety Analysis

¹¹ <https://www.nzta.govt.nz/assets/Safety/docs/speed-management-resources/speed-management-guide-first-edition-201611.pdf>

¹² Safer journeys for motorcycling on New Zealand roads. Retrieved from <https://www.msac.org.nz/assets/Uploads/pdf/NZTA-Safer-journeys-motorcyclists-web.pdf>



COLLISION TYPE	PROBABILITY OF DEATH		
	10%	30%	50%
Pedestrian or cyclists struck by car	30km/h	40km/h	45km/h
Car driver in side impact collision with another car	50km/h	65km/h	75km/h
Car driver in frontal impact with another car	70km/h	95km/h	105km/h

Speed behaviour change campaigns and enforcement are two key activities in regional speed management planning. Police speed enforcement is poorly understood and is not helped by negative media portrayal as ‘revenue gathering’ rather than as protection of people. The need to change the conversation on speed was identified as part of the national speed management review. Over the last three years practitioners have noticed a positive public perception shift in some parts of the region. The ‘Tackling Unsafe Speeds’ national programme includes the move to have safety cameras managed by Waka Kotahi the New Zealand Transport Agency (Waka Kotahi).

Infrastructure improvement and speed management is an area of high concern in the national road safety strategy, *Road to Zero*¹³, because unforgiving roads and roadsides contribute significantly to road trauma, especially head on crashes, run off-road crashes and intersection crashes.

While roads and roadsides can be engineered to prevent or minimise the impact of mistakes and encourage safer use, the high cost of treatments means priority must be given to targeting the highest traffic volume/high risk roads and urban, people-dense areas.

1.6 ROAD NETWORK USE ISSUES IN THE WAIKATO REGION

Human factors are always at play in transport crashes and must be factored into the safe system. It is well understood that all humans at some point are prone to mistakes, lapses and slips in judgement. People may be lacking the skills or ability to use components of the transport system – for example

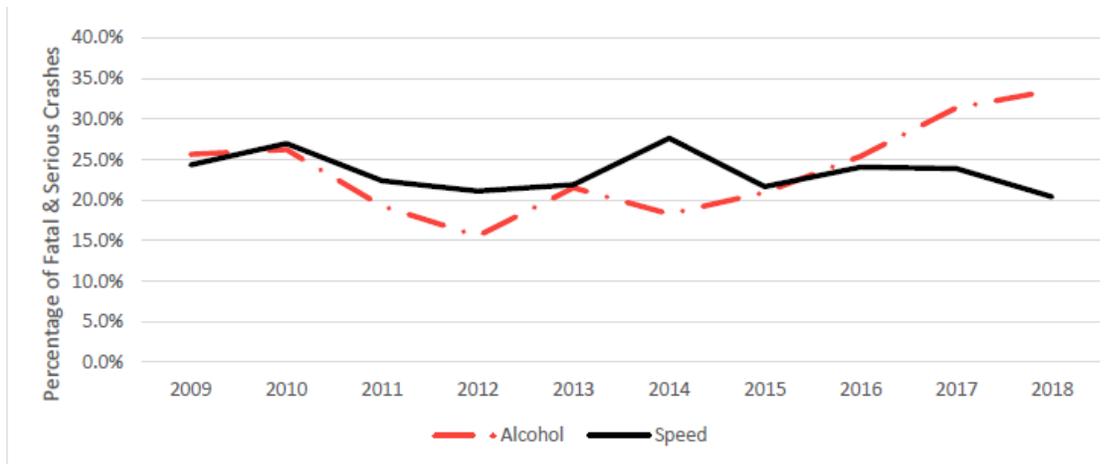
¹³ <https://www.transport.govt.nz/multi-modal/keystrategiesandplans/road-safety-strategy/>

cycling skills, driving skills, children with lower speed perception, vision, hearing or perception impairment. We also recognise that some people deliberately choose to behave antisocially and violate rules.

When people make mistakes on Waikato’s transport network it too often leads to serious injury or death. Many regional crashes can be partially attributed to errors and lapses, and this combines with the unforgiving road network to create fatal results. Poor judgement, fatigue and distraction are three leading causes of error contributing to regional crashes. Many crashes and injuries also result from deliberate high-risk behaviour. The key road use issues contributing to crashes in the region are examined in the following section.

Alcohol and speed contribute to over 50 percent of crashes in the Waikato as shown in Figure 1-4.

Figure 1-4 Alcohol and speed factors contribution to high severity crashes as a percentage of all Waikato region DSI crashes, 2009-2018. Source: WSP analysis.



1.6.1 Vulnerable people

Vulnerable people include pedestrians, cyclists, those in wheelchairs and on mobility scooters, other micro-mobility devices, motorcyclists and people with impaired senses or abilities. Anyone who is not protected by a motor vehicle is at highest risk of injury or death in a crash. Active (and/or vulnerable) people have recently amounted to almost 40 percent of all high severity urban casualties. There has been a decreasing trend in high severity crashes for active road users in the last 5 years (2013-2018). The highest proportion of active casualties in urban areas are pedestrians (

Figure 1-5).

The young and the elderly are particularly vulnerable. In the Waikato region, transport is the leading cause of unintentional injury death for children and young people aged 0-24 - 69 percent of all unintentional injury deaths¹⁴.

Cyclists and Pedestrians are Vulnerable People

Data from the Midland Trauma Registry show that about 480 cyclists and pedestrians were admitted to hospital over 4 years (2014/15 to 2018/19). The cost of acute care for these vulnerable people was estimated at \$6.95 million. Children aged less than 15 years made up almost one in five of those injured (19.5%), with almost a quarter of pedestrians and cyclists being Māori (24.4%). About two thirds (65.1%) of those injured were males.

Cyclists and pedestrians injured in 2018 spent an average of over 5.5 hours (335 minutes) in the Emergency Department and then a further six days in hospital. During this time nine of the pedestrians and three cyclists died in hospital from the injuries suffered. The emotional, social and economic ramifications of these fatalities are immense and ongoing for whānau and the community. Many of those who survive their injuries have long recovery journeys as they rebuild their lives.

There is an equity issue in road safety for these vulnerable people with Māori having a higher incidence rate of hospital admission per 100,000 people than non-Māori. In 2018 the incidence rate stood at 42 per 100,000 for Māori compared with 23 per 100,000 for non-Māori.

1.6.1.1 Pedestrians

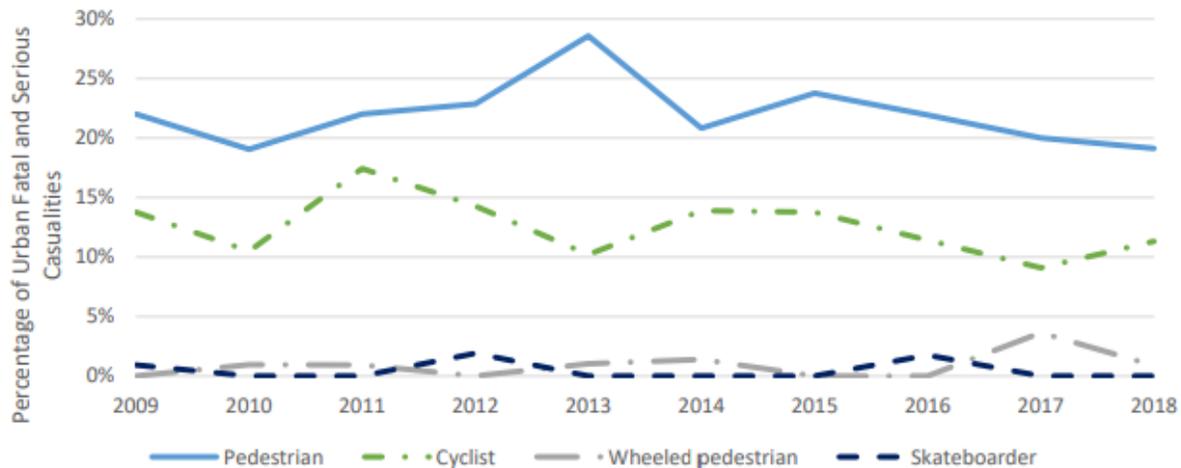
Pedestrians represented 21 percent of Waikato region urban casualties between 2009-18 (

¹⁴ Waikato Local Child and Youth Mortality Review Group, Data overview 2005-2014, The New Zealand Child and Youth Mortality Review Committee.

