

SAFER JOURNEYS FOR PEOPLE WHO CYCLE

CYCLING SAFETY PANEL DRAFT REPORT AND RECOMMENDATIONS

25 SEPTEMBER 2014
CONSULTATION DOCUMENT

Send your comments to: cyclingsafetypanel@nzta.govt.nz
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CHAIRMAN'S FOREWORD

It has been my pleasure to chair the Cycling Safety Panel in developing the recommendations in this document.

The Cycling Safety Panel ("the Panel") was created in response to the 2013 Coronial Inquiry¹ that investigated 13 recent cycling fatalities in 2012 and came to the conclusion that work needed to be done to investigate ways in which cycling on New Zealand roads could be made safer. As a result of the Coroner's recommendation the New Zealand Transport Agency established the Panel, which is composed of ten experts in the fields of cycling, transport and human behaviour.

The Panel has been tasked with developing innovative, comprehensive and practical recommendations for how central and local government can ensure on road cycling is provided as a safe transport option. I believe this document succeeds in meeting the challenge presented to the Panel and the implementation of our recommendations will, over time, result in a material improvement in both the reality and perception of cycling as being a safe transport option.

As a regular cyclist I believe making our roads safer for cycling will encourage more people on to their bikes, especially school children. This will bring wider benefits that include reducing road congestion and improving community health, as well as lowering the social and financial costs of serious accidents and fatalities.

My thanks go to a very committed and knowledgeable Panel and the excellent support we have received from Transport Agency officials. The information we have been provided on where and why cycle crashes happen has been invaluable in the development of this document.

I am confident our recommendations will be well received by central and local government and look forward to their implementation over the coming months and years.

Richard Leggat
Chair, Cycling Safety Panel

¹ Matenga (2013)



...WILL, OVER TIME, RESULT IN A MATERIAL IMPROVEMENT IN BOTH THE REALITY AND PERCEPTION OF CYCLING AS BEING A SAFE TRANSPORT OPTION.



EXECUTIVE SUMMARY

Over the last decade annual cycling deaths in New Zealand have averaged between nine and ten people, with some annual fluctuations, meaning cyclists made up approximately three per cent of on-road fatalities over that period. This is disproportionate to their participation in the roading network where cycling comprises 1.6 per cent of total time travelling. In terms of serious injury crashes cyclists now comprise around eight per cent of all serious injuries in motor vehicle crashes.

The Panel was created to develop an innovative, comprehensive and practical set of recommendations for how central and local government can ensure that on road cycling is provided for as a safe transport option. The Panel's measure of success will be a reduction in the death and serious injury (DSI) rate per million kilometres cycled.

The Panel comprises ten cycling and road safety experts. This document sets out the draft recommendations for consultation with the wider Cycling Reference Group, and will be discussed at a Summit on 17 October 2014. The panel will submit its final report and recommendations to the Associate Minister for Transport in mid-November 2014.

Cycling safety and participation are inextricable

Globally, cycling is seeing a resurgence of growth in many developed countries that have previously been regarded as 'cycling unfriendly'. New Zealand is starting to see this trend as well, and the Panel is concerned that, without adopting many of the recommendations in this report, we will see increases in cycling deaths and serious injuries as more people choose to cycle. The Panel also believes improving both the real and perceived safety of cycling will increase cycling participation, which as well as safety benefits has wider benefits for the community.

Growing cycling has broader societal benefits

Increasing the perceived and actual safety of on-road cycling and the ensuing community benefits need wider recognition by New Zealand society. These benefits include:

- Reduced congestion at peak times in major urban centres
- Health benefits, particular reduced obesity and improved cardio-vascular health
- Reduced motor vehicle emissions
- Improved people-friendly environments
- Reduced road maintenance costs
- Economic benefits that stem from affordable travel, healthier people and reduced congestion.

The Panel's vision is ambitious, as all vision statements should be. We are aiming for **'A safe road network with zero fatalities and reduced serious injuries for people who cycle'**. To achieve this vision we must understand the 'cycle safety system' and the key direct and indirect factors that ultimately contribute to cycle casualties (an explanation is provided in Appendix I).

Understanding real and perceived injury risk

Only one third of on-road cycle crashes resulting in a hospital admission involve a motor vehicle (MV); the Panel is concerned with both cycle/MV crashes and cycle only crashes. However, the severity of crashes involving a motor vehicle are typically greater than cycle only and the Panel has focused more on this type of crash. The information provided for cycle/MV crashes has shown the Panel where the majority of cycle/MV crashes are occurring and the nature of these crashes. The Panel acknowledges more information on non-motor vehicle crashes is required to be able to address more effectively the safety issues of this type of crash.



Three points stand out for the Panel from the evidence we have considered:

- The majority of motor vehicle/cycle crashes occur at urban intersections and driveways.
- Usable road shoulder width is a key factor in the incidence of rural accidents.
- Heavy vehicles, especially trucks, are overrepresented in cycling fatalities.

This information and the Panel's collective understanding of the New Zealand cycling and transport landscape have been influential in the development of a set of recommendations we believe will ultimately help us achieve our vision.

A Safe System approach

We have used the Safe System approach and developed recommendations under the general Safe System enablers and the four pillars of the Safe System as set out in the Government's Safer Journeys strategy.

A summary of the Panel's key priorities is given below. The details of the recommendations under each of these areas are provided in the body of this report.

- **Make active transport needs** (cycling and walking) a greater priority in all transport **planning and investment** decisions. This needs to be reflected in the Government Policy Statement on Land Transport, the National Land Transport Programme, the Transport Agency's Economic Evaluation Manual and Councils' Long Term Plans.
- Establish clear **leadership and accountability** for improving cycling safety. Promote shared responsibility for improving cycling safety across the Ministry of Transport, NZ Transport Agency, NZ Police, Accident Compensation Corporation, local government, freight and fleet operators, AA and its members, other motorists, people who cycle and other relevant stakeholders.
- **System and User Information:** Improve quantity and quality of data collection, research, sharing and

analysis. Use this information to set targets; and strengthen processes for monitoring and evaluation.

- **Safe Roads and Roadsides:** Accelerate the provision of completed, fit for purpose cycle networks. Where appropriate, provide separate infrastructure for cycling away from heavy vehicles and/or high-speed traffic to reduce conflict points, and where this is not currently possible, manage speeds and consider providing temporal separation. Undertake research on continental European design guidelines for roundabouts.
- **Safe Speeds** – endorse the Safer Speeds Programme so that actual travel speeds are safe for the road function, level of safety design and use.
- **Safe Road Use:** Increase the delivery of cycling skills training, including on-road safety training in schools, in conjunction with development of School Travel Plans. Improve cyclist awareness of high risk situations. Promote cycling – it is generally safer for all when there are more bikes on the road, and injury risk is higher when bikes are scarce, but promotion of cycling must go hand in hand with improvement in the road environment. Improve mutual knowledge and understanding between drivers, especially professional drivers, and people who cycle. Explore the introduction of mandatory minimum passing distances for motor vehicles overtaking cyclists.
- **Safe Vehicles:** Explore the introduction of mandatory truck side-under-run protection. Explore the introduction of a higher standard of bike lighting.



OVERVIEW OF RECOMMENDATIONS

SAFE SYSTEM ENABLERS

1. Safe provision for active modes is considered at all stages of road transport planning and investment and given higher priority status.
2. Establish strong leadership and accountability practices for safe cycling
3. Improve and expand cycling information collection and its use in policy and infrastructure development

SAFE ROADS AND ROADSIDES

4. Take action to minimise conflict (crash risk) between people who cycle and other road users, especially heavy vehicles and at intersections – for instance, through:
 - separation of high volume freight traffic and cyclists
 - intersections, especially roundabouts, designed to be safe for people who cycle
 - complete, connected urban cycling networks
5. Provide safe on-road connections to the NZ Cycle Trail and other nationally significant cycle trails

SAFE SPEEDS

6. Manage motor vehicle speeds to minimise cycle crash risk and severity

SAFE ROAD USE

7. Mandate minimum passing distances for motor vehicles overtaking people on cycles – 1 metre where speed limits are below 60 km/h and 1.5 metres where speed limits are 60 km/h or over
8. Increase support for school travel plans and cycle skills training
9. Develop programmes to improve road user (both motorists and cyclists) behaviour and awareness
10. Encourage corporate responsibility for employed drivers and contractors so that they practise safe behaviour towards cyclists.
11. Refresh the legislative review of regulatory provisions relating to on-road cycling.

SAFE VEHICLES

12. Investigate side under-run protection and other vehicle features to minimise the risk to cyclists from heavy vehicle crashes
13. Adopt improved standards for bicycle lights and the European Union standard for e-bikes



CYCLING IN NEW ZEALAND

Almost everyone in New Zealand over 40 years old can remember when the bike sheds at their school were full. Now there are only a few schools with bike sheds and even fewer of these are full.

The decline in cycling to school has been mirrored in cycling to work but is more obvious because such a high percentage of school children used to cycle. Between 1990 and today the numbers cycling to school have declined by approximately 75 percent. While this has meant the numbers being injured and killed have declined over all (the collective risk), the individual risk has actually risen, and society is missing out on the other benefits cycling can bring.

International comparisons

Looking at cycling safety internationally - where does New Zealand sit? The figure below shows average distances cycled per person (the blue line) against the number of cyclists killed per billion kilometre of travel (bars). Our performance sits between the United Kingdom and France. The graph indicates a positive relationship between increasing cycle travel and increasing safety.

The Panel wishes to stress that while cycling could and should be made safer in New Zealand, it is not an inherently dangerous activity. There is approximately one fatality for every 2 million hours cycled. The perceived lack of safety is, however, a significant barrier to the uptake of cycling.

Cycling trends

The period since 1990 has seen a large increase in the New Zealand population, a great deal of 'urban sprawl' and a **massive increase in car ownership** due to the easier availability of cheaper imported used cars. Nevertheless, despite popular perception, commuting distances remain very viable for cycling in NZ, with median distances representing under a 30 minute bike ride in our three largest urban regions.

