International Symposium

Active Living and Environment:
Towards a Healthier and More Sustainable Future

28 – 30 August 2017 | University of Otago | Dunedin | New Zealand

Symposium Proceedings

Editors:
Sandra Mandic, Christina Ergler and Antoni Moore

University of Otago
August 2017
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Welcome

Dear Colleagues,

Welcome to the International Symposium “Active Living and Environment: Towards a Healthier and More Sustainable Future” (ALE) held 28-30 August 2017 in Dunedin, New Zealand. This symposium has been designed to facilitate and grow an international, multidisciplinary and multi-sector dialogue related to Active Living and Environment.

Symposium themes include Health, Transportation, Environment and Sustainability.

This multidisciplinary symposium is bringing together international and national experts from multiple sectors including academia, government, public health, urban design, transportation and environment.

As organizers, we hope that during this symposium you will:

- Learn from international and national experts from multiple disciplines and sectors
- Exchange ideas and engage in an interdisciplinary and multi-sector dialogue
- Showcase your research findings, programmes, interventions, case studies or impact of policy or advocacy
- Extend your networks
- Engage in facilitating the change towards a healthier and more sustainable future, and
- Explore what the University of Otago, Dunedin and New Zealand have to offer.

Here are a few programme details:

- 3 full action-packed days
- 18 invited speakers (11 from New Zealand and 7 presenters from overseas including UK, Spain, Australia, Canada, & U.S.A)
- 10 abstract sessions presenting 40 research-focused and practice/policy abstracts
- Social and networking activities before, during and after the symposium

Working together we can take new steps towards a healthier and more sustainable future.

Thank you for joining us. We hope you will enjoy this symposium, get inspired, make new friends and take many new ideas to extend your current work.

Kind regards,
ALE Symposium Organizing Committee

Dr Sandra Mandic (Chair)
School of Physical Education, Sport and Exercise Sciences
University of Otago

Dr Christina Ergler
Department of Geography
University of Otago

Associate Professor Antoni Moore
School of Surveying
University of Otago
Symposium Details

Dates and Location
28-30 August 2017
University of Otago
Dunedin | New Zealand

Conference Venue
The conference will be held in the Burns (Arts) Building Lecture Theatre:
75 Albany Street, Dunedin (see map)
Catering for morning and afternoon teas will be held nearby (in the ISB Link).
Lunch will be at the University of Otago Staff Club.

Symposium Website
For detailed information, please refer to the symposium website:
www.otago.ac.nz/active-living-2017

Sponsors

Active Living Laboratory
otago.ac.nz/active-living

We would also like to acknowledge the great help of Tessa Pocock, project coordinator, and Chiew Ching Kek, research assistant, who helped with organization of this symposium.

Questions? Let us know…

Active Living Laboratory
Phone: +64 3 479 9112 | Email: ale.symposium@otago.ac.nz
OR come and see us at the registration desk outside BURNS 1 Lecture Theatre.

School of Physical Education, Sport and Exercise Sciences, University of Otago
55 Union Street West, Office 211/212 | PO Box 56
Dunedin 9054, NEW ZEALAND
Invited Speakers

The goal of this symposium is to facilitate and grow an international, multidisciplinary and multi-sector dialogue related to Active Living and Environment. As an attendee, you have an opportunity to learn from and exchange ideas with a range of international and New Zealand speakers and participants across the fields of health, transport, environment and sustainability.

International speakers

Professor John C. Spence, University of Alberta, Edmonton, Canada
Professor Guy Faulkner, University of British Columbia, Vancouver, Canada
Professor Eduardo Generelo Lanaspa, University of Zaragoza, Huesca, Spain
Associate Professor Palma Chillón, University of Granada, Granada, Spain
Assistant Professor Jennifer D. Roberts, University of Maryland College Park, MD, United States
Dr Enrique García Bengoechea, University of Victoria, Melbourne, Australia
Dr Debbie Hopkins, University of Oxford, Oxford, United Kingdom

New Zealand-based speakers

Mr Andrew Jackson, Ministry of Transport
Ms Claire Pascoe, New Zealand Transport Agency
Dr Anna Stevenson, Canterbury District Health Board
Ms Helen Gillespie, Department of Conservation
Professor Simon Kingham, University of Canterbury, Christchurch
Professor Claire Freeman, University of Otago, Dunedin
Associate Professor Melody Smith, University of Auckland, Auckland
Associate Professor Michael Keall, University of Otago, Wellington
Dr Alex Macmillan, University of Otago, Dunedin
Dr Sandra Mandic, University of Otago, Dunedin
Dr Christina Ergler, University of Otago, Dunedin

Details about invited speakers are provided on the following pages.
Dr. John C. Spence, Professor and Vice Dean
Faculty of Physical Education and Recreation, University of Alberta, Edmonton, Canada

“To sit is human, to move is divine: A tale of cultural evolution and progress traps”

Professor Spence has expertise in theories of health behaviour, research methods, and population health. His research focuses on the benefits and determinants of physical activity and how physical inactivity and sedentary behaviour are related to obesity. His recent work has examined the role of policy initiatives for promoting physical activity and reducing sedentary behaviour in Canada. For instance, he has led evaluations on the effectiveness of tax credits and a micro-grants programme to support children’s access to physical activity and sport.

Professor Guy Faulkner
School of Kinesiology, University of British Columbia, Vancouver, Canada
Canadian Institutes of Health Research-Public Health Agency of Canada (CIHR-PHAC) Chair in Applied Public Health

“Examining the Built Environment and Active Travel in Toronto: Lessons from the Canadian BEAT Project”

Professor Faulkner’s research has focused on two inter-related themes: the development and evaluation of physical activity interventions; and physical activity and mental health. He was the principal investigator on Project BEAT (Built Environment and Active Transport; funded by the Heart and Stroke Foundation of Canada and the Canadian Institutes of Health Research) which was a multidisciplinary research programme examining relationships between school transport and the built environment in Toronto, Canada.

Professor Eduardo Generelo Lanaspa
Faculty of Health Sciences and Sport, University of Zaragoza, Huesca, Spain

“CAPAS-Ciudad/CAPAS-Cité: A Transcultural Physical Activity Promotion Program (Spain/France)”

Professor Generelo’s current research examines strategies for promotion of physical activity in Physical Education classes taught in schools. He is a director of the Department of Corporal Expression at the University of Zaragoza, lead researcher of the EFYPAF research group (Educación Física y Promoción de la Actividad Física / Physical Education and Promotion of Physical Activity) and a member of the Pyrenean Center for the Improvement and Promotion of Physical Activity and Health.
**Associate Professor Palma Chillón**

Faculty of Sport Sciences, University of Granada, Granada, Spain

"The PACO (Cycle and Walk to School) Study: Design, Planning and Preliminary Results"

Associate Professor Palma Chillón focuses on researching active commuting to school and she is the principal investigator on three projects on this topic: Safe Routes to School in Granada, Teaching Urban Cycling in Young and Adults and The PACO (Cycle and walk to school) Study. She was a visiting researcher at the University of North Carolina (United States) (2009-10) and University of Cambridge (United Kingdom) (2013).

**Assistant Professor Jennifer D. Roberts**

University of Maryland College Park, College Park, MD, United States

“Active Living Among Washington, DC Area Youth”

Dr. Jennifer D. Roberts' research interests focus on the relationship between the built environment and physical activity in addition to its impact on obesity and other public health outcomes. More specifically, much of her research has explored the dynamic relationship between environmental, social and cultural determinants of physical activity and using empirical evidence of this relationship to infer complex health outcome patterns among adults and children. Dr Roberts is the Director of the Public Health Outcomes and Effects of the Built Environment (PHOEBE) Laboratory.