Figure 1-5). Pedestrians aged 5-9 years are the highest casualty age group followed by 10-14, and 20-24-year olds¹⁷. Pedestrian crashes are the 3rd highest type of crash (behind intersections and loss of control) occurring in urban high severity crashes. Waikato region pedestrian DSI crashes by 100,000 population are slightly under the national average¹⁵, this may reflect the largely rural nature of the Waikato region.

¹⁵ Waikato Region Death + Serious injuries in Pedestrian crashes by 100,000 Population (Source Road Safety Planning Tool March 2013-Dec 2016), CAS.

Figure 1-5 Waikato region urban pedestrian, cycling and micro-mobility casualties as a percentage of all urban death and serious injury casualties (2009-2018). Source WSP analysis.



Nationally, more than nine in every 10 police-reported pedestrian casualties occurred on urban roads (speed limit of 70km/h or less). Over half (53 percent) of all pedestrian casualties occurred on major urban roads (typically busy arterials). Forty percent happened on minor urban roads and 7 percent on roads with speed limits of over 70km/h. The majority (86 percent) of reported pedestrian casualties on urban roads occurred when the pedestrian involved was crossing the road. About two-thirds (66 percent) of these casualties occurred when the pedestrian was crossing the road in an uncontrolled area (for example, not at a pedestrian crossing or traffic lights)¹⁶.

Pedestrian volumes on footpaths and road crossings are not monitored as well as motor vehicle traffic on roads, impacting on the ability to assess pedestrian risk in any environment. Perceived safety may be a factor in whether a pedestrian chooses to cross a road or make a trip at all¹⁷. This is further supported by findings from the Te Awamutu Town Centre Health Impact Assessment applied to Waipa District's Speed Limit Bylaw review in June 2016. Vehicle speeds, safe infrastructure, inadequate visibility of pedestrians, and lack of visibility for pedestrians, were all factors that influenced pedestrian activity. Pedestrian injury risk increases in mixed traffic environments.¹⁸

Beyond crashes, the broader public health perspective also looks at the impact of motor vehicle speed on preferences for driving over walking or cycling and on parental willingness to let children walk or bike. Perceived danger from collisions with motor vehicles is one of the greatest barriers to active transport. Low levels of cycling in urban areas often arise from transport policies that pay little attention to the safety of pedestrians and cyclists.¹⁹

Previous focus groups and studies have shown that people with disability (and by implication, a high proportion of older people) find travel as pedestrians particularly difficult, stressful and tiring. People

¹⁶ Pedestrians crash facts 2016, Ministry of Transport.

¹⁷ Understanding pedestrian safety in New Zealand, Burdett, IPENZ Transportation Group Conference, Hamilton March 2017.

¹⁸ Kristensen et. al. (2016) Health Impact Assessment Te Awamutu Town Centre June 2016 retrieved from <https://www.waikatoregion.govt.nz/assets/PageFiles/41666-speed-management/Waikato%20DHB%20Health%20Impact%20Assessment%20-%20Te%20Awamutu%20town%20centre.pdf>

¹⁹ Genter J. A., Donovan S., Petrenas, B., and Badland, H. 2008. Valuing the health benefits of active transport modes. NZ Transport Agency research report 359. 72 pp.

with a disability make fewer trips²⁰, and those in the focus group reported that they explicitly plan their routes as pedestrians to minimise energy expenditure while maximising perceived comfort, safety and personal security.

For these reasons, counting the presence of people with disability and older people can be a useful indicator of perceived safety. Higher proportions of people with mobility aids are observed at locations that are perceived to be more accessible (that is, barrier-free) and more safe.²¹

1.6.1.2 Cyclists

Cyclists represent about 15 percent of urban fatal and serious crashes in the region between 2009-18. Cyclists aged 45-49 years are the highest casualty age group and children aged 10-14 years are the second highest²². Cyclist death and serious injury crash trends between 2009-18 are shown in

²⁰ SHUMWAY-COOK, A., PATLA, A., STEWART, A.L. FERRUCCI, L., CIOL, M.A., GURALNIK, J.M. (2005). Assessing Environmentally Determined Mobility Disability: Self-Report Versus Observed Community Mobility. *Journal of the American Geriatrics Society*, 53(4), pp.700-704.

²¹ Understanding pedestrian safety in New Zealand 2017, Burdett B. Retrieved from <https://static1.squarespace.com/static/5591f57ee4b07952c1a4d8bd/t/58b4c7dd725e25bf6113074e/1488242659802/Burdett%20C+Bridget+-+Paper+26+-+Understanding+pedestrian+safety+in+New+Zealand.pdf>

²² WSP 2019 Waikato region road safety analysis.

Figure 1-5.

The main risk factors for cyclists are decreased stability, a much lower level of protection than that provided by a vehicle, and lack of safe and appropriate infrastructure. In addition, a cyclist is less visible to other road users than a car or truck and the relatively low presence of cyclists²³ means that drivers are not used to looking out for cyclists. These factors combined give cyclists a high level of risk per time unit travelled²⁴.

Road features such as loose gravel and irregular road surface can contribute to cycle-only crashes²⁵. Other factors were the cyclists' own actions, cycle problems, actions of others, and crashing when trying to avoid collision with another person or object. Two cycling crash patterns emerged from the study: crashes in urban areas mainly occurred when cyclists were using their cycle for transport, while crashes in 100km/h speed zones mainly involved those using their cycle for sports training.

Cycling injuries can strongly affect perceptions of cycling safety which in turn affects cycling participation (Macmillan et al 2014). This means that actually and perceptually dangerous cycling environments can limit the health, environmental, congestion and other benefits that cycling brings, which are potentially very large (Mason et al 2015)²⁶.

Cycle crash data is not well represented for crashes not involving motor vehicles, and work is required to understand this aspect of cycle safety to inform future cycle facility planning. What is known is that vehicle speeds above 40km/h greatly increase the risk of severe cycle crash outcomes. Cyclists are reported in the official crash statistics to be at fault in less than half of all collisions with motor vehicles. Heavy vehicles are involved in a disproportionate number of serious or fatal cycle collisions. Night cycling and poor weather are likely to be riskier for cyclists²⁶.

1.6.1.3 Micromobility

Micromobility is a catch phrase for devices that provide wheeled movement, and can be used on footpaths or cycle lanes (where legally permitted). Micromobility frequently refers to the emergence of scooters and e-scooters. These devices are having a profound impact on how people move about in more highly urbanised areas over relatively short distances. Safety concerns have been raised over the speeds that e-scooters can travel at on footpaths, impact force and speed with pedestrians, parking of devices on footpaths and a lack of appropriate regulation. Essentially regulation has not kept up with the advent of new technologies.

Nationally, new claims for e-scooter injuries have ranged between 39 – 728 per month, between October 2018 and June 2020. Active claim costs have averaged \$584,447 per month in the six months January – June 2020. Claims are typically highest in regions where e-scooter schemes are run by

²³ Less than 2% of total time spent travelling on roads. How dangerous is cycling in New Zealand? Chienga, Laib, Woodward, Journal of Transport and Health, March 2017.

²⁴ Cyclists crash facts 2016, Ministry of Transport.

²⁵ Opus International Consultants Ltd, 2001, Research report 211 Role of road features in cycle-only crashes in New Zealand, NZTA research report.

²⁶ Mackie, H, G Hawley, R Scott and A Woodward (2017) Towards a safe system for cycling. NZ Transport Agency research report 606. 1

commercial operators, due to accessibility. Those aged 20-34 years have the highest injury profile, which may reflect uptake by this age band²⁷.

Key issues with the current system²⁸

The types of vehicles and devices currently used on footpaths, shared paths, cycle paths and cycle lanes are categorised into different groups to help regulators, councils, and the public understand where and how they can be used. These categories are intended to ensure different devices are used in spaces safely and do not impend on other users.