However, over the last five years many western cities, with the private car previously the dominant mode of transport, are seeing resurgence in cycling. A combination of traffic congestion, health and obesity

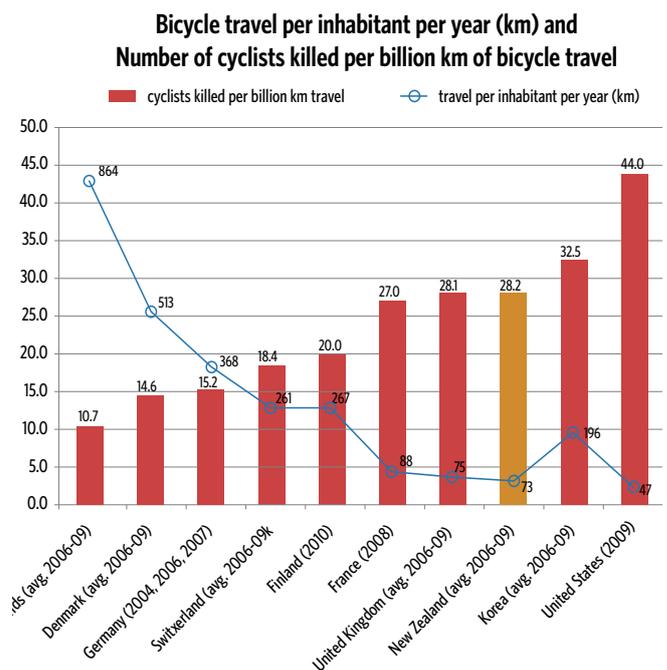
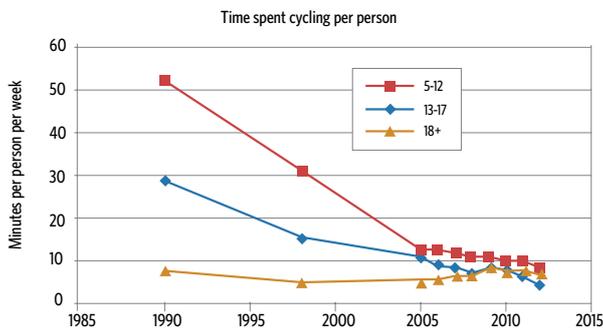


Figure 1: Relative safety of cycling compared to cycling activity: (Axel Wilke). The cycling fatality risk in New Zealand is nearly three times that in the Netherlands per billion kilometres travelled. On average Dutch people cycle about 12 times further per year than New Zealanders (864 kilometres compared to 73)





Copenhagen's Political Will

Copenhagen today is the result of an entire generation of planners and politicians who have understood the importance of re-establishing bicycles on the urban landscape. Commuting by bike is at 36 per cent but the goal is 50 per cent. This goal is taken very seriously and \$50 million was spent in 2013 towards achieving this goal. However, success is largely dependent upon political will, and Copenhagen is currently suffering stagnation from City Hall. One third of short trips are still taken by car even though Denmark is one of the most expensive countries to buy a privately owned motor vehicle due to taxes and registration fees.

issues, environmental concerns and the economic benefits of cycling have seen a number of high profile politicians successfully promote increased cycling. London, New York and Melbourne are three very good examples of political leadership twinned with infrastructure improvements resulting in significant growth in cycling participation (albeit from low bases).

In New Zealand, the cycling infrastructure is, in general, piecemeal and of variable quality and political leadership is only now becoming apparent. Despite this, New Zealand is also seeing an increase in cycling numbers. Increasing pressure on available road space often causes tension between different road user groups and undue risk-taking. Causes of disharmony include cyclists running red lights and riding on footpaths, or motorists passing people on cycles at unsafe distances. Consequently there is work needed in the 'Share the Road' space to ensure that **all road users respect both the rules and other road users**.

Along with the growth in on road cycling numbers for commuting, sport and recreation, New Zealand is also experiencing very strong growth in off road recreational cycling and mountain biking. The 2009 Job Summit led to the creation of Nga Haerenga, The NZ Cycle Trail. This network of 23 Great Rides and over 2,000 kilometres of connector routes has provided safe, off road cycle paths and roads that have given many thousands of New Zealanders a reason to get back on their bikes.

Cycling surveys consistently state the number one reason people don't cycle, or don't let their children cycle, is they believe it is too dangerous. This creates the most important feedback effect in NZ's cycling system at the moment - any increase in cycling leads to greater reporting of injuries and deaths, with a strong dampening effect on further growth. We have seen The NZ Cycle Trail attract people who, currently, would not dream of riding in the town or city where they live because they perceive it to be too unsafe. New Zealand is seeing some growth in cycling commuters but, to see material increases, **people need to feel safer** than is currently the case.





The success of the Hastings model community project, where cycling crashes have declined and people's perceptions of the safety of cycling have improved, is a good example of what can be achieved, although it should be noted that ongoing investment is required to continue to grow the numbers of people cycling, and to have them cycle more often. The plans Christchurch has for an extensive integrated network of cycleways and the recent opening of the Auckland cycleway extension through to the CBD are evidence that **councils and government are starting to take a more proactive role** in providing fit for purpose infrastructure for cycling. But there is still a very long way to go to get close to catching up with the northern Europeans.

It is easily forgotten that **the Netherlands** was not always a cycling utopia. Cycling became so marginalised by modern urban development in the post war period, and traffic such a dominant force, that 3,300 people were killed by motor vehicles in 1971. What makes the Dutch different from their peers was their refusal to accept road deaths as the price of efficiency. They were also outraged at the space taken up by motorists. Street protests with the powerful message 'Stop de Kindermoord' (stop child murder) coincided with the 1973 oil shocks. People enjoyed the traffic-free streets of car free Sundays, which led to city centres being made permanently car free².

Mass protests continued to demand dedicated cycling infrastructure. It is now an **integral part of the Netherlands' transport policies**. Child road deaths have gone down to 14 in 2010 from over 400 in 1971.

An important difference between the Dutch protests and other cycling advocacy campaigns is that Stop de Kindermoord was not about cycling versus cars, it was about child safety on roads, a topic well understood by the wider public. Cycling infrastructure was the most effective policy response to that problem, along with child-friendly street designs, and improved facilities for walking. The Dutch **cultural shift** took approximately ten years, undertaken by parents and professional campaigners and resulted in **embedded cycling policy** at a national government level. This

² Dutch campaigners explain why the Netherlands is now so cycle-friendly <http://lcc.org.uk/pages/holland-in-the-1970s>

example demonstrates the ways that growing cycling is linked to advocacy and political will in a potentially helpful feedback process that shifts both the environment and cultural norms. Rather than waiting for the protests to occur, in New Zealand, policy makers have a golden opportunity to strengthen these processes through up-front investment.

Until very recently, New Zealanders have responded to safety fears by avoiding cycling. This response is heightened among parents of school-age children. New York and London are among many major cities transforming their congested roads into cycle friendly environments. Urban cycle advocates, who believe that New Zealand is capable of joining the cycle friendly countries of the world, are becoming more vocal and visible.

In summary, cycling injury and growth in cycling participation are inextricable, with the potential to achieve potentially helpful feedback patterns through policy intervention: initially embedding safety and cycling growth through infrastructure, followed by achieving safety in numbers and shifting social norms. Finally, the intertwined nature of cycling participation and safety means future targets for cycling mode share (visioning) and understanding the steps to reach them (backcasting) are crucial for improving cycling safety.

Coroner Gordon Matenga noted in his review of cycling safety in New Zealand that 'a rethink of cycling safety in New Zealand is required, **that attitudes both of motorists to cyclists and cyclists to motorists need to change**'³. The Panel considers that this rethink needs to extend beyond cyclists and motorists to planners, engineers, government officials, police officers, schools, parents, councillors, corporations, employers and employees and anyone who uses the road network.

³ Matenga (2013)



THE CYCLING SAFETY PANEL

The Cycling Safety Panel comprises 10 experts from across the cycling and road safety spectrum.

Richard Leggat

(Chair) Chair of the New Zealand Cycle Trail and Board Member of Bike NZ

Simon Kennett

Active Transport and Road Safety Coordinator at Greater Wellington Regional Council

Dr Glen Koorey

Senior Lecturer in Transportation Engineering at the University of Canterbury

Dr Hamish Mackie

Human factors specialist, Mackie Research & Consulting

Dr Alexandra Macmillan

Senior Lecturer in Environmental Health at the Department of Preventive and Social Medicine, University of Otago

Mike Noon

General Manager Motoring Affairs, Automobile Association

Marilyn Northcote

Regional Coordinator of Pedal Ready cycle skills training programme Wellington

Sarah Ulmer

'Ambassador' for the New Zealand Cycle Trail, Olympic cycling Gold medallist

Axel Wilke

Traffic engineer and transport planner specialising in sustainable transport, ViaStrada Limited

Professor Alistair Woodward

Professor of Epidemiology and Biostatistics at the University of Auckland



PROCESS AND TIMELINE

The Panel has met five times throughout 2014 and focussed on very specific issues and their contributing factors.

April

Cycling Safety Summit – Broad exploration of cycling specific issues with the wider cycling community.

May

Panel Meeting – Analysis of rural specific issues

June

Panel Meeting – Analysis of urban and school specific issues

July

Panel Meeting – Examination of obstacles to cycling in the legislative and investment process. Analysis of a selection of international cycling strategies and action plans.

August / September

Consultation with Local Government New Zealand, the Road Transport Forum and the Police regarding draft recommendations to date. Sharing of thinking on proposed recommendations with representatives from the cycling advocacy groups, and prioritisation of actions.

A second Cycling Reference Group Summit will be held in Wellington on **17 October** to discuss this draft report, with written submissions closing on **24 October**. After consideration of submissions, the Panel will submit its final report and recommendations to The Ministry of Transport (MOT), NZ Transport Agency (the Transport Agency) and Local Government New Zealand (LGNZ) by mid-November. The Ministry and the Transport Agency will advise the Minister of Transport on the implications of the recommendations, and standard Cabinet and public consultation processes will need to be followed in for major policy or regulatory decisions.

It is envisaged that a Cycling Action Plan under the Safer Journeys Strategy could be developed with more specific actions, timeframes and targets and be included in the Safer Journeys Action Plan 2016-2020, proposed to be developed in 2015 (see Appendix I).

Using the Safe System Framework to develop our recommendations

The Panel has adopted the **Safe System approach**, in analysing the issues relating to cycling safety and in developing recommendations, as signalled in its Terms of Reference. The Safe System approach views the road transport system holistically by addressing the interactions between the 'elements' of

- road user
- the road and roadside
- speed and
- the vehicle.

These elements (or 'pillars') are often shown as follows, with the Safer Journeys Vision at the centre:



It is the responsibility of all those involved with the design, management and use of the road system to understand this interaction. The 'principles' of the Safe System approach involve recognition of

- human fallibility
- human vulnerability
- shared responsibility among system designers for reducing deaths and serious injuries and
- co-ordinated efforts to strengthen all parts of the system.

More detail is provided in the table below.

the 4 Safe System principles

The Safe System approach aims to create a forgiving road system based on four principles:

- 1 People make mistakes**
We need to recognise that people make mistakes and some crashes are inevitable. But what we don't accept is that death or serious injury from crashes is inevitable.
- 2 People are vulnerable**
Our bodies have a limited ability to withstand crash forces without being seriously injured or killed. Crash forces need to be kept to survivable levels.
- 3 We need to share responsibility**
System designers and people who use the roads must all share responsibility for creating a road system where crash forces do not result in death or serious injury.
- 4 We need to strengthen all parts of the system**
We need to improve the safety of all parts of the system – roads and roadsides, speeds, vehicles, and road use so that if one part fails, other parts will still protect the people involved.

For more on the Safe System approach see Appendix I and www.saferjourneys.govt.nz.

DRAFT RECOMMENDATIONS

The Panel is considering making the following recommendations. They are divided into “system wide” recommendations to enable implementation under the Safe System and specific recommendations relating to each of the Safe System pillars described on page 13.

