



Asia-Pacific
Cycle Congress

17 – 20 October 2017 Christchurch
New Zealand

ABSTRACTS

HOSTED BY



PRINCIPAL PARTNERS



PRINCIPAL PARTNERS



PLATINUM PARTNER



Combining Construction with Conservation

GOLD PARTNER



BRONZE PARTNER



CONGRESS APP



ESPRESSO BAR



LUNCH SPONSOR



AFTERNOON TEA SPONSOR

**Absolutely Positively
Wellington City Council**
Me Heke Ki Pōneke



Asia-Pacific
Cycle Congress

17 – 20 October 2017
Christchurch, New Zealand

GEARING UP
rethinking our
communities
for the future



Asia-Pacific
Cycle Congress

17 – 20
October 2017 Christchurch
New Zealand

Concurrent Session One

- 7** Community Engagement
- 13** Places for People 1
- 19** Bikes for Healthy Lifestyles 1

Concurrent Session Two

- 26** Places for People 2
- 32** Smart Systems 1
- 38** Bikes for Healthy Lifestyles 2

Concurrent Session Three

- 47** Places for People 3
- 51** Bikes for Healthy Lifestyles 3
- 55** Places for People 4

Concurrent Session Four

- 57** Smart Systems 2
- 64** Places for People 5
- 71** Bikenomics
- 78** Poster Abstracts

The image features a collection of white bicycles arranged on a light-colored, possibly concrete, surface. The bicycles are shown from various angles, some in the foreground and others in the background, creating a sense of depth. Overlaid on the center of the image is a large, semi-transparent blue circular graphic. Inside this circle, the text is written in a white, sans-serif font, arranged in a curved path that follows the shape of the circle. The text reads: "We want to explore the benefits cycle networks have on our communities from the inner cities to the rural areas, now and in the future." The overall aesthetic is clean and modern, with a focus on the theme of cycling and community development.

We want to explore
the benefits cycle
networks have on
our communities
from the inner cities
to the rural areas,
now and in the future.

We've got the South Island covered.

Our teams deliver high quality, on time and on budget solutions for a wide range of construction needs, small and large, simple and complex.

- Construction
- Surfacing
- Bitumen products
- Transport
- Quarrying
- Traffic management
- Professional contract management services



Talk to us about your next project.

P 03 359 9145 E info@isaac.co.nz isaac.co.nz

ABSTRACTS

in session order



Asia-Pacific
Cycle Congress

17 – 20 October 2017
Christchurch, New Zealand

apcc2017.com

GEARING UP
rethinking our
communities
for the future

Concurrent
Session One

Wednesday 18 October
1:30pm – 3:10pm



COMMUNITY
ENGAGEMENT



FROM THE FRINGE TO MAINSTREAM

The politics of gaining community support and delivering successful cycling infrastructure for the future

Pippa Coom

*Chair & Transport portfolio lead,
Waitemata Local Board, Auckland Council, New Zealand*

Phil Clearwater

*Councillor, Chair Social & Community Development
Committee, Christchurch City Council, New Zealand*

In a relatively short period of time political support for cycling infrastructure in NZ has gone from the fringe into the mainstream. Politicians have responded to voter demand for greater opportunities to cycle safely in liveable, connected, healthy cities. At the same time, despite funding and backing from cycle-friendly councils, many cycling projects have struggled to be delivered when faced with "nimby" opposition and negative media coverage culminating in "bike-lash"!

This presentation will cover:

- **Effective consultation processes to avoid the pitfalls and gain community support**
- **Establishing and navigating democratic decision-making processes to maximum effect**
- **How to effectively deliver on cycling infrastructure so more people are cycling as part of transport networks with community buy-in and positive media coverage**

The presentation is aimed at elected representatives who wish to share experiences with those working at the coalface to deliver projects and advocates who lay the groundwork for political support. The format will allow for the presentation of case studies and the opportunity to discuss resources and advice with attendees.

Co-presenters Chair Pippa Coom and Councillor Phil Clearwater are combining forces and experiences from their respective council roles to bring a unique political perspective to the Congress. Pippa has been working to deliver cycling infrastructure in central Auckland since her election in 2010 and was a member of the Urban Cycling Investment Panel. She came to politics from a cycle advocacy background. Phil has championed the Major Cycleways project for Christchurch City Council.



A CYCLEWAY FOR ISLAND BAY

Sarah Free

Councillor, Wellington City Council, New Zealand

My presentation will give a brief history and learnings from a political and community perspective.

I will emphasise the importance of putting cycling infrastructure in a broad context of place-making, liveability and building buy-in to the idea of more people riding bikes.

Following the local body elections in 2013, the Wellington City Council was committed to improving conditions for cyclists and increased the annual cycling budget from \$70,000 to \$5 million. Island Bay was selected for the first cycleway, as it had a fair number of commuter cyclists and the main street, The Parade, was wide, straight and flat. After initial consultation, a decision was made to proceed with a curb-side (parking protected) cycleway on both sides of The Parade.

The project met with almost immediate resistance and delays, but was eventually approved by Council and completed in February 2016. The debate and community unrest continued, culminating in a government-commissioned report in June 2016 concluding that consultation had been inadequate and ordering the Council back to the drawing board.

This led to an intensive process of five stages of community engagement, starting from a place-based approach, leading to community-led design statements and finally to consultation in early May 2017 on several different design options.

While we are still in the process of working through to an ultimate solution, the process and the learnings are what I would like to share with you. By the time of the conference, it may be that we will also have a final redesign.



BEYOND *BIKELASH*

Understanding community opposition to cycle lanes in New Zealand

Adrian Field

Dovetail Consulting, Auckland, New Zealand

Kirsty Wild

University of Auckland, Auckland, New Zealand

Alistair Woodward

University of Auckland, Auckland, New Zealand

In this session we explore early results of New Zealand research on factors that lead to opposition to new cycle lanes in communities. We present findings from three case studies: Lake Road in Devonport, Auckland (where lanes were ultimately accepted by the community); Island Bay in Wellington (where lanes have been in dispute, and where at the time of research a community redesign process was underway); and South Dunedin (where lanes were either remediated or removed, and where new approaches are under development). Each case study drew on interviews with key stakeholders, from different elements of community and council/agency interests.

We explore the factors that led to local opposition and how they were responded to by different community and council/agency interests. We ask, what issues appear to trigger conflicts? How do the different sides involved understand the causes of these conflicts? What values lie behind the differing perspectives? And what factors lead to conflicts intensifying, or ultimately help to resolve these disputes? In this session, we also explore how these examples of the New Zealand experience fit within international research and discourse on the causes of and solutions to bikelash. We will discuss with participants the implications for cycle planning in New Zealand.



HOW TO ACHIEVE RAPID CHANGE FOR CYCLING OUTCOMES

Tyler Golly

Stantec Consulting, Edmonton, Alberta, Canada

Ryan Martinson

Stantec Consulting, Calgary, Alberta, Canada

Our communities are changing. People are increasingly thinking about the way their communities are designed and function and are having concerns about affordability, health, equity, accessibility, mobility, and safety for themselves and their children. While some communities are seeking and attempting to make changes to their transportation systems to address these problems, others are concerned that changes will have significant impacts on the way people are currently moving which would impact long term success.

A great way to deal with these different viewpoints is to use rapidly-built, low-cost projects to address the issues and show immediate results. Transportation infrastructure projects, which is typically capially intensive, is one area where innovative design and implementation is being used to make rapid change to the way services are provided.

Rapidly implemented protected bike lanes are a high impact example of this approach, where minimal time and investment can create conditions suitable for people of all ages and abilities to ride a bicycle.

This session will share experiences from our North American projects of using rapidly implemented, low-cost, adaptable infrastructure to bring communities From Zero to Hero. Projects to be shared include the Calgary Centre City Cycle Track Network, Edmonton Downtown Bike Grid, and a few examples of neighbourhood greenway trials. As an option for the conference, we could host an on-the-street or classroom-based planning session for a rapidly implemented bike route with Christchurch City Council staff, GapFiller staff, and conference attendees.





OPUS



Opus are paving the way to safe-cycling for our communities!

At Opus we create environments that help our clients and communities prosper, by setting the benchmark for best practice in cycle-way design and safety.

With a 140 year heritage of creating what matters for future generations, our Opus global team of engineers and transportation specialists deliver smart solutions for implementing world-class cycleway routes through out New Zealand.

Concurrent
Session One

Wednesday 18 October
1:30pm – 3:10pm



PLACES FOR
PEOPLE 1



SAFE... BUT ONLY IF IT'S EFFICIENT

Axel Wilke

ViaStrada, Christchurch, New Zealand

Alistair Woodward

University of Auckland, Auckland, New Zealand

Jürgen Gerlach

University of Wuppertal, Wuppertal, Germany

Historically, transport infrastructure in New Zealand was designed for maximum capacity and mobility, but not for safety. This has changed and today, New Zealand's approach is guided by Safe Systems thinking. However, the authors argue that transport planning in this country is still heavily influenced by efficiency. For example, the economic value of saving 20,000 drivers 12 seconds per day each is the same as saving a life every 14 years, and the authors question the ethics of this thinking. Efficiency doesn't only determine which projects get funded, but also embeds itself in design guidelines as a goal.

This paper compares the New Zealand situation with Germany's road safety approach. New Zealand road safety schemes take travel times into account. For German roads equivalent to non-state highways, travel times are not a consideration for road safety work. This is a stark contrast.

We undertook a case study of an Auckland intersection where the incidence of crashes involving two-wheeled vehicles is unusually high. We found that the intersection has been a blackspot for 80 years, and that only after some very heavy lobbying are fundamental changes now proposed.

The authors conclude that radical changes to New Zealand transport project evaluation are needed. We suggest that the German approach is adopted and that travel time savings should not form part of a project evaluation. It is argued that this approach would, over time, lead to guidelines prescribing safer design approaches.



DEVELOPING A NATIONAL CYCLE INFRASTRUCTURE LEVEL OF SERVICE GUIDELINE FOR NEW ZEALAND

Peter Kortegast

Opus Consultants, Nelson, New Zealand

Chris Bowie

Opus Consultants, Wellington, New Zealand

Tim Hughes

New Zealand Transport Agency, Wellington, New Zealand

Opus Research has been engaged by the NZ Transport Agency to develop a Cycling Level of Service (CLOS) assessment framework for New Zealand.

Work is currently underway and we are nearing delivery of the international Literature research.

Evaluating the existing CLOS for cyclists on key commuter routes and then assessing the appropriate target CLOS for users is key to planning new cycle infrastructure. A number of methods already exist globally, and this research will develop a New Zealand specific framework that has been validated by the views of New Zealand cyclists and the local transport professionals who will use the tool.

Cyclists will ride Opus' instrumented bicycle to provide their perceptions of CLOS on different facilities in real-time. Video footage from these rides will be used to survey a wider group of people to gather a rich dataset on New Zealanders acceptance of bicycle facility design and environmental elements.

In October 2017, we can present our research progress, and workshop with conference participants the proposed CLOS framework to obtain feedback from users, professionals and asset owners. This feedback will help ensure that a usable tool is developed at the end of this research project.

Our presentation will include early results from user perceptions of CLOS in New Zealand, and methods for predicting how different elements of bicycle facilities affect cyclists' satisfaction.

We believe this workshop will be significant interest to a broad cross-section of conference delegates and will provide valuable input into this key national research.



HE ARA KOTAHI THE KARAKA TREE BRIDGE

Bridging The Manawatu River In Harmony With A
Delicate Peri-Urban Cultural & Riparian Environment

Nick Aiken

Opus Consultants, Napier, New Zealand

Rob Green

Green Infrastructure Services Limited

Ray Swadel

Palmerston North City Council, General Manager, City Networks

Palmerston North City Council has been progressing the construction a \$7.6M cycling and pedestrian bridge connection across the Manawatu River to Massey University and the Linton Army Camp.

The project received a 2017 NZ Planning Institute Best Practise Award for Excellence in Community Engagement.

