EVALUATION OF THE ROAD SAFETY TRUST PROJECT

Report prepared for Cycling NZ and the Cycling Advocate's Network by Mackie Research & Consulting

Evaluation context: *The Road Safety Trust project, a multi-faceted project led by Cycling NZ and the Cycling Advocate's Network, aimed to improve road user behaviour and contribute to an overall goal of Safer Journeys for Cyclists.*

Evaluation purpose*: To identify the project's strengths, areas for development and impact, in order to provide project partners with accountability for investment as well as recommendations for the future.*

Evaluation approach: *Comparative case study approach examining aspects of the design, delivery and outcomes of the project components.*

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Greer Hawley & Hamish Mackie

Mackie Research & Consulting
optimising human systems

EVALUATION OF THE ROAD SAFETY TRUST PROJECT

Executive Summary

Introduction

Cycling NZ and The Cycling Advocates' Network (CAN) are national cycling organisations with a vision of '*more people cycling more often'*. These organisations received funding from the New Zealand Transport Agency's Community Road Safety Fund in 2013 for a joint 3-year cycle safety education project (referred to as the RST project), with the overarching aim of *Safer Journeys for Cyclists.*

This aim was to be achieved through two key action areas:

- The education of cyclists and professional drivers through a range of approaches
- Movement towards a fully set up education system that ensures the delivery of cycle safety education beyond the RST contract.

As the project was multi-faceted, the scope of the evaluation was decided in conjunction with the project team, and broadly covered two areas:

- Cycling skills training (on-road cycle training for youth aged 10-14 years, on-road cycle training for adults, and cycle skills instructor training).
- Road User Workshops for professional drivers and cyclists.

Cycle Skills Training Evaluation

Intro to Road and Everyday Cycling

The *Intro to Road and Everyday Cycling* course is designed to give youth and adults the opportunity to learn, develop and practice the fundamental skills of cycling on the road. Overall, *Intro to Road and Everyday Cycling* was delivered to more than 6297 10-14 year olds over the 3-year contract period, and 580 adults (either directly through Cycling NZ or through instructors trained by Cycling NZ). A case study approach was undertaken to compare the delivery and outcomes of the training in different contexts.

The numbers

6297 youth & 580 adults involved in on-road cycling training

698 drivers, cyclists and managers involved in Road User Workshops

"…more cautious, I realise car drivers can make mistakes so I make sure I'm ready in case they do something wrong." (male, aged 13, after participating in on-road cycle training)

"Visibility for a truck driver from the cab toward the front right area is significantly less than I would ever imagine" (female cyclist after attending a Road User Workshop)

Key findings

The *Intro to Road & Everyday Cycling course* aligns to the Transport Agency's guidelines for cycle skills training and the core Grade 1 and Grade 2 skills are being covered. Some courses may not meet the recommendations for on-road delivery time, as a result of students' base skill levels and scheduling within schools. A strength of the programme is that it is based on a learning approach (Teaching Games for Understanding), and this also maximises the time students are riding during the initial off-road sessions.

Cycling NZ has worked alongside other partners and schools to tailor training approaches to the participants and there are some good examples of training being linked with other activities in order to reinforce and extend cycling education and exposure.

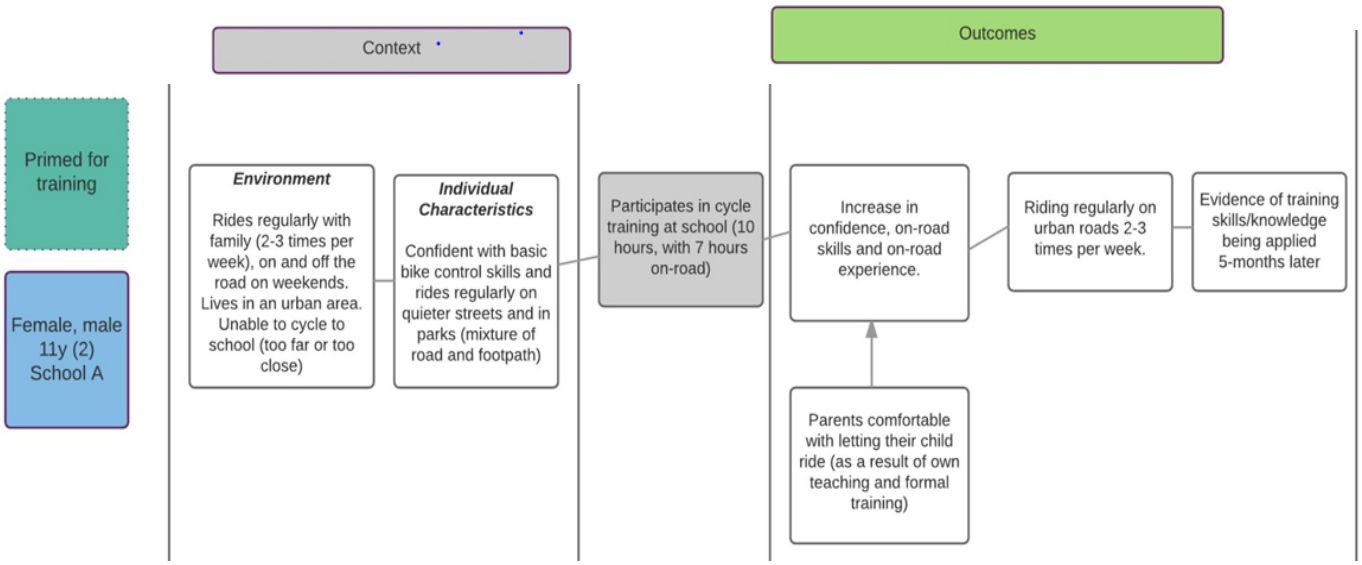
There is good evidence that the on-road training results in increased road code knowledge, cycle safety knowledge and skill development. Students and adults who are riding after the training report they are applying the skills and safety behaviours learnt at the training in on-road environments 4 to 6-months later.

Case studies have indicated that the training may have contributed to small increases in cycling participation, particularly in schools with other activities related to cycling. Although, overall results are consistent with international research which suggests that training alone is unlikely to lead to significant improvements in cycling participation.

An in-depth study of 10 individuals (seven youth and three adults) examined participants' experience of cycle training and the outcomes of the training within the context of their lives. The in-depth studies revealed two broad categories: *'primed for training'* and *'few opportunities to bike'*. This helps to explain the wider context that may allow cycle training to contribute to improved road user behaviour and cycling participation.

Primed for training: Students or adults who have good fundamental bike skills, some interest in cycling and/or some family support for cycling. This group may also have had some previous on-road experience. For this group, on-road cycle skills training is immediately valuable, as they are applying the key skills and learnings from the training while riding up to 6-months later.

An example of two Year 7 students in the 'primed for training' group is provided below (excerpt from Figure 8b page 26).



Few opportunities to bike: Students or adults in this category enjoyed the training, and may have increased their cycling skills through the sessions, but have limited opportunities to bike on the road in their everyday lives. These barriers might be individual, such as engagement in other sports or not seeing cycling as a priority, or they could be related to the road environment in which they live. For these participants, skills developed through training can be viewed as more 'skills for the future' as opposed to skills they can immediately apply in their lives. For this group, further training opportunities, engagement with families and/or initiatives that encourage participation and experience, may be needed to maximise the benefits of on-road training.

The Ride Leader Programme

The purpose of Ride Leader was to enable participants to have the knowledge, skills and confidence to lead a cycling group, in order to facilitate the development of cycling groups and create a network of cyclists.

A small case study of one Ride Leader course, suggests this approach is an effective and efficient way to: encourage more recreational cycling; create a network for sharing cycling information and safety messages; and encourage safe and positive road user behaviour through leadership, role-modelling and peer influence.

Cycle Skills Instructors

The training of cycle skills instructors was a component of the RST project. Observation of eight instructors over 2015, highlights that the majority of instructors, both trained and qualified, are delivering high quality training. Results suggest that the optimal approach is for qualified instructors to lead on-road cycle skills training, with support from trained instructors if necessary, and these trainees should be supported to become qualified. Instructors currently delivering on-road training without any training should be encouraged to undertake training.

Recommendations: Cycle Skills Component

- Work towards consistent delivery of on-road cycle training in the same schools over time as this may support schools to combine training with other cycling learning and events.

- Examine ways that the on-road time during training can be maximised, including appropriately matching training types to the audience's needs and positioning on-road training within a broader cycle skills system.

- Consider the inclusion of route-planning in delivery content and explore ways to engage with parents/ caregivers both during and after cycle skills training.

- Consider the inclusion of content related to cycling around heavy vehicles; results suggest that some youth are cycling in environments where they may encounter these types of vehicles.

- Continue to develop, extend and tailor the Ride Leader approach.

Road User Workshops

A component of the Road Safety Trust project was the Road User Workshops (RUW) managed by CAN. RUWs aim to facilitate understanding and mutual respect between cyclists and heavy vehicle drivers, and improve the road user behaviour of these two groups in order to reduce heavy vehicle vs cyclist crashes.

RUWs typically consist of a theory or discussion component and a practical component, which includes an on-road bike ride. The evaluation approach consisted of three activities: a brief literature review to examine the evidence in relation to the RUWs; the development of a logic model to describe how the inputs are designed to lead to the desired outcomes; and two small case studies of RUWs delivered in 2015.

Key findings

The RUW model is a promising approach to influence road user behaviour prior to the implementation of wider Safe System measures. The strengths of the approach are that it is an immediate solution and targets a specific high-risk problem, it is relatively cost-effective and can initiate on-going communication between two road user groups.

Participant perceptions of the RUWs were positive. The on-road practical ride is the most valued component for drivers, and it is likely to be more effective than a knowledge-based instructional approach. Results suggest that the workshops improve cyclists' knowledge of heavy vehicle blind spots and how to cycle safely in the vicinity of heavy vehicles. Individual cyclists have reported changing the way they cycle around heavy vehicles as a result of their attendance. The outcome for heavy vehicle drivers appears to be primarily attitudinal; drivers report more respect towards cyclists and an understanding of why and where cyclists ride. After the workshop, there are examples of drivers reporting they have given cyclists more space when passing or waited to pass, rather than over-taking.

The integration of the RUW approach into company policy, practices and driver training is needed to extend the reach of these messages as well as provide a mechanism for reinforcement. Approaches to extend the reach of messages for cyclists should also be continued. Currently, RUW messages mainly relate to passing distances, following distances, heavy vehicle blind spots and cyclists' road positioning at intersections. These messages generally align to current understandings of heavy vehicle vs cyclist crash factors, however it is important to continue to examine ways in which the workshop can increase expectation to see a cyclist at all types of intersections and in rural environments.

Recommendations: road user workshops

- Continue to develop the link between heavy vehicle companies and 'road cyclists' or 'bunch' cyclists. Many of the frustrating incidents reported by drivers involved this type of cyclist and there was limited representation from these groups at the workshops.
- Develop clear, measurable objectives as a framework for the programme, including outcomes that are behaviour focused.

- Continue to work towards extending the reach of the workshops, focusing on establishing processes within companies that can reinforce these messages on an on-going basis, as well as positioning these messages within other campaigns and initiatives.
- Ensure the target group is clearly defined for each format of RUW. It may get more difficult to include volunteer cyclists as a key target group if the workshops are positioned within driver training or professional development.
- Continue to develop a detailed understanding of the causes of heavy vehicle vs cyclist crashes in order to tailor workshop content accordingly as well as direct more focus on engaging truck companies.
- Infrastructure improvements are likely to be very long-term and may never occur in some road environments; therefore it may be useful to establish a recognised code of conduct in terms of road sharing between cyclists and heavy vehicle drivers.

Summary: The Road Safety Trust Project Overall

The ultimate goal of the RST project is '*Safer journeys for cyclists',* while this evaluation cannot demonstrate a causal link between the inputs and safety outcomes, it is very positive that there are examples of RST project activities leading to self-reported changes in road user behaviour.

Overall the RST project has extended the reach of on-road cycle skills training and RUWs. The partnership approach of the project has also enabled some innovative and effective programmes to develop. Good examples include: the Ride Leader programme, based on a partnerships between sport , recreation and transport organisations; RUW partnerships between heavy vehicle companies and CAN; and cycle training providers and schools working together to extend cycle skills training learning.

The RST project has also enabled CAN and Cycling NZ to take a leadership role in the cycling education sector. The Cycle Skills and Road User Education working groups has enabled the sharing of knowledge and initiated the coordination of a more nationally consistent, but locally tailored, approach. Investment in cycling infrastructure is increasing, and there is good indication that the number of cyclists will increase in the coming years. Moving forward, a cycling education system that incorporates and builds on the work of the RST project is needed, and steps are being taken by the Transport Agency, CAN and Cycling NZ to develop this.

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Prepared for:	Cycling NZ and Cycling Advocate's Network

Prepared by:	Mackie Research & Consulting Ltd	Signed		Date	30/11/2015

Revision History

Revision No.	Amendments	Completed by	Date
1	Minor revisions from Cycling NZ and CAN	Greer Hawley	11.12.20.15
2			

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Mackie Research and Consulting Ltd
642 Great South Road
Ellerslie
Auckland

Ph 09 579 2328
MB 021 067 0337
www.mackieresearch.co.nz

Contents

1.0 Introduction

1.1 The Road Safety Trust Project in a nutshell

Cycling NZ and The Cycling Advocates' Network (CAN) are national cycling organisations with a vision of '*more people cycling more often'*. These organisations received funding from the New Zealand Transport Agency's (the Transport Agency) Community Road Safety Fund in 2013 for a joint cycle safety education project, as part of the implementation of the Safer Journey's Strategy. This project (herein referred to as the RST project) has the overarching aim of '*Safer Journeys for Cyclists'*, to be achieved through two key action areas:

- The education of cyclists and professional drivers through a range of approaches.
- Movement towards a fully set up education system that ensures the delivery of cycle safety education beyond the RST contract.

Project documents describe inter-linked projects or work streams within the overall RST project; these are listed below with more detail provided in Section 2 and 3.

- On-road cycle training for youth (10-14 years)
- On-road cycle training for adults
- Cycle skills instructor training
- Road User workshops for professional drivers and cyclists
- A Share the Road Campaign
- Analysis of the current state of cycle training to identify gaps in the market

The project's desired outcomes were as follows:

1. Reduce the crash rate for 10 -14 year olds by improving road user behaviour and cycle skills through the education of correct user behaviour
2. Increase the number of people cycling, especially youth, by providing the following: more on road training, a training pathway and connection with local cycling groups that will increase the opportunities to ride.
3. Reduce the crash rate for 20-60 year olds by improving road user behaviour and cycle skills through cycle instruction courses
4. Increase the number of adults cycling and reducing the perception that cycling is dangerous through the road user workshops, cycle leader training
5. Reduce the taxi-bike, truck-bike, bus-bike crashes by increasing education of these road user groups
6. Increasing a culture of positive behaviour or all road users sharing the road safely and the perception the road environment is becoming safer.

Key Performance Indicators are outlined in Appendix A.

1.2 Evaluation purpose and focus

The purpose of the evaluation was to identify the project's strengths, areas for development and impact in order to provide project partners with accountability for investment as well as recommendations for the cycling education sector.

Given the multi-faceted nature of the project, the evaluation focus, scope and activities were developed through meetings with the project team. Three areas were identified as being the most useful within the available resources. These focus areas are presented below in Figure 1, with the corresponding evaluation questions. This report is subsequently separated into Section 2 and 3, which describes the methodology, results and recommendations for each focus area.

As the ultimate goal of the RST project is '*safer journeys for cyclists',* it is important that this evaluation examines the project's effectiveness in contributing to this goal. While the proposed approach will not be able to demonstrate a definitive causal link between the inputs and safety outcomes, it will provide evidence to understand if, and how cycle training and road user workshops are likely to lead to improved road user behaviour.

Cycle Skills Training (Section 2)	**Cycle Instructor Training (Section 2)**	**Road User Education (Section 3)**
Delivery Evaluation To what extent are on-road cycle training courses being delivered as planned? (aligned to Grade 2 guidelines and programme plans) **Outcome Evaluation** What are the short and longer-term outcomes for cyclists after participation in an on-road cycle training course? To what extent does on-road cycle training influence knowledge of safety and road user behaviour? How do the confidence levels and competencies of cyclists, achieved through an on-road cycle training course compare with the skills needed for on-road riding in various road environments?	**Delivery** What differences in quality of delivery exist between instructors who are trained and become qualified and those who do not become qualified?	**Design Evaluation** What is the underpinning theory of road user workshops and how does the design of current workshops in NZ compare with evidence of best-practice? **Outcome Evaluation** What are the short and longer term outcomes associated with participation in a road user workshop?
What works , for who, in what context? What is recommended for the future?		

FIGURE 1: EVALUATION FOCUS AND KEY EVALUATION QUESTIONS

2.0 Cycle Skills Component

2.1 Key Evaluation Questions

- To what extent are on-road cycle training courses being delivered as planned (aligned to Grade 2 guidelines and programme planning documents)?
- What are the short and longer term outcomes for cyclists associated with participation in on-road cycle training?
- To what extent does on-road cycle training influence cyclists' safety knowledge and road user behaviour?
- How do the confidence levels and competencies of cyclists, achieved through an on-road training course, align to the skills needed for on-road riding in various road environments?

2.2 Evaluation approach

The majority of cycle training evaluations have primarily focused on pre-post self-report questionnaires or assessments of trainees cycling proficiency (Section 2.3). While these designs are valuable, previous research has payed limited attention to the environment in which cycle training is delivered and other contextual factors that may support or inhibit cycle training effectiveness. As a result, this evaluation was informed by a Realist Evaluation approach which posits that no intervention will be successful for everyone and that understanding the context in which the programme is delivered is important for understanding causality and outcomes (Pawson & Tilley, 1997). A comparative case study design was used to understand the impact of context on programme delivery and effectiveness, by examining what works, for whom, in what context (Pawson & Tilley, 1997; Goodrick, 2014). This included six case studies of on-road cycle training courses and 10 case studies of individual participants. Quantitative and qualitative data was combined with contextual data related to the road environment and school activities (Table 1).

The case study courses were selected in conjunction with Cycling NZ staff; the aim was to include a range of courses across variables such as geographical areas, road environment, participant age and delivery model.

A summary of evaluation activities for the on-road cycle training component is outlined in Table 1.

TABLE 1: EVALUATION ACTIVITIES FOR THE CYCLE SKILLS COMPONENT

Summary of Evaluation Activities
1. ***A brief review of the literature related*** to on-road cycle training effectiveness and good practice.
2. ***Six case studies of on-road cycle training*** (4 school-based courses and 2 adult courses) in Auckland, Waikato, and Hawkes Bay. ○ Pre-post survey of cycling attitudes, knowledge and confidence (n = 207, Appendix B) ○ Semi-structured interviews with cycle training providers (n = 6, Appendix C) ○ Observation of delivery and comparison to a 'Quality assessment tool' (Appendix D) ○ Documentation of the cycling environment in which the training course is delivered (Appendix E) ○ Pre and post bike shed counts at school-based cycle training as a proxy indicator of cycling participation (average of two days per time point)
3. ***Individual case-studies*** of 10 on-road cycle training participants (7 youth and 3 adults). ○ 10- individuals from different on-road courses were followed for a period of 4 to 6-months ○ Seven-day recall of cycling participation and experiences post-training through a Cycling diary (Appendix F). ○ Semi-structured interviews with participants (and parents if applicable) immediately after and approximately 5-months after the cycle training course (n = 10)

2.3 Cycle skills training effectiveness and good practice

This section outlines key points from cycle skills training literature and principles of good practice; it is not a comprehensive review of all cycle skills training literature.

Cycling risks in New Zealand

Injuries from non-collision crashes (for transport trips) contribute a greater proportion of overall injuries for all age-groups, particularly children 5-14 years; however cyclist vs motor vehicle crashes tend to result in more serious outcomes (Tin Tin, Woodward, & Ameratunga, 2010)

In the 5-year period between 2009-2013 there were 4,112 deaths and injuries (all severity) from cycle crashes in police report data (Ministry of Transport, 2014). Children aged 10-19 year age-group had the greatest proportion of deaths and injuries from cycling crashes (23%), and males experience consistently higher injury rates regardless of age-group. When hours spent cycling are taken into account, the 13-17 and 18-44 age-groups experience the greatest risks (Ministry of Transport, 2014).

In the United States, the common crash types for child cyclists has been examined in order to tailor education accordingly (Ellis, 2014). Results suggested that children tended to be involved in crashes upon entering the roadway (from a driveway, walkway, footpath or midblock) and at intersections, as they are less likely to conduct a proper search. New Zealand-based crash analysis shows that children and young adults are more likely to be 'at-fault' than older cyclists, and the most common crash factors for those at fault (all ages) is failing to give-way and failing to see the other party (Ministry of Transport, 2014). It is important that instructors and programme designers consider these crash types in order to ensure programmes incorporate and emphasise the necessary skills.

Effectiveness of cycle skills training: children and youth

Riding on the road safely requires motor skills, cognitive skills, perceptual skills and the ability to perform these skills at the same time in various on-road situations (Ellis, 2014). Cycle training, delivered by instructors, is a common way to initiate this skill development. Previous research and evaluation has demonstrated that cycle training can lead to improved knowledge, cycling skills and reported cycling confidence (Beca, 2013; Ducheyne, De Bourdeaudhuij, Lenoir, & Cardon, 2014; Hodgson, Worth, & Frearson, 2015). However, due to the difficulty in measuring the effect of such training programmes without expensive long-term robust scientific studies, there remains a distinct lack of scientific evidence that links cycle training with reduced crash risk (Richmond, 2014). Similarly, the duration, format and type of training also varies, making it difficult to compare findings across studies and clearly outline the most effective format. Key points from this literature, as well as from other guidelines in the cycle safety and road safety area, are discussed below and summarised in Table 2.