Safe System Enablers

1. Planning and Investment - safe provision for active modes is considered at all stages of road transport planning and investment

The Panel is concerned that **cycling is often an after-thought** during the infrastructure planning and design process. Cycle lanes are squeezed into roads that have been built for trucks and cars. Speed limits, intersections and parking are designed for motor vehicles, and people who cycle are most often considered too late in the process (if at all). Land designated for new roads often does not make allowance for safe cycling infrastructure. The problem starts at the top with national strategic documents, the flavour of which feeds through the balance of investment, the costs and benefits included in project level decision-making, regional council strategic planning, right through to the implementation of projects on the ground. This is a consequence, in the Panel’s view, of planning and investment criteria prioritising journey time impacts above safety and failing to include other benefits and costs at a population level.

Model Communities: are urban environments where walking and cycling are offered to the community as the easiest transport choices. The benefits include improved safety, congestion relief, reduced environmental impacts, and improved public health. The intention is to deliver safer environments for novice users, with a range of community destinations within reasonable riding or walking distance from residential population centres. Climate, topography and demographic characteristics are also important factors.

In mid-2010 New Plymouth and Hastings were named as New Zealand’s first walking and cycling model communities. The two councils received \$3.71 million and \$3.57 million respectively for walking and cycling infrastructure plus \$1.17 million and \$691,000 respectively for educational measures such as travel planning, cycle skills training and website development. Ongoing funding has been allocated.

New Plymouth’s focus was to building on existing investments. This meant extending and/or upgrading existing paths to make them safer and more user-friendly, ensuring they connect to the right destinations, and expanding successful skills training and awareness campaigns. Let’s Go is a behaviour change programme to encourage and enable people to leave their cars behind and try active transport. Schools are a target because they play a central role in the life of the community; and will foster the next generation of riders and walkers.

Hastings has developed iWay, a hierarchy of walking and cycling routes consisting of four key walking and cycling arterials and a highly visible and coherent network of adjoining collector level routes that link where people live, work and learn. Prior to iWay, cycling was largely seen as a sport and the general feeling in Hastings was that riders did not belong on the road. A regional Share the Road campaign has led to greatly improved perceptions of safety.



The safety issues and mitigations that are particular to cycling are known to the Transport Agency. Recommendations are already present in **strategic documents** such as Safer Journeys, the draft Government Policy Statement and the Transport Agency's Statement of Intent. The Panel is concerned that such proposed actions are often given a low priority or that there are unnecessary barriers to fully utilising allocated funding.

Regional, city and district councils are essential partners in making cycling a safer mode of transport and mobility. Closer collaboration between the Transport Agency and Councils (collectively called Road Controlling Authorities) is needed to develop transparent assurance systems that the appropriate investment is being allocated to cycling. The Netherlands is a good example of a transparent assurance system that is based on national and local appraisal. The Panel would like to see the current draft voluntary benchmarking process for cycling provision implemented by all Road Controlling Authorities. This benchmarking tool helps authorities identify and share best practice.

Road Controlling Authorities (RCAs) do not have meaningful **accountability and key performance indicators (KPIs)** around cycling safety outcomes and participation. The Panel would like to see more accountability linking funding to safety outcomes regarding cycling safety in particular.

The Panel is concerned that there is an **ad hoc and inconsistent** approach to cycling and would like to see some assurance that RCAs are building fit for purpose, value for money, well-assessed cycling infrastructure. Better design auditing of cycling provision in all transport projects would help.

Unfair distributional impacts of policies and investment already occur in the transport sector. This includes both benefits (for example inequitable access to public transport services by income) and harms (for example greater exposure to injury by ethnicity). Ensuring socio-economic and ethnic equity needs to be a key consideration when planning and delivering cycling infrastructure and services.

Local Government investment: Christchurch

Improving the safety and accessibility for cycling was a strong theme for recovery to emerge from the Share an Idea discussion in 2011. People said they wanted the Council to invest in cycling infrastructure to provide more choices and safer routes for people travelling to work, study or play.

The Council is planning on building 13 major cycle routes that will encourage the large group of people who think they would cycle, or cycle more, if it was safer.

To achieve this involves making some significant changes to the transport network in favour of cycling on these routes. In some locations this will result in cyclists having priority over cars at intersections and reduce on-street parking.

Funding of \$70 million for the Major Cycle Routes was approved in the Christchurch City Three Year Plan 2013-16. In the 2014-15 Annual Plan, the Council committed to deliver the project over five years.

Work on some further elements of the Major Cycleways is expected to begin in 2014.



Current Cycling Initiatives

- Consultation with the cycling sector to improve the visibility of existing guidance about safe cycling e.g. Bike Wise.
- Partial acknowledgement in the draft Government Policy Statement (GPS) on Land Transport Funding of cycling's significant potential role in the transport system.
- Some limited investment provision in the draft Government Policy Statement (GPS) on Land Transport Funding and the Transport Agency's Statement of Intent (SOI). (See Key Strategic Documents)
- Investment in the Model Communities in New Plymouth and Hastings.
- The provision of an additional \$100m in Crown funding over 2014-2018 for cycling infrastructure with priority given to completing comprehensive cycling networks in major urban centres.

HIGH PRIORITY ACTIONS

- i. Greater visibility and investment priority for safe provision for active modes in the GPS, the Transport Agency's SOI, and National Land Transport Programme and other strategic documents.
- ii. Inclusion of a wider range of costs and benefits in the Economic Evaluation Manual, including improving the ability to cycling net.

- iii. Providing safe and convenient routes for pedestrians and cyclists, especially to and from work and school, is reprioritised from "medium" to "high" in the Safer Journeys Strategy⁴ or the Transport Agency's investment criteria. High personal risk is reconciled with collective risk when prioritising projects.
- iv. Help RCAs access National Land Transport Programme funding by reviewing and monitoring the planning and investment criteria that are currently making it difficult for cycling projects to meet the "high strategic fit" criterion. Cycling must be considered in all Integrated Transport Strategies, plans and projects. This would include adjusting the application of the Network Operating Framework to give effect to cycling.⁵

MEDIUM PRIORITY ACTIONS

- v. Safe Cycling is a key consideration for Road Controlling Authorities, investment is transparent, accountable and open for external audit. For example, consider the introduction of cycling safety related KPIs for RCAs and create a national team of visiting experts to provide guidance on Council projects and maintenance procedures to ensure a safe environment for cycling.
- vi. Develop consistent national standards and descriptions for cycling infrastructure investment and align relevant legislation where this is necessary.
- vii. All Road Controlling Authorities participate in benchmarking of their provision for safe cycling.

⁴ Safer Journeys priorities were calculated according to relative risk of death and serious injury, meaning that cycling was ranked as medium priority. This has made it difficult for some cycling projects to be ranked highly enough for funding approval. Without distorting the Safer Journeys rankings, the Transport Agency could review other strategic fit criteria to facilitate cycling investment consistently with the draft GPS and Crown funding announcement.

⁵ The purpose of a framework for Network Operations is to assist network managers to monitor the performance of road networks, identify gaps in performance and service delivery, and determine which measures may best address those gaps most efficiently against the needs of a broad range of road users. (<https://www.onlinepublications.austroads.com.au/items/AP-R338-09>)

Emerging Cycling Cities and their Leaders

New York & London

The 2002 New York Mayoral election may have been a case of the right person at the right time when New Yorkers wanted a more liveable city following the terrorist attacks on the World Trade Centre. Michael Bloomberg and his Transportation Commissioner, Janette Sadik-Khan, have proven to be strong, effective and visionary leaders. A city once known for dysfunction, high crime rates and congested streets has been transformed with the creation of cycle lanes and a successful bike hire scheme.

London's Mayor, Boris Johnson, is also a great cycling advocate who has done much to improve cycling by extending the cycling infrastructure and mandate side under-run protection on trucks. London's cycling success is also a question of timing; after the London tube and bus bombings, commuters were ready to look to cycling as a safe and viable alternative travel mode.

2. Leadership and Accountability - establish strong leadership and accountability practices for safe cycling

For the reasons noted in recommendation 1, the cycling sector lacks visibility in planning and investment due to the **lack of strong leadership**.

Current Cycling Initiatives

- Supporting this Panel of experts.
- The Transport Agency has a small number of staff focused on cycling activity but they are overstretched and need additional resources.

HIGH PRIORITY ACTIONS

- i. The NZ Transport Agency and Ministry of Transport establish and resource dedicated teams, with senior leaders, staff and funding, to plan, implement and evaluate investments in cycling. [Local government is encouraged to do the same where resources permit]
- ii. Overhaul of cycling infrastructure guidelines to update them in keeping with international best evidence about the effectiveness of different kinds of infrastructure and include minimum standards of continuity, consistency and quality.
- iii. Introduce KPIs for safe provision for cycling for Road Controlling Authorities.

MEDIUM PRIORITY ACTIONS

- iv. Improving the road safety auditing process to take more account of cycling and walking requirements.



3. Information collection systems relating to cycling safety be improved and expanded

Data capture in New Zealand is better than in most peer countries, however, it is weak and incomplete on many levels. Cycling accidents are under-reported, especially non motor vehicle crashes, in the Transport Agency's Crash Analysis System, making it difficult to measure the size of the problem. Data suggests two-thirds of on road injury crashes don't involve a motorised vehicle, but we have limited understanding of what is causing these crashes. We don't know how many people are cycling, to a fine-grained level, which inhibits planning and investment for cycling infrastructure. Unlike safe workplace measures, no facility exists to report bicycle related hazards and near misses.⁶ Additional questions to ask at the scene of a cycling crash, or on hospital admission, could help prevent future crashes by better informing road planners and cyclists.

There is no central database of dedicated cycling infrastructure provision and different road controlling authorities may use different definitions of terms such as 'segregated cycle path', 'separated cycle path', 'cycleway', 'cycle lane', etc.

Current Cycling Initiatives

- The Crash Analysis System (CAS) is a database managed by the Transport Agency. It contains all the Police Traffic Crash Reports received by the Agency together with crash analysis software and basic road data. Until recently on-road cycling deaths that did not involve a motor vehicle were not required to be notified to CAS. Local Councils conduct annual road user surveys, and some of them count cyclists.
- The Ministry of Health collects hospitalisation data, and ACC collects injury claims data. However, the categorisation and information collected for cycle crashes can be inconsistent.
- The MoT collects Household Travel Survey data, which are invaluable for measuring cycling participation at a national level; without this data we would struggle to express cycling injuries as rates (e.g. per km travelled).

⁶ Ngatuere (2014)

- Sport NZ collects cycling participation data
- A number of cities, including Auckland, Hamilton, Palmerston North and Christchurch have continuous automatic bicycle counters, which provide detailed and consistent information on cycle traffic at key sites. The results have been very good for raising awareness and communicating with the media.
- vi. Facility to report near misses, and tools to report hazards, e.g. www.fixmystreet.com with an assurance that it will be appropriately monitored.
- vii. Analysis of Police Community Roadwatch reports featuring cycling.
- viii. Further research on specific areas of interest. For example, the evidence base is lacking to determine whether cycle skills training improves cycling safety or participation.