This presentation will focus on an innovative approach to iwi, community, and stakeholder engagement; and the resulting iterative evolution of a responsive design for the new bridge. The new bridge will create a unique 'place' in the built environment reflecting the cultural, natural and built heritage of this part of the city. It will explain how:

- the preferred location for the bridge was moved to reduce visual and environmental impacts
- a bridge design theme evolved to reference a nearby Karaka tree grove of particular significance to local Maori

- opportunities to educate or increase awareness of built, cultural and natural heritage features were incorporated into the design and various bridge features
- the design theme was extended to incorporate part of the adjacent road network addressing neighbour's concerns about existing driver behaviour
- engineering challenges were addressed to reduce the profile of the bridge, and thereby the visual impact of the structure as much as possible while at the same time addressing the hydrological and ecological constraints of the mighty Manawatu River

This paper will be of interest to delegates on how to progress a significant piece of walking-cycling infrastructure within the current NZTA business case framework, facing time frame constraints, by obtaining widespread community and political support.



AROUND ABOUT TIME TO MAKE CYCLE-FRIENDLY ROUNDABOUTS?

Tim Hughes

NZ Transport Agency, Christchurch, New Zealand

Axel Wilke

ViaStrada, Christchurch, New Zealand

Megan Fowler

ViaStrada, Christchurch, New Zealand

Roundabouts are the safest form of intersection control for motor vehicle occupants. Numerous studies have shown that, in general, fewer casualty crashes involving only motor vehicles occur at roundabouts than at intersections controlled by traffic signals, stop, or give-way signs. However, injury crash rates for cyclists at roundabouts in Australasia are typically higher than at other intersection types, with the predominant crash type involving a circulating cyclist being struck by an entering motorist.

New Zealand is currently seeking to significantly increase the number of cycling trips, with a focus on improving provision to attract a wider range of people. Given the prevalence of roundabouts on the road network, it is difficult to design an efficacious cycle

network that does not involve roundabouts. Austrroads specifies that low-speed roundabouts should be used in urban situations where pedestrians and cyclists are present, but doesn't give guidance on how to design them.

European research and best practice reveals that roundabouts can be designed to be consistent with safe system principles, thus also making them more attractive for pedestrians and cyclists. Guidance from Germany and the UK in particular has been reviewed. Roundabouts that are "cycle-friendly" involve reducing the speed differentials between people cycling and motor vehicles by reducing motor vehicle speed on the approach, circulation, and departure, as well as specifying single-lane configurations.



WHERE MY LADIES AT?

Creating a Female-Friendly Space

Catarina Gutierrez

Bicycle Junction, Wellington, New Zealand

Cycling is often considered a predominantly male-dominated space, whether it's for sport or whether it's in the local shop. But females make up the majority of commuter cyclists in Christchurch and New Zealand. Research shows that signs of good city infrastructure are when more women are cycling. This is a real social issue that needs addressing.

But how do you do it? How do you include women in the space? How do you make it friendly for them and for anyone?

I've spent the last two years researching movements and trends in the cycling industry in the US. I've started a few workshops and female-friendly programmes (at RAD Bikes) myself with mistakes along the way that are worth sharing.

I'd like to discuss what female-friendly is defined as (and who identifies as female, vs non-binary, vs LGBTQI2). I will share examples of the new shop space Bicycle Junction has created to build a stronger female and family-friendly community of cyclists in Wellington.

I will end with thoughts on how New Zealand can lead the charge in making a more robust female-friendly cycling community.



Concurrent
Session One

Wednesday 18 October
1:30pm – 3:10pm

**BIKES FOR
HEALTHY
LIFESTYLES 1**



BETTER BEHAVIOUR THROUGH SMART DRIVEWAY DESIGN AT URBAN CYCLEWAYS

Anna Davison & Jared Thomas

Opus International Consultants, Lower Hutt, New Zealand

Joe Hewitt & Stephen Harte

Wellington City Council, Wellington, New Zealand

Simon Kennet, Tim Hughes & Jessica Rattray

NZ Transport Agency, Wellington, New Zealand

Even some of the best international cycle paths located next to roadways still face the challenge of being interrupted by multiple driveways, with implications for rider enjoyment, comfort and safety. On exit or entry to a driveway, the driver is primarily focussed on the task of looking for safe gaps in oncoming motorist traffic, and consequently detecting and safely stopping for cyclists becomes secondary. These issues are particularly prevalent in urban commercial locations, evidenced by a wide range of solutions being implemented by property owners, including signage, markings and in some cases technology solutions. However, there is typically limited guidance, consistency, or evaluation of driveway treatment success. This study trials an innovative design approach to see if safety issues can be sufficiently mitigated in practice.

Video footage was used to monitor rider and driver behaviour before and after a treatment condition, which was then evaluated against a behavioural success framework. The treatment involved the use of road markings that already held strong associations with a change in user priority (using colour and symbols), and the use of markings that have a persistent, embedded association with driver yielding behaviour (including limit lines and a pedestrian crossing shape format). The findings showed evidence of success, with a 28% improvement in drivers yielding at the edge of the driveway, lower motorist-cyclist conflict, and indications of cyclist recognition of a change in the riding environment via reduced cycling speed. Other design elements examined included a speed bump and a cyclist-triggered flashing LED warning.



INDEPENDENCE ON WHEELS

How non-profit advocacy creates bike-friendly cities and city-friendly bikers

Barbara Cuthbert

Bike Auckland, Auckland, New Zealand

Around New Zealand, councils and transportation agencies have a clear mandate to make cycling a safer, more attractive choice for getting around. 'If you build it, they will come' is the mantra proven true, time and again.

But who are 'they'? And how to turn 'showing up' into 'speaking up', connecting with people beyond the bike path to boost ridership, grow enthusiasm, improve design outcomes, and keep up the momentum?

Non-profit bike advocacy groups play a key role in this process, transforming 'they' into 'we' by forging strong connections between those who build bike infrastructure and those who benefit from it. Bringing together technical expertise, street cred and

storytelling, advocates contribute to great cycle infrastructure and nurture a strong and diverse community of people on bikes. Non-profits are uniquely positioned to bridge the gap by partnering with agencies, creating campaigns, sharing stories, developing events and services, initiating partnerships and sponsorships, and fostering community confidence and engagement.

In this presentation, Bike Auckland's Communications Manager, Jolisa Gracewood, and Events and Partnerships Manager, Olivia Lynch share examples from New Zealand and worldwide of how not-for-profits collaborate with the full range of stakeholders to achieve the shared objective of creating and sustaining bike-friendly cities.



GREENWAYS

Creating Safe and Sustainable Travel Choice through Smart Footpaths

Jason Chow

GHD Limited, Auckland, New Zealand

'Greenways' are plans of connecting open spaces across a region through the improvement of its walking, cycling and ecological connections. Greenways can follow natural land, or water features like streams or coastlines, or human landscape features like streets or rail corridors.

The 'Mount Roskill Safe Routes' project is Auckland's pioneer Greenways project. It was developed with the principles of: creating high amenity and recreational walking and cycling connections, providing improved ecological outcomes and advocating a strong safety focus by creating a slow yet attractive traffic environment on these streets.

The \$4.9 m project, serves six schools along the 2.3 km route, which follows low volume, low speed roads and improves accesses to green spaces and parks. It involved high levels of engineering and urban design expertise like the application of water sensitive

designs to detain and treat stormwater runoff, and providing safe and pedestrian-priority crossing points at intersecting streets to reduce actual and perceived risks. In addition to engineering considerations, it was necessary to work collaboratively with internal and external stakeholders. This included obtaining land easement agreement along the route, obtaining support from the council prior to consent lodgement, and being flexible in design due to public's hesitant perception. Managing these challenges while embracing the philosophy of Greenways were crucial to this project's success particularly when there were not any precedence in Auckland before.

Auckland's first 'Greenways' project could be the footprint for transforming how local people get around their community and create a healthy and sustainable future.



INDIVIDUAL & ENVIRONMENTAL CORRELATES OF MOTORIST PASSING DISTANCE OF BICYCLE RIDERS

Narelle Haworth

Centre for Accident Research and Road Safety-Queensland, Queensland University of Technology, Brisbane, Australia

Kristiann Heesch

School of Public Health & Social Work and Institute of Health & Biomedical Innovation, Queensland University of Technology, Brisbane, Australia

Ashim Kumar Debnath

Victoria University, Melbourne, Australia

There is ongoing interest in whether the characteristics of bicycle riders (as perceived by the driver) and the environment influence the distance left when overtaking a bicycle. This study examined individual and environmental correlates of passing distance after the introduction of a 1-metre minimum passing distance road rule. Video observations of cyclists and drivers interacting on road segments in Southeast Queensland, Australia, were collected and coded. Open source video analytics software was used to detect and calculate lateral separation distances during passing manoeuvres. The current analysis included observations at four sites in 40 or 60 km/h zones because observations at these sites included >100 passing events for which passing distance could be measured and sufficient numbers of bicycle riders who could be identified as female.

For analysis, a multilevel mixed-effects linear regression model was used. Passing events ($n=1245$ riders; 21% female) were nested within eight observation days and the four sites. Motorists' passing distances were greater for riders who were wearing everyday clothing versus lycra ($p=0.01$), those riding two abreast versus single file ($p<0.001$), and those riding during morning peak versus evening peak ($p<0.001$). Passing distances were also greater in 60km/h versus 40km/h speed zones ($p=0.001$), on streets with narrower kerbside lanes ($p<0.001$) and for motorbike drivers than passenger car drivers ($p<0.001$). No gender effects were found ($p=0.10$). These findings suggest that passing distance is influenced by characteristics of the rider and the environment and add to the limited knowledge about the correlates of passing distance in Australia.



UNDERSTANDING THE VALUE OF BIKES IN SCHOOLS

Preliminary results from a three-year evaluation

Greer Hawley

Mackie Research, Auckland, New Zealand

Hamish Mackie

Mackie Research, Auckland, New Zealand

Richard Scott

Mackie Research, Auckland, New Zealand

Professor Alistair Woodward

University of Auckland

Natalie Hardaker

Accident Compensation Corporation

'Bikes in Schools' is about giving kiwi kids the opportunity to ride a bike on a regular and equal basis in a safe environment. Since 2009, more than 75 schools (totalling approximately 23,000 students) have established school bike tracks with the support of Bike On Charitable Trust.

On behalf of the Accident Compensation Corporation, Mackie Research is conducting a three-year evaluation of Bikes in Schools to understand;

- how the school community views Bikes in Schools;
- how this initiative is put into practice; and,
- the impact on bike access, cycle safety knowledge and skills, cycling participation, and students' physical activity levels.

Preliminary findings from the first year of the evaluation will be presented, including a snapshot of qualitative and quantitative results. Early findings indicate that the value of Bikes in Schools lies in its flexibility; schools can shape the model to meet their needs and integrate it into school life. The ability of Bikes in Schools to meet a range of outcomes is valued by schools; staff report the programme provides an opportunity to restore a culture of cycling, and a place for people (students, staff and families) to be physically active, safe and social.



A photograph of a cyclist from a rear-quarter perspective. The cyclist is wearing a light blue t-shirt, dark shorts, a black helmet, and a large red and black backpack. They are riding a red road bike on a paved path. The background is a blurred green landscape under a bright sky.

Moving communities

We help communities to be active, sustainable and move around easily - whether it's on two wheels or two feet. Now combined with MWH, we provide a range of professional services like business cases, planning, design and engineering. Our strong international track record, and our 21 local offices across New Zealand and Australia, enable us to design cycleways which will meet the needs of small communities and big cities alike.

Be sure to hear our international expert from Canada, **Tyler Golly**, presenting at APCC on Wednesday, and on Friday you can hear from our local specialists: **Mike Smith** and **Ben Dodgshun**. Or come along and chat to the team during the breaks in our Stantec coffee lounge.

stantec.com

Concurrent
Session Two

Thursday 19 October
1:55pm – 3:30pm



PLACES FOR
PEOPLE 2



LESSONS FROM THE TRENCHES

How Auckland Transport have shifted their approach to engaging on their cycling programme

Kathryn King

Auckland Transport, Auckland, New Zealand

Auckland Transport is halfway through the delivery of their Urban Cycle Funded programme, a \$200m investment that will deliver 52 kilometres of new cycleways to the City's network. The investment focusses on providing additional travel capacity in Auckland's fastest growing region, the City Centre. The region is currently undergoing a construction boom including the City Rail Link and Skycity Convention Centre which has significantly reduced traffic capacity in the area, and is subject to the rollout of a new bus network. In addition the area has several highly influential business associations and the residents living within this zone are some of Auckland's wealthiest and most engaged. It is within this environment that AT has drawn a number of valuable lessons on engagement and communication of its cycling programme.

This presentation will introduce the core objectives of the programme and summarise how AT changed its communication strategy with internal delivery partners, senior management, politicians, key stakeholders and the general public, in order to ensure the successful delivery of projects.