Ellis (2014) reviewed children's cycle skills training from a developmental and learning perspective and emphasises the considerable amount of practice and experience required to perform these skills at the same time. Corresponding to this idea of practice, a recent UK study of on-road training in adolescents showed that while the knowledge of hazards and how to respond appropriately may be sustained over time, the practical application of these motor skills may diminish if not practised (Hodgson et al., 2015).

Ellis (2014) and others (Dragutinovic & Twisk, 2006), also highlight that information is best learned in an environment similar to where it will be remembered (i.e. class-room based for conceptual knowledge and on-road for actual skills and behaviour) and that practical training in on-road environments is thought to be superior to simulated training approaches or mock- road settings.

The link between cycle training and cycling participation is also currently unsubstantiated in the literature. UK School Census data has shown that since the introduction of Bikeability (Level 1 and 2 for 9 to 11 year olds) cycling to school levels have generally remained stable (Steer Davies Gleave, 2012a). A large cross-sectional study also showed that Bikeability did not increase the frequency of children cycling overall (not just to school) and did not increase the frequency of cycling independent of an adult (Goodman, van Sluijs, & Ogilvie, 2015).

Delivering cycle training in conjunction with infrastructure that supports safety is suggested as good practice (J Kerr et al., 2006; Mackay, Vincenten, Brussoni, Towner, & Fuselli, 2011). Specifically for cycling to school, the New Zealand Cycle Safety Panel recommended a package of 'Safe System' measures and suggests that education and training around the key risks for cyclists combined with improvements to cycle routes will increase safety outcomes.

Effectiveness of cycle training: adults

Adult cycle training programmes targeting novice on-road cyclists are being delivered in various regions in New Zealand and overseas. Evaluations of these training courses suggest they can improve adults' cycling skills and safety behaviours, confidence to ride in traffic (Hawley & Mackie, 2015; Rissel & Watkins, 2013) and confidence in their right to be on the road (Hawley & Mackie, 2015). However, no known research has examined the impact of adult cycle training on crash outcomes.

Evaluations of adult cycle training programmes in Australia and the UK have demonstrated statistically significant increases in cycling participation 3-months after the training (Johnson & Margolis, 2013; Rissel & Watkins, 2013) as well as 12-months on (Rissel & Watkins, 2013). Similarly, the evaluation of Auckland Transport's adult cycle training programme showed that for those who attended the training with a specific goal to ride on the road, the training had a large impact on the amount they cycled, and participants attributed this change to the skills and confidence they attained from the training (Hawley & Mackie, 2015). Evaluations of these types of courses have generally relied on self-report data, with no comparison group, and the number of adults being trained is relatively small; however, despite these limitations there is some evidence that for individuals who are motivated to cycle and want to learn to cycle safely, professional training can improve their skills, confidence levels, safety behaviours and facilitate cycling participation (Hawley & Mackie, 2015; Johnson & Margolis, 2013; Rissel & Watkins, 2013)

TABLE 2: PRINCIPLES OF GOOD PRACTICE: CYCLE TRAINING

Good practice principle	References
Clear measurable objectives of the training scheme and schemes that are based on an educational theory.	(Cognition Education, 2010; Royal Society for the Prevention of Accidents, 2000)
Ensure training content aligns to the common errors and crash types for cyclists.	(Ellis, 2014)
For programmes involving children and youth, the target group should be children and their parents, with active parental involvement	(Ellis, 2014; Mackay et al., 2011; Royal Society for the Prevention of Accidents, 2000)
Multi-staged programmes that take into the account the developmental stage of the child, and provides opportunities for practice and experience.	(Ellis, 2014; Saville, Bryan-Brown, & Harland, 1996)
Good practice guides suggest that training and education initiatives in conjunction with environmental improvements to support safety are the optimal approach. Cycle training and education alone are unlikely to be effective in isolation.	(Cycle Safety Panel, 2014; J. Kerr et al., 2006; Mackay et al., 2011)
Include on-road components at appropriate age. Simulating on-road environments may be less effective.	(Dragutinovic & Twisk, 2006; Ellis, 2014; Saville et al., 1996)
Delivered over time rather than block sessions	(Saville et al., 1996)
Linked to the school curriculum and on-going throughout the child's education. Linked with other road user education.	(Cognition Education, 2010; Royal Society for the Prevention of Accidents, 2000)

2.4 Intro to Road & Everyday Cycling: Youth Case Studies

The '*Intro to Road and Everyday Cycling'* course is designed to give schools, groups and individuals the opportunity to learn, develop and practice the fundamental skills of cycling on the road. The programme aims to:

- be fun and engaging
- have clear skill progression
- be appropriate for the skill and interest level of participants and
- be an opportunity for participants to learn in a safe, secure and supportive environment.

Intro to Road and Everyday Cycling was delivered directly to 3,343 youth through the RST contract. A further 2,954 youth received training from instructors who were trained by Cycling NZ as part of the RST contact.

The programme is designed to align to the Transport Agency's Grade 2 Cycle Skills Training Guidelines, which also includes a re-cap of core Grade 1 knowledge and skills (New Zealand Transport Agency, 2012). Cycling NZ's Instructor Manual describes the learning aims, key activities, games, equipment and structure of each session. Intro to Road and Everyday Cycling is based on a *'Teaching Games for Understanding'* (TGFU) approach, whereby learning is maximised through games, for example , 'what colour is it?' (looking behind) 'pass it over' (one-handed riding) 'scout, shout and point it out' (awareness of hazards in the surrounding environment). Questioning techniques to facilitate reflection, learning and self-awareness of skill performance, are also a key component of the approach, for example *"How does paying attention to other things affect your ability to control the bike?"* "*From which direction should you focus most of your attention when cycling?"*

For the cycle skills training component, the project targeted the five regions of Auckland, Wellington, Hawkes Bay, Bay of Plenty/Waikato and Canterbury. The project was based on collaboration and partnering with organisations in these five regions (e.g. councils, transport agencies, police, private providers, workplaces) and the model of delivery was tailored to align to existing delivery channels and the capacity of each region.

Table 3 provides a summary of the four case study schools that received Intro to Road & Everyday Cycling: one in Auckland, two in Waikato and one in the Hawke's Bay.

TABLE 3 CASE STUDY SCHOOL CHARACTERISTICS

School characteristic	School A	School B	School C	School D
Decile	9	9	6	5
Year levels	Years 7-15	Years 7-8	Year 1-6	7-8
School roll	1,953	475	424	474
European	79%	79%	79%	33%
Maori	12%	15%	16%	35%
Pasifika	3%	1%	1%	7%
Asian	4%	5%	4%	17%
Other	1%	1%	1%	6%
International Students	3%	0.2%	0%	0.2%
History of cycle Training	2nd year of training for intermediate year levels	Delivered each year to 1-2 classes.	First time through Cycling NZ	First time through Cycling NZ
Number of students trained	201	40	~ 150*	20
Age of students trained	10-12 year olds (Year 7 and 8)	12-13 year olds (Year 8)	7-11 year olds (Year 3 to 6)	11-12 year olds (Year 7 and 8)

*Students brought their own bikes or borrowed a bike and some students did not participate if they did not have a bike to use.

TABLE 4 BASELINE SAMPLE CHARACTERISTICS

Characteristics of the sample	School A	School B	School C
Total sample	n = 124	n = 40	n = 49
Males	49% (n=59)	66% (n=27)	55% (n=27)
Females	51% (n=62)	34% (n=14)	45% (n=22)
9yr olds	0% (n=0)	0% (n=0)	43% (n=21)
10yr olds	15% (n=17)	0% (n=0)	51% (n=25)
11yr olds	83% (n=97)	0% (n=0)	6% (n=3)
12yr olds	3% (n=3)	93% (n=38)	0% (n=0)
13yr olds	0% (n=o)	7% (n=3)	0% (n=0)

*School D requested cycle training and agreed to be part of the evaluation; however, only three training sessions were completed and data from students was unable to be collected. In conjunction with Cycling NZ, it was decided to include this school as a case study in order to highlight barriers to delivery. This is discussed more in Section 2.5.

2.5 Delivery evaluation: youth cycle skills training

Snapshot

To what extent are on-road cycle training courses being delivered as planned?

Observation of sessions, analysis of session plans and interviews with cycle training providers were used to investigate consistency with the Transport Agency's guidelines and Cycling NZ's Instructor manual. Overall, core Grade 1 skills were taught through activities from the Cycling NZ Instructor manual. Grade 2 skills are being covered, although not all students receive on-road training and the main difference between courses was the amount of on-road time participants received. The delivery of cycle training in the same schools each year is leading to schools planning other cycle safety learning and activities around the training (e.g. classroom reading activity based on the cycling road code). It is a strength of the Intro to Road and Everyday Cycling course that it is based on a learning approach (Teaching Games for Understanding approach), as opposed to simply instructing a core set of skills.

The most commonly reported delivery challenge for instructors is managing the different cycling abilities of participants. Communicating expectations to schools and delivering the training as intended within schools' busy timetables is also a challenge.

A summary of the delivery characteristics for each school is provided below in Table 5.

TABLE 5: SUMMARY OF DELIVERY CHARACTERISTICS IN THE FOUR CASE STUDY SCHOOLS

Delivery characteristic	School A	School B	School C	School D
Instruction time	Two full consecutive days (10.5 hours instruction time)	6- sessions over 7-8 weeks	5-sessions over 9 weeks	3 sessions over three weeks
On-road time	Up to 7 hours on-road time	~3 hours (road and shared path)	~30minutes for some students	0
Student selection	All Year 7s	Year 8, 2 classes	Years 3,4,5,6	Targeted at specific students & other interested students were invited to participate
Delivery package or supporting activities.	A component of the School Travel Plan, road code curriculum learning prior to delivery, school mountain-biking trip ~1-month after delivery.	Training delivered to special 'sport-academy' class. Pre-learning activities such as developing RAMS form in conjunction with teacher. Training as a lead in to an inter-school Team Time trial. Teacher (also instructor) continued to promote cycling to school after	A group ride or visit to the Home of Cycling suggested to the school after the training.	Bike maintenance workshop for students to learn how to maintain their bikes delivered after the training.

		the training		
Road environment surrounding the school*	Off-road paths linking subdivisions with the school (including 7.2km estuary path). Quiet local roads and urban collectors surrounding the school. 40km/hr school zone and 30km/hr Safer Speed zone in nearby town centre. School accessed by 3 pedestrian crossings. Busy Urban collectors and bus routes in wider school zone.	Some on-road cycle lanes in the vicinity of the school, some roads with no facilities. Traffic signals 200m from the school gate are a key access point to the school from the north. School active warning signs at school peak times, speed limit 50km/hr. Network of off-road paths near the school.	No known off-road cycle paths or on-road facilities in the vicinity of the school. Active warning signs at school peak times, speed limits 50km/hr. Roads a mixture of urban local streets and urban collectors. High volume road through the township from the north is parallel to the school. Pedestrian crossings to access the school on main roads.	School is located on an urban arterial (AADT of approximately 21,000), which is a major public bus route and there is a large secondary school across the road. Roads in the vicinity are a combination of arterials, primary collectors and local streets. The major roads have painted on-road cycle lanes, signalized crossing at the school gate and a 40km/hr variable speed limit at peak school times.
Linked to infrastructure that supports cycling	Yes – nearby off-road shared path utilised in training	Yes – nearby off-road cycleway and on-road cycling facilities utilised in training.	Sessions were primarily run on the school grounds.	Sessions were run in the school grounds.
Parent/whanau involvement	No	Parents as volunteers during training	No	No
Delivery model	Delivered with joint funding from local TLA to enable two full days of training for all students	Delivered in conjunction with school teacher, who became a qualified instructor as part of the RST project.	Delivered by Cycling NZ Staff.	Delivered by Cycling NZ Staff.

*see Appendix E for a more in-depth description of the road environment surrounding each school

Strengths, similarities and differences in on-road training delivery

Overall, it is very positive that providers tailored the activities to suit their participants and the goals of the school, drawing from both the Transport Agency's guidelines and the Cycling NZ manual. Each case study course utilised many of the activities in the *Intro Road and Everyday Cycling* Manual to develop core skills in off-road environments. For example, the box game (bike control and awareness), 'what colour is it?' (looking behind) 'pass it over' (one-handed riding). Instructors utilised questioning techniques outlined in the Cycling NZ manual to facilitate reflection and self-awareness in both on and off road delivery.

The TGFU approach is based on the theory that involving students in games will actively involve them in the learning process, leading to increased skill development and decision-making abilities (Griffin & Butler, 2005). The approach also maximised the time participants were riding during the training, which is a key indicator of quality in the Bikeability quality assurance framework (Steer Davies Gleave, 2012b). A strength

of the Intro to Road and Everyday Cycling course is that it is based on an approach to learning, as opposed to relying on a core set of skills as the basis to the programme; this is a key principle of good practice road safety education (Cognition Education, 2010). It was also observed that these games contribute to student engagement and general enjoyment of the session, factors which are important for contributing to a 'love of cycling'.

Grade 1 Core Skills: All training courses covered core Grade 1 skills and all providers ensured students had the skills and knowledge required before participating in the on-road component. Key safety skills, such as helmet-fitting and the bike check were re-iterated at the start of the majority of sessions.

Core Grade 2 Skills: In the courses that included mostly on-road training (Schools A and B) all the core Grade 2 skills were covered in course content; however, students who received the two full days of training (between 3 and 7 hours of on-road time) had significantly more time for students to repeat, practice and apply these skills. This also allowed time to cover content specific to the routes and infrastructure around their school (i.e. utilising the shared path to teach road-sharing messages) and for the inclusion of different teaching techniques, such as students explaining and demonstrating core skills. Students who demonstrated good skills and behaviour were extended and taken on to more advanced routes, such as traffic signals, roundabouts and busier environments, as well as longer rides. This extended period of time, also enabled students who were initially less confident, to progress to riding on the road over the two day period. In school A, in the course the evaluator observed, all students had at least 3-hours on the road, and the instructors took advantage of a 7km shared path near the school to improve students' confidence. The extended delivery time for School A was enabled by partnering with a local road controlling authority, and instructors consistently reported that two-full days of delivery was superior to shorter courses.

A particular focus for School B was the progression to group-riding and more sports-focused skills when riders become more confident, these skills were mainly taught on off-road paths. School B students were the 'Sports Academy' class, with some intending to participate in an inter-school team time trial at the end of the term. Students reported that it was these activities and the longer rides that made the training enjoyable (i.e. double-up to single file on off-road paths and rotating position in a group), and instructors reported these activities were a useful method for teaching awareness of surroundings and bike control skills in a fun way. However, given that the amount of time these students had outside of school grounds (approximately 3-hours), more on-road time and application of core Grade 2 skills would have increased alignment with Grade 2 guidelines and given students more exposure to on-road environments.

The students in School C were younger than Schools A and B, and the course was primarily delivered on the school courts, with a 30-minute session on the road for some students. Core Grade 2 skills where primarily simulated in the off-road environment using cones (i.e. kerb ride outs and road positioning). It is essential that cycle training courses are tailored to the ability of the participants, both for the effectiveness of the training and health & safety purposes, thus, students cannot be taken out on the road until they demonstrate they have sufficient skills. However, it is difficult to claim that this course was delivered in accordance with the Grade 2 guidelines given the lack of on-road time (recommended as 7-8 hours, with a minimum of 6 hours). Hazard awareness and response, as well as general confidence with on-road riding is difficult to simulate without the opportunity to apply the skills in authentic environments (Dragotinovic & Twisk, 2006).

As one instructor articulated, students' '*time on the road is proportional to the skills they have'* and is likely to be more a function of previous exposure to riding rather than the quality of the training course. As suggested as good practice in the literature, it is important that cycle training programmes are multi-staged and include an on-road component at the appropriate age (Ellis, 2014; Saville et al., 1996).

Delivery challenges

The most common challenge for providers was managing the different base skill levels of participants. All providers had strategies in place to manage this; however, it was observed that this challenge was considerably easier to manage with more instructors. For example, the provider for School A split the group of around 30 students into 3 groups (beginner, intermediate and advanced) based on students reported confidence and instructor observation; with a pool of six or more instructors all groups were able to progress to on-road riding .

The availability of bikes was a challenge for one provider; a small number of bikes were available for students to borrow, however generally students were encouraged to bring their own bike to each session. While this approach can initiate the habit of students' bringing their bikes to school, it can exclude students from training if bike access is a problem. In contrast, other providers had a reasonable supply of bikes, which overcame the challenge of bike access as well as unsafe or poorly maintained student bikes.

Insights from School D delivery

Schools have many competing priorities and delivering programmes in a school environment can be challenging. The case study of School D has been included in order to highlight these issues and identify strategies for overcoming delivery challenges.

School D has a roll of 474, with approximately 60% of students coming from out of zone, including on buses from rural areas. The school does not actively promote cycling to school, but there are about 20-25 students (4% of the school roll) who cycle to school in the summer time. Some of these students were displaying poor road sense while riding to school, thus, the school approached Cycling NZ for cycle training.

Cycling NZ responded to this request and established an 'Introduction to on-road and everyday cycling' course. The training was established, consisting of 5 sessions over 5-weeks, for the specific group of students the school was concerned about (2-3) and other students across all classes were invited to attend.

Twenty students participated in the first session, 10-13 students participated in the third session and three in the third. All sessions were off the road as students basic skills were very low and some students had poorly maintained bikes (i.e. no brakes). A bike maintenance session was set-up in response to this; however, further practical cycle training was unable to be delivered due to communication within the school, time-tabling and low numbers.

A representative from the school was positive about the training that was delivered. This teacher was quite clear that it was the organisation within the school, confounded by a short time to promote the training that prevented the training being delivered as intended.

> *"we dropped the ball really" (school representative)*

"would have it again because the students who were involved got a lot out of it" (school representative)

The school representative reported that having a few students from each class attend the training was not ideal, and a more structured model within the school would be advantageous. For example the school is organised into learning hubs of 80 to 100 students, a model where all students in the hub participate in a regular time slot, over a term would be a more structured approach to delivery. Similarly, having bikes supplied is necessary from a logistical point of view.

The school is positive about offering cycle training again in the future, they now have a relationship with Cycling NZ and understand the best way to offer cycle training in their school. As highlighted by the supporting activities developed by School A and B over the last 2-3 years, being able to consistently offer cycle training each year enables schools to extend learning, integrate messages into the curriculum and plan follow-up activities.

2.6 Outcomes: Intro to Road & Everyday Cycling for Youth

Snapshot

- *What are the short and longer-term outcomes associated with participation in an on-road cycle training course?*
- *To what extent does on-road cycle training influence cyclists' safety knowledge and road user behaviour?*
- *How do the confidence levels and competencies of cyclists, achieved through an on-road training course, align to the skills needed for on-road riding in various road environments?*

In the short-term (immediately after the training), there is good evidence that on-road training results in improved:

- road code knowledge and cycle safety knowledge (e.g. road positioning).
- on-road confidence
- on-road skills

While the majority of students generally mastered the core Grade 2 skills, students require more practice and experience, especially with particular skills, such as stop-signs and hazard awareness.

Six-months after the training:

- Students who are riding in urban environments report applying the key skills and safety behaviours learnt at the training
- Results suggest that on-road training is more effective than off-road training in terms of influencing cycling participation (measured through school bike rack counts); however, training may need to be coupled with other initiatives and peer-led activities to maximise and maintain this impact. The environment around one school was noticeably more conducive to cycling; however no lasting impact on cycling to school was seen, although this result does not consider other cycling trips.
- Individual case study results highlight that there is a group of students for whom on-road training is immediately relevant; students report applying key knowledge and safety behaviours learnt at the training in their riding up to 5-months on (e.g. hook turns, taking the lane). There was a tendency for these students to have had some family support for cycling and some bike riding exposure prior to training.
- The second group of students, highlighted by individual case studies, is those that improve their skills through the training but are unable to apply these skills after the training due to where they live, safety concerns or other commitments.
- There is evidence that some students (aged 11-13) are applying Grade 2 training content to more complex road environments than experienced at the training i.e. busier roads and signalised intersections. However, utilising the footpath is a commonly reported behaviour in instances where they do not feel confident or safe (narrow roads, roads with many parked cars, busier roads and busy intersections). This behaviour implies that the current training course may not be sufficient to allow young bike riders to negotiate all parts of the network, and where cycling infrastructure and/or further training and experience may be needed. Although this requires further investigation, students may also have varying levels of understanding regarding the risks of different types of roads; thus, education around suitable routes and the active involvement of parents is recommended.

2.6.1 Outcomes immediately after training

Cycle safety knowledge

Pre-post questionnaire results related to cycle safety knowledge, perception of safety behaviours and confidence in different road environments are presented below. The effect of the training of cycle safety knowledge appeared to be greater for the on-road courses; however, students from School C were younger than the other schools and therefore their answers may have been affected by their comprehension.

After the training, School A showed a 32% increase in the proportion of students answering the road positioning question correctly, compared to an 8% increase and a 12% increase in Schools B and C, respectively (Figure 2). Eighty five percent of School B students answered the steps to complete a right-turn correctly after the training (a 37% increase) compared to 57% and 19% in Schools A and C, respectively (Figure 3).