**Dr Enrique García Bengoechea**

Visiting Fellow, Institute of Sport, Exercise, and Active Living, University of Victoria, Melbourne, Australia

Affiliated Researcher, Department of Family Medicine, McGill University, Montreal, Canada

“Towards Community Ownership of Physical Activity Promotion Initiatives in the Indigenous Community of Kahnawake”

Dr García’s main research interests are community-engaged physical activity and health promotion, and youth development and socialization in sport. He was formerly a Research Associate with the Alberta Centre for Active Living in Edmonton, Canada, and an Associate Professor in the Department of Kinesiology and Physical Education at McGill University in Montreal, Canada.
Dr Debbie Hopkins
Research Fellow, the Transport Studies Unit, School of Geography and the Environment, University of Oxford, Oxford, United Kingdom

“The Mobility and Modality of Adolescents”

Dr Hopkins is a human geographer and environmental social scientist interested in the energy implications of the movement of goods and people. Debbie is a Research Fellow in Low Carbon Mobility and Energy Demand at the Transport Studies Unit, School of Geography and the Environment, University of Oxford, and a Junior Research Fellow in Geography at Mansfield College, University of Oxford.

Mr Andrew Jackson
Deputy Chief Executive, Ministry of Transport, Wellington, New Zealand

“Transport – a New Way Forward”

Mr Andrew Jackson is currently Deputy Chief Executive of the Ministry of Transport. His previous role was Deputy Secretary Competition, Trade and Investment in the Ministry of Economic Development of New Zealand. Prior to that, Mr Jackson held various roles in the British public sector including work on the UK’s Foresight programme which sought to bring science to bear on policy challenges.

Ms Claire Pascoe
Cycling Delivery Manager, New Zealand Transport Agency, Wellington, New Zealand

“Boosting Transport’s Contribution to Health”

In her current role, Claire is responsible for the culture change elements of the national cycling programme in New Zealand. In her previous position as senior cycling advisor, she played a lead role in the Urban Cycleways Programme development and delivery. Claire has been immersed in the world of cycling for over eight years in a variety of roles, including local government transport planning, community advocacy and programme development, cycle skills training and now as a cycling delivery manager. Over the years, she has developed a number of programmes that have successfully encouraged more people to take up cycling.
Dr Anna Stevenson
Canterbury District Health Board, Christchurch, New Zealand

“Translating Research to Policy and Practice: Implementation of Health in All Policy Approach in Canterbury, New Zealand”

Dr Anna Stevenson is a New Zealand trained Public Health Physician. Before training in public health she worked in family medicine in cities and rural locations around New Zealand. Dr Stevenson led the reorientation of the Canterbury District Health Boards Public Health Unit, Community and Public health, to an organisation committed to using a Health in All Policies approach with a clear focus on Determinants of health, Equity, sound use of Evidence and honouring the Treaty of Waitangi (DEET) in all our work.

Ms Helen Gillespie
Healthy Nature Healthy People Project Coordinator, Department of Conservation, New Zealand

“Healthy People Healthy Nature – Growing a Movement”

Helen has worked in health, sport and conservation for many years. Helen grew up spending a lot of time outdoors and did not appreciate that it was not like that for everyone. Now as a relative urban dweller with a young family, she has an appreciation for the challenges that face most of our population. Helen’s love for nature has taken her from the backyard with her children - getting up close with critters in the concrete cracks to the top of mountains running for New Zealand. She is very passionate about the health and wellbeing benefits from being in the nature.

Professor Simon Kingham
Department of Geography, University of Canterbury, Christchurch, New Zealand

“Benefits of and Barriers to Creating Healthy and Active Urban Environments”

Much of Professor Kingham’s research over the years has looked at urban environment and health with a significant focus on transport. Professor Kingham directs the Geospatial Research Institute and the GeoHealth Laboratory at the University of Canterbury, is a member of the Canterbury Regional Transport Committee (a regional committee mandated by central government to drive transport policy) and a member of the Editorial Board of the Journal of Transport and Health.
Professor Claire Freeman
Department of Geography, University of Otago, Dunedin, New Zealand
"Creating Biodiverse Cities for Active Lives from Childhood to Old Age"
Professor Freeman's interests are in environmental planning including sustainable communities, planning for children and young people and planning with nature. She mainly teaches in the Master of Planning Programme at the University of Otago.

Associate Professor Melody Smith
University of Auckland, Auckland, New Zealand
“Neighbourhoods for Active Kids: Participatory GIS to Understand Neighbourhood Environments for Children’s Activity”
Aspirations for neighbourhoods where children can be independently mobile, where people can get around safely by walking and cycling, and where social and physical well-being are prioritised and facilitated are key drivers of her research. Most of her work involves the integration of objective measurement of behaviours and outcomes (e.g., accelerometry, inclinometry, GPS, GIS), as well as person-centred methods (participatory planning, online mapping). She is fortunate to work with amazing researchers and students across a range of innovative projects that contribute to understanding the links between built and social environments and health and well-being in children and their families.

Associate Professor Michael Keall
Department of Public Health, University of Otago, Wellington, New Zealand
“Encouraging Cycling and Walking in New Zealand: Evaluation of the Model Communities Programme”
Associate Professor Michael Keall is an injury epidemiologist who is interested in home injury prevention, road safety and exposure assessment (assessing structural environmental risks). He is a principal investigator in two major research programmes hosted by the University of Otago, Wellington - He Kainga Oranga and the New Zealand Centre for Sustainable Cities.
Dr Alex Macmillan
Department of Preventive and Social Medicine, University of Otago, Dunedin, New Zealand

“Achieving Policy and Institutional Change for Healthy Sustainable Transport”

Dr Alex Macmillan’s research applies epidemiology and complex modelling tools to policy change for health, equity and sustainability in cities. She is especially interested in collaborative learning processes that achieve institutional and policy change for climate-friendly, active transport. Dr Macmillan is a public health physician and senior lecturer in environmental health.

Dr Sandra Mandic
School of Physical Education, Sport and Exercise Sciences, University of Otago, Dunedin, New Zealand

“Multidisciplinary and Multi-Sector Approach to Active Living Research: Insights from Otago, New Zealand”

Dr. Mandic’s research focuses on multidisciplinary and multi-sector approach to physical activity and health with the links to transportation, built environment and sustainability. Her academic training and professional experiences span Europe, Canada, United States and New Zealand. She is the academic leader of the Active Living Laboratory and the principal investigator on the Built Environment and Active Transport to School: BEATS Study.

Dr Christina Ergler
Department of Geography, University of Otago, Dunedin, New Zealand

“The Nature of Children’s Seasonal Play: a Case Study from Auckland, New Zealand”

Dr. Ergler’s research interests are at the intersection of geography, sociology and public health and centre on how physical, social and symbolic environments shape and are shaped by the way people play, live, age, fall ill and recover in particular places. She has published numerous theoretical and methodological pieces to alert stakeholders and communities to the socio-spatial, structural and experiential dimensions of people’s health and wellbeing in transforming urban environments.
# Symposium Programme