AT were challenged to deliver Auckland's largest ever investment in new cycling infrastructure in a short three year delivery timeframe, which included a shift in approach to delivering protected infrastructure to make cycling attractive and accessible to all ages and abilities of potential cyclists. The presentation will cover mistakes made and lessons learnt along that journey that are now being applied to AT's standard operating procedures and can provide valuable insights to other agencies embarking on their own cycling programmes.



BIKE DATA ANALYSIS

A comparison between 21,000 NZ riders and 180,000 riders from around the world

Thomas Stokell

Love to Ride, Atlanta, USA

Love to Ride has survey and riding behaviour data from more than 200,000 riders around the world, including 21,000 New Zealanders. This includes data on the barriers and benefits people perceive to riding, cycle frequency, frequency by trip purpose (commute, transport other, recreation), main mode of travel to work, gender, age, average trip distances, and more.

We can examine this data by rider type – to see how the attributes of new riders compare to those of existing riders (e.g. perception, gender, age). We can also do analysis by gender to see, for example, how riders of different genders experience barriers to riding differently. And we can compare the data from NZ riders to that of riders in Australia, the UK, USA, and EU.

We will also look at GPS data and how passively collecting GPS trip data provides a very unique and valuable dataset for planners and cities. This analysis includes examining both the routes people choose to take to get from A to B, and the level of traffic stress experienced, before and after some new infrastructure is put in.



MANGERE FUTURE STREETS

The benefits of taking a strategic urban design approach to walking and cycling improvements

Stuart Houghton

*Urban Designer, Senior Principal,
Boffa Miskell Limited, New Zealand*

This paper will outline the urban design approach taken to developing the suite of walking and cycling improvements implemented as part of the Mangere Future Streets project. The project has been a partnership between an academic research team and Auckland Transport, and aims to make streets around Mangere Central safer and easier to travel around, especially by walking and cycling; while engaging the community and reflecting local identity.

Mangere, typical of post-war suburbs across New Zealand, is a highly auto-dependent residential community, with a pattern of poorly connected curvilinear crescents and dead end streets suppressing the community's ability to get around on foot and two wheels, and contributing to a record of poor transport safety and poor public health.

This paper will reflect on the contribution a strategic and tactical urban design approach has brought to achieving the project goals of improving rates of walking and cycling in the community. In particular, it will outline the approach taken in identifying areas of focus that result in a legible and connected network approach to low cost, high impact interventions that might have the best chance of having a true impact on travel behaviour. The paper will reflect on lessons learned in terms of the effectiveness of design solutions, implementation challenges to realising this approach on the ground, and asks to what extent these sorts of physical interventions alone can be effective in changing people's behaviour.



THE ROLE OF BIKE PARKING

A multi-faceted approach to getting more people on bikes

Jo Clendon

*Bikes Welcome Charitable Trust,
Lower Hutt, New Zealand*

The benefits of active transport are significant, and cycling is a fun and convenient active transport option. How do we get more people on bikes? And how does bike parking help?

Background

Based on an estimate that 80% of cycling trips are less than 5km long, it has been proposed that it is reasonable that up to 36% of NZ's current vehicle driver trips could be made by bicycle. The opportunity is greater than getting people biking to work – there are plenty of trips made for other reasons, in fact, more than the work/business trips.

Description

Bike lanes have a key role to play, giving us safe places to ride. To amplify the effectiveness of bike lanes and cycle paths other measures are needed

Discussion

- Will bike lanes (and other 'places to ride') alone get significant numbers of people on bikes more often?
- What are some of the factors which contribute to people's ability to cycle?
- What is the nature and role of a supportive environment?
- How do we influence the desire to bike: psychological approaches including environmental traces, culture, the power of suggestion, normalisation?

Conclusion

A whole solution is made up of interdependent pieces. We get more people biking when we give people safe places to ride, and a safe supportive environment, build their ability, and grow their desire. Those are four interlocking pieces of a circular puzzle.



ARE BICYCLE SHARING SCHEMES INCLUSIVE?

A Socio-Spatial Analysis in Glasgow, UK & Christchurch, NZ

Dr Angela Curl

University of Canterbury, Christchurch, New Zealand

Julie Clark

University of the West of Scotland, Paisley, United Kingdom

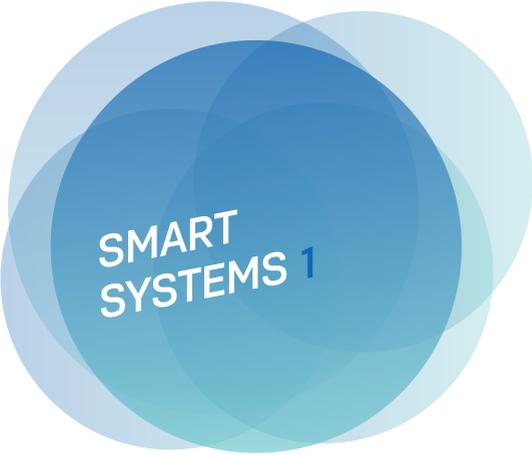
Public bicycle sharing schemes have proliferated in recent years and are increasingly part of the urban transport landscape. Shared transport options have the potential to support social inclusion by improving accessibility: these initiatives could remove some of the barriers bicycle usage such as upfront costs, maintenance and storage. However, the existing evidence base indicates that, in reality, users are most likely to be white, male and middle class. This paper argues that there is a need to consider the social inclusivity of bicycle sharing schemes and to develop appropriate evaluation frameworks accordingly. We therefore open by considering ways in which shared bicycle schemes might be inclusive or not, using a framework developed from accessibility planning.

In the second part of the paper, we use comparative case studies of Glasgow in Scotland and Christchurch in New Zealand to undertake a spatial equity analysis of the bicycle schemes. We examine how well they serve different population groups across the cities, using the locations of bicycle stations. An apparent failure to deliver benefits across the demographic spectrum raises important questions about the socially inclusive nature of public investment in similar schemes.



Concurrent
Session Two

Thursday 19 October
1:55pm – 3:30pm



SMART
SYSTEMS 1



DESIGNING & BUILDING FOR PEOPLE ON BIKES WITHIN EVOLVING CONSTRAINTS

Auckland City CBD

Graeme Bean

Principal Engineer, Major Capital, Auckland Transport, Auckland, New Zealand

Auckland Transport has geared up with Council and NZ Transport Agency since January 2015 to deliver an Urban Cycleway Programme (UCP). The Minister for Transport launched the nation's first projects from what is now Te Ara I Whiti (lightpath)/ Nelson St cycleway.

Many of the construction cranes dotting the CBD are related to residential apartments as well as large commercial and public projects (eg. Convention Centre, City Rail Link). Apartment dwellers and many others are seeking more public space be allocated to people. For those not living in the city centre, travel growth strategy seeks many more trips to be made by public transport and active modes

Cycle facilities need space, especially if they are to be separated where possible from pedestrians and traffic.

This paper outlines the journey of designing (& building) Nelson St and Victoria St cycleways for interested but concerned user groups amongst the backdrop of construction, future projects (eg. Light Rail) and evolving New Bus Networks.

Sometimes the things you think will cause project issues don't materialise whereas other events come from left field and cause parts of a project to require redesign; be that from the project team or an externality. Using organisational values to build trust about the project is considered along with how moving away from "traffic efficiency" towards "sharing space and time more equitably across various modes" enables designs to evolve that provide the best possible quality of service for pedestrians and people on bikes.



CYCLING NETWORK GUIDANCE

The evolution of best practice

Jeanette Ward

Abley Transportation Consultants, Christchurch, New Zealand

Tim Hughes

New Zealand Transport Agency, Wellington, New Zealand

Simon Kennett

New Zealand Transport Agency, Wellington, New Zealand

In June 2016 the New Zealand Transport Agency launched the 'Cycling Network Guidance - planning and design' guide. This web-based collection of planning guidance, design tools, case studies and links to other guides was seen as an important step in having the Urban Cycleways Programme deliver best-practice facilities of a consistent quality nationwide.

Best-practice is evolving quickly in New Zealand. This is a result of unprecedented levels of funding broadening the range of facility types that are affordable, significant upskilling of design teams (particularly in the main urban centres), greater understanding of which designs from overseas lead to the best outcomes, and amendments to land transport rules which enable a broader range of designs.

As new and sometimes innovative designs have been implemented, a growing number of case studies have been collected and documented in the Cycling Network Guidance (CNG). This presentation outlines the ongoing development of the CNG and best practice in general, and describes the outcomes of several New Zealand urban cycling case studies from the last three years.



CYCLING THE HAWKES BAY NZ REGION IN SAFETY WITH THE AID OF A CLIP ON CYCLEWAY

Case studies from Australia & New Zealand

Peter Metcalfe
Wagners, Australia

The Hawkes Bay region in New Zealand is becoming renowned for its cycleways and these are a big tourism drawcard for the region.

This paper discusses a case study on applying light weight composite materials to upgrade the functional capacity of a 50 year old reinforced concrete bridge to include a "clip-on" cycleway, and safely connect cycleways on each side of the Ngaruroro river.



VIRTUAL REALITY

Breaking Down Barriers of Perceived Safety

Katherine Eveleigh

Aurecon (Team Velos), Christchurch, New Zealand

Simon Yorke

Aurecon, Christchurch, New Zealand

- What is the difference between safety and perceived safety?
- How does perceived safety influence willingness to cycle?
- Are designers making the right design assumptions and how do we test assumptions around perceived safety?
- How do we convey design benefits to the wider community and break down the barriers where perceived safety is a significant factor in people choosing not to cycle?
- What are the consequences of getting it wrong?

The Major Cycleways programme in Christchurch includes the application of some new design concepts to the local environment and as such, many of the concepts are locally new and the benefits of them difficult to fully convey to the wider community. Additionally, each route design needs to be uniquely modified to be take into account constraints within the existing environment.

A virtual reality design space is an invaluable tool which would allow designs to be 'road' tested and adapted as required to understand perceptions, confirm assumptions and optimise safety.

Aurecon are working with innovative Virtual Reality technology to transport users into a simulated biking environment using a spin cycle and VR headwear. We will demonstrate how this technology can be applied to a current cycle route being designed as part of Christchurch Major Cycleways programme to test design assumptions and perceptions around safety.

The potential to use this for wider community engagement and education is limitless and indeed a significant step towards breaking down the barriers between assumptions and reality. Our demonstration will allow participants to try this technology for themselves and stimulate discussion about potential applications.



EVALUATION OF BIKE BOULEVARDS IN THE CITY OF DAREBIN

Cameron Munro

CDM Research, Melbourne, Australia

Bicycle boulevards, or "shimmy routes", are connected local streets that provide a convenient and safe alternative to main roads for bicycle riders. The City of Darebin in Melbourne has been implementing a number of "shimmy" routes over the past five years as a key part of their cycling strategy. The routes are very low cost and involved wayfinding signs, bicycle markings on the roadway, improved main street crossings and traffic calming. This infrastructure was accompanied by paper and online maps, social media and on-street engagement with the community. This presentation will describe an evaluation of the shimmy routes that has been undertaken, and include recommendations as to best practices for implementing bicycle boulevards in the Australian and New Zealand context.



Concurrent
Session Two

Thursday 19 October
1:55pm – 3:30pm

**BIKES FOR
HEALTHY
LIFESTYLES 2**



CYCLE SKILLS FOR LIFE

Claire Pascoe

NZ Transport Agency, Wellington, New Zealand

Kirsten Malpas

Accident Compensation Corporation, Wellington, New Zealand

New Zealand is experiencing a boom in biking, with more opportunities to ride through increased and improved places to ride, and more people getting out there and enjoying the benefits of biking. This is good for New Zealanders at an individual level and the country as a whole, recognising the multiple health, transport, environmental and safety outcomes that can arise from more people biking.

While the infrastructure improvements are positive, they cannot be seen as the 'magic bullet' to improve cycle safety and get more people biking. Recognising this, the NZ Transport Agency (NZTA) and the Accident Compensation Corporation (ACC) have recently agreed to partner in the development of a national cycle education system, to complement and add to the effect of the infrastructure improvements. The system will build on some great examples of cycling education from New Zealand and the UK (Bikeability Plus) and be based on best educational practice to increase the reach and effectiveness of cycle education.