Recently new vehicles and devices like oversized mobility devices, e-bikes and e-scooters have become increasingly popular. While these devices have many benefits, they also introduce new challenges in the form of; greater speeds, easier access through share schemes, and greater congestion on spaces like the footpath.

The categories presently used to govern vehicles and devices in these spaces have not easily accommodated the growth of new vehicles and devices and it has become increasingly difficult to ensure that the use of these devices in different spaces are safe and ensure the passage of other users. This is particularly the case on the footpath.

1.6.1.4 Motorcyclists

Motorcyclists have been involved in approximately 20 percent of all fatal and serious crashes in the past 10 years. The highest casualty age group are 45-49 years closely followed by those aged 40-44 and 50-54.²⁹ A previous New Zealand travel survey shows that, on average, the risk of being killed or injured in road crashes is 21 times higher for motorcyclists than for car drivers over the same distance travelled.³⁰

The Waikato region is well known for its popular motorcycle routes. Nationally, motorcycling has increased by around 60% from 2005 to 2015, particularly in the older age groups who ride for recreation. Rural crashes are biased towards more severe crashes, related to the amount of riding done in rural areas - approximately 75 percent on the open road. Motorcyclists are primarily responsible for 56 percent of the crashes and alcohol, drugs or speed impacted on almost half of fatal crashes. In urban areas 48 percent of fatal or injury crashes occur at intersections. On rural or open roads 54 percent of fatal or injury crashes are attributed to lost control / run off road. ACC and the Motorcycle Safety Advisory Council jointly released a single point of truth on motorcycle safety information in 2017 which details use and changes, risk factors, crash and injury facts³¹.

²⁷ <https://catalogue.data.govt.nz/dataset/e-scooter-injuries/resource/aa5837a6-b743-499f-8e2e-ca1e0f3bbc1c>

²⁸ Preliminary regulatory impact statement, Accessible Streets Package, 29 October 2019, Ministry of Transport. <https://www.transport.govt.nz/multi-modal/keystrategiesandplans/road-safety-strategy/accessible-streets/>

²⁹ WSP 2019 Waikato region road safety analysis.

³⁰ Motorcyclists 2017, Ministry of Transport.

³¹ <https://www.msac.org.nz/assets/Uploads/pdf/2017-Motor-cycle-safety-a-single-point-of-truth.pdf>

1.6.1.5 Stock truck effluent

Motorcyclists as well as cyclists, pedestrians, and road workers can be adversely affected by stock truck effluent discharges on road corridors, creating a slippery surface and a health hazard through ingestion.

1.6.2 Restraints

While most vehicle occupants in New Zealand use restraints, up to 15 percent of road fatalities in the Waikato still involve unrestrained vehicle occupants. Wearing a safety belt reduces the chance of death or serious injury in a crash by 40 percent. For a passenger, the risk of serious or fatal injury is virtually the same whether they sit unrestrained in the front or the back seat. Drivers affected by alcohol are less likely to wear safety belts than sober drivers.

The national safety belt wearing rate as at September 2018 was 96 percent for adults in the front seat, 90 percent in the rear seat, 93 percent for children aged under 5 and 95 percent for children aged 5 to 9³². The quality and use of child car seats is an ongoing concern in the region as not all imported seats are of consistent quality, and the variety of seats means that many children are not secured in the seats properly.

1.6.3 Alcohol impairment

Alcohol is the root of many known social harm issues and road crashes are no exception. Alcohol impairment is a factor in over 30 percent of all serious regional crashes. Alcohol related crashes are showing an increasing trend in the last three years between 2016-2018.

For every 100 drivers or riders who died in road crashes where alcohol/drugs were a contributing factor, 30 of their passengers and 25 other road users died with them³³.

While some drivers are intoxicated and violating the law, many others choose to drink alcohol in quantities up to the legal limit and then drive, unaware of the crash risk it poses. Crash risk increases exponentially with higher alcohol concentrations, so even a small reduction in the level of offending by drinkers exceeding the current breath or blood alcohol limits can result in significant road safety benefits.

1.6.4 Drug impairment

Drug driving impairment and distraction statistics are not well known, although a 2018 study from ESR³⁴ has demonstrated that drug-affected drivers involved in serious crashes now out-numbers drunk drivers³⁵. Different drugs, including prescription drugs, have varied levels of impairment at different

³² <https://www.transport.govt.nz/mot-resources/transport-dashboard/2-road-transport/rd059-factors-contributing-to-fatal-and-injury-road-crashes/rd064-wearing-rates-front-rear-seatbelt-and-child-restraints/>

³³ <https://www.transport.govt.nz/mot-resources/new-road-safety-resources/alcohol-and-drugs/who-dies-in-alcoholdrug-crashes/>

³⁴ www.esr.cri.nz

³⁵ Drugs, what drugs? Driving impaired: do we really need to know what the drug is? Dr Paul Quigley, Capital and Coast DHB, Trafanz 2018 presentation. <https://harding.eventsair.com/QuickEventWebsitePortal/trafinz-2018/programme/Agenda/AgendaItemDetail?id=4201138a-c7a8-4cf7-b3e0-dfaf4c56e564>

time frames, and individuals will have a range of tolerances to the effects. Fatigue following drug use may be a significant factor in drug related crashes.

The potential effects of drug use on driving ability include fatigue, visual hallucinations/colour spatial distortions, distraction, decreased reaction times, “speeding up” and strong emotional reactions. Cannabis, a high use drug in New Zealand, causes significant impairment of motor function and response times, has a profound effect on short term memory and doubles the risk of an injury crash. 30 percent of driver fatalities had used cannabis and ¾ were responsible for the crash. Cannabis impacts are accentuated with alcohol. Synthetic cannabinoids are also readily available and can be significantly more potent.

The use of cannabis, synthetic cannabis, methamphetamine and other recreational drugs is growing, and drug related harm is an issue in some parts of regional communities. Previous surveys of known drug users indicate that a majority continue to operate their vehicles whilst under the influence of drugs. Additionally, recent research indicates that many drug-related issues are due to anti-depressants and anti-anxiety medications³⁶. It is unclear how health issues impact on fatigue and driving impairment.

In the Waikato region detection of drugs involved in crashes has increased over the last 10 years. There is a slight increasing trend in “Drugs Proven” and a big increase in “Drug Suspected” over last few years, however these are still a very small percentage of overall crashes (<2.0 percent).

1.6.5 Impairment through distraction

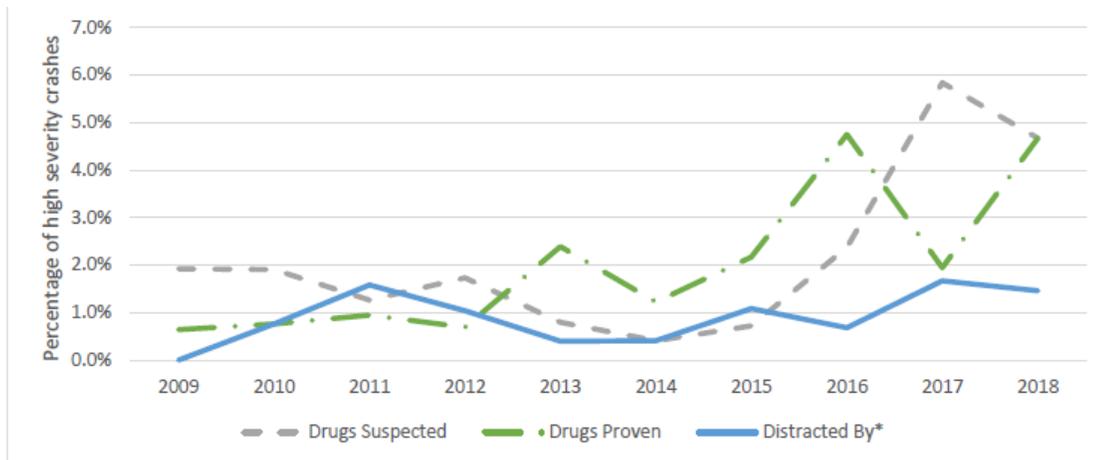
Distraction is an emerging issue, particularly with increasing mobile phone use while driving. General distraction whilst driving is also an issue with inattention leading to more crashes. Nationally over the period 2004–2008 distraction, or inattention, contributed to at least 10 percent of fatal crashes and 9 percent of serious injury crashes. In 2008, these crashes resulted in 245 serious injuries and 42 deaths³⁷.