## Day 1: Monday, 28 August 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Room</th>
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<tbody>
<tr>
<td>08:30</td>
<td>Registrations</td>
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<tr>
<td>09:00 - 09:10</td>
<td>Welcome</td>
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</table>
| 09:10 - 10:00 | **Guy Faulkner**  
Examining the Built Environment and Active Travel in Toronto: Lessons from the Canadian BEAT Project |
| 10:00 - 10:30 | **Palma Chillón**  
The PACO Study: Design, Planning and Preliminary Results |
| 10:30 - 11:00 | **Morning tea** |
| 11:00 - 12:00 | **Active Transport** |
| Jennifer Roberts | Area Youth |
| Tamara Bozovic  | Reducing Barriers to Walking in a Car-Focused Environment: The Potential for Inclusion and a Pragmatic Way Forward for Hamilton |
| Joanne Clendon | Fear and Loathing on the Footpath |
| Marie Russell  | Benchmarking Cycling and Walking in Six New Zealand Cities |
| 11:00 - 12:00 | **Health, Sustainability, Exhibits** |
| Allyson Calder  | Blokes with Stroke Explore the User-Friendliness of Fitness Facility |
| Robyn Zink      | Environments for Engaging in Physical Activity |
| Scott Willis    | Young people as Action Takers and Knowledge Makers – Through Enviroschools |
| Nancy Longnecker | Climate Safe Housing: Where Mitigation and Adaptation Meet |
| 12:00 - 13:00 | **Lunch** |
| 13:00 - 13:30 | **Sandra Mandic**  
Multidisciplinary and Multi-Sector Approach to Active Living Research: Insights from Otago, New Zealand |
| 13:30 - 14:00 | **Melody Smith**  
Neighbourhoods for Active Kids: Participatory GIS to Understand Neighbourhood Environments for Children’s Activity |
| 14:00 - 14:30 | **Simon Kingham**  
Benefits of and Barriers to Creating Healthy and Active Urban Environments |
<p>| 14:30 - 15:00 | <strong>Afternoon tea</strong> |</p>
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<tr>
<th>Time</th>
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<tr>
<td>15:00 - 16:00</td>
<td>BURNS 1</td>
<td><strong>Built Environment and Urban Design</strong></td>
<td>Erika Ikeda</td>
<td>Innovative Measurement of Children’s School Travel Behavior and Perceptions on their School Travel Routes</td>
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<td>Judith Rodda</td>
<td>An Active Transport to School Route Data Atlas for Dunedin</td>
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<td>Erica Hinckson</td>
<td>Associations of the Perceived and Objective Neighborhood Environment with Physical Activity and Sedentary Time in New Zealand Adolescents</td>
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<td>Angela Curl</td>
<td>Do Changes in the Walkability of the Built Environment Lead to Changes in Walking Behaviour? A Comparison of Home Movers and Stayers</td>
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<td>15:00 - 16:00</td>
<td>BURNS 7</td>
<td><strong>Cycle Skills Training</strong></td>
<td>Charlotte Flaherty</td>
<td>South Dunedin Cycling Project</td>
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<td>Siobhan McArthur</td>
<td>Effects of Cycle Skills Training Programme on Children’s Cycling-Related Behaviours, Confidence and Knowledge</td>
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<td>Dana Lawrie</td>
<td>Comparison of Cycling-Related Habits, Confidence, Support and Knowledge among Children and Adolescents from Dunedin, New Zealand</td>
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<td>Chiew Ching Kek</td>
<td>Effects of Cycle Skills Training on Cycling-Related Confidence, Habits, Knowledge and Practical Skills in Adolescent Girls</td>
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<td>16:00 - 16:05</td>
<td>BURNS 1</td>
<td><strong>Activity break</strong></td>
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<td>16:05 - 16:35</td>
<td>BURNS 1</td>
<td><strong>The Mobility and Modality of Adolescents</strong></td>
<td>Debbie Hopkins</td>
<td>The Mobility and Modality of Adolescents</td>
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<td>16:35 - 17:00</td>
<td>BURNS 1</td>
<td><strong>Opening Reception</strong></td>
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<td>17:00 - 17:30</td>
<td>Staff Club</td>
<td><strong>Drinks and Nibbles</strong></td>
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<td>08:30</td>
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<td>09:00 - 09:50</td>
<td><strong>John Spence</strong>&lt;br&gt;To Sit is Human, To Move is Divine: A Tale of Cultural Evolution and Progress Traps</td>
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<td>09:50 - 10:30</td>
<td><strong>Enrique Garcia Bengoechea</strong>&lt;br&gt;Toward Community Ownership of Physical Activity Promotion&lt;br&gt;Initiatives in the Indigenous Community of Kahnawake</td>
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<td>11:00 - 12:00</td>
<td><strong>Physical Activity Promotion</strong>&lt;br&gt;<strong>Eduardo Generelo Lanaspa</strong>&lt;br&gt;'Sigue La Huella' An Example of a Global Approach to Promote Physical Activity&lt;br&gt;<strong>Javier Zaragoza Casterad</strong>&lt;br&gt;A Project-Based Learning Intervention to Promote Active Commuting to School in Spanish Children&lt;br&gt;<strong>Ricardo Oliveira</strong>&lt;br&gt;Active Living Behavior and Health Apps in Y-Generation: Do They Really Work?&lt;br&gt;<strong>Alberto Aibar</strong>&lt;br&gt;Promotion of Healthy Habits through a Participatory Action Research Process Focusing on Physical Activity</td>
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<td>11:00 - 12:00</td>
<td><strong>Cycling</strong>&lt;br&gt;<strong>Mark Falcous</strong>&lt;br&gt;Understanding the Role of Culture in Cycling Advocacy&lt;br&gt;<strong>Joanne Clendon</strong>&lt;br&gt;Beyond Slap-bands and Drink Bottles - Encouraging Everyday Biking&lt;br&gt;<strong>Judith Rodda</strong>&lt;br&gt;Adolescents’ Perceptions of Safety Along Routes to Dunedin Secondary Schools: Is Perception Biased?&lt;br&gt;<strong>Tessa Pocock</strong>&lt;br&gt;Long-Term Effects of Cycle Skills Training: The Results of Follow-up Surveys</td>
<td>BURNS 7</td>
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<td>12:00 - 13:00</td>
<td><strong>Lunch</strong></td>
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<td>13:00 - 13:30</td>
<td><strong>Michael Keall</strong>&lt;br&gt;Encouraging Cycling and Walking in New Zealand: Evaluation of the Model Communities Programme</td>
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<td>13:30 - 14:00</td>
<td><strong>Claire Pascoe</strong>&lt;br&gt;Boosting Transport’s Contribution to Health</td>
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<td>14:00 - 14:30</td>
<td><strong>Jennifer Roberts</strong>&lt;br&gt;Active Living Among Washington, DC Area Youth</td>
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<td>14:30 - 15:00</td>
<td><strong>Afternoon tea</strong></td>
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### Day 2: Tuesday, 29 August 2017 (Continued)

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<th>Time</th>
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<tr>
<td>15:00 - 16:00</td>
<td>BURNS 1</td>
<td><strong>Active Transport to School</strong></td>
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<td>Michael Hale</td>
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<td>Auckland's Recipe for Obesity – Key Results from the Healthy Auckland</td>
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<td>Together Monitoring Report 2017</td>
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<td>Daniel Camiletti</td>
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<td>A Longitudinal Study of the Mode of Commuting to School in Spanish</td>
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<td>Children and Adolescents: The UP&amp;DOWN Study</td>
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<td>Palma Chillón</td>
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<td>Interventions for Promoting Active Commuting to School: An Updated</td>
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<td>Systematic Review</td>
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<td>Christine Cheyne</td>
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<td>Chicken or Egg? The Importance of School Transport Norms</td>
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<td>15:00 - 16:00</td>
<td>BURNS 7</td>
<td><strong>Policy</strong></td>
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<td>Susan Sandretto</td>
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<td>“It Hasn't Been in Our Field of View”: Active Transport, School Policy and Leadership in Neo-liberal Times</td>
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<td>Annie Kentwell</td>
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<td>Incorporating Active Living Principles into Statutory Planning: A Successful Case Study within Canberra, Australia</td>
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<td>Niamh Donnellan</td>
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<td>Measuring the Relationship between the Neighbourhood Built Environment and Children’s Active Transport Behaviours and Perceptions</td>
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<td>Sandy Brinsdon</td>
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<td>Making Sustainable Changes in a Health Oriented Organisation</td>
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<td>16:00 - 16:15</td>
<td>BURNS 1</td>
<td><strong>Activity break</strong></td>
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<tr>
<td>16:15 - 16:45</td>
<td>BURNS 1</td>
<td><strong>Eduardo Generelo Lanaspa</strong></td>
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<td>CAPAS-Ciudad/CAPAS-Cité: A Transcultural Physical Activity Promotion Centre (Spain/France)</td>
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<td>17:30 - 18:30</td>
<td>ARCHWAY 3</td>
<td><strong>Public lecture</strong>: A successful community-academic research partnership: The BEATS Study</td>
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<td>19:00 - 21:00</td>
<td>Staff Club</td>
<td><strong>Symposium Dinner</strong></td>
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## Day 3: Wednesday, 30 August 2017