The planned outcomes of the system include having more New Zealanders:

- With the skills and knowledge needed to ride a bike for everyday trips
- Who can identify hazards and respond appropriately while riding a bike on the network
- Who understand key road sharing behaviours and the perspective of other road users
- Who know how cycling for everyday trips can benefit them, their communities and society
- With competencies to contribute to a safe transport system and liveable communities

Ultimately, we are planning a system that will foster a lifelong love of cycling and recreate a generation of people who grow up using their bikes for everyday trips.



ZERO TO HERO

Whanganui's Story

Rui Leitao

Whanganui District Council, Whanganui, New Zealand

Norman Gruebsch

Whanganui District Council, Whanganui, New Zealand

It all started with a couple of enthusiastic engineers wanting to increase the ways of getting around town, embracing the healthy options and factoring the flat topography of the Whanganui River valley. Now it's one of Whanganui's most successful projects....

Our urban pathways allows cyclists, walkers, skateboards and people with mobility aids to safely get around. It's had overwhelming support from our Mayors, Chief Executive, central government, community organisations and our amazing community.

We are nearing the completion of the Whanganui City Bridge to North Mole section of the cycleway and about to begin on creating Te Tuaiwi shared pathway, which will provide a safe route through town and past some of our central schools.

Our presentation will be about the Whanganui's story and the reasons the community rapidly embraced the 'Let's Go' programme.

Lastly we leave you with a quote from our Mayor, Hamish McDouall:

"I think every city in New Zealand should rise to this aspiration and push to have the best infrastructure, education and community culture that supports people to get about."



SCHOOL TRAVEL BEHAVIOUR CHANGE

Experience from the UK

Tom Ransom

Former Sustrans Schools Officer, Isle of Wight, UK

Schools form an integral part of their communities social structure. They help form a communities view on what's right and wrong, good and bad, healthy and unhealthy. What techniques influence schools to create positive attitudes towards cycling? Does intensive behaviour change engagement with schools influence their travel behaviour and if so, how is that sustained without ongoing intensive inputs?

Sustrans, has partnered with the Isle of Wight Council since 2015 to deliver active travel interventions and incentives to the Islands 50 state schools. Based on their established three year "Bike It" program, the work aims to make active travel central to everyday culture across the school. Initiatives include cycle and scooter skills training, whole school or inter school competitions, "Dr Bike" cycle repair days, and bespoke initiatives for high schools.

Comparing this type of intensive, long term approach with one off "Bike week/day" promotions, what extra depth of change can be induced? From school governors involvement to "Big Street Surveys" of local street infrastructure and Travel Action Plans. What makes schools truly commit?

How sustainable is an intensive programme? How can funders hand over responsibility and passion for healthy active travel to schools? Funders need to see an exit strategy. Establishing pupil active crews and "School Mark" awards systems are some ways Sustrans have sought to achieve this.

Could NZ schools follow Sustrans stepped, long term engagement model? Is this type of more intensive intervention, the missing link in NZ cycle culture?



UNLOCKING CYCLING THROUGH SOCIAL CONNECTION

Amy Taylor

Cycling New Zealand, Cambridge, New Zealand

We all want to get more people cycling for transport, health, liveability, recreation and sport, but how does someone go from not cycling at all, to doing so regularly? Cycling New Zealand in collaboration with the New Zealand Transport Agency, local Councils and Regional Sports Trusts have spent 3 years piloting an innovative programme that has got communities cycling for all of these purposes. People have gone from not biking at all, to biking every week, to work, on New Zealand Cycle Trails and doing recreational events, by joining led-ride groups. Led rides are groups run by Ride leaders who are trained through experiential learning workshops and provided with ongoing mentoring and support.

Ride leaders are volunteers who love cycling and want to share it with others and their passion infuses the groups and people they lead and inspires regular and safe participation. Led ride groups are now run in five New Zealand regions and rapidly increasing the number of people biking. This story will tell how the programme has been set up, how it works, and how other towns, cities and countries can get more people on bikes through a programme built upon a passion for cycling and social connection.



USO BIKE RIDE

Improving the health & wellbeing of Polynesian people through Cycling

Talalelei Taufale

USO Bike Ride, Napier, New Zealand

Chris Te'o

USO Bike Ride, Napier, New Zealand

Kia Ora-Talofa lava-Malo le soifua

Since 2011 USO Bike Ride has started a journey towards better health and wellbeing through regular health checks and keeping active through cycling. The sight of Polynesian –Pacific and Maori men cycling is becoming the "norm" in pockets across New Zealand. As well as being seen we are now being heard.

USO Bike Ride's approach to cycling is embracing not only Pacific and Maori men, their partners and families but all ethnic groups. It started with raising cancer awareness but its much more than that. It's not solely about how fast you ride or the elevation of the climb. We focus on empowering riders and families to cycle safely and confidently in their environment of choice and lending our voice to improving the safety of our cycling environments.

USO is a Samoan word that means brother. We are a brotherhood with a passion to share our message on two wheels. We do this through our regular everyday cycling and bunch rides. We have also shared our message through cycling the length of New Zealand both ways in 2012 and 2016, around Samoa, Hawaii the East Cape.

This is the USO Bike Ride story – A refreshing and inspirational approach to cycling towards improving the health and wellbeing of Polynesian people through cycling.

Nau mai haere mai-Afio mai-susu mai



WHEN IT FEELS LIKE *EVERYONE'S TRYING TO KILL YOU*

Understanding first person & third person perceptions of risk & vulnerability

Helen Fitt

University of Canterbury, Christchurch, New Zealand

Cyclists are often considered vulnerable victims of an automobility that does not adequately cater to their needs. In contrast, motorcyclists are more often constructed as able to influence their own vulnerability through their choice of riding style. In other words, the risk associated with motorcycling is primarily described in terms of motorcyclists' behaviours, while the risk associated with cycling is more often described as the result of conditions beyond cyclists' control. Research conducted in Christchurch, considering both cycling and motorcycling, found a slightly different dynamic. In general, when participants discussed other people's practices, they primarily constructed risk as a function of those people's behaviours.

In contrast, when they moved on to discussing their own practices, they concentrated much more on conditions beyond their own control. This dynamic has several likely repercussions. First, people may not be very tolerant, or may even be aggressive, towards those who they see as having deliberately put themselves at risk by using a certain transport mode. Second, users of that transport mode will construct others as being the source of risk and themselves as trying to mitigate this risk. When these two perspectives meet, conflict seems a likely outcome. This short presentation will challenge how we think about risks from different perspectives and invite the audience to consider what the implications of different risk perceptions might be.



THE IMPACT OF THE NEW HEALTH & SAFETY ACT ON COMPANY BIKE FLEET UPTAKE

Ellie Craft

Beca, Wellington, New Zealand

This presentation will look at the impacts of the new Health and Safety act on company bike fleet uptake. Through studying the new Health and Safety legislation, the presentation will question whether cycling is a risk and if the activity is classed as a risk, what steps can be taken to address it. It will also discuss companies' considerations for purchasing and owning a bike fleet and look into existing bike fleet ownership policies.



ASSESSING THE RELATIONSHIP BETWEEN THE NEIGHBOURHOOD BUILT ENVIRONMENT AND CHILDREN'S ACTIVE TRANSPORT BEHAVIOURS AND PERCEPTIONS

Niamh Donnellan PhD

University of Auckland, Auckland, New Zealand

Erika Ikeda MHS

Auckland University of Technology, Auckland, New Zealand

Melody Oliver PhD

University of Auckland, Auckland, New Zealand

Many studies have shown that adults' physical activity and active transport behaviours are associated with features of the built environment. Until recently, methods to measure the environment have been adult-specific. Child-centred approaches are needed to improve specificity and sensitivity in identifying relationships between the built environment and children's movement. There are limited child-specific indices of moveability in built environment and health research. In this study, kernel density estimation will be used to quantify opportunities for children's active transport in the neighbourhood built environment. Data from the Neighbourhoods for Active Kids (NfAK) study will be used to test the applicability of the child-specific index of moveability.

NfAK is a cross-sectional study of 1102 children aged 9-13 years across 19 schools in Auckland, NZ. Data was collected between February 2015 and September 2016. Interactive mapping was used to collect child-reported neighbourhood destinations, preferences, and perceptions, and mode of transport to destinations. We anticipate that neighbourhoods with high ease of moveability will be associated with higher rates of active transport to neighbourhood destinations than areas with low ease of moveability. It is expected that this research will contribute to current plans in New Zealand to improve both the liveability of the built environment and create environments that encourage active transport behaviours in school children.



Concurrent
Session Three

Thursday 19 October
4:00pm – 5:00pm



PLACES FOR
PEOPLE **3**



CYCLING AS PART OF THE NEW ZEALAND TRANSPORT SYSTEM

NZTA's journey so far and where we're heading next

Claire Pascoe

NZ Transport Agency, Wellington, New Zealand

The New Zealand Transport Agency has spent three years of concerted effort working with partners to make cycling a safer and more attractive transport choice. Much of this work, including the roll-out of the Urban Cycleways Programme, has been part of a coordinated response to the 36 recommendations that were published by the Cycle Safety Panel in 2014. This 3 year period has included the biggest investment in cycling in our history and one of the few national level accelerated cycling programmes in the world. Three years on, this presentation will reflect on the journey so far, what's been accomplished through the Transport Agency's Cycle Safety Action Plan, what's in the pipeline and what challenges have arisen along the way.

Looking forward, this presentation will also discuss what the future looks like for cycling, what have been identified as key priorities for the next ten years and how this is shaping up in terms of delivery and where we will focus investment. Taking a cross-government approach, with benefits to be realised across tourism and economic development, health and safety as well as transport, new partnerships will be discussed as well as the various ways the Transport Agency is working to make cycling business as usual for our transport system.



FOOTPATH CYCLING

A contentious issue

Jeanette Ward

Abley Transportation Consultants, Christchurch, New Zealand

Hamish Mackie

Mackie Research Ltd, Auckland, New Zealand

As part of a wider review of cycling-related road user rules in New Zealand, research into potential footpath cycling law changes was undertaken. The research included a review of literature, analysis of NZ crash records and hospital admissions, stakeholder workshops and footpath user interviews.

A wide range of perspectives emerged from the stakeholder discussions and it was clear that a consensus on footpath cycling was unlikely. Key issues that were raised included the safety of pedestrians, cyclist conflicts at driveways and side roads, and the benefits of more safety-conscious footpath cycling.

The research concluded that on balance, a rule permitting footpath cycling for those aged 12 and under (and accompanying adults) has merit. It would reflect that many aspects of children's cognitive processing do not mature until around 11-12 years of age. It would also allow safe footpath cycling to be proactively taught to younger cyclists, with clear expectations of pedestrian priority reinforced, and from a safety perspective it would likely benefit both child cyclists and pedestrians. It would also potentially encourage the design of safer footpath/driveway interfaces, which would also benefit joggers, mobility scooters, mobility trikes, and children on push scooters. However, it was also acknowledged that footpath cycling could impact the choice of some people to use the footpath if they consider footpath cyclists to be a threat to their safety.



IMPROVING CYCLE SAFETY AT URBAN INTERSECTIONS

Simon Douglas

AA Research Foundation

The 2014 Cycling Safety Panel report (Safer Journeys for People Who Cycle) highlighted urban intersections as a high risk area for cyclists. The report's findings noted that the majority of motor vehicle/cycle crashes occur at urban intersections and driveways. Key to addressing both the risk to cyclists and improving the intersection experience for all users is the development of an understanding of cycle and vehicle interactions that are likely to be associated with poor actual and perceived safety for cyclists at intersections. Previous studies have used manual methods to understand road user interactions, and others are developing automated machine vision methods. There is potential to combine the automation of new technologies with the richness that can only be delivered by a human analyst.

By filming four urban intersections (Auckland and Wellington) at rush hour using fixed cameras and then applying an innovative hybrid computer vision and analyst method, cycle/vehicle interactions will be codified to quantitatively define these interactions and obtain a much more detailed understanding of standard encounters, close encounters, avoidance, near misses and potentially collisions. The AA Research Foundation and the Transport Agency hope to both prove this innovative methodology and gain robust knowledge that will inform intersection design and behavioural initiatives. This presentation will focus on the method development and early trial findings. The work will be completed by December 2017.