There is a growing concern amongst safety partners that both drug impairment and distraction are under-reported as they are difficult to monitor. These difficulties are highlighted by the limited percentage of official crashes as shown in Figure 1-6 **Error! Reference source not found.**

Figure 1-6. Drugs and distracted factors contribution to high severity crashes as a percentage of all DSI crashes, 2009-2018. Source: WSP analysis.

³⁶ Starkey, NJ and SG Charlton (2017) The prevalence and impairment effects of drugged driving in New Zealand. *NZ Transport Agency research report 597*.

³⁷ Safer Journeys. “Distracted and fatigued drivers.” <http://www.saferjourneys.govt.nz/areas-of-concern/distracted-and-fatigued-drivers/>



The MOT 2015 driver distraction report is a useful summary of types of distraction, technologies and approaches³⁸. Further (Australasian) information is detailed by the National Road Safety Road Safety Partnership Program³⁹.

1.6.6 Impairment through fatigue

Fatigue continues to be a long-standing issue for both commercial and passenger transport resulting in avoidable crashes that may ultimately lead to deaths and serious injuries. For all drivers, fatigue often results in loss of alertness, drowsy driving or falling asleep at the wheel. These factors often show up first as poor judgement, slower reaction time and decreasing driving skills. It is an established fact that in a fatigued driver the deterioration in driving skill occurs well before the driver falls asleep at the wheel⁴⁰. Fatigue as a cause of crashes is difficult to measure and therefore does not show as a significant factor. Anecdotal reporting from regional police suggests it is a significant factor on regional routes where drivers are travelling inter-region.

Acute fatigue can be experienced as weariness from the driving task and may affect all drivers. Vulnerable groups include holidaymakers/tourists, commuters, shift workers, the elderly, and other groups. *Chronic* fatigue or drowsiness typically arises from sleep deprivation. Chronic fatigue is most frequently found among professional (truck, bus, taxi) drivers⁴¹, sufferers of sleep disorders and young male drivers⁴². Fatigue is also a common side affect of drug use (illicit or prescription).

Causes of fatigue include body clock factors (day versus night), sleep factors (amount of time asleep and quality), work factors (long or extended hours, recovery time) and health factors (sleep problems, medication, lifestyle).

³⁸ Driver distraction by in-car technologies, July 2015, Ministry of Transport. <https://www.transport.govt.nz/assets/Uploads/Our-Work/Documents/cd48d777a0/Report-on-Driver-Distracton.pdf>

³⁹ <https://www.nrspp.org.au/?s=distracton>

⁴⁰ Health and fatigue, March 2015, NZ Transport Agency. <https://www.nzta.govt.nz/assets/resources/heavy-learner/health-and-fatigue/docs/health-and-fatigue.pdf>

⁴¹ <https://nzta.govt.nz/assets/resources/fatigue-and-fitness-for-duty-of-nz-truck-drivers-phase-2/docs/fatigue-and-fitness-for-duty-of-nz-truck-drivers-phase-2.pdf>

⁴² A literature review on driver fatigue among drivers in the general public, S McKernon, Supplejack Ltd, February 2009, NZ Transport Agency Research report 342. <http://www.feetfirst.govt.nz/assets/resources/research/reports/342/docs/342.pdf>

1.6.7 High risk road users

Some people are at higher risk of crashing, or of suffering injury or death in the event of a crash as shown in Table 1-3. High risk people in the Waikato region, shown in road user age group, 2009-2018. Table 1-3. Demographics and ethnicity also play a part in the exposure to risk of different groups.

Table 1-3. High risk people in the Waikato region, shown in road user age group, 2009-2018. Source: WSP analysis.

Road User Group	Causalities (high severity)	Highest % age group (high severity)	2nd highest % age group (high Severity)
Car/Van Driver	1772	20-24 (17%)	15-19 (15%)
Car/Van Passenger	990	15-19 (21%)	20-24 (16%)
Truck Driver	117	60-64 (16%)	45-49 (12%)
Truck Passenger	27	20-24 (26%)	30-34, 50-54 (11%)
Motorcyclist	679	45-49 (14%)	40-44, 50-54 (11%)
Pedestrian	296	5-9 (11%)	10-14, 25-29 (8%)
Cyclist	193	45-49 (14%)	10-14 (10%)

1.6.7.1 Disproportionate harm to Māori

National environmental health indicators show that between 2005 – 2014, Māori had significantly higher mortality rates than non-Māori for vehicle occupant injuries and pedestrian injuries. The Māori mortality rate was 2.6 times as high for vehicle occupant injury, and 2.8 times as high for pedestrian injury compared to non- Māori (Figure 1-7).

High risk drivers make up around 34% of all at-fault drivers in fatal crashes. Of these 41% are Māori, and of these, 40% are under 25 years⁴³. Rangatahi in the 15–24 age group are shown to be particularly over-represented in fatal crashes⁴⁴. Speed and alcohol are major contributors. Of the high-risk drivers, 61% have alcohol factors, 36% have licence factors and 19% have prior speed offences. However, there is some overlap between these risk categories.

Recent studies in Tāmaki Makaurau⁴⁵ have shown that Māori are at a much higher risk of road traffic injury per population than other ethnicities. In the past five years, 18 percent of all people who have lost their lives on our roads were Māori, representing a disproportionate level of harm as Māori make

⁴³ Ministry of Transport, May 2012. <https://www.transport.govt.nz/assets/Import/Documents/d01a1a6e70/High-risk-drivers-in-fatal-and-serious-crashes-2006-2010.pdf>

⁴⁴ Motor vehicle traffic crashes involving Maori, Sargent et al, January 2004. NZMJ 30 January 2004, Vol 117 No 1188 Page 1 URL: <http://www.nzma.org.nz/journal/117-1188/746/>

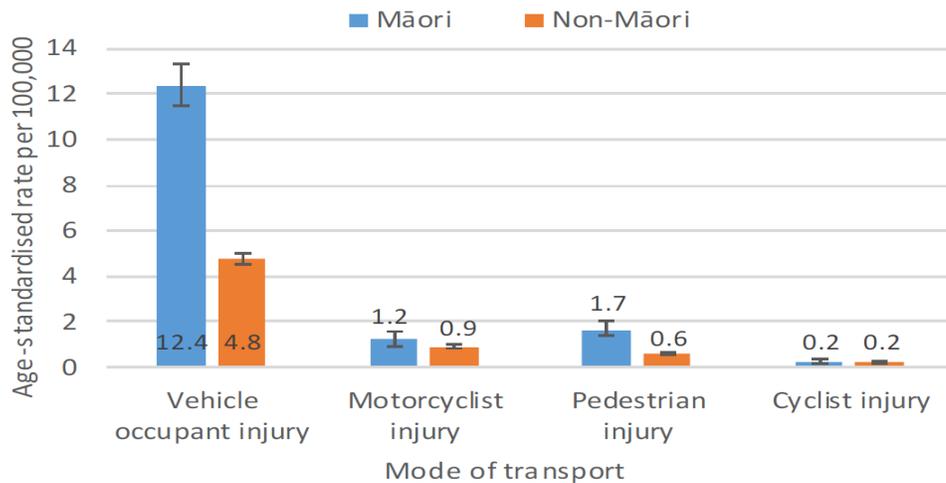
⁴⁵ <https://at.govt.nz/media/imported/4468/social-geographical-differences-report-2013.pdf>

up 11 percent of the overall population in Tāmaki Makaurau. When including serious injuries this figure is 14 percent of all casualties in the past five years⁴⁶.

Statistics alone do not give the full story of the impact of loss of life on Māori. Whānau usually travel together which can result in an immediate impact on whānau, hapū, iwi and hapori Māori from multiple fatalities. From a wellbeing perspective, the data provides a picture of physical harm, however it does not measure the psychological impact on whānau and communities.