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<th>Time</th>
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<tr>
<td>08:30 - 09:00</td>
<td>BURNS 1</td>
<td>Registrations</td>
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<td>09:00 - 09:30</td>
<td>BURNS 1</td>
<td>Andrew Jackson</td>
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<td>Transport – A New Way Forward</td>
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<td>09:30 - 10:00</td>
<td>BURNS 1</td>
<td>Anna Stevenson</td>
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<td>Translating Research to Policy and Practice: Implementation of Health in All Policy Approach in Canterbury, New Zealand</td>
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<td>10:00 - 10:30</td>
<td>BURNS 1</td>
<td>Alex McMillan</td>
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<td>Achieving Policy and Institutional Change for Healthy Sustainable Transport</td>
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<td>10:30 - 11:00</td>
<td>ISB Link</td>
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<td>11:00 - 12:00</td>
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<td>Transport and Urban Design</td>
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<td>James Young</td>
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<td>Travel Demand Management to Change the Travel Behaviour of</td>
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<td>Palma Chillón</td>
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<td>Commuters Returning to Work in Central Christchurch</td>
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<td>Tessa Pocock</td>
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<td>Modes of Commuting to University and Reasons for Mode Choice among</td>
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<td>Annie Kentwell</td>
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<td>School Neighbourhood Environment and Active Transport to Secondary</td>
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<td>Schools in Dunedin, New Zealand</td>
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<td>Active Living Professional Development Workshop Series: Walkshops, a</td>
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<td>Practical Education Program for Government Employees</td>
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<td>11:00 - 12:00</td>
<td>BURNS 7</td>
<td>Environment and Nature</td>
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<td>Miles Saita</td>
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<td>Park-Based Physical Activity Interventions for People with Disability: An</td>
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<td>Meredith Perry</td>
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<td>Accessible and Usability of Community Parks and Playgrounds in the Greater</td>
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<td>Kerry Mulligan</td>
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<td>Incorporating Inclusive Design in Architectural Practice: A Qualitative</td>
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<td>Shannon McNatty</td>
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<td>Study Exploring Architectural Design Student’s Experiential Learning</td>
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<td>A New Way of Being Through Outdoor Learning</td>
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<td>12:00 - 13:00</td>
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<td>13:00 - 13:30</td>
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<td>Claire Freeman</td>
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<td>Creating Biodiverse Cities for Active Lives from Childhood to Old Age</td>
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<td>13:30 - 14:00</td>
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<td>Healthy Nature Healthy People - Growing a Movement</td>
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<td>Christina Ergler</td>
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<td>The Nature of Children’s Seasonal Play: A Case Study From Auckland, New Zealand</td>
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<td>15:00 - 16:00</td>
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<td>Panel discussion: How do we work together?</td>
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<td>16:00 - 16:15</td>
<td>BURNS 1</td>
<td>Closing ceremony</td>
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Symposium Social Events

Social events are a great way to connect with your colleagues and make new friends amongst the symposium attendees. The Organising Committee would like to invite you to the following events:

**Opening Reception**

**Monday, 28 August 2017, 4:35 pm to 6:30 pm**

The Opening Reception of the symposium will take place in the Burns Lecture Theatre Complex on Albany Street (4:35 pm to 5:00 pm) followed by drinks and nibbles at the University of Otago Staff Club (5:00 pm to 6:30 pm; 2 minute walk from the symposium venue). This is a great opportunity to meet up with colleagues and make new friends. Please note that an Opening Reception ticket is included in full registration.

**Walk to the Botanic Gardens**

**Tuesday, 29 August 2017, 12:00 pm to 1:00 pm**

Enjoy a lovely 15- to 20-minute walk to the beautiful Dunedin Botanic Gardens and a leisurely stroll around the garden before returning to the conference venue. The Dunedin Botanic Garden is New Zealand’s first botanic garden and holds the status of six-star Garden of International Significance. Please note that there is no cost to this event. The event is weather-dependent.

**Conference Dinner**

**Tuesday, 29 August 2017, 7:00 pm to 9:00 pm**

The Symposium Dinner will be held at the University of Otago Staff Club. Address: Leith Walk, Dunedin (2 minute walk from the symposium venue) (see map above)

Please note that the Symposium Dinner ticket is not included in full registration and will be available for purchase during the registration process.
Optional Explore Dunedin Tours

Dunedin Heritage Walks

“More than 100 years ago, Dunedin was New Zealand’s largest and wealthiest city, following the discovery of gold in Otago, and large investments in industry, shipping and commerce.” Two Heritage Walks (2 km each, 1 hour) offer the opportunity to see much of Dunedin’s Victorian past, as well as changing skylines and unexpected views.

See the Dunedin Heritage Walks brochure (PDF format, 168 KB)

Cycling Tours

Easy ride: Ravensbourne Track (12 km return)

More keen riders: Otago Peninsula (40 to 70 km return, depending on the route)

These bike rides will start from the symposium venue (Burns Lecture Theatre Complex) on Sunday, 27 August 2017, at 10 am (the day before the symposium starts).

Tramping/Hiking: Pineapple Track

This 4- to 5-hour tramp/hike will start from the symposium venue (Burns Lecture Theatre Complex) on Thursday, 31 August 2017, at 10 am (the day after the symposium finishes)

Please indicate your interest in these optional Explore Dunedin Tours as part of your symposium registration.
Examining the Built Environment and Active Travel in Toronto: 
Lessons from the Canadian BEAT Project

Guy Faulkner, PhD
School of Kinesiology, University of British Columbia, Vancouver, Canada

**Background:** Project BEAT (Built Environment and Active Transport) was a large-scale, multidisciplinary and mixed method study examining how the built environment influences the way elementary school children travel to school in Toronto, Canada. The purpose of this presentation will be to provide an overview of the key findings from project BEAT, and describe how knowledge exchange efforts have informed policy and practice in Canada through the development and implementation of School Travel Planning for promoting greater active school travel.

**Methods:** A series of sequential and overlapping stages and studies were conducted addressing active school travel at multiple levels – local (neighbourhood/municipal), regional (Greater Toronto Area) and provincial (Ontario). These included 1) a theory-building qualitative study engaging children and their parents in order to get at the qualitative reasons behind choices about active transport and what anxieties and empowerments are created in built environments that lead to the development of those choices; 2) a quantitative study examining the relationship between the built environment [capturing diversity with respect to built form (e.g., looping versus grid-based street layout), and socio-economic status (e.g., low and high income households)] and the active school transport mode choice which also identified whether active school commuters in the Greater Toronto Area are more physically active (assessed through accelerometry) and have a healthier body weight in comparison to passive school commuters; and 3) a quantitative cross-sectional survey of provincial prevalence and correlates of active school transport.

**Conclusions:** Project BEAT addressed an important knowledge gap in Canada in examining how to increase active school transport and understanding specifically the role of the built environment in shaping this behaviour. Enhanced research capacity to conduct this type of work was an important by-product.

**Support/Funding Source:** This research was funded by the Built Environment, Obesity and Health Strategic Initiative of the Heart and Stroke Foundation and the Canadian Institutes of Health Research (CIHR).
The PACO Study: Design, Planning and Preliminary Results

Palma Chillón PhD¹, Francisco J Huertas-Delgado PhD², Emilio Villa-González PhD¹, Yaira Barranco-Ruiz PhD³, Isaac J Pérez-López PhD³, Miguel Martín-Matillas PhD⁴, Irene Esteban-Cornejo PhD⁴, Juan M Fernández-Luna PhD⁵, Juan M Santiago-Zaragoza PhD⁶, María J Aranda-Balboa BSc¹, Patricia Gálvez-Fernández BSc¹, José Manuel Segura-Díaz MSc¹, Carlos Rodríguez-López PhD⁶, Romina Gisele-Saucedo BSc¹, Sergio Rosado-López BSc¹, Isabel Belmonte Parra BSc², Daniel Camiletti-Moirón PhD⁶, Javier Molina-García PhD⁷, Ana Queralt PhD⁷, Amador J Lara-Sánchez PhD⁸, Fernando Rodríguez-Rodríguez PhD⁸, Sandra Mandic PhD¹⁰, Manuel Herrador-Colmenero MSc¹.