Concurrent
Session Three

Thursday 19 October
4:00pm – 5:00pm

BIKES FOR
HEALTHY
LIFESTYLES 3



BRINGING MAORI NARRATIVES TO THE CYCLING EXPERIENCE

Callie Corrigan

Toi Tangata, Auckland, New Zealand

Toi Tangata is a national Maori health agency which has a lead role in nutrition and physical activity within the public health sector. A key strength of their approach is using the modality of cycling to connect people to place and space; providing exploration of matauranga (knowledge) and whakapapa (genealogy) within the taiao (environment).

1. How are we bringing more Maori narratives to the cycle related innovations happening across the country?
2. What connection does whakapapa (genealogy) have to the creation of new cycleways?
3. What contribution of matauranga Maori is being enabled in the development of programmes to increase cycling participation?
4. How are we maximising these opportunities to also strengthen capacity building opportunities?

Within this presentation we will share a number of innovations where matauranga is at the forefront and supports participants in gaining a deeper understanding of the opportunities Maori narratives can contribute to increasing a culture of cycling.



TRAVELWHIZ

Implementing a travel plan to support a great place to work

Ann-Marie Head

*Abley Transportation Consultants Limited,
Christchurch, New Zealand*

After 6 years working out of an industrial warehouse with plentiful on and off-site car parking, in May 2017 an office of 30 staff moved back into the Christchurch central city. The office move instigated a 'change moment' for staff to reconsider their travel habits.

As a progressive employer in the business of transport planning, a travel plan titled 'TravelWhiz' was developed and implemented as part of the move. TravelWhiz included a range of initiatives to support travel choice and allow staff to choose travel options suitable for them. The travel plan was informed through a staff travel survey and initiatives were tailored based on staff suggestions and feedback.

The initiatives included, amongst others, an on-line car park booking system to manage use of the limited number of on-site spaces, personalised journey information given to all staff prior to the move, a guaranteed ride home policy, and use of pool bikes for staff to make work trips and carry out errands during their day. Bicycle route choice guidance considering safety versus efficiency was available to staff through the use of a GIS based route selection tool developed in-house.

This paper will provide insight into some tips and tricks when implementing a travel plan referencing a real world example. It will demonstrate that a travel plan can be used to engage with staff and can support the organisation in becoming a great and healthy place to work.



SETTING UP A TRANSPORT MANAGEMENT ASSOCIATION

Sue Philbin

*Team Leader, Travel Demand Team,
Auckland Transport*

Auckland Transport has let a team of businesses to establish the first business-led Transport Management Association (TMA) to be set up in New Zealand, as an independent incorporated society.

A TMA is a private, not for profit and member controlled organisation that provides transportation services in a geographically defined area. In this instance the geographical area is Wynyard Quarter, a reclaimed port development on Auckland's waterfront.

The need for a TMA was determined through the planning consent process when it was recognised that in order to develop WQ as a prime business district of Auckland, access by alternative modes (walking, cycling, carpooling and public transport) would need to be promoted and coordinated. Businesses locating to the area would need to adhere to robust guidance that would limit the number of vehicles entering and leaving WQ in the peaks.

The paper will outline the step-by-step approach taken to establish the WQ TMA and detail the incorporation process such that it can be duplicated in other areas of Auckland and throughout urban centres in New Zealand. It will set out the historical context of establishing TMAs in Europe and North America and demonstrate how 'lessons learned' from those countries, have been applied to New Zealand.

Auckland Transport will share expertise for establishing TMAs that will enable businesses and local organisations to become part of the decision making process for travel demand management solutions in green-field or retrofitted sites.



Concurrent
Session Three

Thursday 19 October
4:00pm – 5:00pm



PLACES FOR
PEOPLE 4



LOCAL PATH (*GREENWAYS*) NETWORK PLANNING WORKSHOP

Kent Lundberg

MRCagney, Auckland, New Zealand

Jack Haldane-Willis

Resilio Studio, Auckland, New Zealand

Local paths, also known as Greenways or Bicycle Boulevards, are a combination of design treatments that reduce the number and speed of cars on neighbourhood streets and reclaim streets for people walking and cycling. Auckland Transport is substantially growing their cycling network through both separated facilities and local path networks. However, the local path facility was unfamiliar to many community members and practitioners in Auckland. Resilio Studio and MRCagney were commissioned to develop the "Local Path Design Guide" to communicate the principles, performance measures, and tools a community can use to achieve a successful Local Path Network.

In this interactive workshop, Kent and Jack will outline the key aspects of the Local Path design guide through small-group exercises. Participants will be provided with a map of a fictional town, a toolkit of treatments with corresponding prices, and a limited budget. The object of the game is to create a local path network that satisfies the performance objectives and the budget while connecting to local destinations. Participants will leave with a greater understanding how to reimagine neighborhood local streets and develop a network in their own communities.



Concurrent
Session Four

Friday 20 October
8:30am – 10:30am

SMART SYSTEMS 2



Asia-Pacific
Cycle Congress

17 – 20 October 2017
Christchurch, New Zealand

GEARING UP
rethinking our
communities
for the future

DESIGNING FOR BIKE RIDERS ON LOCAL ROAD ROUNDABOUTS

Cameron Munro

CDM Research, Melbourne, Australia

It is well known that bike riders are over-represented in crashes at roundabouts in Australia and New Zealand. There have been a number of studies over recent years that have suggested a key contributor to this elevated crash risk is the geometric design of roundabouts in Australasian practice, which encourages tangential vehicle entries into the roundabout. The presentation will review recent Australian experiences in providing for bicycle riders at roundabouts, including the presentation of motorist speed data on roundabout approaches with varying geometries.



DESIGNING SAFER RAILWAY CROSSINGS FOR WALKING & CYCLING

Glen Koorey

*ViaStrada Ltd,
Christchurch, New Zealand*

Leah Murphy

*KiwiRail,
Wellington, New Zealand*

Shane Turner

*MWH (NZ) Ltd,
Christchurch, New Zealand*

Eddie Cook

*KiwiRail,
Wellington, New Zealand*

Gerry Dance

*New Zealand Transport Agency,
Wellington, New Zealand*

KiwiRail and the New Zealand Transport Agency have led the development of a New Zealand design guide for pedestrian and cycle facilities at rail crossings, both alongside roadways and stand-alone. This aims to fill a gap in cohesive policy, information and guidance on providing for pedestrians and cyclists at rail crossings in New Zealand, particularly level crossings. In general, previous guidance has been more developed for roadway crossings than for pathway crossings.

The Urban Cycleways Fund and NZ Cycle Trail programmes have accelerated a number of cycleways throughout the country that are in the process of being designed and constructed. Without clear guidance nationally, there is a risk of inconsistent provision for treatments at rail crossings along these routes, with the possibility that safety gets compromised.

In recent years, there has been an upwards trend in incidents with cyclists and pedestrians versus rail, compared with a downwards trend for road traffic incidents with rail. The new guide aims to provide a more consistent approach to choosing appropriate rail crossing treatments in New Zealand for pedestrians and cyclists, based on an objective understanding of risk and international best-practice.

This presentation describes the development of this guide and highlights the key principles that have been identified for planning and design safe crossing facilities. Some new types of warning devices and crossing layouts have also been proposed for trialling, such as chicane-style crossing approaches.



USING AN INSTRUMENTED BICYCLE TO MEASURE MINIMUM OVERTAKING GAP FOR MOTORISTS OVERTAKING CYCLISTS IN NEW ZEALAND

Peter Kortegast

Opus Consultants, Nelson, New Zealand

Chris Bowie, Jared Thomas, Jovana Balanovic, Anna Davison & Mike Lusby

Opus Consultants, Wellington, New Zealand

Gerry Dance & Simon Kennett

New Zealand Transport Agency, Wellington, New Zealand

Opus Research undertook a research study for the New Zealand Transport Agency on the feasibility for introducing a road user law to require a minimum overtaking gap (MOG) for motorists passing cyclists in 2016.

The research identified that there was a lack of accurate empirical data of similar laws introduced in Australia, Europe and America.

Opus developed an instrumented bicycle (depicted below) which could collect information on cycle and vehicle interactions on the New Zealand road network.

Opus Research's instrumented bicycle has on-board sensors which automatically capture and process a range of data in real-time. This information can be analysed by route segments and is complemented with high quality video footage.

The research resulted in empirical evidence to support a graduated speed MOG in New Zealand context with a recommendation of 1.0m below 60km/h and 1.5m above 60km/h. It also revealed the actual profile of gaps between riders and motorists (see example below), and found that riders encountered discomfort from a close interaction with a motor vehicle for every 22 minutes of riding.

We will also discuss as part of this presentation the issues with developing an instrumented bicycle and how this technology could be used to improve cycle safety. This work will be of significant international interest and has applications to many other Asia/ Pacific countries for both professionals.



SPEED OF UN-ASSISTED & E-BIKE COMMUTER CYCLISTS IN CHRISTCHURCH, NEW ZEALAND

John Lieswyn

ViaStrada Ltd, Christchurch, New Zealand

The rapid growth in e-bikes has prompted some concern about safety implications of more people being able to travel at a higher speed than they might otherwise be able on un-assisted pedal cycles. Some of the concern may be more an issue of public perception than actual speed differentials. The maximum speed of an e-bike rider is likely to be comparable or slower than a fit un-assisted cyclist, while average speed is governed by variables such as traffic density and intersection spacing. Published research is typically focused on average speed based on naturalistic measurements, and few studies directly compare e-bikes and un-powered bikes. Spot speed, or the speed of an individual rider at a single point along a trip, is proposed to be a more useful indicator of potential safety implications. LIDAR spot speed measurements of commuting cyclists have been taken in Christchurch. This paper presents a statistical analysis of speed and gender of people cycling along shared paths, cycle lanes, bus/cycle lanes, and mixed traffic lanes.



FROM RED TO GREEN

The way forward for Cycling, Traffic Signals & ITS

Alex Dean

*Peloton (collaboration between GHD, Beca & Stantec),
Christchurch, New Zealand*

Michael Town

*Peloton (collaboration between GHD, Beca & Stantec),
Christchurch, New Zealand*

Stephen Wright

*Peloton (collaboration between GHD, Beca & Stantec),
Christchurch, New Zealand*

It is not clear within New Zealand legislation how cyclists should be treated and integrated into different situations, such as shared facilities, segregated facilities and on road facilities. There is ambiguity between the different sources of literature for the treatments of cyclists. These deficiencies result in the consistent design of cycle ways nationally and within Christchurch to be difficult to achieve.

How can you follow the standards when there is ambiguity? Throughout the design and review process the same issues and questions continued to arise, which encouraged us to begin developing our own cycleway traffic signal standards. Using these we have endeavoured to standardise traffic signal pole and aspect usage, along with formalising the previously unwritten rules when designing in Christchurch.

And the end game? To develop New Zealand design guides that we would push through the Signals New Zealand User Group to provide a consistent user experience nation-wide.

We are looking to develop best practice guides that provide safe, efficient, and easy to use facilities for cyclists at signalised intersections and crossings. This process explores what we can and cannot do within the current legislation as well as what could be achieved through change in legislation. We have identified what could be achieved through good design practices, and how a refresh of current legislation could lead to promoting cycling as the mode of choice within New Zealand towns and cities.



IMPLEMENTING CYCLEWAYS IN THE RAIL CORRIDOR

Nicola Hopman

*Peloton (collaboration between GHD, Beca & Stantec),
Christchurch, New Zealand*

Railway corridors offer direct links between destinations in an environment away from the constraints of the road network and subsequently introduce new conflicts and issues that need to be resolved collaboratively with KiwiRail.

This paper draws on experience gained from designing the extension of the existing six kilometre rail path alongside KiwiRail's Northern Line in Christchurch to form a new ten kilometre Major Cycle Route and providing a full shared path from Belfast to South Hagley Park. It presents processes, design and collaboration ideas and lessons learnt as a worked example for future rail corridor cycleway designs.

As an introduction to the topic, typical cross-sections of shared paths are presented, accompanied by the rationale behind the widths and offset requirements of the various elements of the cycleway and railway corridor.

In some situations, the width and offsets need to be reduced to manage constraints as well as subsequent implications at level crossings because existing and proposed facilities need to allow safe crossing of the roads and tracks for the additional expected number of cyclists and pedestrians. In most cases the ideal cannot be achieved but solutions work towards achieving the design principles. A process which includes the ALCAM risk and LCSIA is presented.



Concurrent
Session Four

Friday 20 October
8:30am – 10:30am



PLACES FOR
PEOPLE 5



BIKESHARE FOR CHRISTCHURCH, AN IDEA WHOSE TIME HAS COME?