MEDIUM PRIORITY ACTIONS

- i. In order to measure cycling participation, more sophisticated data collection processes are needed that accurately measure usage through hours and kilometres cycled.⁷ Expanding the installation of strategically located bicycle counters is one example of how this could be achieved.
- ii. Road Controlling Authorities undertake ongoing monitoring of numbers of cyclists, trip lengths, injuries leading to hospital visits, public perceptions of cycling safety and satisfaction with cycling facilities provided
- iii. Infrastructure stocktake with consistent definitions and guidelines, including revising and updating the [Cycling Stocktake 2008](#), [Design Standards and Non-motorised Users Interim Guidelines](#).
- iv. Improve cycling crash reporting in CAS by recording more latent contributing factors, e.g. what provision of lighting cyclists had at the time of a crash. Make greater use of hospital and ACC cycling injury data so we can learn more about off road and cycle-only crashes.
- v. Improve understanding of the distributional impacts of cycling participation and injury by socio-economic status and ethnicity through improved collection of these data in the New Zealand Household travel survey and CAS.

⁷ For example, the Household Travel and Road Safety Attitude Surveys sample size could be increased. It would be valuable to have a sample size that gives statistically significant results for cycling participation in the Auckland region, so that results for this key region can be analysed. www.transport.govt.nz/research/roadsafetysurveys/publicattitudetoroadsafety-survey and www.transport.govt.nz/research/travelsurvey





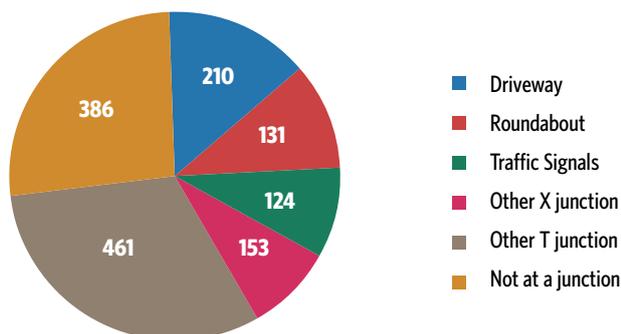
Safe System Approach - Roads and Roadsides

4. Minimise crash risk - RCAs take action to minimise conflict (crash risk) between people who cycle and other road users, especially heavy vehicles

Deaths for cyclists mostly result from cycles and motor vehicles crashing – cyclist only crashes tend to have less serious injuries, although they are more common. Motor vehicle vs. cyclist crashes are often caused by confusion and impatience at intersections, not seeing (or looking for) other parties misjudging speed or intentions of other practices, poor infrastructure design or maintenance, design guidance that balances speed and safety (as opposed to prioritising safety over throughput), motorists infringing upon cycle lanes, road works pushing cyclists into busy traffic, and obstructions that hide cyclists from traffic. *Also see the Safe Vehicles section for recommended enhancements to in-vehicle features.*

Intersections and driveways are the most hazardous

Junction type in urban cyclist fatal and serious crashes 2003-12



locations for urban cycling representing 74% of all cyclist deaths and serious injury crashes. Commonly, this is because a motorist has failed to give way to a cyclist. Cycling safety would be greatly improved by creating a consistent, continuous, convenient network of best practice cycling infrastructure that improves both actual and perceived safety, with extra consideration given to intersection design.

But even improvements to intersections on their own would significantly improve cycling safety.

A particularly difficult area is the safe provision for people on bikes using roundabouts, especially multi-lane roundabouts. There is a fundamental difference to roundabout design philosophy between some continental European and English-speaking countries. English-speaking countries maximise capacity, whilst the radial design philosophy of continental European countries maximises safety of all users. This divergence in European practice was brought about by unacceptably high crash rates for cyclists. Cyclists make up one third of killed and seriously injured roundabout users in New Zealand, whereas at other forms of intersection control, the casualty rate is about seven per cent⁸. Roundabouts in New Zealand are designed to Austroads guidelines, and there is a need to research whether European guidelines should be tried in New Zealand (or Australasia). Radial design philosophy is a significant departure from the status quo, and this is an area where much further Australasian research is needed. In the meantime, we ought to be careful where to build multi-lane roundabouts, and how cycling is accommodated in that part of the network. To cycle through a multi-lane roundabout on the carriageway is incompatible with safe system principles.

International experience and evidence demonstrates that it is possible to worsen safety with poor quality infrastructure. The strongest evidence supports the following kinds of infrastructure:

- Physical separation on arterial and busy collector roads, so long as this is accompanied by continued infrastructure through carefully designed intersections. Elevation at side roads has also been shown to be a helpful accompaniment.
- Advanced stop boxes and hook-turn boxes at intersections appear to improve cycling safety and are likely also to protect cyclists from high exposure to vehicular air pollution.

⁸ Wilke, A., et al. (2014). Assessment of the Effectiveness of On-road Bicycle Lanes at Roundabouts in Australia and New Zealand. Sydney, Australia; Table 7.



- Aesthetically pleasing low speed local streets (e.g. 'self-explaining roads') very effectively reduce crash risks for all road users and can create attractive routes where cyclists are able to mix with slow moving, low volume vehicular traffic.

On the other hand, further research is needed to understand the potentially negative impacts on safety of narrow on-road marked lanes and off-road shared paths.

Current Cycling Initiatives

- Provision of an additional \$100m over 2014-2018 from Crown funding for cycling infrastructure, with priority to be given to comprehensive, complete cycling networks in major urban centres.
- Trialling sharrows (shared lane cycle marking). This pavement marking includes a bicycle symbol and two white chevrons and is used to remind motorists that cyclists can share the lane.
- A National Active Modes Infrastructure Group has been set up by the Road Controlling Authorities Forum. The group is looking to achieve a more nationally consistent approach to implementing cycle-lane markings, signage and treatments.
- NZTA urban design guidelines on providing for walking and cycling.
- [Cycle Network and Route Planning Guide](#).
- [Non-motorised users Review interim guidelines](#).
- Model Communities, i.e. Hastings and New Plymouth.
- [Future Streets](#) (the research element of this project is funded by Ministry of Business, Innovation & Employment).
- Cycling specific projects within the National Land Transport Programme, and cycling works included within other projects.

- Austroads, of which the Transport Agency is a member, has commissioned a study on roundabout safety.

HIGH PRIORITY ACTIONS

- Identify urban and rural freight routes popular with cyclists. Where possible, consider alternative routing, for either freight or cycling. Where this is not possible, special care is needed to reduce heavy vehicle speeds and provide physical separation, intensive intersection treatments and wide protected turning and passing. Align and prioritise this work with the New Zealand Cycle Trail's Network Expansion Project.
- Create consistent, continuous, convenient and complete urban cycle networks, in keeping with the best evidence – a whole of journey approach.
- Parking: Progressively remove parking from arterial routes, which is consistent with the One Network Road Classification. Develop nationally consistent parking guidelines for arterial roads and other key cycling routes.
- Research whether European roundabout design guidelines should be tried in New Zealand.
- Safe provision for cycling at other complex intersections, in keeping with international best practice.
- Rural space management which includes shoulder widening and smooth surfacing, sight distance improvements, road markings, maintenance and regular debris removal on key cycling routes. Align this work with KiwiRAP.





Figure 3 Roadside sign indicating cycling training circuit. Photo by Karin Jones

CASE STUDY

A Victorian study found that many drivers held negative views towards cyclists which ranged from unease and discomfort to impatience and frustration. Some aggressive respondents were adamant that cyclists should not be on the roads at all. They felt that cyclists were taking a risk and therefore any harm was the cyclist's own fault. A majority of drivers weren't aware that cyclists are permitted to ride two abreast and there were knowledge gaps in relation to other cycled related road rules. Attempts to overcome this attitude towards cycle athletes have been made in the Western Victorian region. A cycling training route around Wangoom, near Warrnambool, is clearly signed to alert drivers that cyclists will be in the area. This does not mean that cyclists have priority and are able to spread across the road, rather that drivers should expect to be sharing the roads at the signed times.⁹

Adopting this approach and marking certain roads that are popular with cyclists could overcome safety concerns for both cyclists and motorists. Some of Taupo's popular cycle routes would be a good place to trial the Wangoom signage, together with applying appropriate speeds and removing pinch points.

⁹ Monash (2012)

MEDIUM PRIORITY ACTIONS

- vii. Road markings – identify and provide signage to advise motorists they are driving along a popular cycle route. Identify and provide signage to advise where roads are unsuitable for cycling in a no fault way.
- viii. Minimum standards are developed for width delineation, colour, maintenance and safe entry and exit points for on-road cycling lanes and off-road paths. In some instances this includes a requirement for broken yellow lines along kerbside cycle lanes to clarify to motorists that parking in cycle lanes is not permitted.
- ix. Require managers of road works and building sites to be considerate of cyclists and allow adequate space for them when undertaking temporary traffic management on roads. Strengthen the requirements for providing safe passage for cycling in the Code of Practice for Temporary Traffic Management.
- x. Set up a system to support and encourage RCAs through a benchmarking process that provides constructive feedback and peer support.
- xi. Investigate the feasibility and cost benefit of introducing temporal restrictions on heavy vehicles in urban areas (Network Operating Frameworks).

The findings of a Portland study found that businesses see great value in replacing car parking with bicycle parking and are requesting the City Council to install bicycle corrals. Portland businesses recognise that urban spaces that attract pedestrians and bicyclists encourage higher levels of shopping and dining. Two thirds of businesses surveyed responded that the bike corrals increased foot and bike traffic in the area.¹⁰

¹⁰ Meisel (undated)



5. Road Controlling Authorities provide safe on-road connections to the NZ Cycle Trail and other nationally significant cycle trails

Safety is compromised when cycle paths end and exposure to traffic is inevitable in order to reach the next path. A continuous facility (be it on-road or off-road) greatly enhances the safety and enjoyment of the cycling experience.

Current Cycling Initiatives

In February 2009 building a network of cycle trails was proposed. The network would not only provide a healthy and enjoyable way for Kiwis

and international visitors to see the country, but would also generate economic, social and environmental benefits for our communities. So far, \$50 million has been invested by Government and a further \$30 million by local communities, with further funding committed by Government.

MEDIUM PRIORITY ACTIONS

The Panel endorses NZCT's Network Expansion Project, which aspires to link all the cycle trails, and other nationally significant cycle trails and touring routes, into one national network.

Example of Auckland off-road connections

The NZ Transport Agency is working with Auckland Council and Auckland Transport to connect the Northwestern cycleway to the waterfront, in the heart of Auckland City.

The Northwestern Cycleway is one of the most popular cycleways in Auckland, with over 700 people on average using it each day. The existing route is approximately 9 kilometres in length and generally follows the alignment of the North-western Motorway (SH16), running from the western edge of Auckland's city centre to the Te Atatu peninsula.

With the recent completion of the Grafton Gully & Beach Road sections connecting to the Kingsland Cycleway, cyclists are now able to enjoy an almost entirely off-road journey between Waitakere and Auckland.

This route will also be part of the NZ Cycle trails first urban cycle route connecting Auckland International Airport and Auckland CBD.

The recent completion of the Beach Road portion of the project demonstrates a positive partnership between Auckland Transport and the community. Submitters were listened to and design changes were made as a result of the feedback. The photo on page 25 shows some of the design features.