¹Department of Physical Education and Sport, Faculty of Sport Sciences, University of Granada, Granada, Spain
²Faculty of Education Sciences La Inmaculada, University of Granada, Granada, Spain
³Department of Computer Science and Artificial Intelligence, Higher Technical School of Computer Sciences and Telecommunications Engineering, University of Granada, Granada, Spain
⁴Department of Graphic Expression in Architecture and Engineering, Higher Technical School of Building Engineering, University of Granada, Granada, Spain
⁵Department of Physical Education, School of Education Sciences, University of Cádiz, Cádiz, Spain
⁶Department of Teaching of Musical, Visual and Corporal Expression, University of Valencia, Valencia, Spain.
⁷Department of Nursing, University of Valencia, Valencia, Spain
⁸Department of Didactics of Musical, Plastic and Corporal Expression, University of Jaen, Jaen, Spain.
⁹IRyS Group, School of Physical Education, Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile
¹⁰Active Living Laboratory, School of Physical Education, Sport and Exercise Sciences, University of Otago, Dunedin, New Zealand

Background: Active commuting to school (i.e., mainly walking and cycling) has multiple health benefits. Young people using active modes of commuting to school have increased physical activity levels, better cardiorespiratory fitness and academic performance than those using passive modes of commuting to school.

Description: The objectives of the PACO project are three-fold: a) to analyze the patterns of the mode of commuting to school in Spanish youth in the last two decades, b) to design and study the properties of two questionnaires about mode of commuting to school and other related variables and design two mobile phone-based technological tools targeted in parents and youth to promote active commuting and, c) to study the feasibility of an assessment protocol of the mode of commuting to school and assess the effect of school-based interventions to promote walking and cycling to school in three Spanish cities (i.e., Granada, Valencia, Jaen).

Expected Contributions: The contributions of this project will be: a) to understand the current mode of commuting to school of around 40,000 Spanish children and adolescents and to analyze the trend in the last two decades; b) to provide a valid, reliable and feasible tools to assess the mode of commuting to school and other related variables and additionally, to provide two technological mobile-based tools to promote active commuting, and c) to plan and implement a feasible assessment protocol and several school-based intervention programs to promote walking and cycling to school that may be replicate in future studies.

Conclusions: The results will provide a comprehensive understanding of the behaviour of active commuting to school in Spanish children and adolescents. These results will guide researchers and policy makers to implement effective intervention initiatives to promote active commuting as a public health strategy and contribute to a society with improved health and quality of life.

Support/Funding Source: Ministry of Economy, Industry and Competitiveness [DEP2016-75598-R (MINECO/FEDER, UE)] and the Spanish Ministry of Education [grant number FPU13/01088].
**Multidisciplinary and Multi-Sector Approach to Active Living: Insights from Otago**

Sandra Mandic PhD¹, Antoni Moore PhD², Debbie Hopkins PhD³, Charlotte Flaherty BCom⁴, Gordon Wilson PGDip⁵, Susan Sandretto PhD⁶, Enrique García Bengoechea PhD⁷, John Williams PhD⁸, John C. Spence PhD⁹.

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³Transport Studies Unit, School of Geography and the Environment, University of Oxford, Oxford, United Kingdom  
⁴Dunedin City Council, Dunedin, New Zealand  
⁵Dunedin Secondary Schools’ Partnership, Dunedin, New Zealand  
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⁷Institute of Sport, Exercise, and Active Living, University of Victoria, Melbourne, Australia  
⁸Department of Marketing, University of Otago, Dunedin, New Zealand  
⁹Faculty of Physical Education and Recreation, University of Alberta, Edmonton, Canada

**Background:** Increasing physical activity requires population-based, multi-sector, multi-disciplinary, and culturally-relevant approaches. Recently, ecological models have been developed to take into account individual, socio-cultural, environmental and policy influences on different domains of physical activity. Comprehensive research projects and interventions based on ecological models and targeting individuals, social environments, physical environments, and policies require a multidisciplinary approach and multi-sector collaborations. This presentation will discuss one such collaborative research project conducted in Dunedin, New Zealand.

**Description:** Built Environment and Active Transport to School: BEATS Study (2013-present) examines transport to school habits in Dunedin adolescents (www.otago.ac.nz/beats). The BEATS Study is based on contemporary ecological models for active transport that identify individual, social, environmental, and policy influences on behaviour. This cross-sectional study incorporates both quantitative (surveys, anthropometry, accelerometers, Geographic Information System [GIS] analysis, mapping) and qualitative methods (focus groups, interviews) to gather data from students, parents, teachers, and school principals.

**Expected contributions:** The BEATS Study spans the fields of exercise science, population health, transportation, environment and education. The study was founded on a multidisciplinary approach and multi-sector collaborations between secondary schools, the city council, community groups, and academia. Examination of the unique context of Dunedin and successful implementation through community partnerships (100% school recruitment rate; 12 schools) are expected to contribute to the advancement of scientific knowledge.

**Conclusions:** The findings of this study will provide valuable and unique information for schools, city councils, transport agencies and land planners. The results will advance current knowledge to help inform future interventions for built environment change, social marketing campaigns, and policy development to encourage active transport to school among adolescents. The participatory nature of the BEATS Study, with inclusion of key stakeholders and end-users from its inception and through its phases, will help to translate knowledge in an integrated manner thus ensuring that knowledge is being co-created with the intended users.

**Support/funding Source:** The BEATS Study was supported by the Health Research Council of New Zealand (14/565), National Heart Foundation of New Zealand (1602 and 1615), Lottery Health Research Grant (Applic 341129), University of Otago Research Grant (UORG 2015), Dunedin City Council and internal grants from the School of Physical Education, Sport and Exercise Sciences, University of Otago.
Neighbourhoods for Active Kids: Participatory GIS to understand Neighbourhood Environments for Children’s Activity

Melody Smith
University of Auckland, Auckland, New Zealand

Built environments have significant and enduring impacts on human health behaviours and outcomes. Physical activity, active travel and independent mobility are all important contributors to children’s health and wellbeing. Ensuring environments support healthy behaviours in children is crucial for their current and future wellbeing. Neighbourhoods for Active Kids is a cross-sectional examination of links between neighbourhood environments and health (physical activity, active transport, independent mobility, body size, nutrition behaviours) in 1102 children aged 9-13 years. The team is using an internet based mapping survey (softGIS) to understand and assess neighbourhoods from children’s perspectives – where they go, how they get around, what they like and dislike, and how they experience their neighbourhoods. Food purchasing behaviours at school are also assessed. Height, weight and waist circumference are measured and accelerometers are worn over eight days calculate children’s levels of physical activity. Parents are asked in computer-assisted telephone interviews about their children’s nutrition behaviours, electronic media use and other sedentary behaviours, their own neighbourhood perceptions and the mobility freedoms they allow their children. Preliminary findings from this study will be presented with a focus on the use of softGIS to understand children’s neighbourhood experiences.
Benefits of and Barriers to Creating Healthy and Active Urban Environments

Simon Kingham PhD1, Karen Banwell MSc1, Rita Dionisio McHugh PhD1,
Jesse Wiki BA (Hons).

1University of Canterbury, Christchurch, New Zealand

**Background:** In 2010/11 Christchurch experienced a series of devastating earthquakes that left many communities physically and socially damaged. His research was two projects that aimed to identify what could be learned from the aftermath of the earthquakes in relation to creating resilient, healthy and active urban environments.

**Methods:** Interviews were carried out with researchers, local political figures, community leaders and recovery advisors from government and health agencies in Christchurch, along with forty community participants from four Christchurch suburbs. Interviews were completed between June 2014 and October 2015. In addition, data was collected on community interaction and relationships on roads of differing traffic volume.

**Results:** A number of key features were identified that led to healthier more active urban communities. These included communities that were geographically defined, had greater housing stability (generally less rentals), had more ‘intimate’ streets, were more walkable, had a range of key local destinations, had informal ‘bumping’ and gathering places and had pre-existing community development initiatives/programmes. In addition, it was found that community interaction increased with lower traffic volumes.

**Conclusions:** This project found that it is possible to encourage healthy and active behaviour by making informed strategic decisions about the communities we live in. This includes reducing traffic and traffic speeds, encouraging social modes, and where necessary designing (or retrofitting existing) more heavily trafficked streets with to create ‘bumping’ places such as with street furniture, bus stops, greenspace or access lanes. Investing in local amenity and social infrastructure, designing bumping places in new (and existing) urban developments, and valuing the community role of existing gathering places such as schools, churches are also important.

**Support/Funding Source:** MBIE’s Resilient Urban Futures project.
The Mobility and Modality of Adolescents

Debbie Hopkins PhD¹, Janet Stephenson PhD², Sandra Mandic³.