Using the business case approach to understand the benefits & drivers in mid-sized city

Nick Lovett

CCC, Christchurch, New Zealand

Bikeshare systems (also known as cycle hire schemes) have been suggested in Christchurch as early as 2009. The success of schemes in Europe led to the desire to expand the concept to cities in North America, Asia and Australia. While some cities raced to be the first in their country/region, many cities cautiously adopted the wait-and-see approach before making decisions about investment.

Technology is now offering an opportunity to also having a transformative role in the configuration and function of how systems operate. The vast majority of new systems that opened in the United States in 2016 utilize 'smart bikes'¹ allowing for cost-effective deployment and flexible operations. Previous challenges with planning and running as system, appear to be somewhat alleviated through technology and data.

These developments have enabled smaller cities to re-examine the case for bike share, what it means for the city. As the rebuild and regeneration of the city continues, Christchurch has begun to explore how a bikeshare system can meet its strategic transport objectives, support regeneration, and provide viable choices to residents and visitors through a business case approach.

Many systems are implemented on the basis of cost recoverability, without a detailed needs and benefits assessment. Christchurch has taken a unique approach, engaging with stakeholders early to identify the outcomes and objectives to shape the configuration of a system.

¹NACTO Bike Share Statistics 2016



IS THAT A SHARROW? *DON'T PUT IT THERE!!*

Sandy Mills

Flow Transportation Specialists, New Zealand

Implementing shared lane markings, referred to as 'sharrow markings' or 'sharrows' has recently been permitted in New Zealand with an Omnibus Rule Amendment. The need to enable the use of sharrows arose due to a strong demand to offer additional 'toolbox' measures to assist in the design of cycling infrastructure in New Zealand. A summary of international research on the benefits of sharrows will be presented along with a brief summary of national sharrow trials and the benefits indicated by these trials.

The paper will outline the purpose of a sharrow, define the primary characteristics that should be present when considering the potential implementation of sharrows on a route, give recommendations regarding the locations and situations where sharrows may be appropriate and guidance on the correct positioning of a sharrow marking on the carriageway. In addition, and perhaps more importantly, the reasons why some locations and situations are not appropriate for sharrows will be specified.



COST-BENEFIT ANALYSIS OF RECENT MAJOR CYCLING INVESTMENTS ACROSS QUEENSLAND

Sarah W Wilkinson

Queensland Government, Brisbane, Australia

Through the Cycling Infrastructure Program, the Queensland Department of Transport and Main Roads (TMR) works with local governments and TMR districts to deliver and improve principal cycle networks across Queensland. Local governments that have formally endorsed their region's Principal Cycle Network Plan (PCNP) are eligible to apply for a 50% grant for the design and/or construction of cycling infrastructure that contributes to the delivery of their regional cycle network. TMR districts also deliver missing links on state-controlled PCNP corridors using program funding or as part of other projects.

Since the launch of the program in 2006, hundreds of bikeways have been planned, designed and constructed throughout Queensland. In early 2016, as part of a program review and update, an in-depth evaluation of major investments was undertaken. The review sought to develop and implement an evaluation framework for active transport infrastructure projects.

This was undertaken through:

- Development of a practitioner-friendly cost-benefit analysis (CBA) tool with a means of estimating the likely economic benefits and costs of a project.
- Updating the monetary unit values for the benefits of active transport in line with the recent update of the Australian Transport Assessment and Planning guidelines – Active Travel.
- Demonstrating the use of this tool by conducting evaluations of recently completed active transport infrastructure projects across Queensland.

This presentation will provide an overview of both the methods used and the evaluation results.



ROAD SAFETY, URBAN DESIGN & LANDSCAPE IN CYCLEWAY DESIGN

Using a Safety Audit & Network

Functionality Approach CHRISTCHURCH RESULTS

Mike Smith

Peleton (MWH), Christchurch, New Zealand

Wayne Rimmer

Velos (Opus), Christchurch, New Zealand

Emily Cambridge

Peleton (Beca), Christchurch, New Zealand

The accelerated NZ Governments' Urban Cycleways Programme (UCP) was initiated in 2014 following \$100M of additional Crown funding. The result has seen a significant increase in cycleway planning, design and construction activity countrywide. 54 projects are currently progressing with urgency, to meet the four year UCP timeframe. This fast track programme required the development of a robust design process that was both fit-for-purpose and responsive to any environment.

Christchurch City Council has adopted a process to help facilitate its Major Cycleway programme as part of its wider Integrated Transport Strategy to encourage cycling to become a more dominant commuter transport mode. This is not "Business-as-usual". An innovative assessment programme that considered the impact of the proposed facility on both road safety and other activities within or adjacent to a cycle corridor was developed, and approved for trial by NZTA.

This assessment programme, Safety Audit and Network Functionality, (SANF) applies a special blend of assessment and technical skills to consider multi-modal user needs, adjacent land use activities and wider issues such as CPTED, parking, landscape character, urban design, connectivity, maintenance and future growth. This multi-layered assessment, along with a wide range of design skills, ensures an understanding of, and design responses to, inter-modal issues that, on their own may not be significant, but when considered cumulatively, may be of strategic importance.

This paper presents an outline of the development of the SANF process, along with a summary of the key successful outcomes to date, and essential learnings from the SANF process.



E-BIKES & BICYCLE JUSTICE

Empowering technology or the death of the bicycle?

Kirsty Wild

University of Auckland, Auckland, New Zealand

Electric bicycles are empowering new groups of riders to 'take the lane', challenging the dominance of cars on our streets. Early results from our New Zealand study of e-bike use, as well as evidence from studies in other English-speaking countries, suggests that e-bikes are increasing the confidence and competencies of groups of riders who have previously been underrepresented on our streets: women, older riders, and people with lower levels of fitness. At the same time as ebikes are making biking more accessible, there are also a number of risks and potential losses associated with the 'electrification' of this simple, low-tech, low-cost transport solution. Electrification brings with it a new heightened era of 'built in obsolescence' to a simple technology that could previously have lasted a consumer a lifetime. Electrification also dramatically reduces the accessibility of biking to low-income riders, the people who generally have the most to gain health-wise from taking up cycling. In this session, I reflect on the question of what e-bikes mean for the goal of 'bicycle justice', asking how e-bikes might impact on our desire to increase the number and range of riders, as well as how e-bikes might impact on the larger goal of seeking greater 'justice' and equality for bikes on our roads.



BUILDING CYCLING FAMILIES ALONGSIDE FACILITIES

Jena Niquidet Western

Auckland Transport, Auckland, New Zealand

Auckland Transport's Family Programme targeting kids under 8 and their parents developed out of a community pilot, Bubs On Bikes. Originally created to offer information and support to families cycling with pre-schoolers, events have proven to be an effective tool of engagement for community consultation on new infrastructure.

The programme includes a variety of events & resources aimed at young families interested in cycling, which aid in priming communities and identifying local champions. The popular Kids Learn 2 Ride sessions run at local schools and parks, and team parents with trained cycle skills instructors able to assist in the teaching process. Many parents cannot ride a bike or are not regular cyclists themselves, and the simple act of involving them in their child's learning can spark a desire to ride themselves. Facilitating a positive experience for both child and parent also generates a greater awareness and interest in quality all ages and abilities infrastructure.

The programme continues to expand as our network does. Once infrastructure is built family activities & rides around greenways projects highlight local routes/ links and provide parents with tips on making local trips by bike. Currently these non-controversial events are being planned to pre-prime new target communities, 3-6 years before infrastructure is built. Ultimately helping to grow support and new cyclists as the Auckland network expands.



Concurrent
Session Four

Friday 20 October
8:30am – 10:30am



BIKENOMICS



MAKING IT FIT

Retrofitting high-standard cycleways in urban environments

Ben Dodgshun

Peloton (collaboration between GHD, Beca & Stantec)

With many demands competing for road space, cycleway designers need to be innovative to create designs that provide a good experience and high level of safety for cyclists, whilst minimising the impacts of the cycleway on other uses of the road and its surrounds. This paper draws on the experience gained from working on four Christchurch Major Cycle Route (MCR) projects, including route selection, scheme and detailed design.

Design trade-offs can be made to allow a cycleway to be built around other requirements in the road corridor in particularly constrained situations, however this needs to be done with sound judgement to ensure good outcomes for cyclists and other road users. Such trade-offs were required on the Papanui Parallel MCR to reduce the removal of trees and on-street parking in key areas.

This paper will discuss the development and use of a design utilising low-profile kerb in place of a traditional separator to achieve a design outcome acceptable to the community.

Minimising the removal of on-street parking is a high priority for residents and business owners along cycle routes, but needs to be balanced against safety for all road users. Curved-in versus straight cycleway alignments, and keeping parking on one side of the road versus alternating it at intersections are typically considered when designing a cycleway. This paper considers how these variables interact, and shows examples of how they can be configured to optimise outcomes for cyclists, drivers, pedestrians, and the local community.



FORECASTING CYCLE DEMAND IN AUCKLAND

A new and exact science, or are we just making this stuff up?

Michael Jongeneel

Flow Transportation Specialists, New Zealand

Traditional transport planning uses transport modelling techniques to forecast future travel demands, and to evaluate users' mode and route choices. These transport modelling techniques are well established, widely accepted and relatively well understood, but have almost exclusively focussed on motorised modes of transport.

New Zealand is investing in cycle infrastructure at a previously unseen rate, and with this investment comes the need for credible cycle demand estimates, to ensure this investment is used in the most effective way. Techniques for cycle demand forecasting are however in their infancy both in New Zealand and internationally.

To meet this need, Flow Transportation Specialists developed the Auckland Cycle Model in 2015 to assess future cycling demands on Auckland's growing cycle network.

The result was a cycle demand estimation tool that responds to projected changes in Auckland's land use and to improvements to cycle infrastructure, estimating the quantity of mode shift that might occur following a given cycle project or package of improvements. The model was subsequently used to estimate future cycle demands for a range of cycle projects across Auckland.

But how accurate is the Auckland Cycle Model at predicting cycle demands, and to what extent can we rely on the model's outputs? This paper uses historic 'before' and 'after' cycle count data for a range of recently completed cycle projects, and compares these to retrospective 'forecasts' using the Auckland Cycle Model to assess the model's reliability.



DEVELOPING CYCLING NETWORKS

Where to invest next?

Karl Baker
MRCagney, Melbourne, Australia

Developing nascent urban cycling networks in Australasian cities requires decision-making on where to prioritise limited funds for infrastructure construction. Should network investment focus on central city areas where cycling demands are most concentrated – or locations where increased cycling may provide most benefits for improving health or overcoming congestion?

MRCagney led development of a programme business case for Auckland cycling investment for 2018-28. As part of this process, a framework was developed for testing the effectiveness of cycle network investment in various locations. Spatial data analysis helped pinpoint areas where network development would have most potential to contribute to a comprehensive set of cycle mode shift, safety, local environment and transport accessibility objectives that were established for the programme.

This presentation will report on the processes used for prioritising Auckland locations for network development and implications for cycle network planning in other cities.



BETTER BIKEWAYS FOR BRISBANE

Mark Pattemore

Transport Planning & Programs Manager (& 2015 APCC Board Member) Brisbane City Council, Brisbane, Australia

Brisbane is experiencing significant growth in recreational and commuting journeys by bike. This presentation will demonstrate how mode shift is possible when the right infrastructure is provided.

Brisbane City Council is investing \$100 million between 2016 and 2020 on the 'Better Bikeways for Brisbane Program', a program to deliver bikeway infrastructure across the city. This is in addition to a \$220 million investment over the previous eight years.

The presentation will provide an outline of the 'Better Bikeways for Brisbane Program' and the infrastructure being rolled out to improve and expand the city's bikeway network and improve access to local destinations and the CBD. This includes separated on-road bikeways, lighting initiatives and programs targeting black spots.

These improvements require a strategic approach, such as targeting replacement of under 10 km car trips to the city's eight employment areas. Specific strategies and projects will be outlined in more detail, including how missing links are being addressed on key commuter bikeways.

The presentation will also provide an insight into the important role that Council's travel behaviour change programs, Cycling Brisbane and Active School Travel, play in actively engaging and influencing the take-up of healthy and sustainable travel choices across the community.

The session will outline the benefits of the Better Bikeways for Brisbane Program and how Council has been successful in growing numbers of people cycling, and future plans to sustain and build upon this growth.