Courtesy Axel Wilke

Safe Speeds

6. Manage Motor Vehicle Speed - to minimise crash risk and severity

Increases in speed disproportionately affect crash severity and also increase the likelihood of a crash happening. Impact speed influences the survivability of a crash – particularly for cyclists, who do not have the protective shell of a car or truck. Occasionally, tools intended to manage speed, such as pinch points, can also add to cycling’s safety risk if not well designed.

New Zealand’s default speed limits of 50 km/h and 100 km/h are incompatible with cycling mixing with motor vehicles. Where it is not possible (or pragmatic) to physically separate these modes, then lower motor vehicle speeds are required to reduce the speed differential. In countries noted for their strong cycling culture, a key part of their success is due to their adoption of lower speed environments. Safer Journeys Action Plan requires that speeds support both safety and economic productivity, and that they are appropriate for road function, design, safety and use. The new One Network Road Classification (ONRC) system provides the opportunity to better align travelling speed with road function because the classifications are based on traffic and

freight volumes.¹¹ The speed relationship with fuel consumption has been shown to be more complex than current curves suggest. Travel time reliability is more important economically than travel times per se – unpredictable congestion stop starts in 60km/hr zones are worse than travelling smoothly at 30km/hr for instance. On the other hand, there are direct economic upsides to lowering speeds, including creating urban places that attract greater foot traffic and lingering – both of which increase local business custom.

The Safer Speeds Programme recently adopted by the National Road Safety Committee aims to reduce DSI and support economic productivity by establishing safe and appropriate speeds.

Current Cycling Initiatives

- Under the Safer Journeys Action Plan 2013-2015, the Safer Speeds Programme is being developed jointly by the Ministry of Transport and the Transport Agency in consultation with stakeholders. When implemented this will include clearer guidelines for appropriate travel speeds on different kinds of roads, and campaigns to change the public conversation about speed. The Panel supports the implementation of this Programme.

¹¹ Safer Speeds: New Zealand National Speed Management Programme 2014



- 40km/h part-time school speed zones have been implemented in many cities around New Zealand since 2001.
- Speed reduction awareness campaigns.
- Traffic calming and other physical speed management treatments are reasonably common around New Zealand; however there is little national guidance on these and hence treatments are inconsistent and sporadic.
- Some local authorities have introduced lower speed (<50km/h) speed limits, including Hamilton's Safer Speed residential areas and Wellington's shopping streets.
- Speed management in shared spaces (where cars are supposed to give way to cyclists and pedestrians), however this lacks consistency.
- Expanding the network of speed cameras and red-light cameras through the Road Policing Programme, in partnership with the Transport Agency and local government.

High Priority Actions

- Reduced motor vehicle speeds (using traffic calming, self-explaining street treatments and lower speed limits) around key destinations, such as schools and shops, along key cycling network routes where separated facilities are not present and in local neighbourhood streets.
- Reduced motor vehicle speeds in conjunction with physical separation where cycle and freight routes are unable to be separated.
- Reduced and more appropriate speeds on rural roads where cyclists are most at risk.

Medium Priority Actions

- Elevate the following actions in the Safer Journeys Strategy from Medium to High:

- Reducing vehicle speeds on roads currently used frequently by pedestrians and cyclists
- Achieve complete coverage of temporary lower speed limits around schools

Safe Road Use

Many crashes are caused by inattention, inappropriate behaviour (whether intentional or not) and lack of knowledge by both motorists and cyclists. The Safe System Approach starts from the principle that "People make mistakes", meaning that human error needs to be accommodated within a forgiving road system that manages crash forces to survivable levels. The **Safe Road Use** element of the approach aims to reduce human error or to minimise its effects, while recognising that it cannot be entirely eliminated. Although Safe Road Use can be encouraged through safe roads and roadsides, safe travel speeds and safe vehicles, this section considers actions aimed mainly at attitudes, behaviour and regulation.

7. Minimum passing distances - mandated via the Land Transport Act and Regulations

Cyclists, particularly those on the open road who are being overtaken at high speeds, are vulnerable to being squeezed off the road, sucked towards passing trucks or hit by the vehicle overtaking them. Cyclists are reliant upon balance, and will wobble and fall if their space is impinged upon. In conjunction with the Ontario Coronial Cycling Death Review in 2010, an amendment to the Ontario Highway Traffic Act was proposed to include safe passing distances between motorists and cyclists. **The purpose of this Act is to educate the public and in particular motorists about the safe passing of cyclists and to provide the police with both an educational and enforcement tool that will reduce injuries and fatalities.**¹²

On 7 April 2014, Queensland introduced legislation to trial a *minimum passing distance of at least 1m in a 60km/hr or less speed zone and 1.5m if the speed limit is over 60km/h for motorists passing cyclists.*

¹² DiNovo (2010) The Bill's first reading was carried in May 2010, no further action has been taken



Current Cycling Initiatives

Minimum passing distances are included as a guideline in the Road Code.

HIGH PRIORITY ACTIONS

Legislate for a minimum space when drivers overtake cyclists [1 metre is suggested for speed limits up to 60 km/h, and 1.5m for more than 60 km/h roads]. Use such legislation as the foundation for road safety education and enforcement campaigns that support active mobility.

Although enforcement is subject to proving a breach of the minimum, it is a tool the Police can use that sends a strong message to motorists.

8. School Travel Plans and Cycle Skills Training - increased support from the Transport Agency and local government

Only a small percentage of children are being taught cycling skills and these skills are often not adequate to cope with most traffic. The majority of skills training is at Grade 1 level, which has no on-road component. The Grade Two courses give children

confidence and the skills to cycle in a variety of traffic environments and the Panel would like to see more of Grade Two delivered. Adults are even less likely to have received some formal cycle skills training, and currently there are very few opportunities around the country for adult riders of any level of experience to obtain training by certified instructors. High quality international assessments of the current evidence about cycle skills training and school travel planning conclude a lack of effectiveness at improving safety or participation outcomes for both these interventions. There continues to be a need for further research in this area, particularly to understand whether cycle skills training is helpful for encouraging participation in cycling where good infrastructure is present, as well as to ensure training does not encourage over-confident cycling by children in dangerous environments.

Despite the lack of solid evidence in this area the Panel believes cycle skills training and education regarding the key risks for people who cycle will improve safety outcomes.

A 2009 study found that 8.6 per cent of intermediate school students cycled to school, but 22.2 per cent wanted to.¹⁴

¹⁴ Mackie (2009)

School	Approx % cycling	% of students who would like to bike to school	Theoretical max % cycling A (a)	Theoretical max % cycling B (b)
Avondale Intermediate	1%	17%	20%	55%
Kowhai Intermediate	7%	24%	14%	23%
Wesley Intermediate	2%	13%	31%	58%
			(c)	(d)
Devon Intermediate	14%	35%	29%	58%
Tauranga Intermediate	8%	23%	17%	34%
Mount Maunganui Intermediate	20%	N/A	16%	36%
Average (SD)	8.6% (6.3%)	22.2% (8.3%)	21.5% (8.6%)	44% (15.0%)

(a) Not including pedestrians, public transport users and those who live greater than a 2km radius from school

(b) Including pedestrians, public transport users and those who live greater than a 2km radius from school

(c) Students who live within a 0.75-2km radius from school on reasonable cycling routes

(d) PLUS all students who live more than a 2km radius from the school on good cycling routes



Current Cycling Initiatives

Government is co-investing in Cycle skills training and providing guidance on school travel planning. However, delivery is inconsistent and limited.

There are three levels of training.

Grade one cycle skills training is targeted to 8+ years old (year 4,) takes 3 hours and is held in a non-traffic environment (e.g. playground, netball court). The trainee to instructor ratio is 30:1 (theory) and 15:1 (practical).

Grade two training takes 7-8 hours in total (30 minutes theory and 6 hours riding on local roads). The trainee to instructor ratio is 30:1 (theory and 6:1 (practical). Target group is 10+ years old (year 6)

Grade three training takes 2 - 8 hours and takes place in more challenging traffic environments. It is aimed at 12+ year olds (year 8) and requires a trainee to instructor ratio of 3:1. Because of instructor ratio, these classes are very expensive to deliver.

HIGH PRIORITY ACTIONS

- i. Increase cycle skills training in schools and increase the effectiveness of road user education to make it safer to walk and cycle is reprioritised from medium to high in the Safer Journeys Road Strategy. Cycle skills training should have an increased focus on Grade 2 and above to school aged children, as this level has a greater emphasis on on road riding and dealing with traffic and intersections.

MEDIUM PRIORITY ACTIONS

- ii. Encourage wider delivery and increased funding of 'Bikes in Schools' as it provides a very good introduction to cycling for many children who may not otherwise have the opportunity.
- iii. Ensure school travel planning initiatives integrate roading infrastructure improvements with cycling, parking and travel speed. Instil a principle of shared responsibility between schools, communities and their councils. Make existing travel planning guidance more accessible to schools.

Bikes in Schools is a complete biking package implemented within a school that enables all students to ride a bike on a regular basis.

The full package includes:

- a fleet of new bikes
- a bike helmet for every child
- combination of riding, pump and bike skills tracks
- bike storage facility (where needed)
- bike coach to introduce the programme and teach basic riding skills

All the bikes and helmets are owned by the school and remain on the school property. The tracks are built within the school property. The storage facility (e.g. converted shipping container or bike shed) is also owned by the school.

This package can be complemented by a Travelwise Safe School Travel Plan (in Auckland) or other local Council school road safety programmes, and also a cycle skills training programme from a range of different providers.

Current guidelines include:

- School travel planning
 - [Safe Routes to School](#)
 - Safer Journeys to Rural Schools
 - Cycle Skills Training
 - Neighbourhood Accessibility Plans.
- iv. NZTA will develop resources and programmes for delivering cycle training to adults. This training would include improving cyclist awareness of high risk situations, e.g. cycling near trucks, cycling on rural roads. Christchurch Cycle Safe Programme
- v. Councils and providers to partner in robustly designed programme evaluation and research to improve the evidence-base for the benefits of cycle skills training and travel planning, while ensuring that potential harms are avoided.

The Christchurch City Council funds the Cycle Safe programme for year six pupils (10-11 years old); it has been running since 1998. During the 1980s, the Ministry of Transport Road delegated cycling instruction to classroom school teachers. However, the instructors required for the high ratio of one instructor for six pupils for on-road instruction were unavailable. Concerns that a generation of children would miss out on essential safety skill training led the Christchurch Road Safety Co-ordinating Committee to set up a programme.

Two full time and a pool of part time instructors were employed to deliver the on-road component of the Safe Cycling course. The programme's popularity required the addition of a second team in 1999; ever since approximately 90 percent of children in year six have been trained to ride their bicycles with confidence and be road-wise. Nine-five percent of those children who received cycle training achieved competencies assessed at level 2.

Christchurch's Cycle Safe Programme is considered one of the best in the country and is used as a leading delivery model. In 2007 The Cycle Safe team worked with the Land Transport Safety Authority to develop the current national cyclist skills training guidelines. The course usually takes 10 and a half hours, made up of seven modules of 90 minutes each, including 7 hours of on-road instruction.

An independent evaluation has shown that the children are learning and using the cycle skills and those who pass the test are more likely to have parents who permit them to ride to school.