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²Centre for Sustainability, University of Otago, Dunedin, New Zealand
³School of Physical Education, Sport and Exercise Sciences, University of Otago, Dunedin, New Zealand

Background: The mobilities of adolescents and young adults have received significant academic attention, particularly in response to declining rates of physical activity, increasing health concerns and rising greenhouse gas emissions. Globally, motorised transport has become dominant, and as a result, interventions to encourage active transport have proliferated. Nevertheless, there are reports of adolescents and young adults prioritising alternative mobilities, delaying or forgoing learning to drive, prioritising multi-modality and substituting travel with information communication technologies.

Methods: This paper will draw from two data sets: First, ten focus group sessions (n=54 participants) conducted with high school students from years 9 to 13 in Dunedin, New Zealand, during the academic years of 2014 and 2015. The focus groups were used to illicit perceptions of mobility and modality as part of the BEATS Study. Second, 17 semi-structured interviews were conducted with 18-35 year olds (11 females and 6 males) in Dunedin in 2014. Six participants had full driver’s licences, six had a learners licence, and five had no licence. The interviews were used to examine perceptions of motorised and non-motorised transport.

Results: In this presentation, we will report findings on: learn to drive behaviours, Information Communication Technologies (ICT) and travel substitution, and perceptions of active and public transport modes. We find highly nuanced perceptions of the importance of learning to drive, with important motivation arising from social norms and expectations, and parental role-modelling. There is little evidence of travel substitution behaviours, with participants from both studies articulating a strong preference for corporeal mobility. Diverse perceptions of transport modes are reported.

Conclusions: We conclude that motorised transport is deeply entrenched within current patterns of mobility, that are, in many places, being replicated by adolescents and young adults. There is a clear need to rethink the discourses and framings used in transport interventions, policy and practice.

Support/Funding Source: The BEATS Study was funded by Health Research Council of New Zealand (14/565), National Heart Foundation of New Zealand (1602 and 1615), Lottery Health Research Grant (Applic. 341129), University of Otago Research Grant (UORG 2015), Dunedin City Council and internal grants from the School of Physical Education, Sport and Exercise Sciences, University of Otago. The Energy Cultures project was funded by the Ministry of Business Innovation and Employment grant number CONT-42734-EMTR-UOO. The Generation Y study was partially funded by the NZ Ministry of Transport.
To Sit is Human, To Move is Divine: A Tale of Cultural Evolution and Progress Traps

John C. Spence PhD.

1Faculty of Physical Education and Recreation, University of Alberta, Edmonton, Canada

Humans did not evolve to make rational choices about what to eat (energy intake) or to be physically active (energy expenditure) in conditions of abundance. Thus, to understand engagement in physical activity and sedentary behaviour, we need to understand the conditions and environments that humans (& early hominids) experienced over the past 250,000 years. In this presentation I discuss the biological and cultural factors that influence movement behaviour and our drive to seek efficiencies in energy expenditure. Finally, I present several options for addressing physical inactivity in a modern world.
Toward Community Ownership of Physical Activity Promotion Initiatives in the Indigenous Community of Kahnawake

Enrique García Bengoechea PhD¹, Jon Salsberg PhD², Soultana Macridis PhD³, Judi Jacobs⁴, Morrison King⁴, Ann C. Macaulay MD⁵.

¹Institute of Exercise, Sport, and Active Living (ISEAL), Victoria University, Melbourne, Australia
²Department of Family Medicine, McGill University, Montreal, Canada
³Alberta Centre for Active Living, Faculty of Physical Education & Recreation, University of Alberta Edmonton, Canada
⁴Kahnawake Schools Diabetes Prevention Project, Kahnawake, Canada
⁵CIET/Participatory Research at McGill (PRAM), Department of Family Medicine, McGill University, Montreal, Canada

Background: Ensuring that effective physical activity (PA) interventions are sustained over time is crucial from the point of view of increasing PA levels in the population resulting in long-term health benefits. Many research-based PA interventions are short term and/or are not concerned with sustainability upon study completion. Using participatory engagement strategies to foster a sense of ownership over the intervention and research among concerned community members and stakeholders increases the chances of intervention uptake and maintenance.

Description: The Kahnawake Schools Diabetes Prevention Project (KSDPP) is a long-standing community-based participatory research (CBPR) health promotion initiative with the Indigenous community of Kahnawake (Canada). Recent PA promotion initiatives undertaken by KSDPP in collaboration with school and community stakeholders include the design, implementation and ongoing evaluation of a school-based PA policy, which complements the existing nutrition policy, and the planning and implementation of a related initiative to promote school active transportation among elementary school students. Work on both areas led to the creation of the current School Wellness Committee.

Lessons Learned: In this presentation we will discuss what we have learned in our recent work in terms of: (a) benefits and challenges of using a CBPR approach from the point of view of engaging with school and community stakeholders for the purpose of co-development and evaluation of PA and health promotion programming, (b) strategies to foster community self-determination and sense of ownership over project and research process, and (c) methodological issues surrounding the documentation and reporting of the observed changes.

Conclusions: Ensuring the sustainability of PA interventions and initiatives that work remains an important challenge. The work described illustrates how this important aim can be facilitated by using strategies that foster community involvement in the process.

Support/Funding Source: Canadian Institutes of Health Research (CIHR), Anisnabe Kekendazone—Network Environment for Aboriginal Health Research (AK-NEAHR).
Encouraging Cycling and Walking in New Zealand: Evaluation of the Model Communities Programme

Michael Keall¹, Ralph Chapman², Philippa Howden-Chapman¹, Caroline Shaw¹.

¹ NZ Centre for Sustainable Cities, Department of Public Health, University of Otago
² NZ Centre for Sustainable Cities and Victoria University of Wellington, Environmental Studies Programme

Background: In 2010, two small cities in New Zealand, New Plymouth and Hastings, were selected as New Zealand’s two walking and cycling Model Communities. Over the 2010/11 and 2011/12 financial years, the programme consisted of $(NZ) 3.71 and $(NZ) 3.57 million respectively to New Plymouth and Hastings District Councils from central government for infrastructural changes (e.g. improved walkways and cycle lanes) along with information and education (e.g. campaigns to increase uptake and the confidence of individual cyclists). This was important to help address a national decline in active travel (walking and cycling for transport) observed over past decades, associated with increasing rates of obesity-related health conditions.

Methods: For our quasi-experimental study, Masterton and Whanganui were identified as suitable matched communities. They share some of the characteristics of the intervention cities, are similar in size and climate, and are interested in increasing active travel, but they did not have the additional central government funding. By comparing the intervention cities with the control cities, we could infer whether changes seen in Hastings and New Plymouth were due to the intervention or were part of a wider trend. A face-to-face survey obtained information on walking and cycling. We drew also on the New Zealand Travel Survey, a national ongoing survey of travel behaviour, which was conducted in the study areas.

Results: Relative to the control cities, the odds of trips being by active modes (walking or cycling) increased by 37% (95% confidence interval 8% - 73%) in the intervention cities between baseline and post-intervention. The net proportion of trips made by active modes increased by about 30%.

Conclusions: For the small cities studied, improvements in infrastructure and associated programmes appear to have successfully arrested the general decline in active mode use evident in recent years.

Support/Funding Source: New Zealand Ministry of Business, Innovation and Employment ‘Resilient Urban Futures’ grant.
**Background:** Cycling has not been pulling its weight as a mode of transport in New Zealand. Seventy-five percent of Kiwis say they would cycle if there were safe networks, 2% currently ride for transport. That is the biggest customer gap on the transport network.

**Description:** In 2014, the New Zealand Government initiated a step change in the development of urban cycleway networks through the Urban Cycleways Programme. In partnership with local government, the New Zealand Transport Agency is delivering the Urban Cycleways Programme as part of a multi-faceted programme aimed at making cycling a safer and more attractive transport choice, and increasing trips by bike by ten million per year by 2019.

**Lessons Learned:** The main benefits of having more people get around by bike, and foot (many of the Urban Cycleways Programme routes are shared paths), are health related. Active transport is one of the easiest ways to incorporate physical activity into everyday life, and in many cities, has additional benefits of convenience and affordability. This has been widely understood for some time but New Zealand is now starting to see changes to policy, investment and the built environment that will deliver real outcomes.