Figure 1-7: Road traffic injury deaths by Māori /non- Māori and mode of transport 2005-2014 (age standardised per 100,000 population). Source: New Zealand Mortality Collection Dataset.

Māori had a higher traffic injury mortality rate than non-Māori in 2005–2014.

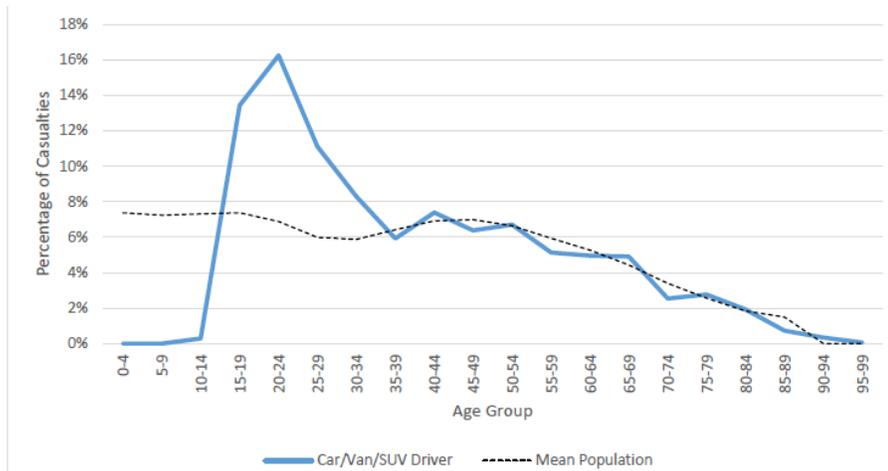


1.6.7.2 Young drivers

Young drivers are those aged 16-24, and they are categorised as inexperienced drivers. The crash risk for this group increases threefold in the first six months that they drive solo on their restricted licence. Drivers in this age group account for around 30 percent of serious injury and fatal crashes in the region (Figure 1-8).

Figure 1-8 Waikato region high severity crash car/van driver casualty age, 2009-2018. Source: WSP analysis.

⁴⁶ Vision Zero for Tāmaki Makaurau: A Transport Safety Strategy and Action Plan to 2030. Retrieved from <https://at.govt.nz/media/1980910/vision-zero-for-tamaki-makaurau-compressed.pdf>



1.6.7.3 Heavy motor vehicles

This group features in a disproportionately high number of crashes in the region, regardless of fault, with approximately 20 percent of fatal and serious rural crashes⁴⁷. Nationally, just over 6 percent of the total distance travelled on New Zealand roads is travelled by trucks⁴⁸ and the Waikato represents upward of 13 percent of total freight movements by volume^{49,50}. Unfortunately, crashes involving heavy motor vehicles nearly always result in serious injury or death.

1.6.7.4 Visiting drivers

The Waikato region hosts many visiting drivers, both as a destination and for visitors travelling through the Waikato, often at the beginning of their trip. The road environment and driving rules in New Zealand are quite different to many countries and Waikato rural roads can be particularly challenging for visiting international and inter-regional domestic drivers. In past years there have been several high-profile, multiple-fatality crashes involving visitors to the region.

For overseas drivers, in about a third of crashes where an overseas driver was at fault, one of the factors that contributed to the crash was the driver failing to adjust to New Zealand rules or conditions. This was 42 percent for fatal crashes. The other factors that contributed to crashes of overseas drivers tended to be the same as those for New Zealanders, such as the driver losing control or failing to give way or stop⁵¹.

⁴⁷ WSP 2019 Waikato Regional Safety Analysis

⁴⁸ Trucks 2015, Ministry of Transport.

⁴⁹ Waikato Regional Land Transport Plan 2015-2045, Waikato Regional Council (p37) Change in average daily traffic volumes for trucks on the state highway network in the Waikato Region (2011-2015), showing an increase on most major routes.

⁵⁰ Upper North Island Freight Story – Shared Evidence Base (2013) <https://www.waikatoregion.govt.nz/assets/PageFiles/20345-UNISA/Upper%20North%20Island%20Freight%20Story%20-%20Shared%20Evidence%20Base%20Document%20-%20FINAL%20April%202013.pdf> <https://www.waikatoregion.govt.nz/assets/PageFiles/20345-UNISA/Upper%20North%20Island%20Freight%20Story%20-%20Shared%20Evidence%20Base%20Document%20-%20FINAL%20April%202013.pdf>

⁵¹ <https://www.transport.govt.nz/assets/Uploads/Research/Documents/4ae59905f0/Overseas-drivers2017-Sep17.pdf>

The Waikato region has had on average 5 fatal and 19 serious injury crashes involving overseas drivers per year between 2013-2018. Fatal crashes involving overseas drivers have ranged between 3-12 percent of regional fatal crashes, with an average of 8 percent, suggesting the region is over-represented compared to New Zealand. The same is true of serious injury crashes involving overseas drivers, with an average of 315 between 2013-2018, and an average of 6 percent⁵².

1.6.7.5 Ageing population and disability

New Zealand has an ageing population which will result over time in an increasing incidence of disability and impairment. People over the age of 65 were reported as 59 percent identifying as disabled in 2013⁵³. People are also living longer and there will be an increasing number of people with age-related disabilities. Older people have different reaction times, vision and hearing abilities. Māori had a higher rate of disability than non-Māori, regardless of age in 2013. Older people had higher disability rates generally⁵⁴ (Table 1-4).

Table 1-4 Disability prevalence, by age group and gender, Māori and non-Māori, 2013. Source: Statistics NZ.

Indicator	Māori			Non-Māori		
	Males	Females	Total	Males	Females	Total
Total disabled (of total population), 0–14 years, percent, 2013	19.0	10.6	14.9	11.0	7.2	9.2
Total disabled (of total population), 15–24 years, percent, 2013	20.3	23.5	20.9	14.0	13.8	13.9
Total disabled (of total population), 25–44 years, percent, 2013	24.7	22.2	23.3	14.0	15.3	14.7
Total disabled (of total population), 45–64 years, percent, 2013	39.6	45.3	43.6	26.0	26.1	26.1
Total disabled (of total population), 65+ years, percent, 2013	73.7	50.0	62.2	55.1	57.0	55.9

Local authorities need to be planning now for future changes in our population structure and the impacts of this on transport use.

1.7 VEHICLES AND WORKPLACE SAFETY

New Zealand has one of the oldest vehicle fleets in the developed world. The average age of the New Zealand light vehicle fleet is over 14.1 years and rising⁵⁵. While advances in modern vehicle technologies are significantly improving occupant safety, many of these benefits are not realised in the older New Zealand fleet. Many older vehicles are not up to the safety standards of their modern counterparts and are less forgiving in the event of a crash, leading to occupants sustaining more severe injuries or death. Emissions standards for older vehicles are also lower and continue to contribute to ongoing harm from air and water-borne pollution.

⁵² Regional Road Safety Monitor report to RTC meeting 1 July 2019, p16-25.

<https://www.waikatoregion.govt.nz/assets/WRC/Community/Council-Meetings-and-Agendas/Regional-Transport-committee/2019/Agenda-Package-Regional-Transport-Committee-1-July-2019.pdf>

⁵³ Statistics New Zealand (2015). He haua Māori i: Findings from the 2013 Disability Survey.

⁵⁴ <https://www.health.govt.nz/our-work/populations/maori-health/tatau-kahukura-maori-health-statistics/nga-mana-hauora-tutohu-health-status-indicators/disability>

⁵⁵ 2018 New Zealand Vehicle Fleet Annual Statistics, Ministry of Transport

The Waikato regional fleet age mirrors that of the national fleet. Traffic volumes in the Waikato region are the second highest in the country with proportionally high conflict. The road network hosts commercial, freight, tourist and commuter traffic used by many different vehicle types and drivers.

Heavy motor vehicle volumes are particularly high on the region's state highways, servicing key freight routes, and the local road network where much of the region's dairy industry is based. As the number of High Productivity Motor Vehicles (HPMV) increases over time, with new safer vehicles being imported, it is expected that there should be road safety benefits on HPMV routes. This may not be reflected on non-HPMV routes as more marginal operators with older vehicles are likely to service these routes in the short term⁵⁶. Operator rating systems and roadside infringement detection by the police also have an impact on heavy vehicle safety standards.