Assessment of Police reported crashes:

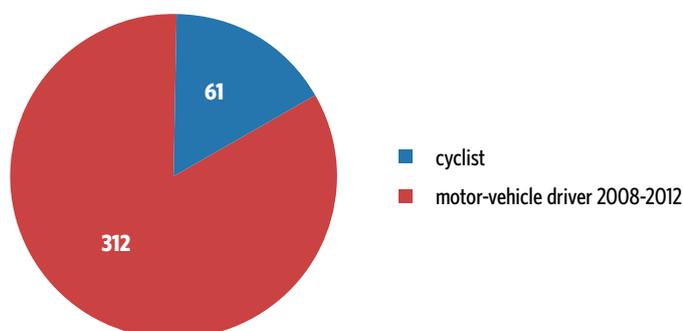
10 Year Olds	1994-1997	1999-2002	2003-2006
No Training	94 injury crashes		
Training		39 injury crashes 39% reduction	
Training			21 injury crashes 67% reduction
Other comparable cities		25% reduction	32% reduction

There was, however, a general downturn in cycling to school through this period that was smaller than the crash reduction. Other comparable centres also experienced a reduction in cyclist crashes in this age group over the same periods with corresponding reductions of 25% and 32% that were much smaller than achieved in Christchurch.

The Cycle Safe programme is free to schools and funded by the Christchurch City Council, with financial assistance from NZ Transport Agency. Bikes and helmets are supplied by sponsors for use by those students without their own.



Party that failed to give way in urban fatal and serious cyclist crashes



9. Road User Behaviour and Awareness - the Transport Agency to develop programmes to improve road user (both drivers and cyclists) behaviour and awareness

As noted earlier, many crashes are caused by inattention, inappropriate behaviour (whether intentional or not) and lack of knowledge by both motor vehicle drivers and cyclists. Many motorists find cyclists unpredictable and inconvenient.¹⁵

Road user guidance already exists, but isn't obvious or easily accessible to road users. The Road Code includes a chapter advising motorists on how to share the road with cyclists and advises cyclists on safe road use practices. Many road users do not seem to be aware of the finer points of this guidance, which contributes to misunderstandings, antagonism and crashes. Additionally, some legislation is ambiguous or changes with circumstances, for example overtaking on the left when riding.

Current Cycling Initiatives

- "See the Person, Share the Road" public awareness campaign. The Transport Agency website also contains tips for motorists about sharing the road with cyclists
- Road Code (general)
- Code for Cyclists

¹⁵ Ngatuere (2014)

- **Bike Wise:** funded by the Transport Agency, is New Zealand's national programme of cycling activities. It is supported by the Bike Wise Reference Group, which includes representatives from BikeNZ, Cycling Advocates Network, New Zealand Police, Ministry of Transport, Accident Compensation Corporation and several others. More details can be found through the website <http://bikewise.org.nz/>
- **Safety tips for cyclists and truck and bus drivers:** This leaflet provides some practical advice on how cyclists, buses and trucks can share the road together safely.
- With funding from the Transport Agency, Bike NZ and Cycling Advocates Network deliver "Making the Journey Safer for those who cycle". This project has a clear aim of targeting high risk areas for cycling in New Zealand to improve road safety outcomes by training and certifying instructors for cycle skills training, holding 'road user workshops' for commercial drivers and cyclists, and developing informational material on safe road use behaviours when/near cycling.

Law breaking is not condoned, and could be minimised if the roads, designed for motorists, did not endanger cyclists.

Road user behaviour is influenced by the environment.

HIGH PRIORITY ACTIONS

- i. Encouraging drivers and cyclists to share the road safely is reprioritised from medium to high in the Safer Journeys Road Strategy. This will be done by adopting best practice to effectively communicate with the general public about safe road use for people who cycle.
- ii. Add questions to the driver licence test regarding passing cyclists and interaction with pedestrians and cyclists. Investigate if driving instructors are appropriately qualified, and have relevant resources, to teach young drivers to be mindful of cyclists.



10. Corporate responsibility - WorkSafe New Zealand and ACC and other stakeholders encourage corporate responsibility for employed drivers and contractors so that they practise safe behaviour towards cyclists

The Pike River tragedy of 2010 has highlighted the importance of taking a whole of system approach to safety in the workplace. A key recommendation from the Royal Commission on the Pike River Coal Mine Tragedy and the Independent Taskforce on Workplace Health and Safety was the need for an independent workplace health and safety regulatory agency – WorkSafe New Zealand was established for this purpose (see below).

Being mindful of increasing expectations and standards for occupational health and safety (OSH), the Panel considers it imperative that all relevant OSH standards extend to responsible road and vehicle use, where the vehicle can be considered a workplace.

WorkSafe NZ is promoting a range of measures to improve workplace safety. In addition, the Business Leaders' Health and Safety Forum is a coalition of business and government leaders committed to improving the performance of workplace health and safety in New Zealand. Their vision is "... all business leaders passionately committed to achieving Zero Harm Workplaces"

Current Cycling Initiatives

The Cycling Advocates Network has been running 'road user workshops' for a number of years where commercial bus and truck drivers come together with regular cyclists to literally 'sit in each other's seats' and discuss how best to interact with each other on the road in an empathetic, non-confrontational setting. To date, over 300 commercial drivers have been through these workshops.

Companies across Britain implement Crossrail lorry safety requirements

Crossrail builds rail infrastructure in Britain, with a heavy emphasis on London. A joint road safety event between the company and police is Exchanging Places, held on London roads and in schools. It gives cyclists the chance to sit in a lorry driver's seat and understand the blind spots faced by Heavy Goods Vehicles (HGV) drivers.

Crossrail's rigorous safety requirements for any HGV working on their projects is leading to widespread change in the UK haulage industry as vehicles are upgraded with new safety equipment to alert drivers to vulnerable road users. Crossrail requires all HGVs delivering to its worksites to have cycle safety equipment and for regular drivers to undergo a one day intensive training course regarding vulnerable road users. Lorries are inspected when arriving at site to ensure the required safety equipment is fitted and in working order.

Crossrail requirements include that HGVs are fitted with Fresnel lenses or cameras, blind spot detection equipment that warns the driver when a cyclist is in the near-side blind spot and under-run guards to prevent cyclists from coming into contact with lorry wheels. Vehicles must also carry warning signs to alert cyclists and pedestrians of the risks they face by getting too close to HGVs.

Eleftheriou (2014)

HIGH PRIORITY ACTIONS

- i. Encourage corporate responsibility by ensuring that all employees who drive a motor vehicle as part of their employment receive cycle safety specific driver training
- ii. Training for truck and other professional drivers and cyclists on how to be aware of each other, and actions to reduce risk. Consider expanding the current programmes to also include taxi drivers and driver training instructors.
- iii. Reward corporate responsibility and actions to improve cycle safety through ACC levies and insurance premiums.

11. Legislative Review - the Ministry of Transport refresh its legislative review of provisions relating to cycling.

Many existing pieces of traffic regulation were designed largely with motorists and pedestrians in mind; in many cases they are not always equally sensible when cyclists are involved. Such rules include overtaking on the left, riding between traffic lanes, riding on footpaths and using zebra crossings.

A legislative review of provisions for vulnerable road users was initiated in 2006. At the same time changes were made to the give way rule and driver licensing. Other recommendations were delayed until the new give way had become firmly embedded with road users.

Separated bicycle facilities (SBFs) are an emerging issue, as they have been a prominent infrastructure type in the US and Australia for a few years, and are increasingly being built in New Zealand (e.g. Beach Road in Auckland). There is much legal ambiguity, for example in relation to give way rules, and the current integration of these facilities into traffic signal operation is compromised by the fact that the rules are written for drivers.

Blind spots



The blind spot can be the full length of the vehicle, leaving the driver unable to see anyone cycling beside them on the left.

Remember, if you can't see the driver or their mirrors, then they can't see you.

Don't risk your life by trying to pass trucks or buses on the left-hand side when they are stopped at intersections or are about to turn.

This extract from Safety tips for cyclists and truck and bus drivers shows why it is so dangerous for cyclists to ride on the left-hand side of trucks or buses. The full leaflet can be found at: <http://www.nzta.govt.nz/resources/safety-tips-cyclists-truck-bus/docs/leaflet.pdf>



Review how the provision of separated bicycle facilities fits into the legislative framework.

MEDIUM PRIORITY ACTIONS

Legislative recommendations from the work commenced in 2006 be revisited and revitalised. This could be done in conjunction with work to mandate minimum passing distances.

Comment about Clothing and Helmets - status quo for high visibility clothing (voluntary) and cycling helmets (compulsory)

Helmets The Panel does not believe that cyclist safety would be improved by revoking the legislation that makes helmets compulsory.

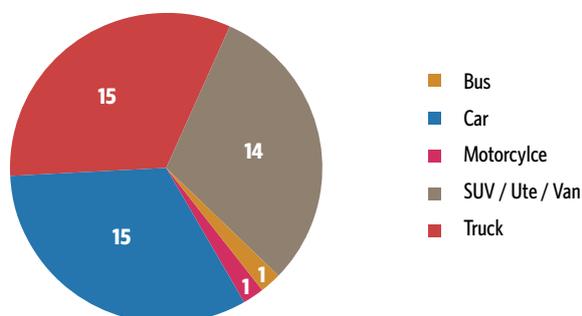
High visibility clothing is an issue often raised by Coroners and journalists. The Panel encourages people to wear bright clothing and reflective garments when cycling (especially in busy or dark environments), but does not support suggestions that these be mandated. Available research does not demonstrate a significant cause and effect between wearing high-vis clothing and reduced risk of death or serious injury.

Safe Vehicles

12. Truck Side Under-run Protection - investigation of side under-run protection and other vehicle features to minimise the risk to cyclists from heavy vehicle crashes

Trucks are over-represented in crashes causing cycling deaths and serious injuries. Between 2003 and 2012, trucks were involved in 33 percent of urban cyclist deaths. The seriousness of trucks mixing with cyclists has recently seen Transport for London ban unauthorised heavy vehicles from the central city (see insert). As well as roads and roadsides measures (see 4 above), there is scope for in-vehicle enhancements to reduce both the risk and severity of such crashes.

Vehicles involved in urban cyclists deaths 2003-12



The Ministry of Transport has reviewed literature on side under run protection systems (SUPS) and concludes that *'the evidence suggests that existing SUPS designs have been effective at reducing the severity of injury sustained by cyclists in collision with heavy goods vehicles. A preliminary analysis of recent cycle-truck crashes in New Zealand suggested a statistically significant reduction in the incidence and severity of such crashes had SUPS been present; further investigation would also be useful to assess whether additional benefits of SUPS to pedestrians and light motor vehicles might also be obtained.*

Given the prevalence of side under run protection systems in comparable jurisdictions and evidence of their effectiveness, the Panel considers that the issue is worthy of further investigation in the New Zealand context. Pedestrians and motorcyclists may also benefit from this protection.

We note that further investigation would require close consultation with freight operators and representative organisations, detailed cost benefit analysis, whether SUPS should apply to new vehicles only and options for funding or other financial incentives.