**Conclusions:** The New Zealand Transport Agency is also currently thinking differently about how the transport system affects health outcomes and is moving away from its traditional focus on road trauma to consider wider health implications. This session will outline how this thinking is developing and provide some examples of where transport and health are working more closely together on the ground to get more people active.
Active Living Among Washington DC Area Youth

Jennifer D. Roberts DrPH\(^1\), Brandon Knight MS\(^2\), Lindsey Rodkey BS\(^1\), Rashawn Ray PhD\(^3\), Brian E. Saelens PhD\(^4,5,6\).

\(^1\) Department of Kinesiology, School of Public Health, University of Maryland, College Park, Maryland, USA
\(^2\) Department of Preventive Medicine and Biometrics, F. Edward Hebert School of Medicine, Uniformed Services University of the Health Sciences, Bethesda, Maryland, USA
\(^3\) Department of Sociology, University of Maryland, College Park, Maryland, USA
\(^4\) Department of Pediatrics, University of Washington, Seattle, Washington, USA
\(^5\) Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, Washington, USA
\(^6\) Seattle Children’s Research Institute, Seattle, Washington, USA

**Background:** Physical inactivity or the lack of active play is contributing to childhood overweight/obesity in the Washington metropolitan area (DMV). Less than a quarter of DMV youth achieve the 60-minutes/day physical activity guideline. Furthermore, characteristics of the home neighbourhood built environment, bedroom electronic presence and parental rules can contribute to children’s physical inactivity and sedentary behaviour. Within the DMV, the Built Environment and Active Play (BEAP) Study examined (1) the relationship between children’s active play and built environment parental perceptions and (2) the association of children’s sedentary behaviour with built environment features, parental rules, and bedroom electronic presence.

**Methods:** Using a stratified sampling strategy, in September–December 2014, parents of children (7-12 years) completed mailed or online questionnaires collecting data on the aforementioned variables. Data were analysed using Chi-square tests and logistic regression.

**Results:** The BEAP Study (n=144) found a statistically significant greater proportion of active children's parents agreeing with the importance of neighborhood esthetics, active play areas, walkability and safety as compared to the parents of non-active children. Children living on streets without a dead-end/cul-de-sac exhibited a higher odds in sedentary behaviour using electronic media \([2.61 (CI: 1.31, 5.18)]\) and having no television in a child's bedroom was associated with a lower odds in sedentary behaviour \([0.085 (CI: 0.018, 0.395)]\).

**Conclusions:** The DMV area represented a highly optimal setting for conducting the BEAP Study due to its unique racial, ethnic, income, educational, and origin of birth diversity (over 34% Black/African and Asian Americans). Among a heterogeneous population of DMV children, the presence of built environment amenities and facilities supporting physical activity encouraged active play and discouraged sedentary behaviour.

**Support/Funding Source:** A Uniformed Services University of the Health Sciences intramural start-up grant and University of Maryland start-up grant for newly appointed faculty provided funding for this research.
Background: The concerning situation of the effects of our society's sedentary lifestyle, observed in our studies using a transcultural perspective has encouraged us to seek shared solutions.

Description: The University of Zaragoza (Spain) and the University of Pau et des Pays de l’Adour (France) have teamed up with the city councils of Huesca (Spain) and Tarbes (France) to design a structure that will coordinate the different sectors and will favour an improvement in the quality of life of city inhabitants, by promoting physical activity. This project, called CAPAS-Ciudad/CAPAS-Cité, includes two programmes, one in France (Physical Activity Promotion Medicine Service) and the other in Spain (Physical Activity and Health Promotion Programme Assessment Service).

Lessons Learned: We will present the organisational structure of CAPAS-Ciudad/CAPAS-Cité and the priority focus areas. We will explain the basic fundamentals for the design and implementation of this project: community-based participatory research; the importance of inclusive knowledge translation; scientific rigour both in the description of the phenomena and in the intervention processes; the need to create partners in the academic and community fields; and the importance of having the support of Health Promotion Schools as a priority entry route into the social fabric.

Conclusions: Although we cannot currently present conclusions of the work of the Centre, we can say in advance that it is being well-received by the different social structures in both countries. This gives us hope that the Centre will be able to develop with sustainability criteria, thus justifying its importance as a health promotion tool.

Support/Funding Source: This research was supported by the European Programme INTERREG V A Spain-France-Andorra (POCTEFA) 2014-2020. Specifically, this research was funded by CAPAS-Cité project (EFA095/15).
Transport – A New Way Forward

Andrew Jackson

Ministry of Transport, New Zealand

Tomorrow will not necessarily be the same as today. This is the dilemma facing transport systems throughout the world as nations consider how best to invest in their transport infrastructure. History tells us a story of how stable the transport system can be for decades, but it also shows how technology can bring a sea change, from the arrival of the bicycle to the train, automobile and airplane. Each in their own way has changed the shape of society. We hear stories in the paper every day of new transport technologies with the potential to bring in the next era of transport. This presentation will consider the uncertainties ahead, the possible changes we might see and what that means today for how best we might prepare for that future.......!
Translating Research to Policy and Practice: Implementation of a Health in All Policies Approach in Canterbury, New Zealand

Dr Anna Stevenson MBChB.
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**Background:** The ‘New Public Health’ is premised on the assumption, (supported by considerable evidence) that a significant proportion of illness and disease is caused by social and environmental factors beyond an individual's direct control. Practitioners of new-style public health prioritise equitable outcomes for all social groups. They stress the role of sectors outside of the ‘health service’ in creating and maintaining health and wellbeing and support efforts by the community to participate in political decision making. Policy makers are viewed as important practitioners in a holistic healthcare system.

**Description:** In the last decade Dr Stevenson has represented the Canterbury District Health Board and/or a New Public Health perspective in a variety of transport related policy forums and projects. These include the Canterbury Regional Transport Committee, The Active and Public Transport Group, The Canterbury Active Transport Forum, The Joint Public Transport Committee, and several high level health impact assessments on regional and local transport policy. Dr Stevenson has brokered working relationships between transport policy makers and health sector officials and has developed partnerships between universities, local and regional government, and public health staff.

In this presentation Dr Stevenson will discuss some of the mistakes, difficulties, and ongoing frustrations focusing on what public health practitioners can learn for future practice.

**Lessons Learned:** It is difficult to over communicate. Relationships are paramount. Trust is hard won and easily lost. No one person can do this all on their own!

**Conclusions:** Change is hard for individuals and for communities. Achieving the kinds of change in our communities that will enable and support active living requires a joined up approach between individuals and agencies that represent many diverse skillsets and knowledge bases. Change is hard but in Canterbury it is happening!

**Support/Funding Source:** Canterbury District Health Board
Achieving Policy and Institutional Change for Healthy Sustainable Transport

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**Background:** Transport policy in New Zealand, like many Western countries, reflects the neoliberal goal of enhancing economic growth, above other objectives such as improving wellbeing. Technocratic planning models have tended to reinforce a path dependence of road building. To break this path dependence, the transport planning literature has called for new ways of modelling that integrate a broader range of outcomes and participatory approaches to transport planning that work towards community-identified objectives.

**Description:** Over the past decade, I have been using complex systems modelling, participatory intervention research, and advocacy tools to influence change in New Zealand’s transport policy. Initial experiences with Health Impact Assessment in the transport sector were underwhelming, despite leading to policy advisory roles. In the Community wellbeing and the trip to work project I experimented with participatory system dynamics modelling to understand what the healthiest, most environmentally sustainable transport policies for Auckland might be. This modelling and its dissemination contributed to some shifts in policy thinking, as well as a national policy advisory role. In Future Streets, we have brought community, academic and policy knowledge together in an equity-focused suburban infrastructure intervention. Myth-busting and some institutional change have already resulted, along with a legacy of long-lasting physical change. A range of health, social and environmental outcomes will be measured at a year post construction, with longer term follow up planned. These will feed into further modelling work.

**Lessons Learned:** Community involvement in transport decision-making at a local and regional level significantly changes the objectives of planning, acting as a potent counterweight to the voices usually heard in the planning process. It is even more powerful when triangulated with evidence. The language we use to describe outcomes is important for persuasion across ideologies. The political sources of significant change can be surprising.