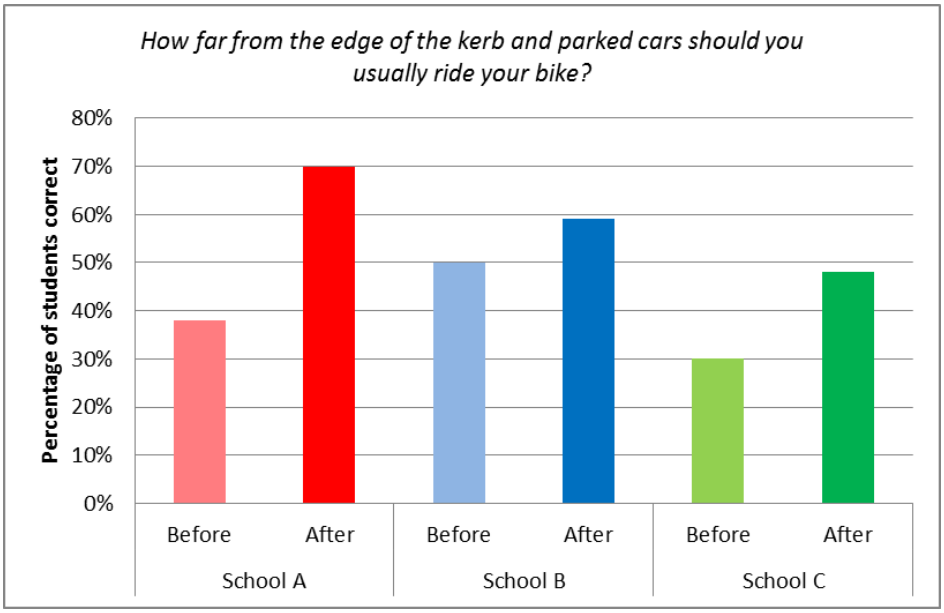


FIGURE 2: STUDENTS' KNOWLEDGE OF ROAD POSITIONING WHILE RIDING STRAIGHT: BEFORE AND AFTER CYCLE TRAINING.

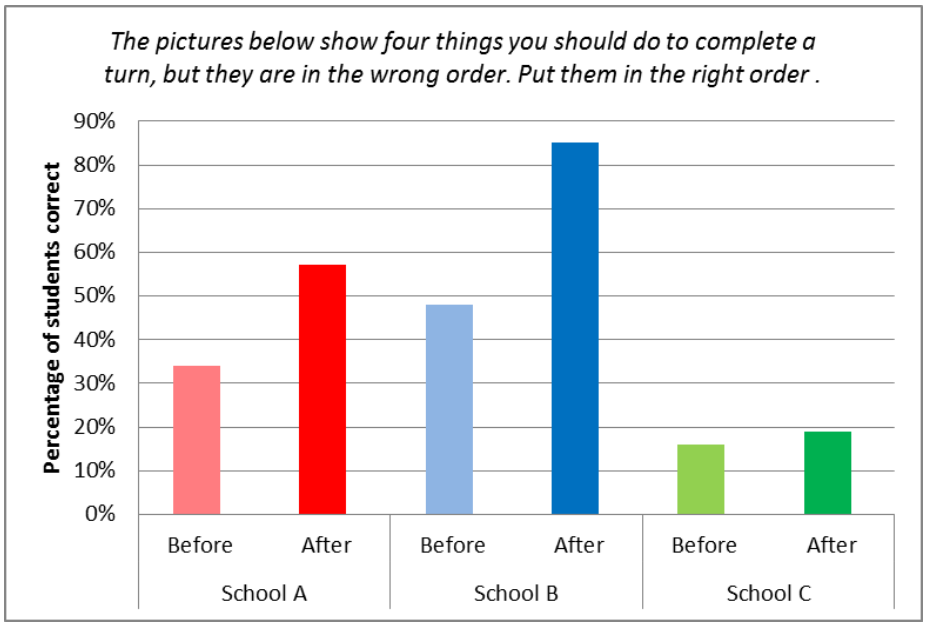


FIGURE 3: STUDENTS' KNOWLEDGE OF THE STEPS REQUIRED TO COMPLETE A RIGHT-TURN ON THE ROAD: BEFORE AND AFTER TRAINING

Before and immediately after the training students were asked, via an open-ended question, to list the things they could do to keep themselves safe while cycling on the road (students could list up to 6 items). Responses were coded into 13 categories (the 12 categories in Figure 4, plus an 'other' category). This method collates and presents qualitative results and provides an indication of what students' perceive as key safety behaviours (as opposed to a simple knowledge test or self-reported behaviour). Students had a maximum of six behaviours they could list; therefore a reduction in one category after the training does not necessarily indicate a decline in knowledge. Also, students ranged from age eight to thirteen years and therefore their ability to articulate their response to this question is likely to have varied greatly.

Across all schools (n = 207), both before and after the training, the safety behaviours most commonly reported by students were:

- wearing safety clothing and gear (i.e. helmet, bright clothing, high vis, wearing shoes) and,
- using hand signals.

After the training, there were noticeable increases the number of students who reported behaviours related to checking their bike (an increase of 24 students) and checking behind to check for traffic (an increase of 17 students). There were smaller increases in the number of students who reported obeying the road rules (+6) and positioning themselves at intersections (+10) (Figure 4).

Interestingly, the number of students who reported more sophisticated hazard awareness behaviours was the same before and after the training. This category included responses such as*: being alert or aware, extra head checks (e.g. life saver look), scanning for hazards, be predictable, listen for cars, walk your bike if unsure.*

While the categorical data does not yield any overwhelming pattern or change in what students perceive as safety behaviours, the language used in the raw quotes below does reflect the key messages of the training.

Example quotes: *List the things you can do to keep yourself safe while cycling on the road.*

"have both hands near your brakes"

"don't ride three abreast"

"when near a roundabout, own it"

"be confident"

"don't let cars intimidate you"

"make sure you signal strong"

"life saver check"

"ride 1m from the footpath"

"Top of the T goes before me"

"Remember power position"

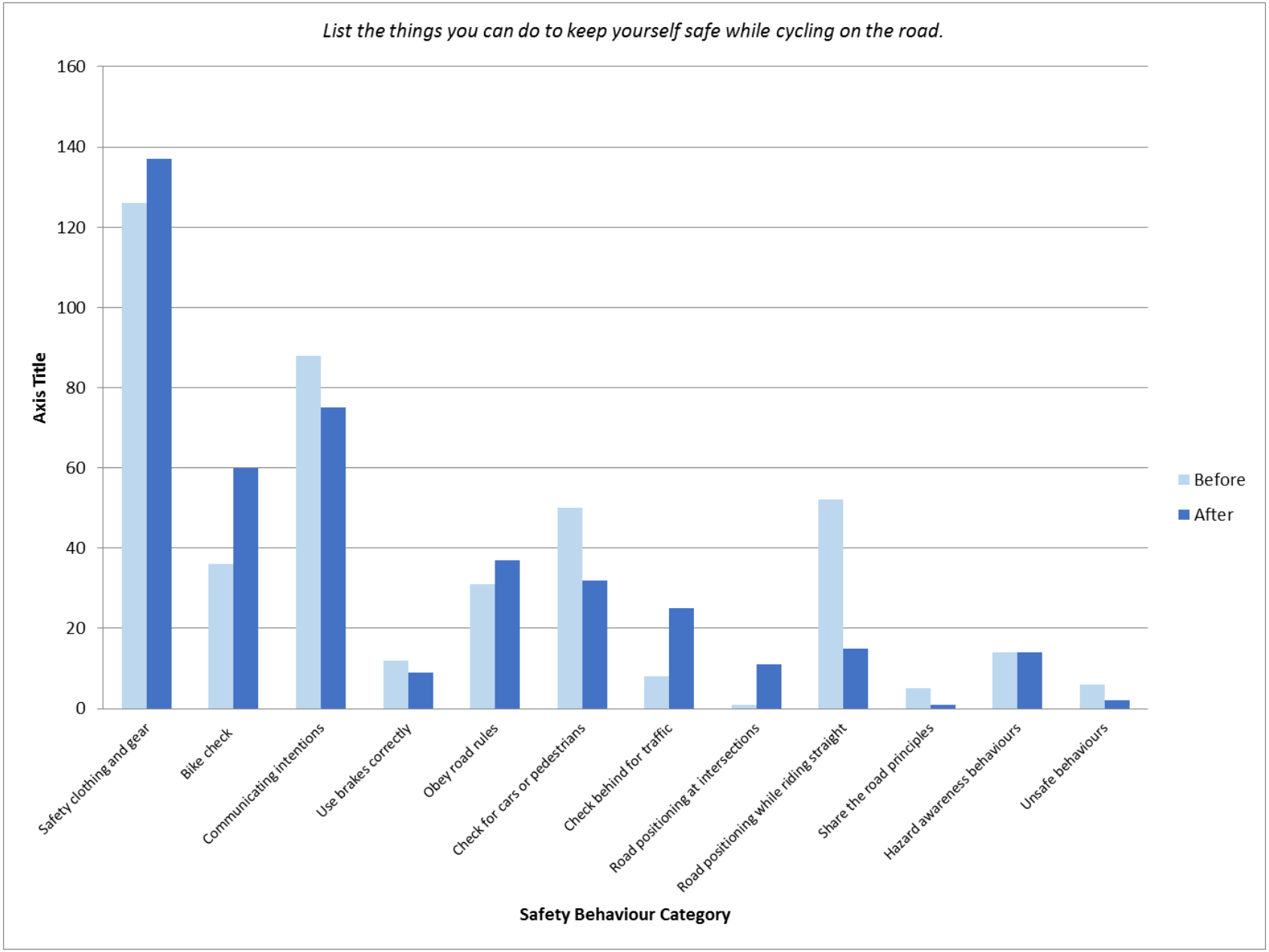


FIGURE 4: STUDENTS PERCEIVED SAFETY BEHAVIOURS GROUPED INTO KEY CATEGORIES: BEFORE AND AFTER THE TRAINING

Road Code Knowledge

Cycling NZ have a before and after road code knowledge test. Collation of results from five schools that received training in 2014 (total of 714 students) provides good evidence that the training leads to improvements in road code knowledge.

- On average there was 25% increase in the number of correct answers after the training, with a range of 84% to 93% of answers correct across the five schools.
- Cycling NZ also have a simple test of cycle skills called the Fire Hose test, where students have to ride straight without wobbling along a fire hose. After the training, there was a 25% increase in the number of students who 'passed' this test, with the pass rates across schools ranging from 72% to 97%.

2.6.2 Confidence, competence and the road environment

Three instructors interviewed were clear that this was very much an *Introductory* on-road training course, as the name suggests, and that most students need more practice, experience and support from parents. Example quotes are:

> *"just because they have done this course doesn't mean they can go and ride on the road by themselves"*
>
> *"just takes time and experience".*
>
> *" I normally start the lesson with this is only the beginning of your cycling journey"*

Instructors generally reported that a child's ability to ride alone in the environment around the school largely depended on the child and could not be generalised across all students. Similarly, while instructors reported around 50% to 70% of students mastered the core Grade 2 skills, most students still had core skills that they needed to practice, for example correct behaviour at stop signs, looking behind while maintaining a straight line and ensuring students were aware and 'seeing' traffic at intersections, as opposed to simply applying the sequence of movements.

Self-reported confidence is often measured as an outcome variable in cycle training research; however, there has been little focus on confidence levels in relation to different road environments and actual skill levels. Using images, students were asked to rate their confidence in terms of riding on four different road types before and after the training: local street (Photo A), an urban collector (Photo B), a higher speed road (Photo C) and an off-road path.

There was a 21% increase in the number of students who 'strongly agreed' that they were confident to cycle on a quiet local road; 96% of students were confident riding on this road type after the training (Figure, 5). There were also noticeable increases in confidence in relation to riding on urban collectors (18% increase in the proportion of students who agreed or strongly agreed they were confident, Figure 6). Some students from School A and B experienced this type of road during the training. It is encouraging that these confidence levels reflect the environments in which the course was delivered and generally the skills of the participants.

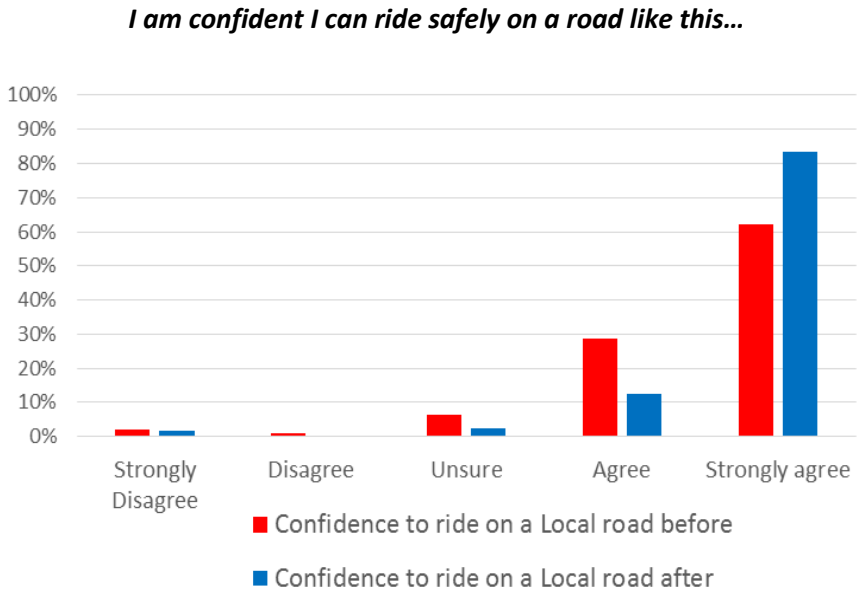


Photo A

FIGURE 5: PARTICIPANTS' REPORTED CONFIDENCE TO CYCLE ON LOCAL STREET: BEFORE AND AFTER THE TRAINING

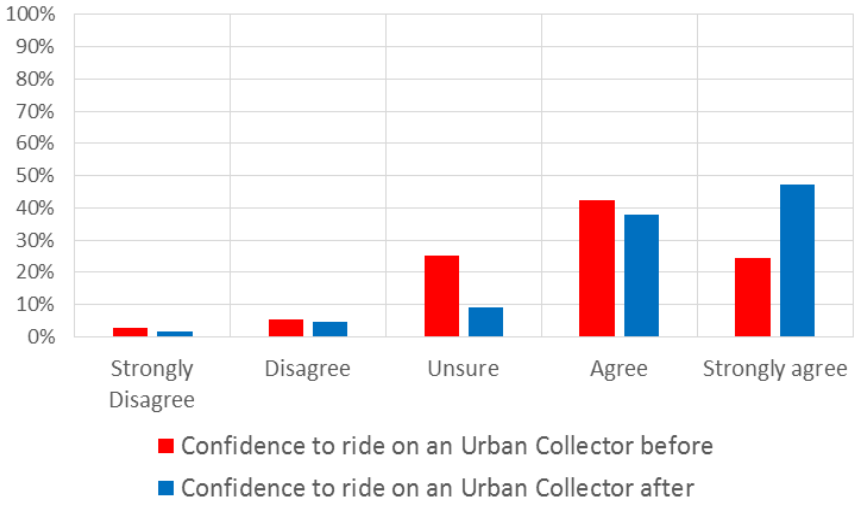


Photo B

FIGURE 6: PARTICIPANTS' REPORTED CONFIDENCE TO CYCLE ON URBAN COLLECTOR: BEFORE AND AFTER THE TRAINING

Interestingly, there was also a reported increase in confidence to ride on a rural road after the training (Figure 7). A small number of students (four) were also from Schools C who received no or very little on-road training. It is possible that some students may have mis-interpreted the photos or not considered their confidence and ability properly before answering the question.

I am confident I can ride safely on a road like this…

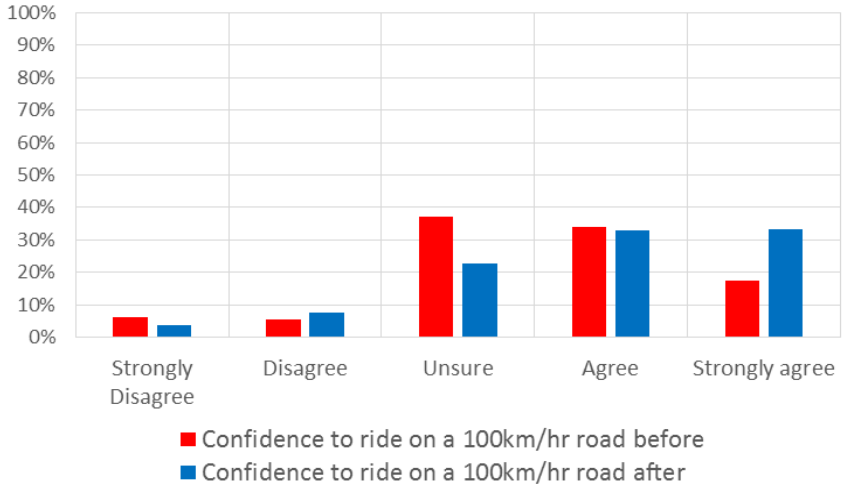


Photo C

FIGURE 7: PARTICIPANTS' REPORTED CONFIDENCE TO CYCLE ON A RURAL ROAD: BEFORE AND AFTER THE TRAINING

Qualitative data (interviews with individual students) has provided an initial indication that there may be varying perceptions regarding the risks of higher speed roads.

> *i.e. " I learnt how to be safe on the training so would probably go down a 100km/hr road if I had to" (Male, 13)*

In comparison, another male student of the same age reported that he avoids higher speed or 100km/hr roads because of wind gusts and trucks.

Some students may not understand the risks that higher speed vehicles represent or the types of roads that best match their skill level; thus, a discussion of different road types and appropriate routes may be a valuable addition to training content. Some instructors reported that the inclusion of route-planning or route content would be ideal to include if there was more delivery time. The inclusion of content related to cycling around heavy vehicles is also important, given that students are riding in urban environments where they could encounter these vehicles. Similarly, as good practice guidelines suggest (Ellis, 2014; Mackay et al., 2011) engaging parents and families in the training will also enable parents to reinforce learning, understand students' skill levels and the most appropriate routes for their child to ride on.

2.6.3. Cycling participation

Immediately after the training students from all schools displayed strong intentions to keep cycling; the majority of students across all schools reported they intended to cycle for sport and fitness, for transport and for fun, suggesting that cycling is a popular activity, but also that students may not necessarily distinguish between different cycle trip purposes.

A reasonable proportion of students from School A and School C (23% and 10% respectively) reported that they would probably stick to riding on the footpath or off-road paths rather than on the road, indicating that these students may need on-going support from parents or other approaches in order to be confident. Similarly, approximately 10% of students reported they would not be allowed to cycle on the road, and 10% did not have a bike.

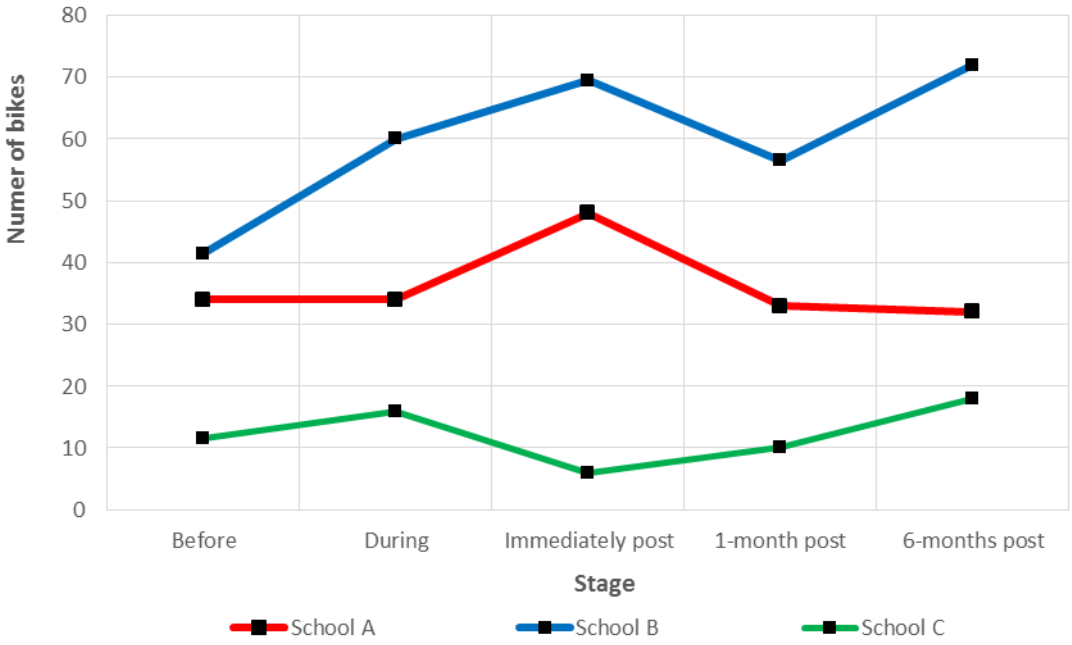


FIGURE 8: SCHOOL BIKE RACK COUNTS: BEFORE AND AFTER THE TRAINING

The training appears to have had some initial impact on the number of students cycling to school in School A and B, although winter may have affected the maintenance of this impact (Figure 8).

Six-months after the training School B had an average of 72 bikes in their racks, 30 more bikes compared to before the training. This represents 15% of the school roll, a proportion considerably higher than the national average of 2% (Ministry of Transport, 2015). School B are involved in other bike events, such as Triathlons and Cycle Skills champs and appear to be actively encouraging their students to cycle to school. Instructors also reported that the students who participated in the training were generally the students who other students look up to, and therefore they appear to be encouraging others to ride.

The number of students trained was greatest for School A and the road environment around the school was the most conducive to cycling, compared to the other three case study schools (Table 5). Six-months post-training, follow-up data collected by cycle instructors, shows that half of School A students report cycling more; however, this might not necessarily be cycling to school. Bike rack counts are a good indicator of cycling participation; however, this method does not capture other types of cycling and cycling to school may be inhibited by other factors, such as distance, family priorities and extra-curricular activities.