HIGH PRIORITY ACTIONS

- i. Ministry of Transport and the Transport Agency to complete investigations of the cost-effectiveness of truck side under-run protection and other vehicle technology improvements such as collision detection systems, additional mirrors or cameras.

London Safer Lorry Scheme

Between 2008 and 2012, 53 per cent of cycling fatalities in London involved lorries, though they make up only around 4 per cent of the traffic. National legislation requires trucks to fit side guards and extended mirrors, but exemptions are allowed to skip operators with vehicles under 18 tonnes and a large number of these exempted vehicles are killing cyclists.

The safety equipment for the Safer Lorry Scheme is defined as:

- Class V and VI mirrors will be required by all HGVs over 3.5 tonnes irrespective of current exemptions
- Side guards will be required for all vehicle types, irrespective of current exemptions.

Basic safety equipment is relatively inexpensive, especially when compared to typical heavy vehicle purchase and operating costs. A close proximity mirror costs around £300 and side guards around £1,000, including installation.

Transport Research Laboratories (2014) estimate that, for collisions with HGVs without side guards where the impact point is at the side of the lorry some and the vehicle manoeuvres are going ahead in a straight line, then between 50% and 74% of cycling fatalities may be prevented if side guards had been present.

13. Bicycle Lights and E-Bikes – the Transport Agency adopt improved standards for bicycle lights and the European Union standard for e-bikes

Lack of cyclist conspicuity is one of the biggest factors contributing to a crash. Sorry Mate, I Didn't See You (SMIDSY) is often the response of motorists. A well-lit bicycle is one of the easiest ways for a cyclist to be more visible at night and reduce the risk of a crash.

The European Cyclists Federation has studied some issues regarding lighting standards and the International Standards Organisation (ISO) standard is under review. Their report concluded that often bicycle lights are too powerful and dazzle oncoming traffic, but conversely, many lights gave only limited vision of the road. LED lamps were becoming almost universal and have long replaced the halogen as the state of the art with higher lifetime, higher efficiency and greater lighting. Flashing lights were not recommended because of potential confusion with emergency vehicles, being hard to judge distances and in rural areas a question of a decrease in conspicuity¹⁶.

E-Bikes are not an issue, yet. They are increasing in popularity and it has been estimated they account for 40 per cent of expenditure on new bikes in Europe. As no standards are in place to regulate the speed of an e-bike, an issue could arise where unlicensed people (including children) are riding e-bikes that are very similar to motorbikes.

Current Cycling Initiatives

- Monitoring the European and Australian e-bike experience.
- Bicycle light requirements are contained in the Cycling Code.
- *Be Bright* campaign

HIGH PRIORITY ACTIONS

- i. A new international ISO bike light standard is being developed. In the interim, the Panel recommends raising the standard in the Road Code as follows:
 - one or two white or amber headlights that can be seen from a distance of 200 metres (one of these headlights may flash).
 - one or more red rear-facing light that can be seen from a distance of 200 metres (this may be steady or flashing)
- Note: The existing provision that lights should not dazzle or confuse other road users would remain.
- ii. Adopting the European standard for E-bikes.

16 ECF (2012)



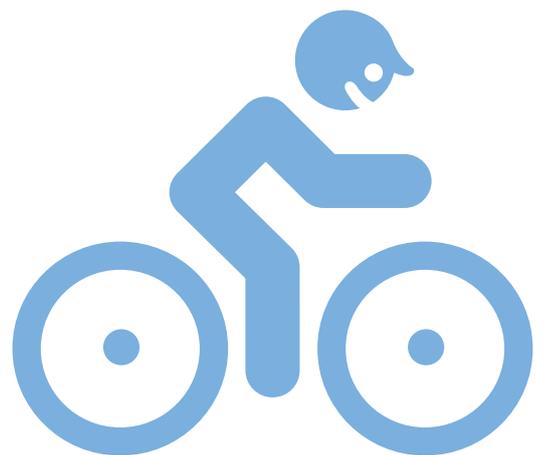
MEASURES OF SUCCESS – EVALUATION AND MONITORING

The Panel has discussed how the success of its recommendations can be measured. The main “Key Performance Indicators” will be progressive reductions in on road cycling fatalities until our Vision Zero is achieved, accompanied by on-going reductions in serious injuries. If these results are achieved alongside increasing participation in cycling, then we will be very pleased with the results.

The Panel has not been established as an on-going performance monitoring body for cycling safety. Once central and local government have decided which recommendations will be implemented, it will be essential for their work programmes to include monitoring and evaluation requirements so that results can be measured and evaluated accurately. The Safe System approach involves continuous improvement as lessons are learned about what works and what doesn't and then fed back to the next planning and investment round. The improvements in data collection and analysis suggested under Recommendation 3 are vital to this process.

The NZ Transport Agency is establishing a dedicated Cycling team in its Planning & Investment business group as well as an internal governance group. We understand that the new Cycling team will have a large role in developing and overseeing the work programme flowing from government decisions on our recommendations. We are heartened by these developments.

The following table sets out possible performance measures for our recommendations:



Recommendations

Possible Performance Measures

Adoption of Safe System principles	<ul style="list-style-type: none">Proactive recognition of cycling in planning and investment processesIncreased investment (absolute/percentage) in improving actual/perceived cycle safety
Safe Roads & Roadsides	<ul style="list-style-type: none">Establishment/enhancement of relevant design standards.Reduced risk of death and serious injury on roads where infrastructure has been improved.Stocktake and on-going measurement of various types of infrastructure for cycling (needs consistent national definitions) e.g. kilometres of segregated or off-road cycle paths.
Safe Road Use	<ul style="list-style-type: none">Percentage of school children who receive cycling skills trainingMore positive attitudes from motorists to cyclists and vice versa (increasing mutual respect and understanding)Reduced deaths and serious injuries from crashes involving heavy vehicles and cyclists
Safe Speeds	<ul style="list-style-type: none">Increased kilometres of roads, used regularly by cyclists, with lowered speed limits.Reduced deaths and serious injuries where speeds have been lowered.
Safe Vehicles	<ul style="list-style-type: none">Percentage of bikes with lights that meet standards.Percentage of heavy vehicle fleet with side underrun protection.Percentage of motor vehicles with collision warning/avoidance systems.
Safety Outcomes	<ul style="list-style-type: none">Reduction in death and serious injuries (DSI) per km travelled / time spent cycling / total numbers.Percentage increases in cycling DSI not to exceed/be less than any percentage increase in cycling participation.
Participation Outcomes	<ul style="list-style-type: none">Uptake cycling, e.g. km cycled or time spend cycling (e.g. by age group, region), increased percentage of trip legs in Household Travel Survey. Increased participation is a sign that perceived fear has decreased.Number of RCAs fully engaged with a benchmarking programme.Increased percentage of commuters cycling to work (census data).Increased percentage of children cycling to school.
Panel's Work	<ul style="list-style-type: none">Number of panel recommendations implemented fully/partially by [date].Establishment of on-going monitoring mechanism/advisory body.Encouragement/support by a benchmarking programme.
Perception Outcomes	<ul style="list-style-type: none">Perceived safety of cycling e.g. percentage of people who feel safe/unsafe while cycling.Reduced percentage of people who don't cycle because they think cycling is a safe/unsafe activities.Reduced percentage of parents who think it's too dangerous for their children to cycle to school.



APPENDIX I: TAKING A SAFE SYSTEM APPROACH

A “whole of system” approach to improving road safety for people who cycle

The Panel’s Terms of Reference require it to take into account the Safe System approach to road safety which the Government has adopted under the Safer Journeys Strategy 2010-2020. The Panel has found this a useful framework. It may help to explain the safe system approach in more detail to put the Panel’s comments and draft recommendations into context.

The Safe System approach is usually illustrated by this diagram¹⁷:

The vision at the centre of the diagram of “a safe road system increasingly free of death and serious injury” has been adapted by the Panel, to the cycling specific vision, as set out earlier: **“a safe road network with zero fatalities and reduced serious injuries for people who cycle”**.

In New Zealand the Safe System Approach also incorporates four principles:



1 People make mistakes

2 People are vulnerable

3 We need to share responsibility

4 We need to strengthen all parts of the system

¹⁷ Ministry of Transport (2010). Safer Journeys: New Zealand’s Road Safety Strategy 2010-2020, p11

Human tolerance to crash forces

Next to the central vision is the recognition of “human tolerance to crash forces” – this is the second of the four principles – people are vulnerable and have limited tolerance to crash forces. Therefore, the rest of the road system has to be designed around managing crash forces so that people are not killed or seriously injured.

Elements of the Safe System approach

The coloured segments in the circle diagram are the “elements” or “pillars” of the Safe System:

- Safe roads and roadsides
- Safe road use
- Safe vehicles
- Safe speeds

All the elements need to take into account the principles – particularly that *people make mistakes*.

Shared responsibility and strengthening all parts of the system

The outermost ring of the diagram links mainly to the two remaining principles of shared responsibility and strengthening all parts of the system and to “enablers”

for implementing the approach. These factors have less direct impact on individual crashes but hugely influence the overall safety of the road system. These are:

- Understanding crashes and risks
- Innovation
- Legislation and enforcement
- Leadership and capability
- Education and information
- Admission to the system

The Panel proposes to make recommendations in all these areas because, without a coherent system-wide approach and shared responsibility, there is a risk of fragmented and ad hoc attempts to improve cycling safety, which may inadvertently lead to more deaths and serious injuries.

Wider institutional and societal factors affecting cycling safety and participation

Moving beyond the boundaries of the Safe System diagram there are a range of inter-related wider institutional and societal factors affecting road safety in general, cycling safety and more broadly cycling participation.



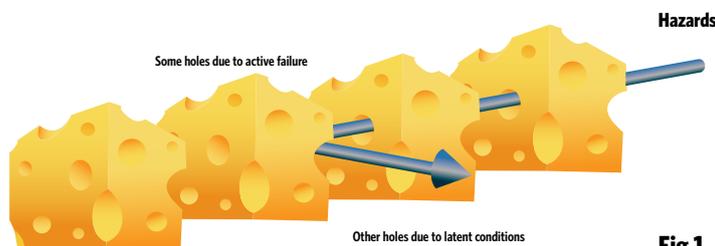


Fig 1.

Holes = hazards such as user behaviour, inappropriate speed limits, inadequate road or shoulder space etc

Solid cheese = system defences such as user training, appropriate speed limits, signage, physical separation of users.

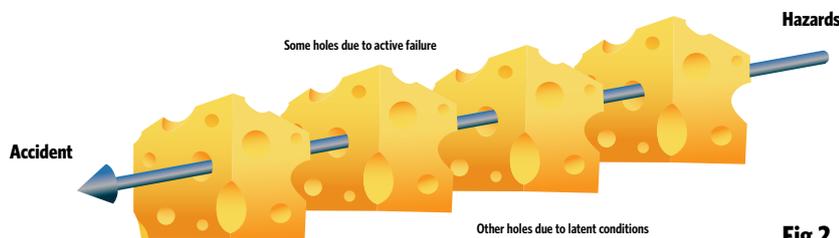


Fig 2.