Motorcyclists also favour many regional routes. The challenging nature of these routes requires skilled riding and safe vehicles, particularly brakes and tyres. It is in the interest of all people that all vehicles are maintained to the highest safety standards and that they protect their occupants/riders in the event of a crash. *Road to Zero* has a strong focus on motorcycle safety.

Company fleet vehicles

'At work' drivers have crash rates that are 30-40 percent higher than other drivers. In the Waikato there are high numbers of company vehicles on the roads and this group has been identified as a key target audience for road user safety messaging⁵⁷. Focus on company fleet policies and practices can result in reduced injuries, vehicle costs and hidden costs including organisation reputation⁵⁸.

⁵⁶ NZ Transport Agency

⁵⁷ Waikato Regional Road Safety Strategy 2013-16

⁵⁸ <https://www.fleetsafety.govt.nz/planning-your-policy/reasons-to-do-fleet-safety/>

2 SECTION 2: INTERVENTIONS AND STAKEHOLDER ACTIVITIES

Please note, this section does not provide comprehensive detail on interventions, but an overview of some regional activities. This section may be updated periodically.

2.1 PROVIDING AN EFFECTIVE REGIONAL RESPONSE

System designers and people who use the roads share responsibility for creating a safer road system where crash forces do not result in death or serious injury. Responsibility for what happens in a crash reflects the relationship between:

- people who use the road environment
- transport system designers
- utility providers
- those whose decisions influence how people behave
- how well the system protects people.

The existing regional model allows road safety stakeholders to come together at all levels of planning and operation. However, while the appropriate regional structure is in place, it can only continue to be successful with strong governance, appropriate resourcing and the ongoing buy-in of all parties. In an ever-changing environment with associated funding pressures, it is critical to ensure the delivery of regional road safety is strategic, coordinated and effective. This is also the right time to look beyond the traditional sector to identify opportunities to partner with wider stakeholder groups.

2.2 REGIONAL INTERVENTIONS AND RESOURCES

2.2.1 Managing the system well

The Regional Transport Committee (RTC) has taken a lead role by recognising and prioritising road safety⁵⁹. Road to Zero for the Waikato 2020 identifies the need to further engage politicians, community leaders and key decision makers in the safety conversation. The support of high-profile road safety champions is vital, particularly when seeking community buy-in for new safety initiatives, maintaining a regional profile and advocating to central government for legislation change.

At the district level, stakeholders work together on operational Road Safety Action Plans (RSAP). While some districts in the region are working well, others lack resources and the full buy-in of the local road controlling authorities or their partners. This is a critical system flaw and one that needs to be addressed in order to advance with many of the actions in this strategy. Building knowledge, capacity and ownership in RSAP groups is an ongoing key focus of this strategy.

⁵⁹ Draft RLTP 2018 priorities.

Stakeholders will work together to prioritise and submit funding proposals through the next Regional Land Transport Plan (RLTP), while also investigating alternative funding sources and potential private sector funding partnerships.

Data requirements continue to be developed and evaluated with actions and measures from *Road to Zero* guiding regional reporting. Good information is essential to make good decisions and to be able to evaluate progress against targets. A wealth of information is collected, both regionally and nationally, and stakeholders wish to harness the value of this in the work they do, as well as identify gaps, or opportunities. There is also a large amount of transport research undertaken annually both in New Zealand and overseas. Stakeholders should define their research needs and consider options for new research if their needs cannot be met, as well as raising awareness of available research.

To deliver safe and appropriate solutions and infrastructure the right tools, guides, methods and research need to be used. Appropriate professional education awareness and access is a key tool to ensuring quality outcomes for planning, infrastructure and activities. Waka Kotahi offers a range of professional education opportunities and communication about these and understanding education gaps will be a short-term focus.

2.2.2 Infrastructure Interventions to reduce serious crashes

There are a range of effective safe system infrastructure interventions to address unsafe sites and corridors. The KiwiRAP risk assessment programme and the other tools have identified many sections of high risk state highway and local roads for safety improvements.

A number of new or updated risk assessment tools⁶⁰ have been developed by Waka Kotahi in recent years, designed to assist local RCAs with the development of proactive risk-based strategies for prioritising network treatments. *Road to Zero* indicates a range of guides and best practice guidance will be updated to reflect best practice guidance internationally.

Guides have been developed for:

- High Risk Rural Roads
- High Risk Intersections
- Safer Journeys for Motorcycling and Making Roads Motorcycle Friendly
- Cycling Network Guidance⁶¹
- Pedestrian Network Guidance (refreshed version in development)
- Safer Journeys for Rural Schools
- Urban KiwiRAP and Infrastructure risk ratings
- Speed management maps
- Safer Journeys Risk Assessment Tool (Mega Maps)

Road to Zero national initiatives benefiting the Waikato region include:

- Identifying and treating several high-risk intersections

⁶⁰ <https://www.nzta.govt.nz/resources/>

⁶¹ <https://www.nzta.govt.nz/walking-cycling-and-public-transport/cycling/cycling-network-guidance/>

- Roads of National Significance - Waikato Expressway
- Motorcycle safety improvements have been implemented in the Southern Coromandel Loop

Completion of the Waikato Expressway will improve our regional star ratings for SH1 between south Auckland and Cambridge, aiming to move significant freight volumes off unsuitable routes. Safety improvements to SH2 have decreased crashes, and business cases for improvements to SH1 and SH29 corridors are underway with safety and efficiency a core focus. The Safe Roads Alliance⁶² operated between 2015-2019 to deliver \$600 million State Highway safety improvements across New Zealand, had several key projects in the Waikato region which will improve outcomes in key corridors over time. The Safe Network Programme has succeeded this initiative and is in progress⁶³.

The division of control of different parts of the regional network does not always assist and in the past it has been common for parts of the network to be assessed and treated for crash risk while adjoining roads with equal or higher safety risk go untreated because they belong to a different authority. In late 2016 Waka Kotahi released tools and maps to assist RCAs identify and treat routes and intersections of highest risk across the regional network. The Mega Maps tool calculated the safe and appropriate speed for every road in New Zealand, which local authorities can then truth-test for their network.

The One Network Framework (ONF) aims to provide a common view of transport corridors and place for community⁶⁴. The ONF project builds on the One Network Road Classification (ONRC).

The intention for the One Network Framework project is to work with a broad stakeholder group to evolve the current ONRC to:

1. Provide a consistent travel experience along elements of the transport system with similar classifications at the best achievable value for money.
2. Consistently describe the elements of the entire land transport system so strategic, land-use and planning, improvement, operation and management activities use a common language.
3. Describe service levels and outcomes for land transport modes that are appropriate for urban and rural contexts and functions consistent with the wider network and adjacent land use.
4. Provide a clear line of sight between transport interventions and the customer service levels and community outcomes to be useful for strategic, operational and tactical activities.
5. Provide a structured service level and performance framework so transport investment decision-making considers all modes equally.

The ONF aims to provide a common language to reflect the role transport corridors play in the movement of people and freight across all land transport modes and the community space these corridors provide in our urban areas. The resulting framework will provide a toolbox to support the development of customer focused investment in future land transport programmes.

⁶²

<https://static1.squarespace.com/static/5591f57ee4b07952c1a4d8bd/t/58e2dda5cd0f68f219536efd/1491262891597/Keyte%2C+T+-+Safe+roads.pdf>

⁶³ <https://www.nzta.govt.nz/safety/our-vision-of-a-safe-road-system/safe-network-programme/>

⁶⁴ <https://www.nzta.govt.nz/roads-and-rail/road-efficiency-group/projects/one-network-framework/>

2.2.3 Speed management interventions to reduce serious crashes

The *Road to Zero* Tackling Unsafe Speeds programme⁶⁵ will look at revamping the way RCA's consult and implement Speed Management plans and speed changes across the country. This includes a 10-year programme of delivery including changing speed limits around schools and associated investments. These changes are aimed to simplify changing speed limits to safe and appropriate speeds using the NZ Speed Management Guide (Guide)⁶⁶ and other associated tools.