No major shifts in the number of students cycling to school were seen for School C, these students were younger, they received less on-road training, and scootering may be a more popular active travel mode in this school (the school reports instances of up to 90 scooters in their racks).

2.6.4 Individual case studies: longer term impact on cycling behaviours

Participants were recruited for the individual case studies through liaising with instructors and school staff. The aim was to recruit a range of participants across cycling exposure and skill levels, in order to capture the different experiences after cycle training and the identification of situations in which training might be most effective.

It was voluntary to participate in the individual case study; 14 students were asked to participate and seven completed the activities. Those who completed the activities may have been those most interested in cycling and therefore these results cannot be generalised across all on-road training participants. Participants were asked to complete a cycling diary once a week for first 4-weeks after the training, and then once per month for the remaining 4-months (Appendix F). Across seven individuals a total of 40 weeks of cycling diary data was collected, and this was supplemented with telephone interviews with students and parents.

A summary of the pathway for each individual (or group of individuals if similar results were seen) is presented in Figure 8a and 8b. These pathways demonstrate how the social and physical environment and the individual characteristics of the student has influenced and interacted with the experience of cycle training. Broadly, the experiences of individuals can be categorised into two groups (Figure 8a and 8b). This is not an exhaustive list of potential groupings; however, these descriptors contribute to an understanding of when outcomes may or may not be seen.

Primed for training: Students or adults who have good fundamental bike skills, some interest in cycling and/or some family support for cycling. This group may also have some previous on-road experience. It is this group which demonstrates the most immediate value of on-road cycle skills training students as they are applying the key skills and learnings from the training 4 to 6-months later.
Few opportunities to bike: students and/or adults who enjoy the training, and who increase their cycling skills through the sessions, but have limited opportunities to bike on the road in their everyday lives. These barriers might be individual, such as engagement in other sports or not seeing cycling as a priority, or they could be related to the road environment in which they live.

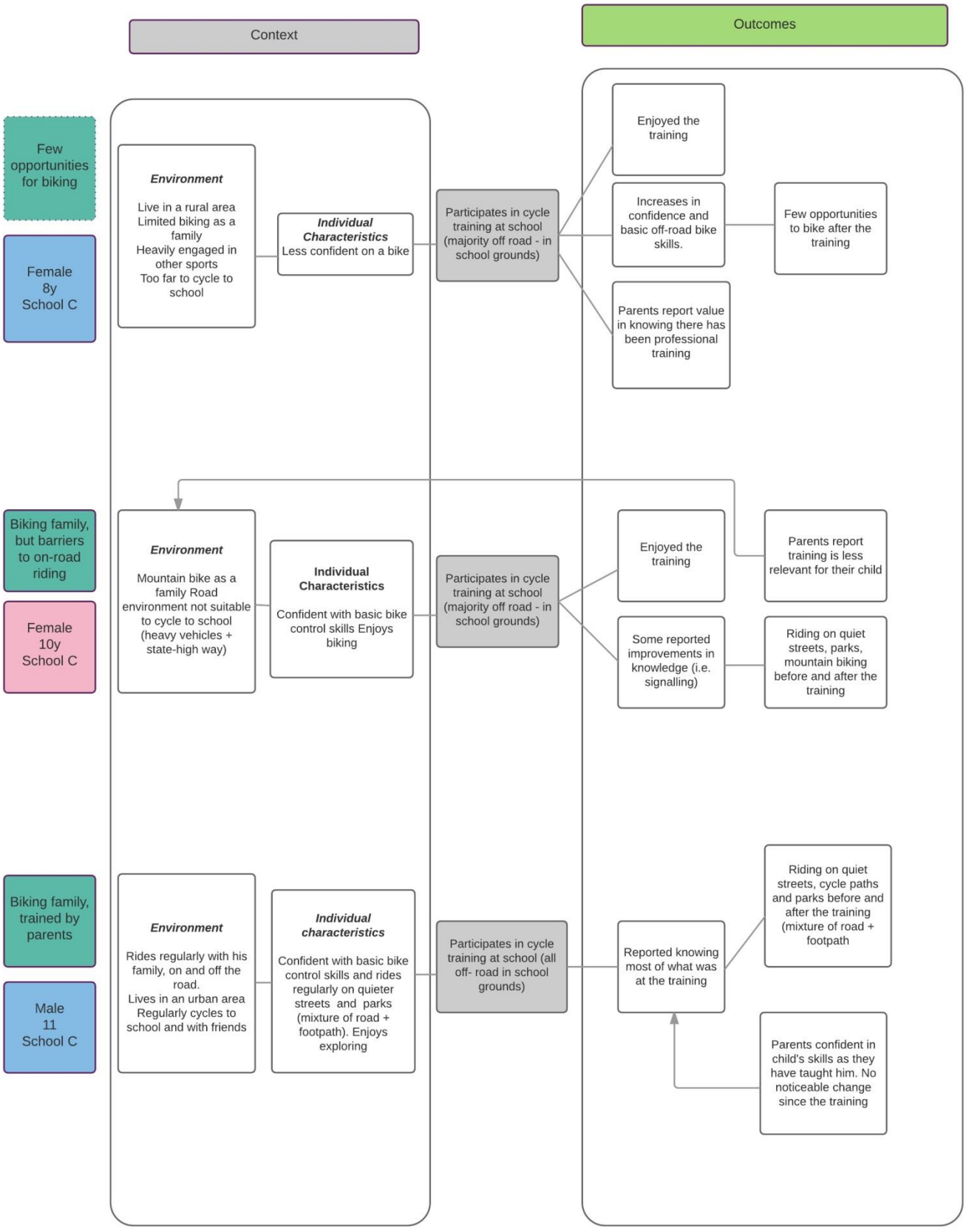


FIGURE 8A: INIDVIDUAL CASE STUDIES YOUTH: CYCLE TRAINING OUTCOMES IN CONTEXT

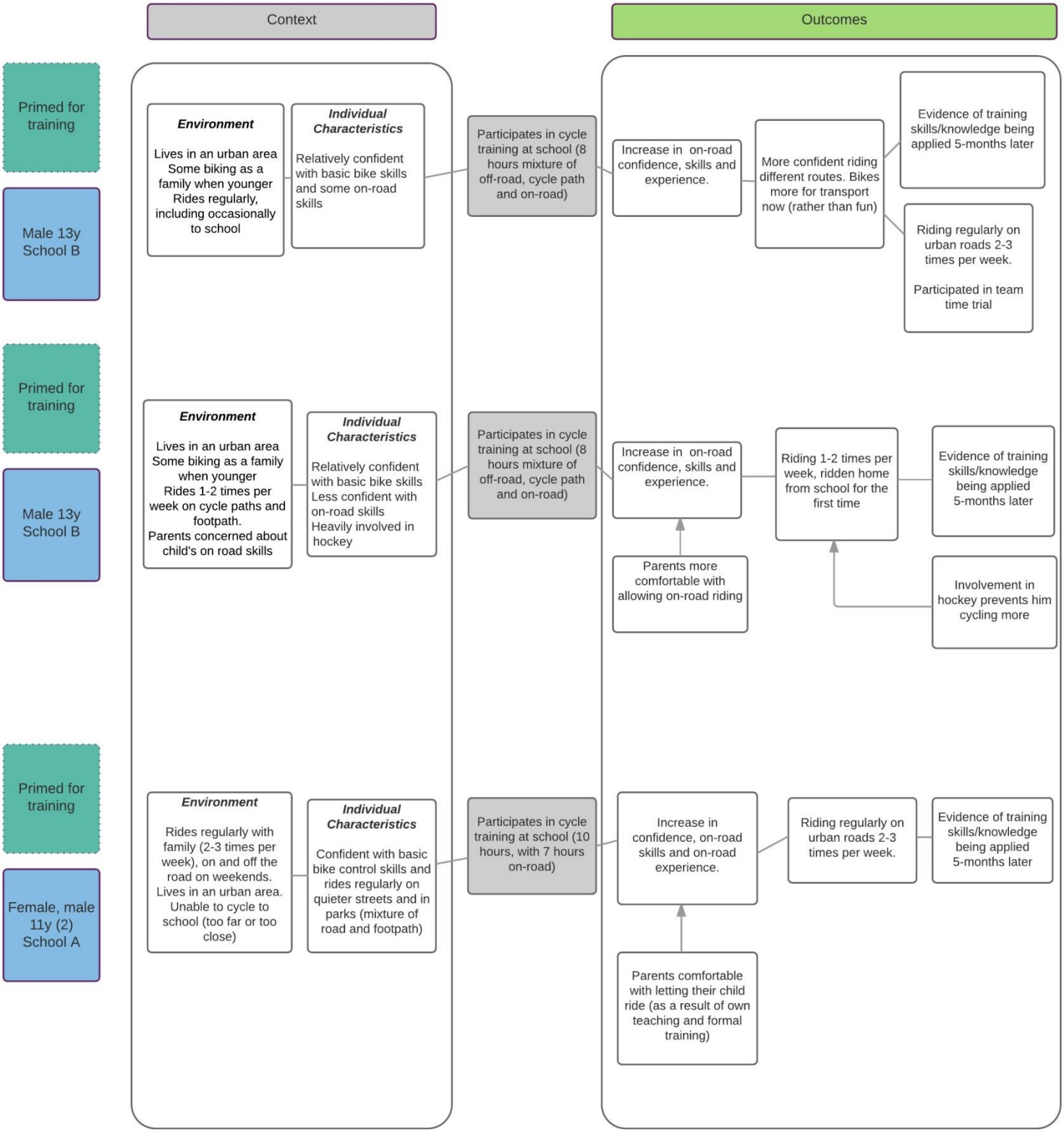


FIGURE 8B: INDVIDUAL CASE STUDIES YOUTH: CYCLE TRAINING OUTCOMES IN CONTEXT

Key themes from the individual case studies were:

- Students report the training made them more confident in their right to be on the road, as well as more confident with on-road skills, such as signaling to cars, how to position themselves at intersections and midblock, as well as general awareness of their surroundings.

  "before when a car went passed I was right in close to the gutter, now I know I'm allowed to be on the road" (male, 13)

  "before the course I had road sense, but not road sense on a bike…now I am confident…I was like do I need to do this here? do I do this here?....now it all has become a bit more automatic" (male, 11)

  "…more cautious, I realise car drivers can make mistakes so I make sure I'm ready in case they do something wrong."(male, 13)

  "… more aware of the things on the ground and more aware of being sensible on the road other than just kind of mucking around" (male, 13)

- Four of the seven individuals report riding in urban environments that are more complex than those they experienced at the training; environments, such as signalised intersections, urban collectors and roundabouts. They appear to be applying the basics from Grade 2, as well as general skills and knowledge they have learnt from their families. It is noteworthy, that all four students who are riding on the road regularly after the training had ridden with their family in some way prior to the training.

- Utilising the footpath in certain situations, such as roads with many parked cars, busier roads or busier intersections was commonly reported. This indicates that while their on-road skills improved over the course of the training, they are using techniques to manage the road environment in specific situations. Students did not report riding on rural or higher speed roads. For one student the hook turn was very useful as it allowed him to avoid turning right at a busy intersection, this also made his parents more comfortable to allow him to ride.

- Cycling diary data shows that the three younger students (8-10) that received none or very limited on-road training, were mainly cycling on off-road paths or quiet local streets after the training, and did not report riding on busier roads or higher speed roads. These younger students also appeared less able to articulate what they had learnt or behaviours they were applying while riding after the training. For example, generic comments were common such as 'signal' or 'look for cars'. In contrast, student's 11-13 years, were more able to comment on changes in their riding and could identify strategies they used to keep themselves safe for example '*I make sure cars see me*'. It is difficult to determine whether this is an effect of age or an effect of the on-road training.

Insights from families

Parent perceptions regarding the value of the training varied. Four families reported the training had given them confidence in their child's cycling skills, and they valued knowing their child had received expert training. For example, one parent commented:

> *"Now I let him bike home…this is solely because of the training and more comfortable knowing he will get off if he is unsure" (Parent)*

Other families reported the training was less relevant to them: one because they lived on a road with heavy vehicles and another because they had taught their child to cycle on the road themselves.

> *"training at school doesn't really apply to us, kids that bike to school would find it useful"*

In the vicinity of School A's main entrance.

2.7 Adult Cycle Training – Intro to Road & Everyday Cycling Case Study

Results Snapshot

Purpose: The adult 'Intro to road and Everyday cycling' course introduces participants to on-road cycling skills and key safety concepts, such as road positioning.

Key results: The majority of participants increased their on-road riding confidence, and participants reported increased skills and knowledge related to negotiating intersections and roundabouts. Increased confidence in bike checks and basic bike skills, such as braking, was also reported by some participants. There was limited evidence of an effect on cycling participation; however, individual case study data showed that participants were applying key skills from the training 4-months later. A delivery challenge is that instructors have to manage varying degrees of cycling skill levels in the adult sessions.

What does this case study tell us?

Introductory on-road cycle training is a valuable tool to increase the on-road confidence and cycle safety knowledge of adults who volunteer to attend.

The Intro to Road and Everyday Cycling course was delivered directly to 366 adults over the RST project period, with a further 214 adults receiving training from instructors trained by Cycling NZ.

The adult case study course was delivered over two evenings. A re-cap of off-road skills was covered first, followed by the on-road component covering road positioning and intersection safety. Instructors tailored the training to suit the participants' needs over the 4-hours of instruction time.

Seven participants attended the case study course (ages 33-62, 6 females and 1 male). Most participants had some on-road riding experience; however, there was a range of confidence, skill and participation levels. It is encouraging that participants' motivations for attending the training directly aligned to the course objectives: to increase their on-road riding confidence and improve their knowledge of safe cycling.

Overall participants reported learning the following skills at the training:

- How to fit a helmet properly
- Understanding of road rules and signs
- Road positioning mid-block, as well as at roundabouts and other intersections. This was a key learning reported across nearly all participants.

Three participants were involved in the individual case studies; they completed cycling diaries (Appendix F) and telephone interviews up to 5-months after the training. Key finding are presented in Figure 9.

All participants reported finding the training very valuable. Two participants were applying key learnings from the training in their riding and generally the levels of cycling participation were the same for these adults before and after the training. One participant was still unsure about cycling on the road and still preferred off-road paths; however, she has children who cycle to school and she believed the training was very beneficial in terms of helping her to teach her children about cycle safety.

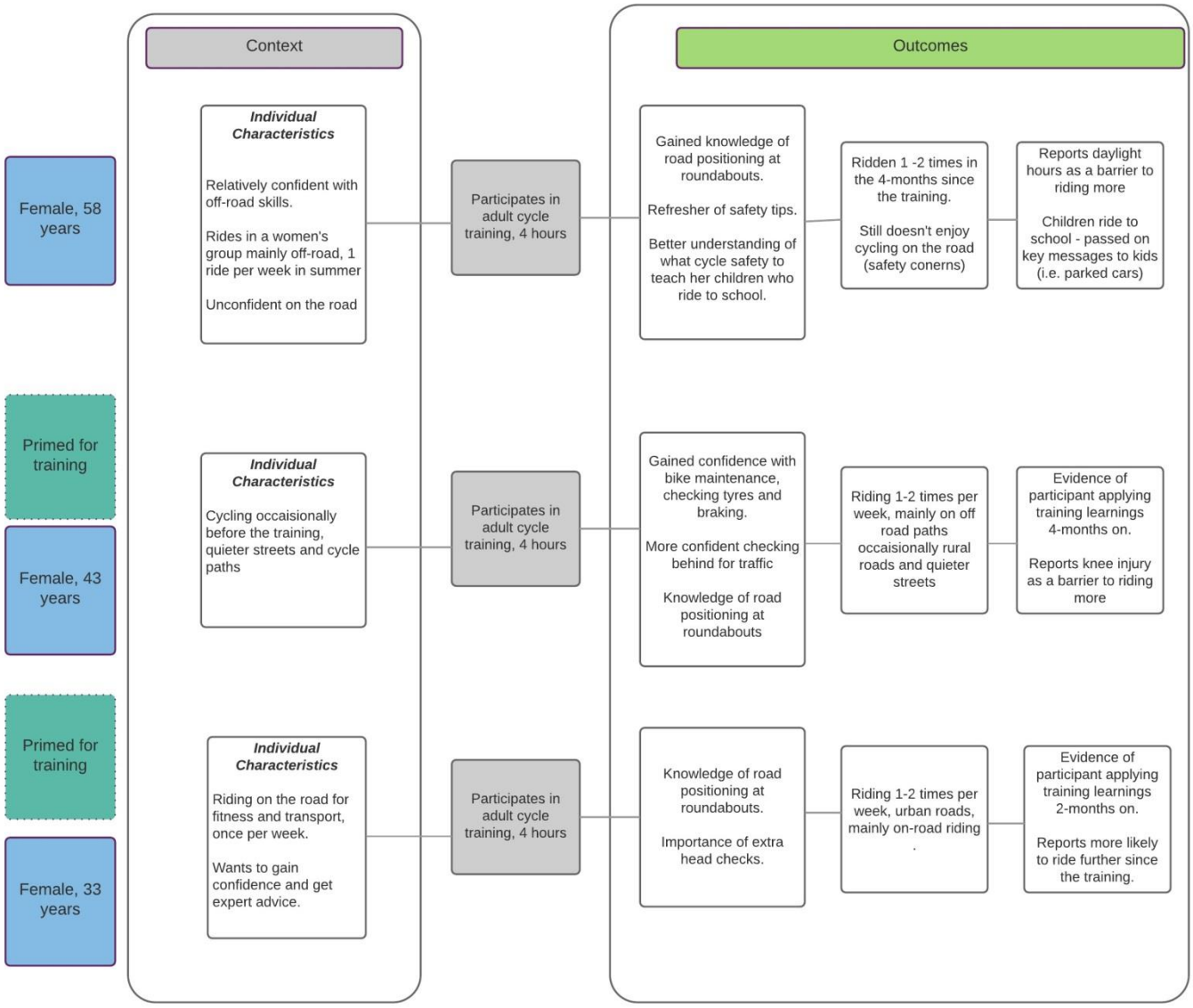


FIGURE 9: INDVIDUAL CASE STUDIES YOUTH: CYCLE TRAINING OUTCOMES IN CONTEXT

2.8 Adult Cycle Training – Ride Leader Tauranga Case Study

Ride Leader Results Snapshot

Purpose: The purpose of Ride Leader was to enable participants to have the knowledge, skills and confidence to lead a cycling group, in order facilitate the development of cycling groups and create a network of cyclists.

Key results: Ride Leader was well-received by participants. Participants report improving their knowledge related to leading a ride as well as general cycle safety messages. Two-months after the training the majority of participants reported applying key skills learnt on the training (12 of 17) and as well as sharing cycle safety messages with other riders (10 of 17).

Six new recreational cycling groups were established immediately following the Ride Leader course and four of these groups were still active 6-months later.

What does this case study tell us? This small case study highlights that Ride Leader programmes have the potential to be an effective and efficient way to: encourage more recreational cycling, create a network of groups by which cycling information and messages can be spread, and encourage safe and positive road user behaviour through role-modelling and peer influence.

Ride Leader is a programme aimed at adults who want to share their passion and knowledge for cycling with others. The purpose was to enable participants to have the knowledge, skills and confidence to lead a cycling group, and therefore create a network of cyclists and cycling groups. The course was open to all types of cyclists (mountain bikers, recreational, road cyclists) of all abilities. The 4-hour workshop covered the topics in Table 6. These messages were introduced through discussion, demonstrations and activities. The three principles of safe-learning-fun underpin the workshop's approach.

The workshop was followed by a practical ride at the end of the session to demonstrate the content in practice.

In February 2015, 22 adults attended two Ride Leader workshops delivered in partnership by Sport Bay of Plenty, Cycling NZ and Tauranga City Council (Travel Safe).

2.8.1 Evaluation Method

The following evaluation activities were carried out:

- Pre-post questionnaire before and immediately after the workshop (n =20)
- Observation of 1 Ride Leader session, including participation in the practical ride
- An online questionnaire for participants 2-months after the workshop (n = 17)
- Collation of follow-up information from Sport Bay of Plenty.

TABLE 6: KEY CONTENT AND MESSAGES DELIVERED IN THE RIDE LEADER WORKSHOPS - TAURANGA

Pre-Ride Logistics • Route-planning, consideration of fitness levels, time of day, skills of the group, cycling black spots, road works, light conditions • Equipment (first aid, spare tubes etc.) • Pre-ride communication, emails, phone calls
Group Culture • Understanding the needs and motivations of your group • Equipment for each person • Respect for other road users, creating a positive culture of road-sharing
Safety Messages • Being confident in your own skills • Heavy vehicle blind spots • How to ride through intersections, including road positioning • Dismounting at pedestrian crossings • Don't assume that all your riders will be aware of these safety skills/messages.
Rider briefing • Introductions • Expectations, shared responsibility • Signaling with the group and to other road users (visual and verbal signals) • Role-modeling safe and courteous behaviour
On the Go Group Management • Braking and starting as a group • Punctures • Pathway gates • Bunch etiquette, single-file and double-file riding • Fall Prevention, (glass, potholes, gravel) • Leading from the front or the back, • Trouble-shooting common problems
Debriefing • Debriefing • Risk management/incident reporting

2.8.2 Ride Leader Key Results

Who came to Ride Leader and why?