James Reason: 'Swiss Cheese' Model of Error

Figure provided by : <http://www.evidenceintopractice.scot.nhs.uk/patient-safety/what-is-patient-safety.aspx>.

Original model: Reason, J. (1990). Human Error, Cambridge University Press.

How do crashes happen?

When looking at improving cycle safety, it's vital to look beyond the immediate causes of crashes and the natural desire to allocate blame. In almost every crash there will be a mix of contributing factors – for instance availability of funds for infrastructure, investment criteria, road design, the speed limit, cyclist and/or driver behaviour, financial or social pressure to hurry, applicable road rules, the weather and time of day and so on. To illustrate this James Reason's "Swiss Cheese" model is often used:

James Reason developed the Swiss Cheese Model following his work in the nuclear industry. However, the model has now been applied in most safety critical industries including road transport.

The figure above provides a visual representation of the Swiss Cheese Model. In the model, the slices of cheese represent the various system defences against adverse events and the holes represent latent and active errors or mistakes. Latent errors are factors not directly linked, but contributing to the incident (e.g. organisational level failures). Active errors are unsafe acts that can be directly linked to the incident.

An example of the application of this model might be a situation where a driver fails to see a person on a cycle and crashes into him or her. In this situation both active and latent failures could be identified:

Active

- Driver failed to notice a person on a cycle

Latent

- Driver was fatigued.
- Vehicle tyres were worn limiting grip on the road.
- Given the speed limit, road function and traffic volumes, physically separated infrastructure should have been provided.
- The relevant Road Controlling Authority had found it difficult to obtain funding for infrastructure improvements due to restrictive investment criteria.

The key principles of the Swiss Cheese Model have a number of important implications for the Safe System approach:

- Mistakes may occur many times without an obvious consequence, making them seem trivial and unimportant. However, the 'holes in the cheese' only have to align once to cause a serious crash.
- Incidents/crashes are usually caused by multiple systems failures. Therefore, a systems approach to safety improvement is essential.
- Many errors do not result in harm. However, they provide opportunities for learning and preventing harm before it occurs.
- Because incidents and crashes often occur as a result of behaviours that a road user may have engaged in many times before without harm, most road users fail to fully understand how risky some of their behaviours are. For example, drivers may routinely exceed the speed limit without fully understanding the risks and implications of doing so because crashing is such a rare event.



APPENDIX II: ROAD USER ATTITUDES

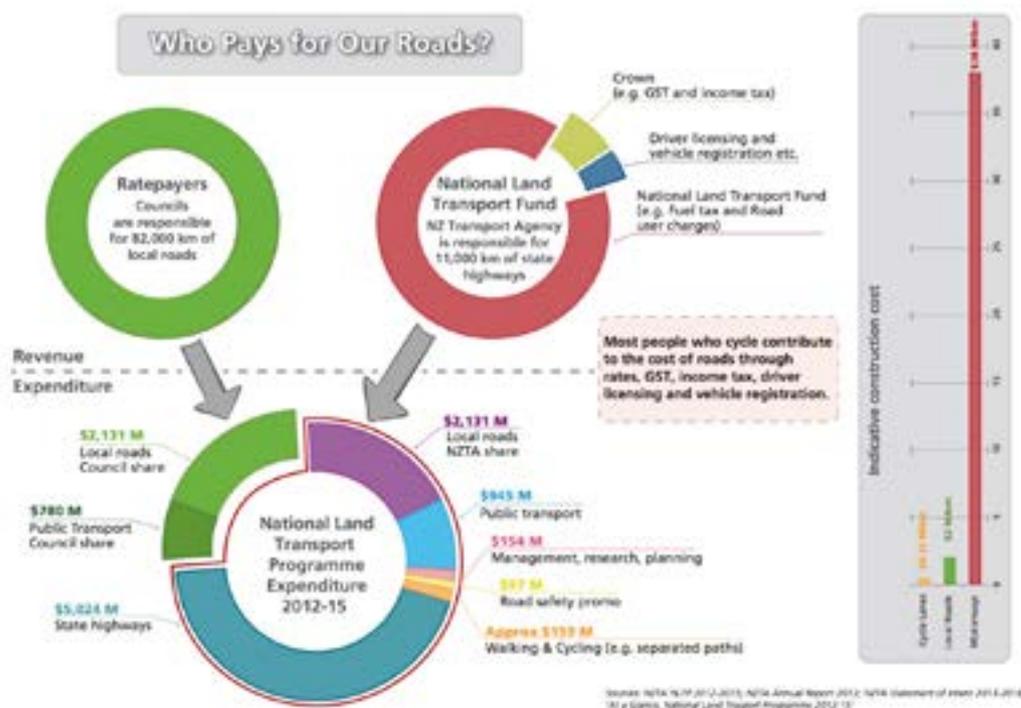


Figure 5 Simon Kennett, Greater Wellington Regional Council

“Cyclists don’t pay”

A frequent complaint from motorists is that cyclists don’t pay petrol taxes, registration, road user charges or ACC levies. Over 80 percent of Cycling Advocates Network members own a car and therefore do pay road taxes. Moreover, a majority of road charges pay for the damage and external costs (such as environmental damage and health effects of inactivity) caused by vehicles.¹⁸ A 2 tonne 4-wheel car typically causes about 10,000 times more damage to a road than a 100 kg bicycle and its rider. A 30 tonne 18-wheeler truck might do more than 1 million times the damage. A large proportion of transport costs go towards covering the ongoing effects of cars and trucks on the roads; any damage to roads by bikes is negligible.¹⁹

Anyone who owns or rents a home contributes to local Council rates, which pay for fifty percent of local roads. People who work are paying income tax and ACC levies; and anyone who consumes goods and services are paying GST.

“Cyclists are a law unto themselves”

Under the Land Transport Act 1998, “driver” includes a person riding a bicycle. Therefore, people who cycle must obey all the road rules applying to drivers of motor vehicles. It is difficult to quantify the extent to which cyclists are involved in traffic offences because of the practical difficulties involved in bringing prosecutions. Anecdotally, letters to the editor and media reports indicate that many motorists find cyclists’ misbehaviour frustrating and annoying. In turn, most cyclists can relate incidents and near misses involving motorists driving with inattention or flagrant disregard of cyclists’ safety. A “them and us” culture has developed. In the Panel’s view the progressive improvement of cycling infrastructure will help reduce tensions by eliminating many conflict points. At the same time there is scope for investment in a social marketing campaign to improve mutual understanding between cyclist and motorists – covering issues such as courtesy and patience, as well as understanding of the road rules.

¹⁸ Cycling Advocates’ Network (2003)

¹⁹ Cycling Christchurch (2013)



What cyclists would like drivers to know

- Cycles are small and can be difficult to see, especially at night. Don't just look for car-sized vehicles.
- Cyclists can feel threatened by inconsiderate driving. Cyclists have a right to space on the road and need extra room at intersections and roundabouts.
- Cyclists may ride away from the kerb or occupy a lane – not because they want to annoy drivers, but to:
 - avoid drains, potholes or roadside rubbish
 - be seen as they come up to intersections with side roads
 - discourage drivers from squeezing past where it's too narrow.
- Cyclists turning right are exposed. They need extra consideration from drivers, especially on multi-laned roads with fast-moving traffic.
- Cyclists can be forced into faster traffic by vehicles that are parked where they shouldn't be:
 - in cycle lanes
 - on broken yellow lines
 - near intersections.
- Cyclists are dazzled by headlights on full beam, just like other road users – remember to dip your lights for cyclists as well as other motor vehicles.
- Cyclists can travel quickly, capable of speeds of 40km/h or more.
- Cyclists have a right to use the roads and to travel safely and enjoyably. Please understand and respect their needs.

What drivers would like cyclists to know

- Drivers expect cyclists to obey the road rules.
- Drivers usually travel faster than cyclists and therefore have less time to react to hazards. Remember this when you're on the road.
- Sometimes cyclists' behaviour can unsettle drivers, such as when cyclists appear hesitant or change direction suddenly.
- Drivers can feel delayed by cyclists.
- Licensed drivers and cyclists both have a right to use our roads, and both share a responsibility to understand and respect each other's needs.

GLOSSARY

[to be expanded in final report]

Defining and managing risk

Collective risk measures the crash density along a road. That is, number of crashes per kilometre. Each individual vehicle may have a low personal risk of crashing, but a large number of vehicles add up to a high collective risk. Roads with high traffic volumes are likely to have more crashes unless they have specific safety treatments. Where roads are high collective risk, and have high traffic volumes, is where the greatest safety gains can be made through infrastructure improvements, as well as where enforcement may be more effective. There are also likely to be economically important, and so safety treatments have a higher economic benefit.

Personal risk is the measure of risk that an individual vehicle is involved in a crash on a particular stretch of road. A road with low volumes of vehicles can have high personal risk and high cost infrastructure changes are unlikely to be cost effective. In this case other lower cost safe system interventions will be needed.

Key Strategic Documents

The Transport Agency's Economic Evaluation Manual (EEM) is the industry's standard for the economic evaluation of transport activities. The EEM is used by approved organisations for economic evaluation and the preparation of funding applications to the Transport Agency.

The Government Policy Statement on Land Transport (the GPS) is the Government's main lever for setting priorities and funding levels for land transport investment.

The draft GPS 2015 includes:

- national objectives for land transport
- the results the Crown wishes to achieve from the allocation of funding from the National Land Transport Fund
- the Crown's land transport investment strategy
- the Crown's policy on borrowing for the purpose of managing the National Land Transport Programme.

The GPS cannot determine which projects will be funded, or how much funding any particular project will receive. Rather, the GPS sets ranges of funding that government will make available for different types of activity. The New Zealand Transport Agency then determines which projects receive funding – and to what level – within those overall funding ranges.

The NZTA Statement of Intent (Sol) sets out an approach and course of action for the next three years that will contribute to the delivery of the government's land transport objectives and wider transport vision. It includes performance measures and what is intended to be measured (and how) and details of what is expected to be accomplished. The document also includes full financial statements. The Sol is a statutory compliance document.

What is KiwiRAP?

KiwiRAP is the award-winning New Zealand Road Assessment Programme (RAP), developed in partnership with the Automobile Association, Ministry of Transport, NZ Police, Accident Compensation Commission, and the NZ Transport Agency.

There are three protocols: risk mapping, star rating and performance monitoring.

Risk mapping uses historical traffic and crash data to produce colour coded maps that illustrate the relative levels of risk on sections of the road network.

Performance tracking involves a comparison of crash rates over time to establish whether fewer, or more, people are being killed or injured, and to determine if measures to improve safety have been effective.

Star ratings are based upon the engineering features of a road. Between one and five stars are awarded to road links depending on the level of safety 'built in' to the road.

An excellent correlation between injury crash rates and star ratings demonstrate the strong technical basis underlying KiwiRAP and provides confidence that improvements to the star rating of a road will deliver the expected crash reductions.



One Network Road Classification (ONRC)

The ONRC's purpose of is to:

- Recognise the role and function of each type of road in the road network
- Provide a basis for establishing consistent levels of service for each category of road (including levels of service for safety), and
- Use this information to guide decisions about the design and management of the road, including safe operating speeds to ensure it can fulfil its role in the transport network.



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