PLANNING & DESIGNING BIKE-FRIENDLY CITY-CENTERS

With examples from Europe & USA

Richard ter Avest

Dutch Cycling Embassy, Nederland

What city do you want? Making people-friendly cities is normally starting in city-centers, where there is a lot of traffic and less space available. Richard speaks about experiences of planning and design in cities and town in Europe and USA. The planning depends on the ambitions and the current stadium of a city: Dare, Able or Invite to cycle. And a balance in networks for all modes, including Transit and Car. He shows inspiring examples and tells about the webtool MOVE-meter to illustrate the chances and challenges that urban areas are facing on their way to become smart cities.





We make things happen

We are the problem-solvers – the thinkers, the creators, the planners and practitioners - who, together with our clients and communities, are helping create a vibrant future for Christchurch.

www.beca.com

 **BECA**

POSTER ABSTRACTS

by title order



Asia-Pacific
Cycle Congress

17 – 20 October 2017
Christchurch, New Zealand

apcc2017.com

GEARING UP
rethinking our
communities
for the future

BIKES WELCOME

A Crowd-Based Bike Friendly Business Program

Jo Clendon

*Bikes Welcome Charitable Trust,
Lower Hutt, New Zealand*

Background

Bikes Welcome want more kiwis using their bikes everyday and everywhere... riding to the shops, on errands, to meet with friends, to an appointment. It's about making riding a normal everyday activity: just like brushing your teeth.

Description

Bikes Welcome want to make everyday bike use easier, more attractive and 'normal'. The 'Bikes Welcome Business' program utilises relationships, marketing, technology, and psychology. It helps businesses to recognise that their customers do ride bikes, and not just in the mountain bike park or Sunday morning pelotons. It makes it easier: easier to say "yes, I bike", easier to ask for, find and implement bike parking.

Bike-Users invite businesses to find out about becoming a 'Bikes Welcome Business'. Businesses find out more and register on the bikeswelcome.org website. Bike-Users support 'Bikes Welcome Businesses' and can find them in an online directory. Bike Parking is one requirement for becoming a Bikes Welcome Business.

Lessons Learned

1. Multiple approaches are required to normalise everyday biking.
2. Businesses have a role to play.
3. Bike parking has a role to play.
4. This is a new approach in New Zealand creating some real challenges.

Conclusion

Engaging with businesses can help grow bike use by: normalising bike use, growing the profile of everyday bike use, and building social license. It can help leverage the provision of quality bike parking.



BIKE SHARE 101

State of the Practice

Sam Corbett

Jacobs, Auckland, New Zealand

There are more than 1000 bike share schemes worldwide. Bikeshare is becoming a "must have" sustainable transport option for cities around the world. This presentation will draw upon desktop research on bike share schemes in London, Paris, New York, Madrid, Melbourne, Brisbane, Seattle and Portland, as well as other research papers and guidance on bikeshare.

There is an emerging trend in several Chinese cities towards dockless bike share systems that rely upon GPS to enable customers to locate the bicycles and a mobile phone app to check out the bicycle to authorised bikeshare members by scanning the QR code on the bike. With this system, bikeshare members are also able to make micropayments through the use of an app such as WeChat to cover the cost of bikeshare usage. This presentation will include discussion on these systems and their pros and cons compared to more traditional bikeshare systems.

The presentation will provide an overview of each of the bikeshare case studies, giving background on the scale and coverage of the scheme. The presentation will also address operational considerations of bike share, specifically the challenge of ensuring a good supply of bikes and docking spaces as well as the outcomes of the schemes including; usage, safety, and impact on mode choice. The presentation will conclude with a summary of the challenges and successes of the bikeshare schemes and provide insights into the critical attributes for successful bikeshare.



CYCLE INVESTMENT IN NEW ZEALAND

From Famine to Feast

Andy Lightowler

Beca Limited, Auckland, New Zealand

Ben Frost

Auckland Transport, Auckland, New Zealand

Adam Ebrahim

Beca Limited, Auckland, New Zealand

A few years ago funds for cycling projects were very difficult to secure. Recently Government allocated \$10m to Council's nationwide to spend over three years. This step change in funding left Councils, consultants and contractors challenged to deliver the outcomes envisaged.

Over the last few years, accelerated by the funding boost, cycle design solutions have made amazing progress. The painting of a simple white line to demarcate a cycleway has given way to separated cycle lanes of all sorts of colours. Designers have innovatively interpreted current NZ Design Standards, drawing on overseas guidance and experience, and adapting these to the unique road rules in New Zealand, as they seek specific solutions to local challenges.

Increasing the width of the road corridor to accommodate separate cycle lanes is often difficult to achieve. Reallocating existing road corridor space can be controversial. It often involves removing car parking spaces and reducing intersection capacity for example. Transport Authorities are increasingly confident at overcoming these challenges. Combining cycling projects with urban streetscape amenity improvements greatly assists in obtaining community buy-in.

This presentation gives an overview of the challenges faced by designers and the innovative solutions developed for urban cycling projects in NZ. It gives specific examples and lesson from the Beach Road and Nelson Street separated cycleways in Auckland. It also comments on best practice from overseas and how this has been applied recently and successfully to the NZ urban context, including in Auckland Transport's new Roads and Streets Framework.



CYCLE TOURING IN CUBA

A different world

Jillian Frater

*University of Canterbury,
Christchurch, New Zealand*

Cuba is an island with an area half that of New Zealand's but with approximately three times the population. Since 1959, it has been governed by the Communist Party of Cuba (and its predecessors), led by Fidel Castro and Raoul Castro. A United States embargo against Cuba has also existed since around this time. As a result of its history, change within Cuba has been limited for nearing 60 years and consequently it has a unique culture and way of life. Due to the regulation of private foreign car imports from 1959 until 2014, the car fleet in Cuba is dominated by American vehicles from the 1950s, together with Russian vehicles (pre-1990). In 2004, it was estimated there were 173,000 cars in Cuba (i.e. 1.6% car ownership).

Cycling, walking, horses, motorbikes, buses, tractors, taxis and very limited train services also form part of the transport passenger infrastructure in Cuba. On most roads, in contrast to most New Zealand and Australian roads, slow traffic, including cyclists, is accepted and expected. As a consequence, cycling for transport in Cuba is more pleasant than cycling at home, although cycling on rough roads in temperatures of over 35°C has its challenges. In April and May of this year, I cycled independently with my partner and two teenage boys around the country, staying in people's houses. This presentation provides a snapshot of cycling in a country where the car is not yet king, but where change is happening.



CYCLING PRACTICES THROUGH THE LENS OF INNOVATION BIOGRAPHIES

Fariya Sharmeen

Radboud University, Nijmegen, the Netherlands

Arnoud Lagendijk

Radboud University, Nijmegen, the Netherlands

Success to cycling practices are often attributed to good infrastructures, whereas some scholars endorse socio-cultural setting as the stimulating factor. We contend that good cycling territories are established by means of practices, both material and social. The challenge however lies in adapting and re-inventing traditional practices through the perpetual demographic and socio-technological transitions. Since support for cycling occurs below the radar of mainframe transport policies even in a cycling nation like the Netherlands, innovation and knowledge sharing presumably is the key to remain relevant. Therefore, it is fundamental to understand how innovative ideas are seeded and transformed into successful community practices, and how they transform from niche to mainstream. To that end, innovation biographies advance a novel instrument to trace knowledge dynamics of specific innovations.

Within this framework, we will map territorial knowledge dynamics of a specific innovative material practice of cycling (i.e. bicycle highways) in the Netherlands as a case study using ego-centric social network approach. The ego here is defined as the innovation itself and the dispersion of the idea from infancy to maturity will be traced by interviewing key informants (individuals or organisations) about the knowledge flow. The social institutional processes and interaction between actors will be explored to understand the conducive conditions and challenging contexts as-well-as the ways to (counter)balance those. To the best of our knowledge, this is the first application of this novel methodology in transportation research, which will benefit both science and practice to understand and realise innovation in shaping sustainable cycling practices.



CYCLING CITIES

What should we prepare for?

85

Sjouke Wieringa

Auckland, New Zealand

In 2014 the Dutch owned about 1.2 bicycles per person. In addition to the privately owned bicycles, the public transport system provides rental bikes. This is because the Dutch choose a bike per leg of the journey in alignment with the function of that part and in greater extent, where it will be parked. It is common that a traveller uses one or two bikes for one journey. At the end of a bicycle trip, the bicycle needs to be parked and hence major cities in The Netherlands face cycle parking problems, especially at rail and bus stations.

Because people own multiple bicycles and can buy them relatively cheap, bicycles become abandoned easily to end up as litter in streets, parks and canals. People simply forget to or do not need to collect their bicycles, bicycles get lost at big bicycle parking areas or are stolen. In The Netherlands on average 311 bicycles are reported stolen a day (Nu.nl/Jerry Vermanen, 2015).

A third problem for cycling cities is the cycle volume on the cycle lanes. The cycle density in the city centre can rise up to a point where it deteriorates safe cycling. Cycling crashes happen and with the up-rise of the e-bike and the higher proportion of elderly in the cycling population, the likelihood on injuries due to cycle crashes increases.

To prepare for a safe and practical cycling city, it is important to understand the long-term implications of a cycling society. This paper elaborates on those implications to prepare for a safe and well-functioning cycling city.



INSIGHTS FROM NEW ZEALAND'S RAPID CHANGE OF GEAR IN CYCLING

From a national perspective

Elizabeth Claridge

*New Zealand Transport Agency,
Wellington, New Zealand*

The author's personal insights into developing cycling behaviour change programmes – and linking them strongly network development that others might find useful.

The goal will be to provide some simple concepts or frameworks for those wanting to know where to start, and how to target. It will also touch on the key differences between a national/regional programme and a city/town focused programme

These insights were gained by experience over the past two and half years working on; development of a national framework for getting more people on bikes in urban areas in New Zealand; developing a national urban cycling promotion programme for New Zealand and encouraging/supporting city authorities to develop local promotion programmes.



SPATIAL CHARACTERISTICS OF BICYCLE-MOTOR VEHICLE ACCIDENTS IN CHRISTCHURCH, NEW ZEALAND

A case-control approach

Tom Williams

Jacobs, Christchurch, New Zealand

This paper aims to predict the probability of bicycle motor vehicle (BMV) accidents occurring on a network-wide level in Christchurch, New Zealand based upon the spatial characteristics present in the road environment. To achieve this, logistic regression was undertaken with a binary dependant variable (accident/non-accident) using a case-control strategy, with case sites being locations of reported BMV accidents whilst control sites were sampled from the road network in proportion to where people cycle. Due to the uncertainty of cycling flows in Christchurch, five logistic regression models were undertaken based upon different route selection preferences.

The results identified that BMV accident probability increases with the same magnitude across all five models due to the presence of driveways, or intersections, identifying that these characteristics are associated with an increase in BMV accident probability. In contrast to this, there is significant variation across all five models relating to how BMV accident probability is influenced by the presence of painted on-road cycle lanes, road classification and urban planning zones.



THE EFFECTIVE SPEED OF CARGO-CYCLING

Affording load-carrying capability

Jane Pearce

*University of Canterbury,
Christchurch, New Zealand*

Questions of transport affordability have important implications for spatial planning, urban sustainability and resilience. Attempts to increase the speed of car travel, impose time costs not usually accounted for in travel calculations. Employing the simple formula: speed equals distance divided by time, Tranter conceptualises “effective speed” to incorporate all the time costs dedicated to a travel mode, including for instance the time spent to earn the money to afford, maintain and park the vehicle in question. Clearly for any particular mode, relative income will be a significant factor in effective speed calculations, with people on lower incomes having to work longer to afford any mode, hence further reducing their effective speed. Cycling affords individual freedom of mobility, and is perceived as affordable, and broadly equitable.

Research in Europe, the United States and New Zealand suggests that cargo-cycles are often purchased by households to avoid the costs or use of a second car, partly because cargo-cycles can substitute for car-use in the accomplishment of a number of mobility related practices. Secondary analysis of publicly available data is used to apply the concept of effective speed to cargo-cycling in Christchurch, New Zealand, addressing the affordability implications of cargo-cycling as a load-carrying mode of transport. Where cargo-cycling can offer a substitute for driving in terms of higher effective speed, it has the potential to mediate the relationship between transport and other household costs, including housing, in the urban environment.