2.2.4 Road user choice interventions to reduce serious harm from crashes

Road user education and behaviour change is a core component of the strategic approach going forward. NZ Police, Waka Kotahi and WRC will work closely with Road Safety Coordinators to target high risk issues and audiences that have been identified as regional priorities.

The NZ Police have a strategic enforcement focus on restraints, impairment, distraction and speed. Police analysis has identified the four categories as highly valuable for risk-targeted enforcement. High-risk drivers, or those who purposefully drive dangerously or do not follow the road rules are also a key focus. Speed behaviour change campaigns and enforcement are two key activities in regional speed management planning.

New relationships in the private sector will be explored and cross-regional partnerships developed to maximise opportunities to promote safe road use and raise awareness of the risks to people. The Communities at Risk Register⁶⁷ and other tools will be used to assist in the planning and implementation of these programmes.

The region will continue to advocate strongly for changes to legislation that have the potential to significantly impact road safety outcomes, this is evident in our submissions on drug driving legislation which has contributed to the planned changes to the tools available to Police. The region will also advocate for more resources to train inexperienced drivers, and for continued national work to ensure that visiting drivers fully understand the driving environment and rules when they visit New Zealand.

Alcohol

Local Alcohol Policies (LAPs) are an important factor in helping to control harmful types of alcohol consumption and mitigate drink drive risk across the region. Extended opening hours ensure alcohol is available to more people for longer periods of time. Late closing is likely to benefit those who are already under the influence of alcohol. It is important to acknowledge the harm extended opening hours can bring and address these as part of LAPs. Achieving regional consistency in LAPs and plans is a critical tool for managing alcohol related harm in communities.

⁶⁵ <https://www.transport.govt.nz/multi-modal/keystrategiesandplans/road-safety-strategy/tackling-unsafe-speeds/>

⁶⁶ <https://www.nzta.govt.nz/safety/speed-management-resources/>

⁶⁷ <https://www.nzta.govt.nz/resources/communities-at-risk-register/>

Vulnerable people

The Waikato Regional Council's Young Road User programme⁶⁸ is a bilingual interactive and fun road safety foundation programme that teaches children aged 3 to 7 years old foundation road safety skills to keep them safe around roads and traffic. Ruben the Road Safety Bear travels around the Waikato Region teaching children about road safety. Ruben and his team of presenters visit preschools, schools and events with a road safety aspect to share his road safety tips. Online resources are also available.

Cyclists

The Cycling Safety Panel published its recommendations⁶⁹ to make cycling safer and more attractive. The top priority of the Cycling Safety Panel to increase safe cycling is by providing improved cycling infrastructure, particularly in urban areas where most crashes occur. The second and third key priorities are reduced traffic speeds and a major culture shift among all people toward sharing the road safely. A range of work has taken place since then and a progress report was published by Waka Kotahi in April 2017⁷⁰. A regional programme business case for cycling investment identified a key benefit of improved safety for cyclists⁷¹.

A regional cycle skills programme and Bikes in Schools coordination is being supported by Sport Waikato. These programmes reach across the region to leverage greater value from existing funds and overcome constraints for the smaller councils.

Motorcyclists

ACC lead the Ride Forever motor cycle skills national training programme. The programme delivers on-road coaching as well as online coaching, and has a range of levels that riders can achieve. Riders who take the course have a significantly reduced risk of death or serious injury. A motorcycle awareness month is held every year, and regional events are also supported.

Stock truck effluent

Effluent disposal facilities across the region are required to reduce the risk of discharge and a regional work package is underway. The Waikato Regional Council, Waka Kotahi and partner councils continue working through the identified stock truck effluent disposal sites in a planned and coordinated way. The most recent site completed is located near SH1/SH 24 Kaimai. The speed of delivery for the remaining sites is dependent upon the availability of funds.

⁶⁸ <http://ruben.govt.nz/>

⁶⁹ Safer journeys for people who cycle, Cycling safety panel final report and recommendations, December 2014.

⁷⁰ Cycling safety action plan, making cycling safer and more attractive, NZ Transport Agency, April 2017.

⁷¹ Cycling in the Waikato Region, Waikato Regional Council Programme Business Case, May 2017.

Visiting Drivers

Work has commenced in known tourist areas to alert visitors to the safety issues and this will continue to be a focus across the region. Speed management in high travelled areas along with targeted promotion campaigns will continue to be important in raising awareness.

2.2.5 Vehicle safety interventions to reduce serious harm from crashes

Regional stakeholders have little influence over vehicle import standards or vehicle legislation. However, the region does play a role in regulation, enforcement, education, awareness and advocacy. Stakeholders will continue to promote safety as a key consideration for the purchase and operation of regional vehicle fleets, and to private and commercial vehicle owners. Road safety partners will host workshops and information days and promote safety tools and tips through regional campaigns.

Stakeholders, particularly enforcement and regulatory authorities, will continue to ensure that appropriate safety checks are in place for operators of vehicles with the highest crash risk in the region and will work with operators on their safety programmes.

Regional stakeholders will advocate nationally for the introduction of vehicle import standards, customer information programmes and the promotion of operator rating systems.

2.3 CASE STUDIES

2.3.1 Accessibility and pedestrian safety

One reason why analysis of pedestrian safety is difficult is due to a lack of pedestrian volume data. Counting pedestrians is useful for many reasons⁷², but volumes alone may misrepresent safety because people have different perceptions of risk that translate into different amounts of travel. Given that mobility aid use is correlated with disability and age⁷³, and focus group findings confirm intuition that older people and those with disability find transport difficult⁷⁴, counting people who use mobility aids is an objective proxy measure for perceived safety on a road crossing or footpath. The hypothesis for the use of mobility aid use as an indicator population is that the higher the relative proportion of mobility aid use, the more safe the location is perceived by local pedestrians. This hypothesis was tested with a brief series of pedestrian counts across four hours during a weekday and two hours on a weekend day at a roundabout in Thames, New Zealand. The results are shown below (Figure 2-1).

These results show that the most popular crossing point is the zebra crossing south of the roundabout. This crossing also had the highest proportion of people using mobility aids. Three of the splitter islands had no pedestrians using mobility aids across the six hours of counts. Counts at other locations have

⁷² LINDSEY, G., NORDBACK, K. and FIGLIOZZI, M.A. (2014). Institutionalizing bicycle and pedestrian monitoring programs in three states: Progress and challenges. In 93rd Annual Meeting of the Transportation Research Board, Washington, DC (pp. 1-22).

⁷³ BURDETT, B. (2014). Measuring accessible journeys: a tool to enable participation. In Proceedings of the Institution of Civil Engineers-Municipal Engineer, 168(2), pp. 125-132.

⁷⁴ MACKETT, R. (2015). Improving accessibility for older people—investing in a valuable asset. Journal of Transport & Health, 2(1), pp.5-13.

repeatedly shown that where accessibility is good, proportions of mobility aided pedestrians are higher.⁷⁵

Figure 2-1 Intersection of Mary and Queen Streets in Thames, showing the proportion of people with mobility aids crossing the road at different facilities. Courtesy Bridget Burdett.



2.3.2 Five Cross Roads – Raised pedestrian crossing⁷⁶

Improving the desirability of pedestrian crossings has shown to have a positive effect on both compliance and use. If crossings are safe and put on the desired line it is far more likely to be used.