- 12 males and 12 females attended Ride Leader
- Three participants already led group rides and aimed to develop their skills further, the remaining were interested in learning how to lead group rides or how to share their passion for cycling with others.
- Participants reported engaging in different types of cycling; around half reported participating in both on-road and off-road riding (including mountain-biking)

Immediately after the Ride Leader workshop:

- More participants understood the rules regarding the number of cyclists that can legally ride abreast *(47% correct before vs 88% after)*
- All riders reported that approximately 10 to 20 riders was the most appropriate number for a group of riders.
- 16 of 17 participants agreed or strongly agreed that the course had improved their knowledge and skills related to leading a ride (Figure 10).
- 16 of 17 also rated the course highly (either a 4 or 5 out of a 5-point scale) (Figure 10).
- 100% of participants agreed or strongly agreed that part of being a good ride leader was ensuring your group was courteous towards other road users.
- The number of participants who were not confident to lead a ride decreased after the workshop, and this result was maintained 2-months later (Figure 11).

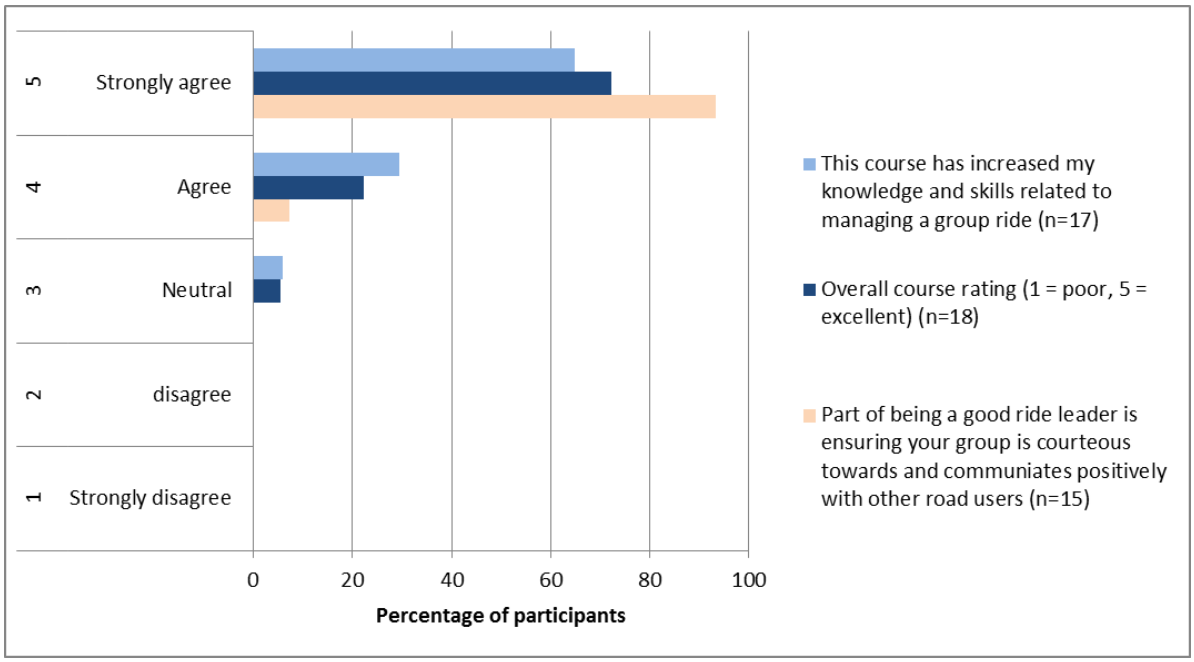


FIGURE 10: PARTICIPANT PERCEPTIONS OF THE RIDE LEADER TRAINING

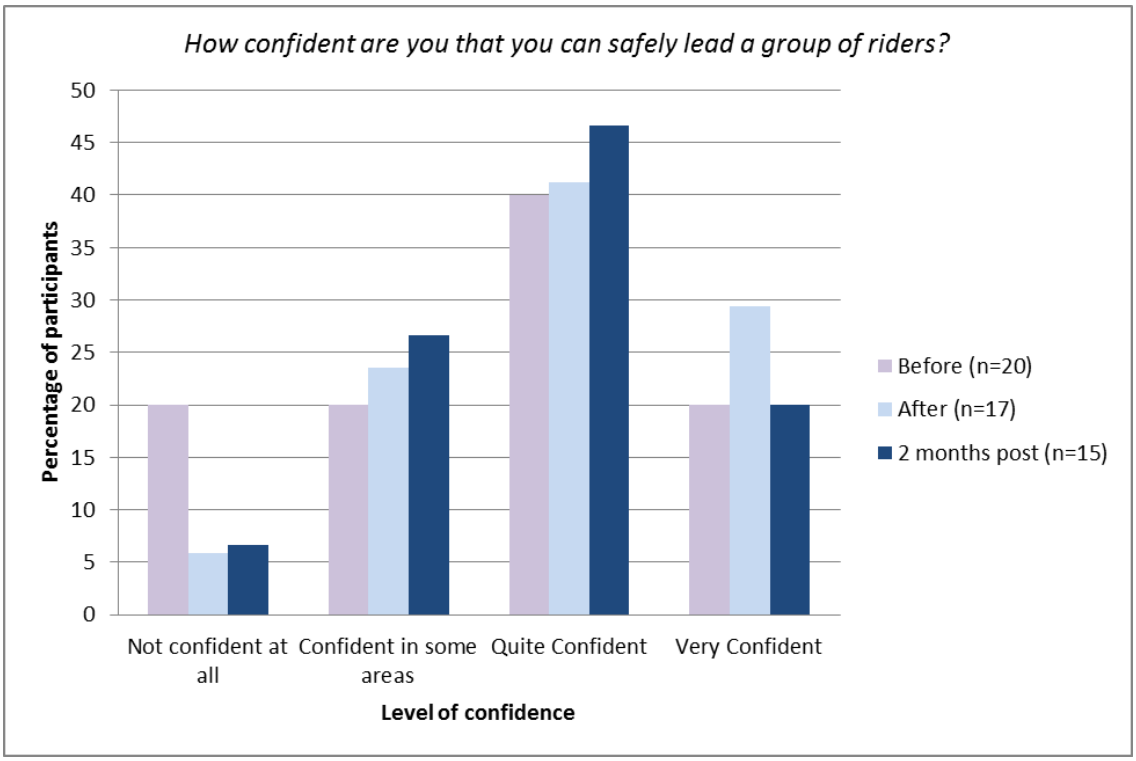


FIGURE 11: PARTICIPANT PERCEPTIONS OF THE RIDE LEADER TRAINING

Key feedback from participants on the workshop content and delivery is outlined in Table 7.

TABLE 7: PARTICIPANT FEEDBACK ON RIDE LEADER CONTENT AND FORMAT

Ride Leader content participants found useful	• Route-planning • Safety practices when riding on the road (owning the lane, how to ride through a roundabout) • Managing group dynamics and how to organise rides that suit abilities • How to communicate with a group prior to the ride and during the ride • Networking and meeting like-minded people • The importance of role-modelling • Group riding techniques (i.e. single file, double-up method)
Areas participants' felt they needed to develop (in order to be more confident)	• Mechanical skills and bike maintenance • First Aid • Signaling and communicating with a group while riding. • People skills and how to create a group culture • General bike ability and confidence
Participants suggestions regarding the workshop content and delivery	• More on how to 'start' a group and how to get more people involved. • Three attendees thought there should be more specific information tailored to each kind of cycling and more advanced course • Two attendees thought there was some of the content was repetitive and the workshop was too long.

2.8.3 Longer-term outcomes associated with Ride Leader…

There is good evidence that many participants were applying key skills learnt at the training two-months after the Ride Leader Workshop.

> *"Make sure group is wearing high vis, carrying their own tube and that they are following the road rules"*

> *"re-grouping at appropriate intervals and not necessarily leading from the front"*

Nine participants had led rides for the first time or supported another ride leader (Table 8). Five participants also reported cycling more overall since the workshop.

TABLE 8: REPORTED CYCLING BEHAVIOUR 2-MONTHS AFTER THE RIDE LEADER COURSE

Reported behaviour	Number of participants	% of respondents
I was leading rides before the course and have continued to do so	4	23%
I have led a group of riders for the first time since the course	6	35%
I have supported or helped another ride leader since the course	3	17%
I have been involved in a group ride as a rider	4	23%
I have not led or been involved in a group ride	3	17%

*participants could report multiple categories

Around half of participants had shared knowledge or skills from the training with other cyclists. Some participants also reported more confidence and knowledge related to basic cycle safety, such as hand signals, owning the road at intersections, improved awareness of traffic and better understanding of the road rules, and had noticed changed in their own riding since the Ride Leader course.

> *"I know I've changed some of my cycling behaviors as to be a good role model (e.g. strictly following road rules, dismounting bike if crossing at pedestrian)"*

> *"A really worthwhile course and are looking forward to meeting more new riders and spreading the love of cycling around the community"*

Immediately after the workshop six new cycling groups were established in the Tauranga, Bay of Plenty area. These groups were set-up as a direct result of the Ride Leader workshop and the groups were supported on an on-going basis by Sport Bay of Plenty. Six-months on, four of these groups are still established and running weekly rides with up to 48 members in total. These groups predominantly ride on off-road trails, with most members being 50 and over.

2.8.4 Discussion: The potential of Ride Leader

Participants report a reasonable amount of new knowledge and skills obtained through the workshop; they also report applying these skills in their riding, as well as sharing these messages with other riders. The fact that there are still four cycling groups regularly cycling 6-months later is a positive outcome for the Ride Leader workshop and good evidence that this approach is both an efficient and effective way to improve the network of recreational cyclists, as well extend the reach of road user behaviour and cycle safety messages. A key strength of the approach is that adults who may never enroll in a formal training course could be influenced by another cyclist or a Ride Leader. Results suggest that this initial course had the most impact on older recreational cyclists; however, the strength of the Ride Leader model is that the focus can be adapted depending on the goals of participants and the strategic goals of the stakeholders involved.

Stakeholders involved in the delivery of Ride Leader have noted that the cycling groups can create a communication network for the distribution of information about events, further safety messages and training opportunities.

Limitation of this evaluation

Few Ride Leader workshops have been delivered to date, with small overall reach. Similarly this case study has relied on observation and self-reported behaviour methods. However, despite these limitations this small evaluation shows that the Ride Leader model has potential and can contribute to Objectives 2, 4 and 5 of the RST project (Section 1).

Points for consideration

It was observed that some adult cyclists attending the Ride Leader workshop were reasonably novice on-road cyclists themselves. This was also reflected in the results, as a number of participants reported learning basic cycling safety skills and improving their on-road confidence. It may be counter-productive to restrict Ride Leader to experienced, confident cyclists; however, consideration to a ride leader's own skills could be given more emphasis in workshop content. Linking participants to extra cycle skills training as an extension of Ride Leader could be a strategy to fill this need. Similarly, an approach to segment or split the training based on riding experience levels could be a good approach, as was suggested by some participants.

Koorey et al.'s (2014) analysis of common patterns in New Zealand cycle crashes suggests that older cyclists may be a high risk group for cycling fatalities; they are more likely to be at-fault and more likely to be involved in a fatal non-collision crash. This potentially emerging trend, highlights the importance of training approaches that encourage the development of basic cycling and safety skills, and the importance of aligning content to the experience level of workshop attendees. A strength of the Ride Leader model is that older cyclists can gain confidence within the established groups and receive support from more experienced cyclists.

Some safety tips arose through discussion and questions from participants (e.g. intersection safety); however, it was unclear if this would always be included in Ride Leader content. In order to increase

the reach and spread of road user behaviour messages it is recommended that key safety tips for riding on the road and road-sharing messages be formally included in Ride Leader content as much as possible, regardless of the type of cycling or experience levels of the participants. As shown in these results, around half of these participants reported some level of on-road riding and are likely to be riding in shared environments.

Key safety messages for how to ride safely around heavy vehicles was covered in the course content, however, no participants noted this as a key learning for them. It may be that this information was not particularly relevant to their type riding; however, as these ride leaders are sharing key messages with other cyclists, it is recommended that the heavy vehicle component be given more emphasis and be practically demonstrated if possible. Three Ride Leaders subsequently attended a CAN Road User Workshop as a follow-up training opportunity; this is a beneficial way to extend the safety messages.

It was observed by the evaluator that the practical ride at the end of the Ride Leader session was not led in a way that reflected course content (See Section 2.9). The group had varying levels of cycling abilities, fitness levels and on-road riding experience, and was not appropriately segmented in the pre-ride phase. During the ride, the group also became spread-out, some sections appeared to be beyond the skill level of some riders and a defined route was not clearly explained. It is extremely important that this ride practically demonstrates all the principles covered in the workshop. This is an area for improvement and it is recommended that those leading the demonstrated ride be qualified and experienced cycle skills instructors.

2.9 Cycle skills instructors

Key Evaluation Question: What differences in quality of delivery exist between instructors who are trained and become qualified and those who do not become qualified?

Eight instructors were observed:

- 4 were trained but not qualified,
- 3 were qualified and
- 1 was not trained or qualified

Delivery quality was defined by the 'Delivery Quality Tool' developed for the purpose of this evaluation (Appendix D).

Overall, instructor quality was high for both trained and qualified instructors; both groups demonstrated good rapport with participants, managed student behaviour well, kept students active in the session, and managed the different competency levels of participants.

All instructors based their delivery on the Grade 2 guidelines and Cycling NZ's Intro to Road & Everyday cycling manual; as discussed in Section 2.5, the key difference being the amount of on-road time.

Qualified instructors who were regularly delivering and had 1-2 years' experience were consistently strong across every category (Table 9). Some instructors (both trained and qualified) were less structured about checking helmets (or getting students to check their own) and slightly less particular about how a skill should be executed.

Observed subtle differences in delivery style between trained and qualified instructors were:

- Qualified instructors consistently and clearly identified the learning objectives of every session, whereas this was less consistent for trained instructors.
- Some trained instructors did not always give a student feedback once they had performed a manoeuvre or correct a students' mistake. In comparison, qualified instructors made sure they gave each student feedback after almost every manoeuvre, especially if the student had made a mistake.
- The instructor with no training or qualification demonstrated poor instruction in some areas and did not role-model key safety concepts covered in the course.

TABLE 9: SUMMARY OF DELIVERY QUALITY CHARACTERISTICS: COMPARISON OF TRAINED AND QUALIFIED INSTRUCTORS.

Delivery Characteristic	Rating			Comments
	Limited evidence	Some evidence	Strong evidence	
Aims and objectives of session are clearly outlined	1x untrained	3x trained	3x qualified 1x trained	The objectives of the overall training were outlined by all instructors, but not all instructors clearly outlined the purpose of each session/learning focus.
Session is structured and on time	1x untrained	1x trained	3x qualified 3x trained	
If participant makes a mistake while performing a manoeuvre they are corrected as soon as possible.		3x trained 1x qualified	2x qualified 1x trained	More difficult with fewer instructors to give feedback to every individual student. Some occasions when individual feedback was not given while on the road.
Timely feedback is given in a positive an encouraging manner		1x trained	3x qualified 3x trained	
Maximises opportunities to be active and apply knowledge in the session			3x qualified 4x trained	Off-road games were utilised to promote activity during the sessions.
Clear, concise explanations and demonstrations audible/visible for whole group	1x untrained	1x trained	3x qualified 3x trained	
Behaviour is managed well			3x qualified 4x trained	
Differences in competency of participants is managed well	1x untrained	1x trained	3x qualified 3x trained	
Encourages participant self-awareness			3x qualified 4x trained	All instructors utilised reflective questioning
Students are engaged in the session			3x qualified 4x trained	Overall students were highly engaged.

2.9.1 Cycle instructor training summary

The observation of eight instructors suggests that training for instructors is beneficial and supports high quality delivery. The highest quality delivery was observed by experienced, qualified instructors who are delivering cycle skills training regularly. Thus, it is thought that the optimal approach is for qualified instructors to lead on-road cycle skills training, with support from trained instructors if necessary, and these trainees should be supported to become qualified. Instructors who are delivering and have had no training, should be encouraged to undergo training.

2.10 Discussion & Recommendations – Cycle skills component

The RST project has extended the reach of on-road training; *'Intro to Road and Everyday Cycling'* was delivered to more than 6297 youth over the 3-year contract period, and 580 adults (either directly through Cycling NZ or through instructors trained by Cycling NZ). In the '*Intro to Road & Everyday cycling course'* Core Grade 1 and Grade 2 skills are being covered, although some courses may not meet the recommendations for on-road time in the NZTA guidelines, as a result of students' skill levels and scheduling within schools.

The projects' partnership approach is also a key strength; Cycling NZ have worked alongside key partners and schools to tailor training approaches to the participants, and there are some good examples of training being linked with other activities in order to reinforce and extend cycling education. The project has also enabled innovative programmes, such as Ride leader, to develop.

Cycling NZ has taken a lead role in the sector and improved the sharing of knowledge through the Cycle Skills working group and 'National Cycle Skills review'. The *Intro to Road and Everyday Cycling* course is the first cycle skills programme that is based on a learning approach, as opposed to delivery of a core set of skills; this movement towards good practice is a strength, and will be important going forward.

The subtle differences between trained and qualified instructors identified in this evaluation supports the value of instructor qualification, as well as the need for processes that can enable instructors to consistently deliver. An effective process around instructor qualification is important, as is the need to identify providers who have no training or qualification.

This evaluation was not designed to test the causal link between cycle training and crash risk. However, there is good evidence that on-road training results in increased road code knowledge, cycle safety knowledge and on-road confidence. Similarly, it is positive that adults and students who are riding after the training report applying the skills and safety behaviours learnt at the training in on-road environments. Skills related to signaling and road-positioning both mid-block and at intersections was a common learning across participants.

The case studies of School A and B suggest that combining on-road training with other cycling learning, events and opportunities to bike, in an area with some cycling facilities, is the most effective model. The effect of peer influence is also an important area for future investigation. While

these case studies have shown some effect on cycling participation, overall results are consistent with international research that training alone is unlikely to lead to significant improvements in cycling participation (Goodman et al., 2015).

The experiences of individuals involved in the training were categorised into the two broad groups: *primed for training* and *few opportunities to bike*. These descriptors position cycle training within the context of the individual's lives and therefore contribute to an understanding of when outcomes may or may not be seen. It is thought that the *primed for training* group are those who are most likely to benefit from the current approach to on-road cycle training. In participants who may not have the opportunity to cycle now or have lower base skills (i.e. barriers such as other sports, road environment, no access to a bike, lack of interest); the training could be viewed as more of a skill for the future as opposed to something that is immediately relevant to their lives. For this group, further training opportunities, experience, infrastructure improvements and/or other initiatives that encourage participation, may be needed to maximise the benefits of on-road training. Similarly, as recent evidence suggests, skills developed through training may not necessarily be maintained if not practiced (Hodgson et al., 2015).

For these reasons, positioning on-road training within a wider cycle skills system is important. Similarly, as indicated by the individual case studies, there may be road environments which are inappropriate for young or novice cyclists and circumstances in which training is insufficient, therefore a cycle skills system will also need to be encompassed within a wider Safe System approach.

The following recommendations will increase the likelihood of on-road cycle training leading to improved road user behaviour and cycling participation.

Cycle skills component: recommendations

- Consistent delivery of on-road cycle training in the same schools over time may support schools to combine training with other cycle learning and events.
- Examine ways that the on-road time during training can be maximised, including appropriately matching training types to the audience's needs, the road environment and positioning on-road training within a broader cycle skills system.
- Consider the inclusion of route-planning in delivery content and explore ways to engage with parents and caregivers both during and after cycle skills training.
- Consider the inclusion of content related to cycling around heavy vehicles; results suggest that some youth are cycling in environments where they may encounter heavy vehicles.
- Identify individuals or providers who are delivering cycle skills courses without training and support them through training and qualification processes.
- Continue to develop, tailor and extend the Ride Leader approach to a wide range of audiences.

3.0 Road User Workshops

A component of the Road Safety Trust project was the Road User Workshops (RUW) and accompanying education activities managed by the Cycling Advocates Network (CAN) with support from Cycling NZ. The RST project objectives the RUWs most directly align to are (Section 1):

- *Increase the number of adults cycling and reducing the perception that cycling is dangerous through the road user workshops and cycle leader training*
- *Reduce the taxi-bike, truck-bike, bus-bike crashes by increasing education of these road user groups*
- *Increasing a culture of positive behaviour; all road users sharing the road safely and the perception the road environment is becoming safer.*

For the purpose of this report the term heavy vehicles encompasses trucks and buses. The term cyclist is also used to describe 'people who cycle'.

3.1 Evaluation approach

The RUW model is developing and the size and scope of the evaluation was relatively small; thus, a formative evaluation approach was taken, focusing on the design of the programme, potential outcomes and providing recommendations for future development.

Key Evaluation Questions

1. *What is the underpinning theory of Road User Workshops, and how does the design compare with evidence of best-practice?*

2. *What are the short and longer-term outcomes associated with participation in a road user workshop?*

Summary of Evaluation Activities
• Targeted literature review to identify principles of best practice and identify programme strengths and areas for consideration in comparison to these principles. • Development of a programme logic model to explicitly present how RUWs are intended to lead to the desired outcomes and identify any gaps and assumptions in this logic. • Two case studies of Road User Workshops delivered in 2015, one in Auckland and one in Christchurch

3.2 Road user workshop background

Heavy vehicles are over represented in fatal crashes involving cyclists, in comparison with their proportion of the total vehicle fleet and vehicle kilometres travelled (Koorey, 2014; Cycle Safety Panel, 2014). In response to this problem CAN developed the RUW model; the overall purpose, as described by the CAN website, is *"to give participants an understanding of the issues that people cycling face every day. It also aims to give cyclists an understanding of issues facing bus drivers, police, truck drivers, couriers, taxis.*"

Workshop invitations describe the purpose as "*To bring professional drivers and cyclists together to increase awareness and empathy for the road safety issues that face cyclists in the city"* (Urban-focused workshop).