THE RELATIONSHIP BETWEEN HEALTH INDICES & ACTIVE TRAVEL SCORES IN METROPOLITAN US CITIES

Catherine Elliot

Lincoln University, Christchurch, New Zealand

Michael Hamlin

Lincoln University, Christchurch, New Zealand

Gary Steel

Lincoln University, Christchurch, New Zealand

Commuting via active travel has been related to lower levels of obesity, diabetes, hypertension, cardiovascular risk factors, increased physical activity levels and an improved ability to maintain healthy weight.

The 2015 Bike Score®, 2016 Walk Score® and 2015 Transit Score® comprise a patented, standardised scoring system developed using novel, web-based geospatial technologies to score accessibility of biking, walking and public transportation. The objective of this research was to determine the relationship between population health indices (related to weight and wellness) within 72 metropolitan cities in the USA.

A multivariate multiple regression was calculated followed by a Pearson's correlation. The Bike Score® was significantly associated with several health indices, including overall wellbeing ($p=.027$), exercise frequently ($p=.005$), smoking ($p=.010$), healthy weight ($p=.003$), obesity ($p=.018$) and physical inactivity ($p\leq.000$). The Bike Score® was not significantly associated with eating produce frequently ($p=.122$), daily stress ($p=.895$) or overweight ($p=.669$). Bike Score® correlated positively ($p<.05$) with wellbeing ($r=.32$) and healthy weight ($r=.44$), and negatively with smoking ($r=-.48$), obesity ($r=-.42$) and physical inactivity ($r=-.55$). The Bike Score® also correlated positively with the Walk Score® ($r=.69$) and Transit Score® ($r=.64$) ($p\leq.000$ for both).

This correlational study indicated that residents living in more bicycle friendly metropolitan US cities reported significantly better well-being, they smoke less, have a healthy weight, are less obese and are more physically active. By increasing the bikeability of a city as indicated through the Bike Score®, there is impetus to improve population health of city dwellers.



THE USEFULNESS OF A GPS BICYCLE TRACKING SYSTEM FOR EVALUATING CHANGES IN TRAFFIC VOLUMES ON BICYCLE ROUTE

Kristiann Heesch

School of Public Health & Social Work and Institute of Health & Biomedical Innovation, Queensland University of Technology, Brisbane, Australia

Michael Langdon

Infrastructure Management and Delivery Division, Department of Transport and Main Road, Brisbane, Australia

A key strategy to increase transport cycling in low-cycling countries is the construction of bicycle infrastructure. Tools to evaluate this strategy are limited. This study assessed the usefulness of a GPS tracking system for evaluating the effectiveness of new infrastructure on increasing cycling route volumes. Usefulness was conceptualised as geographic coverage, precision of data point locations and sensitivity of the GPS counts to changes in traffic volumes due to infrastructure improvements.

Methods

Cycling data were collected from Queensland, Australia cyclists who recorded their cycling trips on a GPS tracking app. Raw bicycle counts from the GPS system were compared with bicycle traffic counts from traffic monitoring stations, and heat and traffic volume maps produced from the raw data were analysed.

Results

Heat maps showed a high level of coverage of bicycle trips across the state. Traffic volume maps indicated some errors in displaying the precise locations of cyclists. These occurred when cycling counts were attached to the open street map. The data were sensitive to changes in traffic volumes and these changes reflected changes seen in counts recorded by traffic monitoring stations.

Conclusion

GPS tracking data are promising for evaluating the impact of infrastructure improvements on traffic volumes on cycling routes across Queensland. As GPS tracking data and existing data sources have their own inherent biases, data triangulation is critical. GPS is a promising data source to use in conjunction with existing data sources for evaluating changes in traffic volumes pre- to post- introduction of new bicycle infrastructure.



UNDERSTANDING USER PERCEPTIONS OF HIGH SPEED E-BIKES FOR DAILY COMMUTE

Babet Hendriks

Radboud University, Nijmegen, the Netherlands

Fariya Sharmeen

Radboud University, Nijmegen, the Netherlands

Cycling is gaining territory in travel behaviour debates potentially to substitute commute trips, as the major share of daily travel is associated with work during peak hours. Even in high cycling countries, existing use of bicycles are limited as a feeder mode for short intra-city commute travel, which is understandable given the physiological needs and limitations associated to cycling. Therefore, to maintain cycling trends throughout cities and to further promote those trends in larger city regions, regional governments are investing in high-speed cycling infrastructures (or bicycle highways) and in high speed electrical (pedal assisted) bicycles. Among those e-bikes, high speed e-bikes or speed-pedececs (SP) with an achievable speed of 45 km/h has warranted promising opportunities and consequently new institutional mandates.

Blurring the edge of bicycles, these new generation e-bikes justified a revision of the institutional framework associated with both the use and the user of SP (e.g. taxes, licensing and age limit). While any innovation is challenged with gaining critical mass, this is more so the case with SP. In this study, we address this challenge of establishing sustainable commuting practices with new technological infrastructures by means of understanding user perception and behavioural traits. With the theory of planned behaviour in the forefront, attitude and preference towards commute modes were analysed for both existing and potential users of SP. Results indicate whether and how institutional mandates subvert the critical mass and enhances our understanding of attitudes and perceptions towards institutionally constrained new technologies to develop effective strategies.



‘WHAT'S A SHARROW?’

Learning by trial and error on the new Island Bay Cycleway

Mike Lloyd

Victoria University of Wellington, Wellington, New Zealand

New road signs go through a careful process of design, trial and approval before they appear on roads. This care does not guarantee that road users will know anything about a new road sign, or if they do, will comply with the sign's intent. This problem is highly relevant to new cycling infrastructure, as it often employs relatively new road signage. The case study here concerns the 'sharrow', short for shared lane arrow, as used in a section of the Island Bay Cycleway completed in mid-2016. Using naturalistic video data, the intricate details of socio-material interaction in this new cycleway are closely examined. The results show some support for the effectiveness of the sharrow, but also emphasise that it cannot be considered in isolation. This will not surprise road safety designers, but the intricacy of the coordination between vehicle drivers, cyclists, and material features of the road, sometimes has to be seen to be believed. Consideration of cycling and driving in its fine detail is useful for any attempt to improve safety on roads.



WATERVIEW SHARED PATH

Connecting a community with travel mode choice

Marcus Pillay

Auckland Transport, Auckland, New Zealand

The Waterview Shared Path arose out of the Waterview Tunnel Board of Inquiry Decision S014 and set out a social mitigation requirement for the Waterview Tunnel Construction and operation. The mitigation was for the loss of open space in Alan Wood Reserve. The New Zealand Transport Agency would contribute \$8m in 2011 for the construction of the shared path and Auckland Council and Auckland Transport would be responsible for the property, design, consents and development costs, including any cost overrun, for the project.

Proponents put the path forward as a strategic cycleway network link, connecting major shared paths in the region and contributing to a city-wide cycle and walking network. Community groups wanted mitigation during the construction years and beyond. Mana whenua sought to recognise the history of the land, the narrative of Maori gardens and the story of their ancestors in the area. Community Groups also wanted architectural solutions that addressed concerns over use ability, appearances and visual amenity. Our users groups needed a facility that accommodates people of all abilities to service the community of over 25,000 people and to connect to the major shared paths in the region.

Our alliance partners looked to produce a shared path to meet a set of minimum requirements for a price developed in the alliance delivery contract with a financial and risk based decision making process. Our funding agents put forward the benefit costs estimate based on the travel choice, travel time savings, attractiveness of a substantially off road shared path to users and costs benefit analysis.

Each line of sight contributed to the rich cultural and historical tapestry that traversed by the Waterview Shared path as this thin 4.5m corridor of connects the community to transport corridors, green space, future public transport hubs, enables the development of the major land blocks along the route into residential and commercial developments with cycling and walking as a major travel choice options and opens up development opportunities along the route. This substantially off road facility has enabled a number of other projects to be brought forward and integrated with the shared path construction for a more seamless delivery.



WHERE ARE ALL THE CYCLISTS?

Examining the location of university staff and student cyclists in relation to new infrastructure in Christchurch

Angela Curl

University of Canterbury, Christchurch, New Zealand

Simon Kingham

University of Canterbury, Christchurch, New Zealand

Helen Fitt

University of Canterbury, Christchurch, New Zealand

This paper investigates spatial patterns of cycling mode share amongst staff and students at the University of Canterbury in relation to new cycle infrastructure in the city.

The research is undertaken in the context of the disruptive earthquake events in 2010/2011. Such disruptive events present opportunities to change travel practices and policies (Marsden and Docherty, 2013). The disruption led to the opportunity for transport policy change and has seen a shift towards promotion of sustainable travel in the city and at the university. Such initiatives include a network of major cycle routes, the first of which 'uni-cycle' - Puari ki Pū-taringa-motu connects the university to the city centre. Alongside this, both before and after the earthquakes, the university has implemented a range of policies and initiatives to promote cycling. At the same time as decentralisation of jobs and homes mean that cycling may become less feasible as a mode of travel due to increased travel distances.

In 2016, 18.5% of staff and 18.9% of students cycled to the university. In this paper we examine the spatial patterns of cycling to the university in relation to cycling infrastructure in the city.

This helps to explore:

- Whether new cycling infrastructure is built in locations catering for existing cyclists
- Areas of the city where there is potential for cycling promotion to staff and students
- In future, whether cycling infrastructure has led to increased uptake of cycling to the university from some areas of the city

References:

Marsden, G and Docherty, I (2013) Insights on disruptions as opportunities for transport policy change. Transportation Research Part A: Policy and Practice, 51. 46 - 55. ISSN 0965-8564



WHY INTERSECTIONS SHOULD GIVE CYCLISTS CYCLE TIME

Sjouke Wieringa

Auckland, New Zealand

Too often cycling needs are overlooked when designing a signalised intersection. Detectors are not ready to pick up the light metal of a road bike and cyclists go through the intersection without clear guidance nor protection from cars. Sometimes, cars need to drive up to the cyclists in order to avoid delays for that approach for cyclists and cars. The irony is there: cyclists do not get cycle time.

Cyclists' speed differs, their acceleration and deceleration time and distance differ and they are more flexible than cars to manoeuvre through the junction. Despite that, signalised intersections often do not cater for cyclists differently than for cars. Current practices in New Zealand show in greater extent advanced stop boxes and hook turn boxes to allocate space to cyclists, but often no adequate detectors to accommodate for cyclists, let alone a cycle signal to guide this vulnerable group of road users through the intersection. We expect cyclists to adapt and behave as a car, but is that the best safe system outcome?

One could design for cyclists per default. What could signalised intersections look like to cater also for cyclists and what would be the value of having cycle proof signalised intersections for the safety and efficiency of all road users? What are the implications for designing cycling intersections per default?

This paper presents an elaboration on how to guide cyclists through signalised intersections and discusses the value of those changes to the traffic network based on best practices from New Zealand and The Netherlands from a safe system approach.



YES I BIKE

Jo Clendon

*Bikes Welcome Charitable Trust,
Lower Hutt, New Zealand*

As a bike user*, an everyday bike user, my transport mode preferences are hard to detect. So it would be easy for businesses to fail to recognise me. I leave my helmet on my handlebars, and my bike is outside where they can't see it. Of course, they see plenty of cars parked outside, and probably that is how they travelled, so naturally they expect that I probably drove too. They would find it easier to recognise me as a cyclist if I were wearing lycra and walking with an odd gait due to cycling shoes. Hence the common conclusion of most business operators:

“My customers don't ride bikes [to get here]”

If people have only ever used cars to get around, that's how they see the world. How could there be any other option? That's how our minds work. How do we tweak that view, just a little, just to suggest that there might be other options?

The 'Yes I bike' poster challenges us to think of biking beyond sports and recreation and inspires us to ride more places more often.

*I like the term bike user. I look at it this way: I brush my teeth everyday, but I don't call myself a tooth-brusher. In the same way, I'm not a cyclist. I'm a person who uses a bike, most of the time, sometimes... whatever.



RIDE
AND
WIN!



AOTEAROA MINI BIKE CHALLENGE

It's spring, ride anywhere and win! A fun, free individual competition that everyone can take part in. Ride anywhere, anytime. Track your standing, set goals, and win prizes!

RUNS OCTOBER 16 – 29

SIGN UP TODAY! WWW.AOTEAROA.BIKE



Asia-Pacific
Cycle Congress

17 – 20 October 2017 Christchurch
New Zealand

apcc2017.com



HOSTED BY

PRINCIPAL PARTNERS