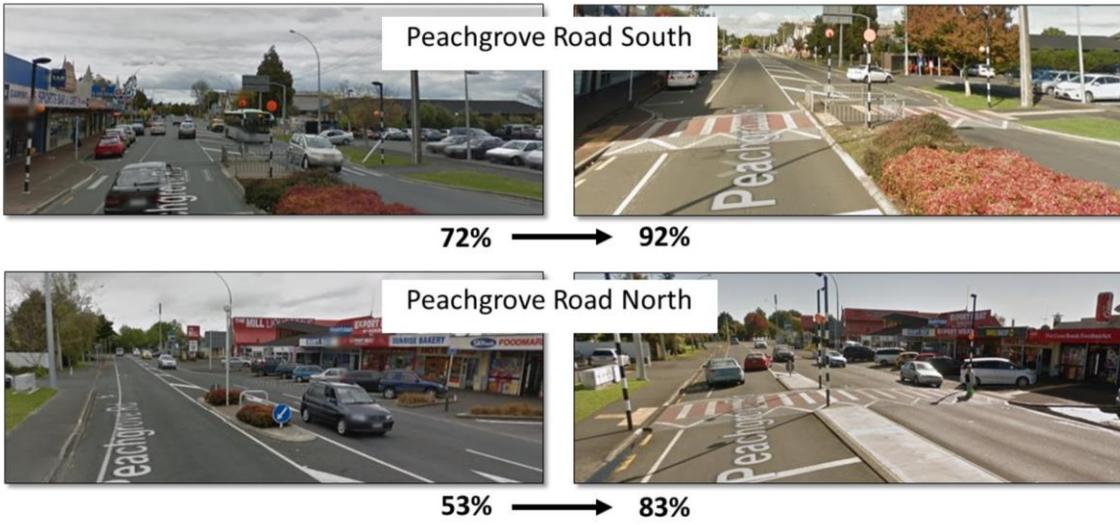
⁷⁵ Burdett, B. (2017) Understanding Pedestrian Safety in New Zealand. Retrieved from <https://static1.squarespace.com/static/5591f57ee4b07952c1a4d8bd/t/58b4c7dd725e25bf6113074e/1488242659802/Burdett%2C+Bridget+-+Paper+26+-+Understanding+pedestrian+safety+in+New+Zealand.pdf>

⁷⁶ Provided by Hamilton City Council

Changes in Hamilton several years ago showed that raised zebra crossings reduce the number and proportion of pedestrians crossing in other places. The 'raised' part of the platform makes the crossing and pedestrians more visible, and forces traffic to slow down improving safety for everyone.

Figure 2-2 Five Cross Roads, Hamilton: proportion of pedestrians using the formal crossing before and after improvements were made. Courtesy Hamilton City Council.

Five Cross Roads, Hamilton: proportion of pedestrians using the formal crossing, before and after improvements were made



As shown in Figure 2-2, the percentage of pedestrians using the formal crossing improved from 72% to 92% where the raised crossing replaced a flush zebra crossing. The percentage increased from 53% to 83% where the raised crossing replaced a refuge island. Making a raised pedestrian crossing not only makes the street safer for everyone, it vastly improves crossing compliance. Improvements on other approaches that were not raised crossings showed minimal change.

Anecdotal evidence has also shown that lower speeds from the raised platforms also has an additional benefit for general traffic and cyclists. As speeds are reduced the ability to find safe gaps improve as vehicles are not speeding through various intersections and sections of roads. Raised pedestrian crossings can be used to improve the safety of pedestrians.

3 APPENDICES

3.1 GLOSSARY

Active Users Pedestrians, cyclists, wheeled pedestrians (wheelchair and mobility device users), micromobility users

CCS Disability Action The largest pan-disability support and advocacy organisation in New Zealand

ESR ESR is a Crown Research Institute that provides science services and research capability across a number of science disciplines.

DSI Death and Serious Injuries. Police-reported crash outcomes are captured by NZ Police in a national Crash Analysis System (CAS) database, administered by Waka Kotahi. DSI are the focus in preventing the most severe trauma and reducing more minor trauma.

Hapori In this context refers to section of a kinship group, family, society, wider community.

HPMV High Productivity Motor Vehicles exceed a mass of 44,000kg and/or maximum dimensions allowed for standard vehicles, operate under a route-specific permit that can cope with their dimensions or mass and may be required to display an 'H' sign.

ICU Intensive Care Unit (hospital).

Midland Trauma The Midland Trauma System is a network of specialised clinical people committed to ensuring best practice is applied in trauma care across the five District Health Boards in the Midland region (Bay of Plenty, Lakes, Hauora Tairāwhiti, Taranaki and Waikato).

MOT Ministry of Transport is the national agency responsible for government policy and funding for the transport system.

NLTP National Land Transport Programme. The programme established for the prioritisation and distribution of the National Land Transport Fund.

RAG Regional Advisory Group comprising roading managers/engineers from Waikato territorial authorities, Waka Kotahi and representatives from Waikato Regional Council. The RAG group are advisors to the Regional Transport Committee.

Rangatahi In this context refers to the younger generation, youth.

RATA Waikato Regional Asset Technical Accord, local government roading asset management services.

RCA Road Controlling Authority. Every territorial authority is a Road Controlling Authority, as is Waka Kotahi which manages the State Highway network, and Department of Conservation.

REG Road Efficiency Group – a Local Government NZ and Waka Kotahi programme to support the transport sector to deliver a modern integrated system

Ride Forever ACC programme of motorcycle rider training.

RLTP Regional Land Transport Plan. The regional transport policy and funding programme which outlines regional funding priorities. This is prepared by the Regional Transport Committee and submitted for consideration into the NLTP.

RS Coordinators Road Safety Coordinators have an education and behaviour change focus and generally work with or within roading teams for road controlling authorities.

RS Forum Waikato Regional Road Safety Forum. A multi-agency group, empowered by the RLTP 2018, which oversees regional road safety direction in the Waikato and which has also served as the steering group for the development of this document.

RSAP Road Safety Action Plan. A planning tool used by local road safety partners to coordinate activities. Also a funding requirement of Waka Kotahi.

RTC Regional Transport Committee. Chaired by Waikato Regional Council, membership includes representatives from territorial authorities, Waka Kotahi and NZ Police (non-voting).

Safe Network Programme WG Safe Network Programme Working Group. A multi-agency regional group focused on safe infrastructure and safe, appropriate and consistent speeds across the region.

TA or LA Territorial Authority or Local Authority. Otherwise known as district or city council.

Tackling unsafe speeds Government programme of reforms to address speed management.

Te Tiriti O Waitangi The Treaty of Waitangi.

Waka Kotahi Waka Kotahi the New Zealand Transport Agency are a Road Controlling Authority for State Highways, and also have a role as central government co-investor and regulator.

YRU Young Road User Programme – Waikato Regional Council’s Young Road User Programme. Ruben the Road Safety Bear is the mascot.

3.2 ACRONYMS

AA Automobile Association

ACC Accident Compensation Corporation

ANCAP Australasian New Car Assessment Program

CAS Crash Analysis System

CVST Commercial Vehicle Safety Team

IDMF Investment Decision Making Framework

Km/h Kilometres per hour

MoE Ministry of Education

MoT Ministry of Transport
MSAC Motorcycle Safety Advisory Council
NLTF National Land Transport Fund
NRSC National Road Safety Committee
Waka Kotahi Waka Kotahi New Zealand Transport Agency
RSC Road Safety Coordinator
VKT Vehicle kilometres travelled
VRU Vulnerable Road Users
Waikato DHB Waikato District Health Board
WRC Waikato Regional Council

3.3 WSP 2019 WAIKATO REGION ROAD SAFETY ANALYSIS NOTES

Inputs to the WSP data analysis and report were derived from a variety of sources. These sources are:

- Crash Data (2009-2018). Reported crash data was sourced from the new CAS. This database contains details of police reports for all reported crashes in New Zealand where a Traffic Crash Report is completed.
- Vehicle Kilometres Travelled (VKT) data, sourced from Waka Kotahi.
- Population data (2006-2015). Data was sourced from the Ministry of Statistics' online tool. Additional information was also sourced from Waka Kotahi's Road Safety Planning/Wizard Tools).
- New Zealand Transport Agency Road Safety Wizard.
- New Zealand Transport Agency Road Safety Action Plan tool.

In addition, the New Zealand Transport Agency Road Safety Wizard and New Zealand Transport Agency Road Safety Action Plan tool has not yet been updated after the new CAS was adopted. Therefore, the following time periods were used for analysis:

- March 2013 – December 2016 (New Zealand Transport Agency Road Safety Action Plan tool); and
- January 2009 – December 2016 (New Zealand Transport Agency Road Safety Wizard).