The specific benefits of the workshops as described in programme materials are:

- *"An increased understanding of the needs of other road users leads to a decreasing number of incidents and creation of a safer road environment for all"*
- *"A positive dialogue between local cycling groups and driving representatives to create win-win outcomes such as effective separation between heavy vehicle and training routes"*
- *"Utilise first hand experiences to create empathy between road users and facilitate lasting behaviour change"*

CAN deliver two types of RUWs:

1. A workshop aimed directly at heavy vehicle drivers and cyclists. Fifteen of these workshops have been delivered over the 3-year contract period, involving 473 participants.

2. A workshop aimed at heavy vehicle company managers and Health & Safety reps and cyclists. The aim of this format is to introduce managers to the RUW concept and messages, in order to encourage companies to deliver a workshop for their own drivers and/or disseminate messages within their own training processes. Fifteen of these workshops have been delivered over the contract period, involving 225 participants.

Broadly, a RUW is made up of a discussion/theory component and a practical component in the form of an on-road ride and vehicle demonstrations. In the discussion component instructors facilitate a two-way conversation that seeks to enable these two road user groups to share, learn and understand each other's perspective. Drivers and cyclists share examples of being frustrated, confused or fearful in interactions with the other road user and subsequent discussion of how this incident could have been mitigated is facilitated.

The course content also centres around four key messages, which are designed to lead to improved sharing of the road space and thus improved safety outcomes:

- Following distances: 4 second following distance for heavy vehicles, enables cyclist to pull over more easily and is more comfortable for the cyclist - will also give heavy vehicle time to stop safely if necessary
- Road positioning: why cyclists are advised to ride 1m from the kerb and take the lane at intersections

- Passing distances: giving cyclists enough space (drivers will most likely need to be in the next lane in order to do so)
- Heavy vehicle blind spots: if volunteer cyclists are present they are given a practical demonstration of heavy vehicle blind spots and advice on where they should position themselves to ensure drivers can see them.

More recently programme deliverers have adapted their approach to include more experiential learning and less instruction-based delivery. These messages are gradually introduced through demonstrations and an on-road ride, allowing participants to discover the concept for themselves through practical experience and discuss their perspectives with others, as opposed to presenting the messages through a PowerPoint presentation.

Programme deliverers aim to recruit cyclists to be participants in the RUW; however depending on the availability of cyclists and the heavy vehicle companies preferences, sometimes the 'cyclists' as a group are represented by cycling instructors or others involved in the sector. CAN also provide education around these messages to cyclists through other channels, such as cycling events.

3.3 Literature review

Key evaluation question: What is the underpinning theory of Road User Workshops, and how does the design of road user education in New Zealand compare with evidence of best-practice?

A targeted literature review was undertaken to identify principles of good practice and highlight key areas for consideration going forward.

3.3.1 The problem: cyclist vs heavy vehicle crashes

The number of cyclists and the volumes of heavy vehicles on our roads will increase in the coming decade, thus providing a strong case for targeted initiatives aiming to reduce cyclist vs heavy vehicle crashes. A summary of cyclist crash statistics and crash factors are summarised below (Cycle Safety Panel, 2014; Koorey, 2014; Ministry of Transport, 2014)

Urban environments

- 39.5% of cyclist deaths on urban roads involved a truck and 2.6% involved a bus (2003 to 2012 period, Cycle Safety Panel, 2014)
- 55% of cyclists deaths and injuries were on major urban arterials, as opposed to more minor roads (Ministry of Transport, 2014)
- The majority of urban cyclist deaths and serious injuries occur at intersections or driveways (Cycle Safety Panel, 2014)
- For crashes involving heavy vehicles, injuries tend to be more severe for cyclists
- Although heavy vehicle vs cyclist crash types vary, a common crash movement is a cyclist being struck on the left-hand side from a heavy vehicle that is moving or turning left (Koorey, 2014)
- Failing to see a cyclist is a common crash factor in urban cyclist crashes (all motorists, not specific to heavy vehicles). At intersections, where one party was required to give-way it

was the motor vehicle who failed to give way the majority of the time, and this was mainly as a result of not seeing the cyclist.

Rural environments

- 19.4% of vehicles involved in fatal cycling crashes on rural roads were trucks and 8.3% were buses (2003 to 2012 statistics, Cycle Safety Panel, 2014).
- The majority of rural cyclist deaths and serious injuries involve a cyclist being struck from behind mid-block. Failing to see a cyclist was a common crash factor and insufficient passing distance was also a crash factor some of the time.
- More cyclists die on rural roads, and injuries are more severe than in urban areas.
- The panel highlighted a lack of usable road shoulder width as a contributing factor in rural crashes.

The Cycle Safety Panel also highlights that close passing distances, particularly when passing parked cars and in circumstances with limited usable shoulder space, may contribute to cyclists' perception of risk and therefore can be thought of as an inhibitor to cycling participation (Cycle Safety Panel, 2014).

There appears to be no formal NZ data on road user attitudes towards cyclists; however, anecdotal evidence and previous evaluation work by CAN points to frustration and resentment between these two road user groups (Western, 2012). Thus, intertwined with this safety issue, the RUW model is also based on the rationale that increasing empathy towards other road users will create not only a safer road environment but a more positive shared road environment.

Currently, RUW messages mainly relate to passing distances, following distances, heavy vehicle blind spots and cyclists' road positioning at intersections. These messages generally align to current understandings of heavy vehicle vs cyclist crash factors. '*Look but didn't see'* crashes and failing to give-way or stop for a cyclist at controlled or uncontrolled intersections is a crash type that could be given more attention in workshop content. While drivers have a good understanding of their vehicles blind spots, examining and testing ways in which the workshops could increase their expectation to see a cyclist at all types of intersections, not just within their left blind spot, is important for alignment with crash risks. Similarly, alerting cyclists to the tracking curves and tail swing of turning heavy vehicles could also be included.

3.3.2 A safe system perspective

The disproportionate nature of heavy vehicle vs cyclist crashes is not a New Zealand-specific problem, similar patterns are seen in both the UK and Europe, including is countries such as Germany where the level of cycling infrastructure is generally more extensive than New Zealand's (Jia & Cebon, 2015; Johannsen, Jansch & Otte, 2015; Transport Research Laboratory, 2014) . Internationally, examples of countermeasures include London's recent 'Safer Lorry Scheme', which has mandated Class V and VI mirrors and sideguards for all heavy goods vehicles operating in London. Other researchers are developing and modelling the potential safety impact of vehicle technologies, such as blind spot detection systems and vehicle to cyclist communication systems (Johannsen et al., 2015; Silla et al., 2015)

The investigation of side under run protection and other vehicle technology systems is a priority area in the NZ Cycle Safety Panel recommendations and NZTA's current cycling safety action plan, as is investment in cycling infrastructure and the development of cycling infrastructure design guidelines. While the physical separation of heavy vehicles and cyclists is important, a true Safe System approach also requires initiatives that directly target human behaviour and facilitate safe road use, thus, the RUW model has a place as a countermeasure from a Safe System perspective. Similarly, it is noteworthy that some vehicle modifications and safety technologies still require a behavioural response from the driver or cyclist in order to be effective in reducing a collision. For example, mirrors still have to be utilised, and detection systems responded to, thus initiatives like the RUW may continue to have a place even as other safe system factors are improved.

3.3.3 Is there evidence for the Road User Workshop approach?

This approach is relatively new and innovative and there are no known evaluations that have specifically focused on the effectiveness of educating heavy vehicle drivers and cyclists in this way. However, a large body of literature has sought to understand the effectiveness of road safety education in improving road safety behaviour, particularly in children and young drivers (Twisk, 2006) as well as the effectiveness of both professional and private motor vehicle driver training (Christie, 2001).

A key point from the literature is that training or workshop style interventions that aim to improve behaviour and safety outcomes assume there is a knowledge or skill deficit prior to the training (Christie, 2001). Case studies of NZ RUWs (Section 3.5) demonstrate that there may be a knowledge deficit for some key safety messages, particularly for cyclists. However, improved knowledge or skills does not automatically translate into improved behaviour, and the literature suggests that drivers (and cyclists) may also need to be 'motivated' to use the road safely (Christie, 2001; Twisk, 2006). The literature highlights the distinction and sometimes confusion between 'training' and 'road safety education'. Practical in-car or on-road instruction is viewed as 'training' and is primarily aimed at skill acquisition, whereas education seeks to influence knowledge, as well as underlying attitudes and values (Keskinen & Hernetkoski, 2011). Experiential learning, or 'learning that makes active use of personal experiences' is important for self-evaluation and the development of decision-making skills, that go beyond knowledge or skill acquisition (Keskinen & Hernetkoski, 2011). Thus, for professional drivers who have an established skill base experiential learning can be viewed as a valid approach.

A Cochrane review examined 21 research trials of driver education initiatives, which taught more advanced driving skills and/or targeted those with traffic offences. Pooled analysis, with a total sample of more than 300,000 participants, found these interventions had no effect on crash outcomes; although poor study quality was highlighted as a common issue (Ker, 2003). This demonstrates that driver education post licensing may be ineffective in reducing traffic crashes and the difficulty of changing behaviours that are automatic (Ker, 2003; Twisk, 2006). In the context of this literature, integrating RUW principles early on in driver and professional driver education, rather than relying on post-licensing training, is worthy of consideration.

The incorporation of driver education within comprehensive fleet safety programmes, which combine vehicle selection, driver education and incentives, are suggested as being the most effective approaches (Christie, 2001). This prevents initiatives from being one-off events, which are disconnected from company structures and policies and not reinforced in company culture. The NZ Bus approach to the RUWs is an example of embedding this learning into broader training systems (Section 3.5.4).NZ-based professional driver training programmes targeting fuel efficiency and safety have been reported as being effective in leading to changes in driving behaviour (SAFED NZ, 2011). This is encouraging given the recognised relationship between fuel efficient driving and safe driving, for example, behaviours such as managing speed, anticipating the situation ahead (Bass, 2012).

Twisk et al. (2013) conducted a trial comparing two types of education approaches (both half-day interventions) for adolescent cyclists and pedestrians aiming to improve their behaviour around heavy vehicle blind spots. Results showed no effect on their simulated behaviour post-training, although the approach based on 'competencies' as opposed to 'knowledge of risks' was marginally more effective. The authors highlighted the need to extend learning beyond school-based initiatives in order to sufficiently affect behaviour in various traffic scenarios (Twisk, 2013). Adolescents may also be a particularly difficult, but important group to influence (Twisk, 2013).

Good practice in any health, safety and social interventions is to utilise a behavioural theory or a combination of theories to guide the development of initiatives (Glanz, 2004), this may be particularly important in the absence of a strong evidence-base. The Theory of Planned Behaviour (Ajzen, 1991) proposes that behavioural intentions are the key predictor of actual behaviour and that behavioural intentions are influenced by:

- Behavioural beliefs (attitudes): favourable or unfavourable attitudes towards the behaviour and the perceived outcomes of performing the behaviour
- Normative beliefs (social norms): perceived social pressure or subjective norms, peer approval or disapproval of the behaviour and the motivation to conform with these norms.
- Behavioural control beliefs: perceived ability to perform the behaviour in various environments and situations.

Perceived behavioural control may be a particularly useful construct in relation to RUWs as it recognises behaviour in various contexts (Ajzen, 1991). For example, a driver may find it more difficult to wait behind a cyclist if under pressure to keep to a schedule. Similarly, the theory of planned behaviour encompasses the influence of social norms on an individual's behaviour, highlighting the importance of influencing company culture, leadership and cycling group norms, as opposed just focussing on the individual driver or cyclist.

Emotional influence is also common construct in many behavioural theories, and generally evoking emotion (e.g. sadness, fear or empathy) is more effective as a behaviour change tool when followed by a positive message or clear guidance on how the risk or 'negative outcome' can be avoided (Glanz, 2008). While the RUWs may aim to influence respect and more positive attitudes towards

other road user groups, it is important that workshops include clear guidance on how participants can translate this respect into behaviour on the road.

3.3.4 Error types and the RUW approach

The field of road safety and human factors describes the different types of error that contribute to incidents or crashes (Reason, 1990). On a simplistic level, errors can be classified into:

- inadvertent slips or lapses, which result from road design factors or road user alertness, and
- mistakes or violations, which are more conscious, and result from a lack of knowledge, skills, or poor attitude.

While multiple error types can occur concurrently, examining error types can support the identification of appropriate countermeasures. As evidence for the underlying causes of cyclist crashes improves in New Zealand, including the contribution of infrastructure and vehicle design, education initiatives like the RUWs can be more directly targeted at the error (s) they are seeking to solve. It is also important to understand the mechanism of 'look but didn't see' crashes, including the difference between failure to see another road user (a situational factor), and failure to comprehend the presence of another road user (expectancy).

In-depth qualitative research in London sought to understand instances of when road sharing failed, from the perspective of the road users (Christmas, 2010). There were six common themes identified by drivers and cyclists.

1. Deliberate acts of aggression or intimidation (e.g. driver deliberately cutting a cyclist off or a large group of cyclists 'pushing in')

2. Failure of attitude (not caring enough about other road users, or being selfish) –e.g. driver's being impatient and therefore follow too closely or a cyclist travelling too slowly and failing to let a vehicle pass.

3. Failure of competence or understanding (e.g. how much space a bike needs, judging speed of cyclists, or a cyclist wobbling over the road)

4. Failure of expectation to see a cyclist (e.g. in certain areas where don't normally see cyclists or due to lapses in concentration).

5. Pressure from other road users (e.g. stress and feeling pressure to pass a cyclist if being followed by another road user)

6. Other situational factors (weather, road surface, light and infrastructure).

Interestingly, authors note that for the common crash factor for vehicle vs cyclist crashes in London at the time *'failure to look, or failure to look properly',* could be explained from multiple perspectives. For instance, 'not looking' could be understood as a failure of all 6 of these categories, except number 1. The RUW approach does have the potential to influence these failures in road sharing behaviour (1 to 5) and it is beneficial that content includes both knowledge messages, as

well as contextual factors (such as time pressures) and broader attitudes towards the other road user.

3.3.5 International examples– education of heavy vehicle drivers

The UK's Safe Urban Driving Course (primarily offered in London) is an accredited course in the Driver Certificate of Professional Competence qualification; drivers complete the course as part of the 35 hours training required each year (www.safeurbandriving.co.uk). The 2WheelsAware programme educates those who drive for work (taxis, emergency services, delivery drivers) on where, how and why cyclists ride, in order to minimise risks when sharing the road (www.bikeright.co.uk).

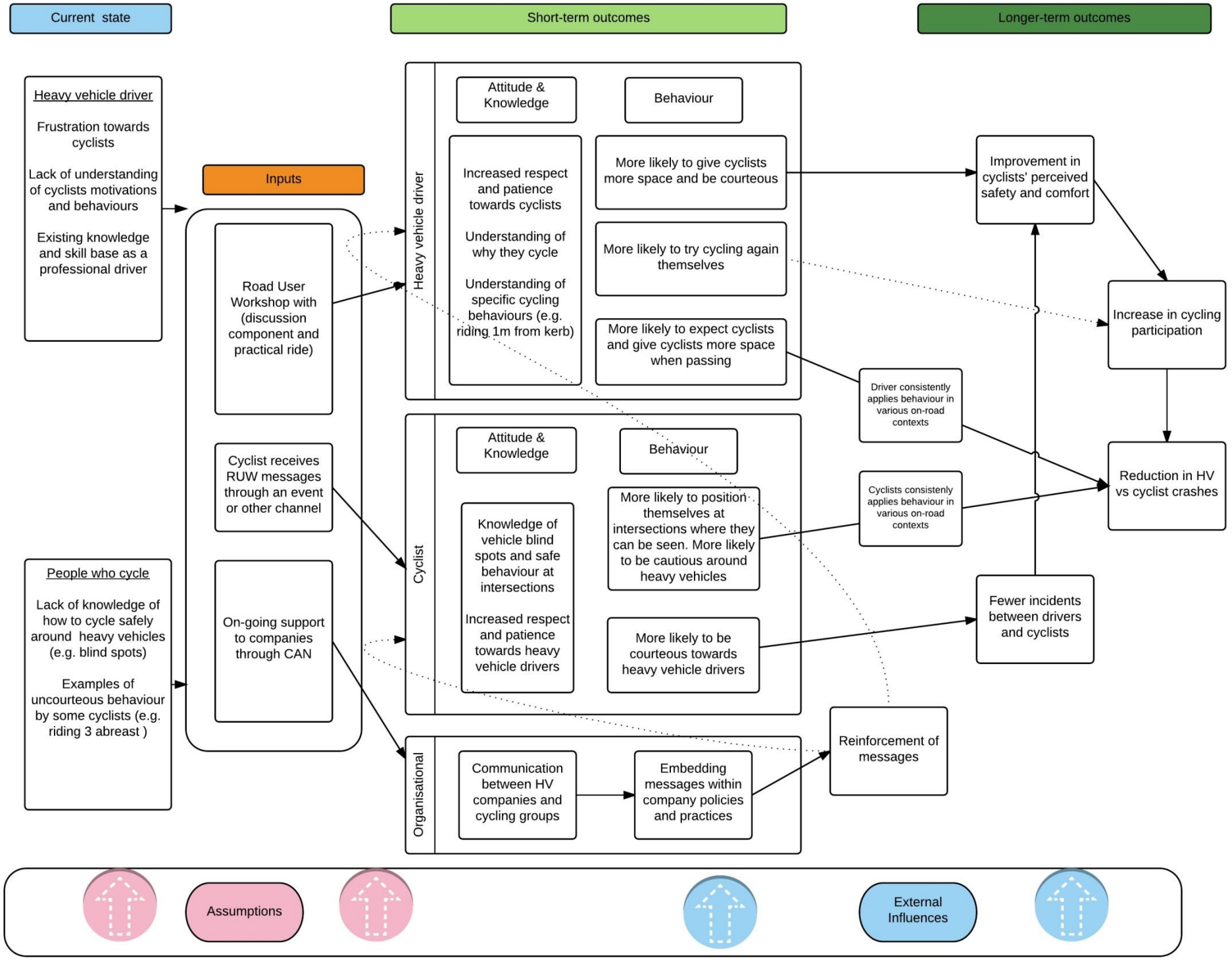
These are one day courses, comprising of a theory component and followed by a practical on-road ride; it is believed that the NZ format was modelled on these approaches. The aims and messages of the UK and NZ approach appear to be similar; however, the UK content is slightly broader than the current New Zealand programme and the primary target group is the drivers themselves, rather than aiming to dually influence the attitudes of both drivers and cyclists. The UK course content mainly focusses on cycling related messages; however it also covers other vulnerable road users such as, pedestrians and motorcyclists and driving in a manner that minimises the risk for each of these groups. The benefits of active travel in terms of efficiency and the environment are also covered, as is the potential technologies available to reduce the risks for vulnerable road users e.g. side under run protection.

As well as these differences in content, the primary difference is that the UK examples are part of the 'system' of driver professional development. The literature suggests that integration into formal driver training or professional development enhances effectiveness (Christie, 2001). CAN is currently working on integrating these messages into Heavy Vehicle unit standards and this is something that should be continued to work towards.

3.4 Logic model for the current Road User workshop approach

A logic model has been developed based on project documents, the literature above and case study results in Section 3.5. This model describes the current thinking around how the RUW and associated activities, is designed to lead to the intended outcomes (Figure 12). External influences, key assumptions, gaps, risks and strengths of the model are subsequently highlighted. This formative evaluation exercise will support stakeholders to develop the RUW model and identify key areas for on-going development and evaluation.

Figure 12: Road user workshop logic model



External influences

Variables such as road design, road space, vehicle speeds and vehicle design (as well as the policies that influence these factors) are external influences that will also impact on heavy vehicle vs cyclist crashes in the longer term. The magnitude of influence of these external influences is likely to be very large.

Assumptions

A key assumption in this model is that, in addition to a lack of awareness of cyclists, poor attitudes towards cyclists exist, and that these attitudes can be influenced to create a safer road environment. A reasonable amount of drivers also rode a bike, meaning that people cannot always be segmented into the driver vs cyclist group. While there is considerable anecdotal evidence regarding heavy vehicle driver's attitudes towards cyclists and vice versa, there is currently no formal representative data set that examines this issue. This would aid in the targeting and tailoring of RUWs.

3.4.1 Current gaps and potential risks with the current RUW model

- While the reach of RUWs has increased in the RST project, the relatively small scale of the workshop model and limited roll-out is a risk, i.e. this model may have limited ability to reach sufficient drivers and cyclists across the country in order to have a tangible effect on cycle safety. A key tenet in the current model is the embedding of the messages into company and cycling group processes, thereby reinforcing messages and increasing the reach. Without embedding the workshops within company structures and reinforcing messages, isolated workshops may have a limited lasting impact on road user behaviour.

- Without skilled facilitation, there is a risk that these workshops could create further negative attitudes towards other road user groups. Some workshops aim to dually influence drivers and cyclists, however this model does rely on the availability of cyclists to participate in a workshop and may be logistically difficult to maintain on an on-going basis. Also, it may be more difficult to have the desired effect on both groups within a short workshop.

- Stakeholders could view RUWs as a tick-box for vulnerable user interventions and therefore hinder the development of more expensive vehicle safety features or infrastructure, which may have a greater net safety benefit but are more difficult to implement.

- The workshops may not have the desired effect if the focus is not aligned to key crash types. Currently workshop messages primarily relate to HV blind spots and passing distances which is useful for some crash types; however a common crash cause is drivers 'not seeing' or giving-way to cyclists at intersections. Thus, it needs to be raised that any attitudinal or knowledge change in drivers may not impact on this crash factor, particularly if there are road design or vehicle design contributing factors (external factors in the model above). It can be hypothesised that an improved driver attitude (and a practical on-road experience by drivers at a workshop) may make drivers more likely to notice or look for cyclists; however, this link will need to be examined in future evaluations. Similarly, it appears the most traction with RUWs has been within the bus industry, more focus on involving truck companies is important, given that the vehicles involved in cyclist fatalities are more commonly trucks (Cycle Safety Panel, 2014).

- As many of the incidents/frustrations with cyclists were directed at 'bunch cyclists' or 'road cyclists' engaging this group in workshops or through other approaches is needed. It is acknowledged that the Ride Leader programme, supported by Cycling NZ (Section 2.8) is working on improving this gap.

3.4.2 Strengths of RUW and the gap it fills

- If these workshops were not delivered, 698 drivers/cyclists would be unaware of perspectives, knowledge and behaviours that they are entitled to know, and a movement towards a positive dialogue between these groups may not have been initiated (Section 3.5).

- It is thought that the most appropriate positioning of these workshops is as a component of a broader Safe System approach, or an 'Interim approach' until improved infrastructure and vehicle safety improvements can be developed. Creating more dialogue between these two groups now, could also help facilitate more of a consensus regarding the way forward in terms of a full Safe System approach.

- The content covering attitudes, knowledge and behaviours through experiential learning is thought to be a valid approach for the target group and is likely to be more effective than an initiative based solely on knowledge transfer.

- Despite the relatively limited reach of these workshops, the approach of directly targeting a high-risk group (and tailoring these messages to suit their context) is a good approach, as opposed to relying solely on a broad 'share the road' message for all road users. CAN is aware that there are many things that could be done to extend the reach of these messages, including the integration into other training/education systems (e.g. cycle skills training for students and adults).

- The ability to tailor the format to suit their company and their drivers was a key strength highlighted by heavy vehicle managers (Section 3.5.4), and it is important that the model remains flexible going forward.

3.5 Road User Workshop – Case Studies

These results summarise data collected from two RUWs: the first was attended by heavy vehicle company managers, drivers and people who cycle in Christchurch. The second was attended by bus drivers in Auckland, with support from cycle instructors.

The data collection methods were:

- Observation of two RUWs, involving 37 participants
- Post-survey for participants to measure perceived value, learning, intended behaviour and suggestions for improvement. For the Christchurch workshop a survey designed by the evaluators was used (n = 20, 100% response rate, Appendix G). For the Auckland workshop the evaluator collated post-survey data collected by the workshop provider (n = 17, 100% response rate).
- Semi-structured interviews with RUW participants 4 to 6-weeks after the workshop to gather more in-depth data on participant perceptions and examples of behaviour modification (drivers/managers = 7 and cyclists n = 1) (Appendix H)

3.5.1 Perceptions of the workshops

Overall, drivers and managers had positive perceptions of the workshops and they were consistently seen as very valuable. Given that drivers had to take time out of productive work to attend, this result is encouraging.

> *"highly recommended - unforgettable experience, sharing the messages with colleagues" (bus driver, male)*

> *"should be part of regular training for drivers" (bus driver, male)*

> *"It was really good – really beneficial"(manager, female)*

While most cyclists were positive about the Christchurch workshop, there was also some mixed feedback. Parts of the discussion component were viewed as unwieldly with limited purpose, and at times not as balanced as cyclists would have liked.

> *"A sense of blaming the victim and cyclists being wrong and inconsiderate…. I am all for workshops but I really wonder what this one achieved?" (female, cyclist)*

> *"I am not really sure what I walked away with" (female, cyclist)*

This feedback from cyclists may reflect the personalities and discussion that arose at this particular workshop, as opposed to a general reaction from all workshops.

3.5.2 New knowledge and perspectives

New knowledge of the extent of heavy vehicle blind spots was the most common learning amongst cyclists. It is noteworthy that most of these cyclists had been cycling on the road for some time and saw themselves as safe cyclists.

> *"As a cyclist I learnt more about truck blind spots and how we have to adapt to work with them" (female, heavy vehicle company manager and cyclist)*
>
> *"Visibility for a truck driver from the cab toward the front right area is significantly less than I would ever imagine" (female, cyclist)*
>
> *"stay behind trucks that are stopped, get out in front and middle of the lane if first at the intersection" (male, cyclist)*

As opposed to a technical knowledge gain some driver/managers reported the workshops were more of a reminder or refresher.

However, a common theme for drivers was that the workshop facilitated more patience and respect towards cyclists. Drivers also reported more of an understanding of what cyclists get taught and their motivations for cycling. Evidence from qualitative interviews with seven drivers suggests that these attitude shifts were maintained 4-6 weeks after the workshop.

> *"for me, before they were just a pest. More understanding now of what they are doing and why they are there" (female, driver)*
>
> One driver reported he previously would have thought, "*what's that bloody cyclist doing, now know that he is actually being a good cyclist, now we can know what to expect" (male, manager)*
>
> **"***I thought cyclists were crazy, now I get why they cycle, these people are trying to be healthy and get fit – I will never cycle but I get why they are there now". (female, manager)*
>
> *"way more patient now, recognising that cyclists do have a say - kept thinking if that was me" (bus driver, male)*

Some drivers also reported that the workshop was a good reminder of the sharing concept or a refresher for safe driving around cyclists.

> *"I think it gets forgotten that everyone has equal share of the road, this can get forgotten the bigger you are, more aware that everyone has a share". (female, manager)*
>
> *"comes back to a lack of respect"[between RU groups] (Male, bus driver)*
>
> *"nothing particularly new, brought things to the forefront" (male, manager).*

Overall, of the 20 participants at the Christchurch workshop 90% (18) *'agreed'* or '*strongly agreed'* that the workshop had increased their knowledge of how to reduce on-road difficulties with cyclists (Figure 13).

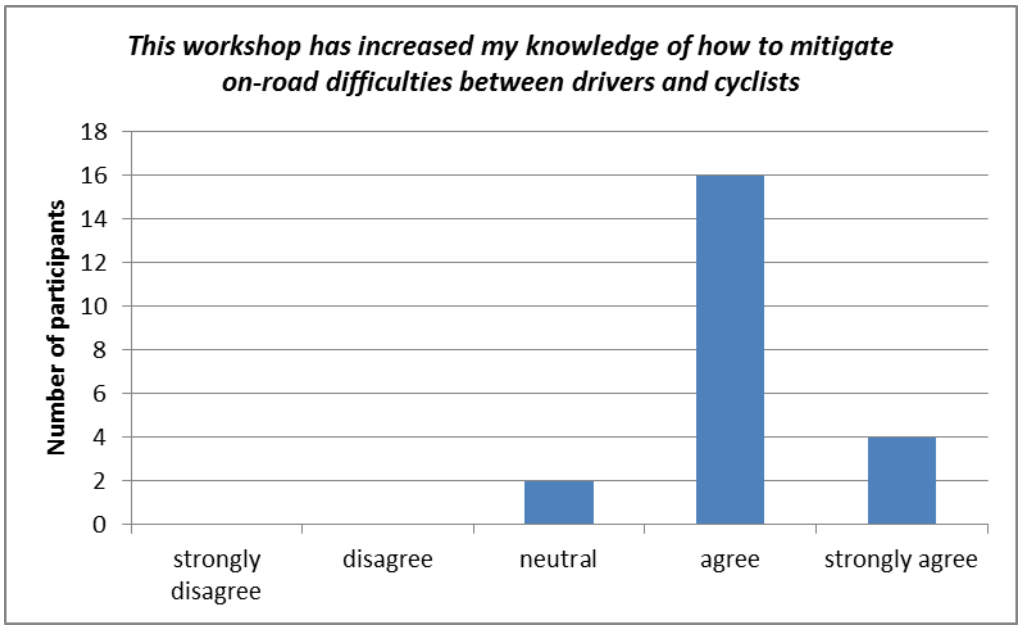


FIGURE 13: PARTICIPANTS PERCEPTIONS OF KNOWLEDGE GAINED FROM THE ROAD USER WORKSHOPS

3.5.3 Evidence of behaviour modification

Immediately after the Christchurch workshop the majority of participants agreed that the workshop would influence the way they drove or cycled (Figure 14).

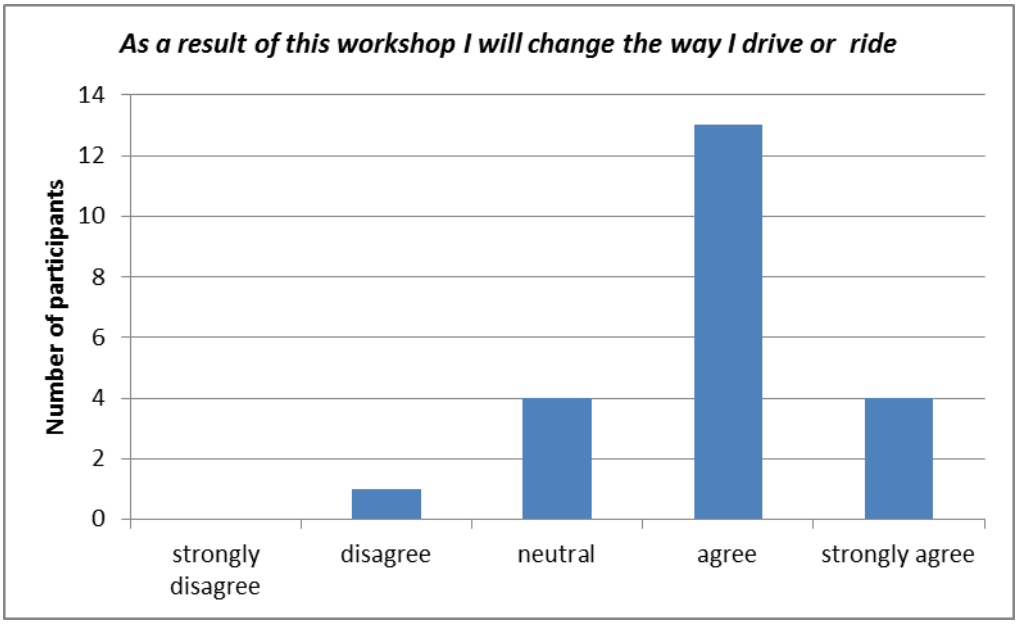


FIGURE 14: PARTICIPANTS REPORTED INTENTIONS TO CHANGE THEIR BEHAVIOUR AFTER THE WORKSHOP

These intentions were explored in the interviews 4 to 6-weeks later; participants were asked if they could identify instances when they had driven (or ridden) differently since the workshop and there were some clear examples of behaviour modification. This question was less relevant for the managers of heavy vehicle companies and therefore mainly relate to the Auckland-based bus driver workshop.

> *"have tried waiting behind - rather than passing or getting frustrated…. And I've noticed cyclists moving over if I've been following too long… we still have to cross the centre line but that's good"*
>
> *"definitely the distance, given them more distance"*

A cyclist, who perceived herself as a relatively experienced and safe cyclist, could also identify examples of how she had changed her riding.

> *"more cautious with determining if I will make it to the front of the intersection before cars start moving or not, also making eye contact with drivers, I did this before but am more aware of it" (female, cyclist)*

3.5.4 Sharing workshop content & integrating messages into company practices.

Immediately after the workshop, participants demonstrated strong intentions to share workshop messages with others; eighteen participants (90%) reported they were *very likely*, or *quite likely* to transfer or share the content they had learnt within their company/networks (Figure 15). Some heavy vehicle company managers intended to plan specific training for their drivers, others intended to discuss these messages with their drivers at Health and Safety or toolbox meetings and cyclists planned to share messages with their cycling groups

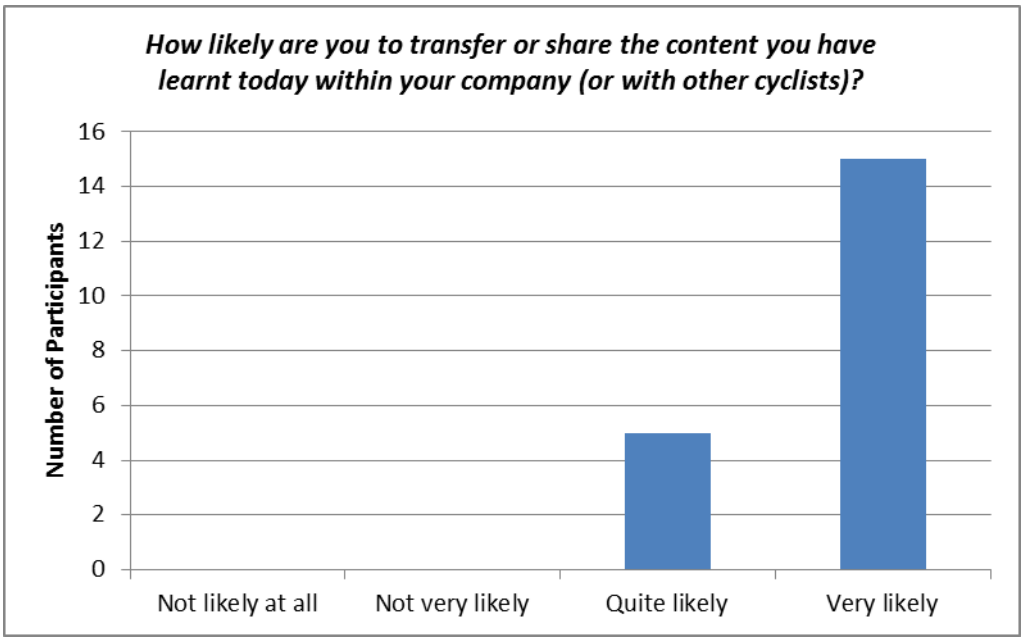


FIGURE 15: PARTICIPANTS REPORTED LIKELIHOOD OF SHARING WORKSHOP MESSAGES WITH OTHERS.

Six weeks after the workshop, interviews with company managers indicated that pamphlets had been circulated and messages had been shared at drivers' meetings; however, more formal follow-up with RUW messages may take longer to establish. For example, one company intends to arrange RUWs for all their drivers (81 drivers, 28 trucks) and make connections with cycling groups in the area, and CAN reports that this follow-up is scheduled for approximately one-year after the initial workshop . In contrast, one company was unaware that CAN could help them to establish their own workshop.

A clear follow-up or support process is needed after the driver/manager workshops to ensure companies can follow through on their intentions.

> *"I can see it being a part of regular/annual training….workshop would need to be tailored, and time would need to be reduced, 1-2 hours, our drivers loose concentration, need the practical part getting out on bikes in the yard and getting passed by a heavy vehicle". (female, manager)*

NZ Bus is an excellent example of integrating RUWs into their training practices and demonstrates strong organisational commitment to this issue. They have been involved in delivering RUWs with CAN since 2012 and have trained 300 drivers (approximately 15% of driving staff) to date. Company management has taken increasing ownership of how the workshops are run, and the workshops are currently one of three elective training modules offered to drivers. NZ Bus reports the workshops are having a large impact, with a noticeable decrease in incidents with cyclists over the 4-year period since the workshops began, although the data to verify this is unavailable.

Drivers can volunteer to attend, they may attend as part of training for new drivers, or they may attend as part of NZ Bus's on-going road safety education programme between drivers, cyclists and other road users. NZ Bus reports this mix of participants will result in cross-pollination across drivers from different sites and experience levels.

From NZ Buses' perspective the most important factors are:

- the practical ride, which they believe leaves a lasting impression on drivers
- The ability to tailor the workshop to suit their drivers (the way they learn and the on-road situations they encounter) and company processes.

> *"off the shelf packages may work for some, but it needs to be tailored…. External providers need to meet expectations or we will do it ourselves" (NZ Bus representative)*

> *"This is one example of NZ bus empowerment" (NZ Bus representative)*

NZ Bus identify that a gap remains in the reinforcement of messages, and they are looking into how drivers are applying the RUW messages on the road and ways in which messages could be extended into regular health and safety meetings.

This is a great example of how an externally led workshop can transfer into a company policy; however, there may need to be more of a focused effort to achieve this within other companies. It is noteworthy that this focus on cyclist specific education within NZ Bus is voluntary; other companies

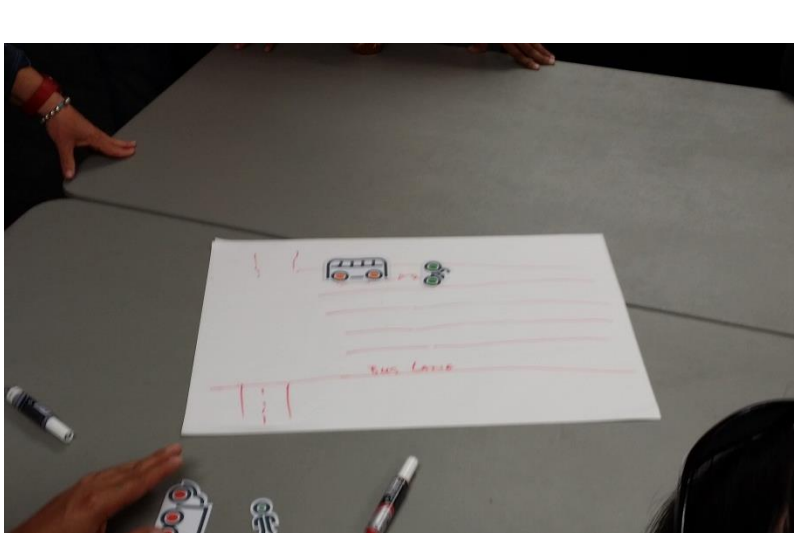
may need a more incentivised approach to demonstrate this commitment. Certainly a high degree of corporate leadership is likely to be necessary to embed the RUW approach into company business as usual.

3.5.5 The workshop format: observation and feedback from participants

The practical ride and being able to experience the road from a cyclists' perspective was by far the most valued component of the workshop for drivers. This was seen as an essential component and extremely suited to this target group.

There were a number of drivers in both workshops however who thought the practical ride was too safety conscious and felt it would have been more beneficial to experience busier roads or go to a problematic area for cycling and heavy vehicle incidents.

Drivers also valued the shared discussion around incidents with cyclists as it made them think about how they could have responded differently.



Drivers experiencing the practical ride and discussing their interactions with cyclists

One participant suggested that the same outcomes could be achieved by having one or two heavy vehicle drivers in the room (or vice versa for cyclists) as opposed to 10 of each.

In discussions at both workshops the majority of frustrating or confusing incidents with cyclists appeared to highlight 'road cyclists' and 'bunch cyclists' as the 'problem', and there was limited representation from this type of cyclist at both workshops.

At both workshops, problems with road design and lack of facilities for cyclists also commonly arose, although facilitators tended to steer the discussion towards behavioural factors, as opposed to solving infrastructure issues.

The target groups of the two workshops were different (the Christchurch workshop aimed to dually target drivers/managers and cyclists, whereas the Auckland workshop was specifically tailored to bus drivers) and therefore the delivery style and content were different. Intersection safety, particularly cyclist positioning at intersections, was a clear component at the Christchurch workshop; however, there was mixed feedback about how this was delivered, with some participants wondering what the key point of the intersection observation was.

Discussion at both workshops and in qualitative interviews revealed passing distances as an inflammatory issue for drivers and an issue that was not necessarily solved by the workshops. The more practical workshop in Auckland, whereby drivers were physically passed by a heavy vehicle appeared to convey the message of space for cyclists more successfully than the instruction-based workshop in Christchurch.

> *"when we went out on the bike and the bus went past, quite a big gap - could come closer, I thought wow what a distance…does it have to be that far"*

> *"1.5 metres from a car is further than you think, many times you won't be able to pass if you stick to that rule"*

> *"Sharing the road discussion – needs to be continued. I.e. who has right of way? Does a truck have to wait behind a cyclist on narrow windy roads, need clarification on what the proper process should be here, further discussion with NZTA, CVIU. If we pass then we have to cross the centre line and this puts other road users at risk, is that fair?, should we be penalised?" (Manager, male)*

Drivers experiencing being passed by a bus on the practical ride

Transport for London's qualitative research into cases of road sharing failure (Section 3.3.4) raises the importance of perspective when analysing road sharing behaviour i.e. *in a scenario such as frustration arising from being unable to pass a cyclist, is it the driver who is being unreasonably impatient, or the cyclist who is being inconsiderate?* (Christmas, 2010). Working towards establishing more of a recognised code of conduct in terms of road sharing may be useful going forward, given the constraints of some road environments.

Some drivers were very honest that despite the workshop having facilitated feelings of respect towards cyclists, with some even articulating examples of how they had changed their driving, the nature of their job and constraints within the road environment did make it hard to 'share the road'.

> *"why can't they be on the footpath or cycle path, long drag for us having to deal with them all the way down"(female, driver)*
>
> *"it's always said don't worry about the time, but still there is time pressure" (male, driver)*
>
> *"have to be back at the yard in 14 hours focus, is on compliance and doing the job, not necessarily sharing the road with cyclists" (male, manager)*

These perspectives demonstrate that while the RUW are a valuable approach, they should not be viewed as the silver bullet to road sharing and crash reduction, and need to be positioned within wider safe system initiatives. Other system factors that heavily influence commercial drivers, such as time pressure, should not be taken lightly and in many cases the stage that is set by company culture has a huge influence on how drivers eventually behave.

3.5.6 Limitations of the case study approach

This was based on a case study approach and relies on self-report data from a small sample. While it provides a useful insight into participant experiences these results may not reflect outcomes from all RUWs. Similarly, future evaluations should aim to establish pre-workshop attitudes and investigate approaches for measuring post-workshop actual on-road behaviour.

Companies do report they have Health & Safety data that is likely to include incidents or crashes with cyclists. However, they raised that changes to their reporting systems, other factors such as numbers of vehicles in their fleet, and difficulties with extracting data just relevant to cyclists could make these data sets problematic for evaluating the effect of RUWs. This data was unavailable for this evaluation; it may be useful in the future if careful consideration is given to the limitations in the data sets and data sharing agreements are established.

3.6 Road User Workshop Evaluation Conclusion

Overall, participant perceptions of the RUWs are positive. The experiential learning approach, consisting of an on-road practical ride is the most valued component for drivers, and is thought to be more effective than a knowledge-based instructional approach. Results suggest that the workshops improve cyclists' knowledge of heavy vehicle blind spots and how to cycle safely in the vicinity of heavy vehicles. There is evidence that individual cyclists may have changed the way they cycle around heavy vehicles as a result of their attendance. The outcome for heavy vehicle drivers appears to be primarily attitudinal; drivers report more respect towards cyclists and an understanding of why and where cyclists ride. After the workshop, there are examples of drivers reporting they have given cyclists more space when passing and waited to pass, rather than over-taking.

This data is based on two small case studies of RUW and therefore cannot be generalised to all workshops, also results rely on self-reported data from participants and therefore may not reflect their actual behaviour. However, the RUW model is a promising approach to influence road users prior to the implementation of Safe System measures. The strengths of the approach is that it is immediate, targets a specific high-risk problem, can be viewed as relatively cost-effective and initiates on-going communication between two road user groups

The integration of the RUW approach into company policy, practices and driver training is needed to extend the reach of these messages as well as provide a mechanism for reinforcement. Approaches to extend the reach of messages for cyclists should also be continued. It is also important that workshop content is aligned to crash causation factors and continues to be developed as knowledge of crash causation improves.

3.6.1 Recommendations

- Continue to develop the link between heavy vehicle companies and 'road cyclists' or 'bunch' cyclists. Many of the frustrating incidents reported by drivers involved this type of cyclist and there was limited representation from these groups at the workshops.

- Develop clear, measurable objectives as a framework for the programme, including outcomes that are behaviour focused.

- Continue to work towards extending the reach of the workshops, focusing on establishing processes within companies that can reinforce these messages on an on-going basis, as well as positioning these messages within other campaigns and initiatives.

- Ensure the target group is clearly defined for each format of RUW. It may get more difficult to include volunteer cyclists as a key target group if the workshops are positioned within driver training or professional development.

- Continue to develop a detailed understanding of the causes of heavy vehicle vs cyclist crashes in order to tailor workshop content accordingly, as well as direct more focus on

engaging truck companies. '*Look but didn't see'* crashes and failing to give-way or stop for a cyclist at controlled or uncontrolled intersections is a crash type that could be given more attention in workshop content. Similarly, examining and testing ways in which the workshops could increase driver expectation to see a cyclist at all types of intersections and in rural environments is important for alignment with crash risks.

- As infrastructure improvements are likely to be very long-term and may never occur in some road environments, working towards establishing a recognised code of conduct in terms of road sharing may be useful going forward.

4.0 References

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5.0 Appendices

Appendix A

Road Safety Trust project Key Performance Indicators

1. 2,400 children through grade 2 skills – 'Introduction to road and everyday cycling'
2. 300 adults through grade 2 skills
3. 150 cycle skills instructors (to then allow continued delivery of cycle skills)
4. National review of how much cycle skills is being delivered in NZ
5. Evaluate the effectiveness of the road safety trust project – cycle skills component
6. Cycle skills working group
7. Defining BikeNZ and CAN's role in the future of creating safer journeys for cyclists
8. Determine what cycle skills programmes should be delivered
9. Deliver 12 Road user workshops aimed at professional driver trainers
10. Deliver 12 Road user workshops
11. Road user working group
12. Create sector specific resources to deliver road user workshops
13. Determine BikeNZ and CAN's role in the road use sector, beyond 2015
14. Determine what road user programmes should be delivered, where, when and how including models and costs

Name: _____ Year Level: _____ Female ◻ Male ◻ Age: ____

Introduction to the Road & Everyday Cycling: Student Questionnaire

We want to know what you think about cycling and riding your bike. Please be honest, there is no right or wrong answer.

1. In the last month, have you cycled on a road like this?
(road with a 100km/hr speed limit)

◻ Yes ◻ No

2. I am confident I can cycle safely on a road like this.
(circle the number below that matches your thoughts)

1	2	3	4	5
Strongly disagree	Disagree	Unsure	Agree	Strongly agree

3. In the last month, have you cycled on a road like this?
(on the road not on the footpath)

◻ Yes ◻ No

4. I am confident I can cycle safely on a road like this?
(circle the number below that matches your thoughts)

1	2	3	4	5
Strongly disagree	Disagree	Unsure	Agree	Strongly agree

5. In the last month, have you cycled on a road like this?
(on the road not on the footpath)

◻ Yes ◻ No

6. I am confident I can cycle safely on a road like this?
(circle the number below that matches your thoughts)

1	2	3	4	5
Strongly disagree	Disagree	Unsure	Agree	Strongly agree

7. In the last month have you cycled in a park or reserve on a path like this?

◻ Yes ◻ No

8. I am confident I can cycle safely in parks and reserves.
(circle the number below that matches your thoughts)

1	2	3	4	5
Strongly disagree	Disagree	Unsure	Agree	Strongly agree

9. Before today, have you ever cycled to this school?

◻ Yes ◻ No

10. I am confident I can cycle safely to my school.
(circle the number below that matches your thoughts)

1	2	3	4	5
Strongly disagree	Disagree	Unsure	Agree	Strongly agree

11. List the things you can do to keep yourself safe when cycling on the road:

- _____
- _____
- _____
- _____
- _____
- _____

12. The pictures below show four things you should do to complete a turn, but they are in the wrong order. Put them in the right order – 1st to 4th




Hand back on handlebars	Signal	Look behind to check for traffic	Complete the turn
Number ____	Number ____	Number _____	Number_____

13. Approximately how far from the kerb and parked cars should you usually ride your bike? (✓ one box)

☐ 2 metres ☐ 0.5 metre ☐ 1 metre ☐ Don't know

14. Tick ALL the statements that match your cycling at the moment:

☐	*I cycle on the road for sport or fitness (e.g. in a road cycling club or for the school road cycling team)*
☐	*I cycle on the road to get to places (e.g. school, friends place, shops etc.)*
☐	*I cycle on the road for fun (e.g. with friends or family)*
☐	*I mostly cycle in parks or on footpaths and cycle paths (not really on the road)*
☐	*I don't really like cycling*
☐	*I don't have a bike to use*
☐	*I am not allowed to cycle on the road*

Appendix C: Cycle skills instructor interview script

1. From your perspective, what are the objectives of the course?
2. What proportion is normally delivered off-road vs on-road?
3. What percentage of students do you think would meet the Grade 1 competencies before the course? (is that typical)
4. What proportion of students meet the Grade 2 to competencies at the end of the course? (is that typical)
5. How do you ensure you are teaching all the Grade 2 and Grade 2 skills?
6. How do you manage different skill cycling skill levels in your group?
7. What do you do if a student makes a mistake while performing a skill when out on the road?
8. Are there any barriers that prevent you from delivering the course as planned?
9. What do you perceive are the key outcomes of this course for participants in the short-term and in the longer term?
10. Are there any key safety or general skills/knowledge that students don't grasp or still need to practice?
11. Are there any follow-up (or pre-work) activities or packages done by you, directly linked to this course?
12. Are parents or caregivers involved by you in anyway?
13. In relation to the road environment surrounding this school, after participation in this course how prepared do you think students are for cycling in this area and to school?
14. In your opinion, how effective is the current training in keeping these young cyclists safe on the road?
15. From your perspective is there anything else that you would cover if you had time?

Appendix D: On-road training Quality Assessment Tool

This assessment tool was developed using existing information and tools from:

- Bikeability's internal quality assurance guide
- NZTA's Grade 2 Guidelines
- Skills Active assessment guide and unit standards
- Bike NZ instructor manual and delivery assessment tool
- Cycle skills assessment tool in (Spence, Cambridge, & Francis, 2006)

Course 'quality' will focus on 6 key areas:

- Course context (background)
- Course format and processes
- Content
- Delivery (style and engagement)
- Delivery model and package (more for context/background)
- The surrounding cycling environment (more for context/background)

Course Context and background

Item	Comment/evidence
Course setting (e.g. school or community)	
School type	
School cycling culture (e.g. baseline bike rack counts, travel plan, other cycle training, cycling club, cycling in the curriculum)	
Demographics	

Course format and process

Item	Answer/evidence	Comment/other
Number of sessions		
Length of sessions		Total course time: _____
Spacing of sessions		
Number of participants		
Age of participants		
How participants were selected?		
Hours off-road time		
Hours on road time		% on-road vs off-road
Instructor(s) qualifications		
Instructor to participant ratio	Theory: ___ Practical:_____	
Course objectives:		
RAMS form and on-going risk assessment		
Identification of cycling route prior to course.		
Lesson plan		

Content – alignment with Grade 2 NZTA Guidelines

Revision/assessment of grade 1 core skills.		*Interview questions/prompts (see separate interview sheet)*
Carry out Bike check		
Carry out helmet check		
Understand the legal requirements and safety equipment for bicycles		
Get on and off the bike without help		
Start off and pedal without help		
Stop quickly and with control		
Steer the Bike and manoeuvre safely to avoid objects		
Look behind		
Signal – stop, left and right		
Use the gears		

Grade 2 core skills/outcome.	Evidence of this being covered in course (Method: data from programme docs, observation and provider interview)			Comments
	No evidence of this being covered in the course	Some evidence of this being covered in the course	Strong evidence of this being covered in the course	
Recall an understanding of road signs and the road rules.				
Start from side of road (kerb).				
Stop on side of road (kerb).				
Ride along the road.				
Pass a parked or slower-moving vehicle.				
Turn left – at a controlled and uncontrolled intersection.				
Turn right – at a controlled and uncontrolled intersection.				
Travel straight through controlled and uncontrolled intersections.				
Road positioning				
Hazard identification and response				
Traffic awareness				
Constantly checking for hazards				
Sharing the road – understanding and respecting other road users				
Optional content				

Cycle lanes and riding in bus lanes (aware of drivers blind spots)				
Cycling through roundabouts				
Shared paths etiquette				

Content – alignment with Cycling NZ instructor manual and/or lesson plans

Key Skills	Evidence of this being covered in course (Method: data from programme docs, observation and provider interview)			Comments
	No evidence of this being covered in the course	Some evidence of this being covered in the course	Strong evidence of this being covered in the course	
Manoeuvring the bike and riding efficiently around corners				
Riding in a bunch safely				
Rotating position in a bunch/group				
Using gears and riding up hills				
Overtaking other riders				
Other - comment				

Delivery style	Method: observation, provider interview, doc analysis			Comments
	No evidence of this being covered in the course	Some evidence of this being covered in the course	Strong evidence of this being covered in the course	
Aims and objectives of session are clearly outlined				
Session is structured and on time				
If participant makes a mistake while performing a manoeuvre they are corrected as soon as possible.				
Timely feedback is given in a positive an encouraging manner				
Maximises opportunities to be active and apply knowledge in the session				

Clear, concise explanations and demonstrations audible/visible for whole group		
Behaviour is managed well		
Differences in competency of participants is managed well		
Encourages participant self-awareness		
Students are engaged in the session		

Additional data:

Delivery model and package (things to consider)	Evidence/method (Programme documents, observation, interview)	
Standalone course or integrated with curriculum or travel planning etc.		
Linked to infrastructure that supports cycling e.g. teaching them how to use cycling infrastructure		
Identification of safe routes to school within the course		
Follow-up package or activities		
Involvement of parents or attempted involvement		

Cycling Environment	Evidence/method (Programme documents, observation, interview)	Comments
Cycling environment around the tool	Separate audit tool	
Cycling environment in which the course is delivered.	Observation. Grade 2 guidelines description: " Lightly trafficked single-laned roads in both directions" As training progresses – more complex traffic situations, give-ways stops, right-hand turns	

Appendix E – Road environment around school case study courses

School A – Road environment surrounding the school

Roads in the vicinity of the school: The area immediately surrounding the school consists of a mixture of urban local streets (Photo A2) and urban collectors (Photos A3). There is a mixture of roundabouts, controlled and uncontrolled intersections, including traffic signals 1-2km from the school.

Speed environment: A slower speed zone (30km/hr Safer Speed area) exists on the main road through the town centre (Photo A4), 1-2 km from the school

School Access: The school access road has three school gates, three pedestrian crossings which align to the school gates (and bike racks) and a 40km/hr school zone, including threshold treatments (Photo A1). The majority of roads have no formal cycling facilities; however, there are some significant off-road shared paths enabling students to avoid main roads and intersections (a 7.1km circuit around the estuary linking newer subdivisions with the school and another shared path through a park that terminates near the school gate).

School zone: There are also busy urban streets, such as Hibiscus Coast Highway and Grand Drive 1-2 km from the school and the wider school zone includes a state highway and an urban arterials. Other potential areas of risk (identified through observation and by parents), include roads close to the school that are known bus routes and are narrow with a high number of parked cars.

Photo A1

Photo A2

Photo A3

Photo A4

School B – Road Environment surrounding the school

Roads in the vicinity of the school: The area immediately surrounding the school consists of a mixture of urban local streets (Photo B1) and urban collectors (Photo B5 and B3). One of the major roads parallel to the school and through the main town centre has painted on-road cycle lanes (Photo B5); however the majority of roads have no facilities, including the main road closest to the school (Photo B3). Traffic signals 200m from the school gate are a key access point from residential areas to the north (Photo B3). There is also a state high way within 1km to the east of the school and within the school zone; however the majority of homes lie to the west.

Speed environment: Active warning signs alert drivers to the presence of a school at peak times, otherwise speed limits are 50km/hr in the vicinity of the school.

School access: There are two school accesses, the main entrance on a side road with a pedestrian crossing (Photo B1) and another entrance on the main road (patrolled at peak times).

Cycling facilities: There is an off-road limestone cycle way which links the school to the coast and is an alternative to the main city centre. There are some other smaller off-road links allow students to avoid busier roads.

For students living between the two main roads, the route to school would consist of urban local streets; however, for most students the route would include riding on or crossing the urban collector (photo B3)

Photo B1

Photo B2

Photo B3

Photo B5

School C – surrounding road environment

School zone: Located in a small Waikato township and the school zone includes both rural and urban areas.

Road types in the vicinity of the school: The area immediately surrounding the school consists of a mixture of urban local streets (Photo C5) and urban collectors (Photo C2, C3, C4, C6). One of the major roads parallel to the school is the main connection from the north through to the main centre (C6). Intersections in the vicinity of the school are predominantly controlled (stop and give-way – Photo C3); there are no traffic signals in the area. There is also a state high way to the south of the school however this is not within the school zone.

Posted speed environment: Active warning signs alert motorists to the presence of a school at peak times on the two main roads in the vicinity of the school and these roads also have patrolled pedestrian crossings (C 2, C6). Speed limits are 50kmhr.

School access: The main school entrance is in a cul de sac (Photo C1)

Cycling facilities: There are no known off-road cycle paths that connect to the school or near the school and no roads near the school have on-road cycle facilities.

Photo C1

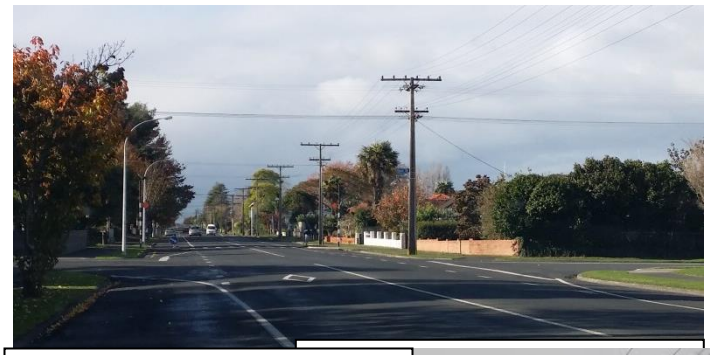

Photo C6

Photo C5

School D's surrounding road environment.

The school is located on an urban arterial with an AADT of approximately 21,000, it is also major public bus route and there is a large secondary school across the road which causes congestion in the morning and afternoon peak. The roads surrounding the school are a combination of arterials, primary collectors (traffic volumes of 10, 000 to 12, 000 a day) and local streets. The major roads have painted on-road cycle lanes, including the main road the school is on and there is a signalized crossing at the school gate and a 40km/hr variable speed limit at peak school times.

Despite the on-road facilities, crossing and variable speed limit, it is understandable why this school was concerned about student's cycling behaviour given the traffic volumes and buses on the main school road. The base skill level of students was also a delivery challenge and prevented the instructor from safely instructing students in an on-road environment, thus, ensuring students from the local feeder primary schools are given the opportunity to develop their base cycling skills is an important consideration for on-road training return on investment. With this example in mind however, there is likely to be occasions such as this where training is needed for a particular group of students who are already riding in a certain environment and displaying unsafe behaviour. In these cases, a flexible approach to delivery is needed, whereby training content and delivery model can be directly tailored to the participants in need. Similarly in such cases a close link with parents and families may be an important component of the training.

Appendix F – Cycling Diary for youth and adults

3. How much cycling did you do this week? Please tick ONE box per cycle trip

	on Monday	on Tuesday	on Wednesday	on Thursday	on Friday	on Saturday	on Sunday
I cycled to school or work	☐	☐	☐	☐	☐	☐	☐
I cycled to get somewhere, other than school/work (e.g friend's place, the shops, parks, or sports practice)	☐	☐	☐	☐	☐	☐	☐
I cycled for sport or fitness (e.g. road cycling practice)	☐	☐	☐	☐	☐	☐	☐
I cycled for fun with friends or family	☐	☐	☐	☐	☐	☐	☐

Other (or write none if you didn't cycle this week)

4. Look at the photos off different types of roads you were given. In the last 7 days, what types of roads have you cycled on?
(Tick all that apply to you)

- ☐ Rural roads (Photo A)
- ☐ Roads in town with cycle lanes (Photo B)
- ☐ Roads in town with no cycle lanes (Photo C)
- ☐ Quiet streets (Photo D)
- ☐ Cycle paths (or cycle way) that are off the road (Photo E)
- ☐ Parks or reserves (e.g. Mountain Bike Park)

5. In the last 7 days, where were you cycling mainly? (Choose one answer)

- ○ Mainly on the road
- ○ Mainly on the footpath
- ○ A mixture of road and footpath
- ○ In a park or an off-road path

6. If you cycled on the footpath, describe when you were cycling on the footpath and why?

7. Please describe any hazards you noticed while cycling this week?

8. When you were riding this week, can you remember doing any of the things you learnt on the cycle training course? Please describe.

9. Please describe any 'near miss' crashes or incidents with cars or pedestrians in the last 7 days.

10. In the last 7 days, was there any other time when you felt unsafe or not very confident? Please describe the situation and what you did.

11. Have you noticed any changes in how you cycle compared to before the cycle training? Please describe

Appendix G: Road User Workshop Evaluation Questionnaire

1. **Please indicate how much you agree with this statement.**

This workshop has increased my knowledge of how to mitigate on-road difficulties between cyclists and professional drivers.

Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

2. **Please describe any <u>new</u> knowledge or perspectives you learnt today.**

3. **Please indicate how much you agree with this statement.**

As a result of participation in this workshop I will change the way I drive (for drivers) or ride (for cyclists)

Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

4. **From today, how likely are you to transfer or share the content you have learnt today within your company? (Please tick one)**

- □ Not likely at all
- □ Not very likely

} Go to Q5

- □ Quite likely
- □ Very likely

} Go to Q6

5. **<u>Why</u> are you not likely to share the content you have learnt today within your company?**

6. **<u>How</u> do you intend to transfer or share the content you have learnt today within your company?**

Appendix H: Road user workshop participant interview

Tell me about your experience at the Road User Workshop? **How did you end up at the training? (volunteered or directed to go?)** **What do you think the overall purpose of the workshop was?**
Were there any times in the workshop you thought *"oh I didn't know that"* or *"oh I hadn't thought of it like that before?"* **Please describe?**
How do you feel about sharing the road with cyclists (and vice versa)? **Is this different or the same, compared to before you went to the workshop?**
In the last few weeks, when you have come across a cyclist (or heavy vehicle) have you done anything differently? …… Or thought anything differently?
What was the most valuable part of the workshop for you?
From 1 to 5 how much impact has attending the workshop had on the way you drive around cyclists or ride around heavy vehicles? **(1 no impact and 5 a high impact).** • **Why or why not?** • **Any other outcomes?**
Had you ridden a bike recently (prior to the workshop) – What about since? Can you see yourself riding in the future?
Any other comments or suggestions?

Management/Health & Safety Representative Interview:

Name:
Company Role:
How long has your company been running RUW for your staff? Have you attended a workshop?
What do you see as the objective (or purpose) of the programme?
Do you think this workshop meets these objectives? (design)
What was the most valuable part for you and your drivers?(outcomes)
How did these drivers end up on the course (voluntary – directive)
Have there been any follow-ups to the training?
Have you noticed any outcomes as a result of the workshop in your company? i.e. driver attitudes, knowledge or behaviour? Conversations, workshops formal training?
Does your company do any other formal education, training or initiatives to promote driving safely around cyclists?
Recently, have there been any company policy or organisational changes regarding driving around cyclists? **How much impact has the RUW had on these changes?**
Have you noticed any changes in the number of employees riding to work since the start of RUW?
On a scale of 1 to 5, in your opinion, how much impact do you think the RUW has on heavy vehicle vs cyclist crashes? Why, why not? What extra support do you need?
Is there any internal data sets that may be available related to workshop outcomes: **e.g. – reported near misses/incidents or crashes** **- complaints re: drivers (from cyclists)**
Any other comments?