**Support/Funding Source:** Health Research Council, Ministry of Transport, Ministry for Business, Innovation and Employment, Auckland Transport, NZ Transport Agency, Māngere-Otahuhu Local Board.
Creating Biodiverse Cities for Active Lives from Childhood to Old Age

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Background: We know that there are both physical and mental health benefits associated with nature exposure and nature contact is an essential component in maintaining an active lifestyle. We also know that children in cities are experiencing constraints on their independence and ability to freely access outdoor spaces, especially those with high biodiversity values. What is less well known is whether children can access the benefits of nature within cities in the context of reduced outdoor access. Similarly, we know that there are health benefits associated with nature exposure and connection, that ageing is associated with declining health and that ageing is assuming ever greater significance in western societies such as New Zealand. But, we know very little about how nature engagement changes as people age, and how meaningful contact with nature and its associated therapeutic benefits can be supported through different living circumstances.

Methods: City children study: children (n=187) from 9 schools in Auckland, Wellington and Dunedin. Data obtained through interviews, drawings and GIS mapping to create personalised nature maps. We identified the spaces children used to connect with nature and the factors that encourage and restrict their nature access. Older adults study: adults (n=72) from Dunedin comprising adults living in family homes, downsized homes and rest homes, aged 65-99. Data was obtained through interviews, respondents’ photographs and GIS mapping to create personalised nature maps. In the study we identify the type of green spaces older adults enjoy and prioritise as their living accommodation and health changes.

Results: Children and adults value their contact with nature and actively seek opportunities to experience such contact. Both children and older adults with health impairments are particularly constrained in their ability to access natural places, even where these places are close to their homes. For lower socio-economic children and older adults with health impairments the constraints can be especially restrictive.

Conclusions: If the nature connection needs of both children and older people, particularly the frail are to be met, greenspace planning needs to pay particular attention to the local and domestic scale in greenspace provision. This paper identifies possible mechanisms to achieve this.

Support/Funding Source: RSNZ Marsden grant and University of Otago Research Grant
Healthy Nature Healthy People - Growing a Movement

Helen Gillespie

Project Coordinator - Healthy Nature Healthy People, Department of Conservation, New Zealand

Background: Nature is an underutilised health resource. In our drive to pack more into our lifestyles we are connecting with open space and nature less and we are becoming more burdened with lifestyle related illnesses. Healthy Nature Healthy People recognises the interdependency between people and nature and the health of both.

The key principles of Healthy Nature Healthy People are:

a) The wellbeing of all societies depends on healthy ecosystems
b) Parks and protected areas nurture healthy ecosystems
c) Contact with nature is essential for improving emotional, physical and spiritual health and wellbeing
d) Parks and protected areas are fundamental to economic growth and to vibrant and healthy communities

Description: Healthy Nature Healthy People is about improving the health and wellbeing of New Zealanders, it is about increasing their awareness of the importance of nature in their lives and it is about bringing them into more contact with nature. Our connection with nature has always been important but we are losing touch with it or have lost sight of how important it is in terms of how our wellbeing depends on it. All New Zealand’s green and blue spaces are valuable nature resources - from our green belts and urban parks, our rivers to our beaches and our wilderness areas and national parks.

Lessons Learned: We have been reaching out to learn from others but mostly we have been joining dots and connecting. Everyone that we reach has so much value to add to the growth of the Healthy Nature Healthy People movement – including YOU.

Conclusions: We are keen to unlock the potential that comes when we connect across sectors and specialties to co-design and genuinely strive for the same things – making life better for all. This session will have a fun interactive component so be prepared to contribute.
The Nature of Children’s Seasonal Play: A Case Study from Auckland, New Zealand

Christina Ergler PhD
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Children’s independent mobility and physical activity is declining in unison with the increase in time spent engaged in sedentary indoor activities. Questioning the environmental determinist perspective of many previous studies, which simply called for an improvement in the number and quality of play spaces and viewed climatic and weather conditions as fuzzy moderators structuring outdoor play from above, this paper explores why ‘play’ resonates differently across localities (in both vertical and suburban environments) and seasons in Auckland, a city with a moderate climate. Drawing on Bourdieu’s theory of practice and Gibson’s affordance theory, I argue that the empathy participating parents and primary school-age children revealed towards outdoor play in 73 semi-structured interviews reflects locally constituted beliefs about what is seasonally ‘appropriate’ children’s activity. These beliefs are formed through historical, placed and seasonally-specific structures and practices. Thus, the determinants of seasonal outdoor play transcend modifiable barriers such as traffic and unsuitable play spaces as well as the inevitable issue of inclement weather. To foster a healthier and sustainable present as well as future for children, this paper concludes that cities need to become de facto adventure playgrounds in which independent outdoor play is ‘appropriate’ and desirable all-year-round.

Support/Funding Source: This research work was conducted as part of the Understanding Relationships Between Neighbourhoods and Physical Activity (URBAN) project, funded by the Health Research Council (HRC) of New Zealand [Grant number 07/356]
Abstracts: Active Transport

Active Transportation Behaviours and Perceptions among Washington DC Area Youth

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Background: Parental perceptions are important to consider when assessing the decline in youth active transportation (AT) behaviour. Our cross-sectional BEAP Study assessed parental perceptions of built environment (BE) variables on AT behaviours among children and our PEAT Study assessed adolescent AT behaviours and perceptions in the Washington DC metropolitan area.

Methods: Parents of children (7-12 years) completed mailed or online questionnaires collecting data on home BE perceptions, children AT behaviours to school, and sociodemographic characteristics. Adolescents (13-15 years) participated in focus groups that gauged behaviours and perceptions of AT. Ordered logistic regression was conducted to determine if individual BE variables predicted AT independently and qualitative data were digitally recorded, transcribed, and summarized.

Results: Over 30% of the children used AT-public transportation to commute to school four days a week and nearly 13% of the children AT-walked to school daily. Children were significantly less likely to engage in AT-walking when parents did not believe that there are crosswalks and signals on busy streets in their neighbourhood \([0.066 (CI: 0.006, 0.767)]\). When parents perceived no or low neighbourhood stranger danger \([2.27 (CI: 1.51, 263.84)]\) their children were more likely to take AT-public transportation. The odds of AT-public transportation increased when parents did not perceive the route to be simple for the children to walk \([9.94 (CI: 1.60, 61.91)]\). Among the adolescents, most used AT for transport, exercise and “fun”, many reported parents, safety and weather as barriers to AT.

Conclusions: Our research demonstrated that parental perceptions of BE and other environmental barriers are associated with AT in youth.

Support/Funding Source: A Uniformed Services University of the Health Sciences intramural start-up grant and University of Maryland start-up grant for newly appointed faculty provided funding for this research.
Reducing Barriers to Walking in a Car-Focused Environment: The Potential for Inclusion and a Pragmatic Way Forward for Hamilton

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Background: Hamilton has been developed around and for the car, the largely dominant mode of transport today. The upcoming challenge is to increase significantly the levels of walking and cycling, while accommodating a growing and ageing population (Access Hamilton Strategy). New Zealand Transport Agency works with the city council on the development of the transport strategy, and is responsible for planning and managing the state highways. Twenty-seven kilometres serve as urban arterial roads within Hamilton. The New Zealand Transport Agency aims to identify and prioritize the barriers to use for active modes, and present a consistent approach to address them.

Description: The program aims to build a whole picture and inform improvement proposals, through analysis and community engagement. The main activities involve: (a) Assessing the existing environment – networks, accessibility and continuity, traffic volumes, speeds, trip generators, safety issues, urban environment quality; (b) Assessing the existing and potential needs for local trips across and along the state highways - identification of patterns, barriers to use and potentials, (c) Intervention development and prioritization

Lessons Learned: The study is a work in progress, but has however already outlined some valuable elements, namely; (a) The main barriers to walking and cycling in Hamilton City and their consequences; (b) Information gaps and ways of bridging them; (c) The crucial importance of community engagement and ways of acquiring specific inputs from different users.

Conclusions: This case study is crafting recommendations to improve the walking and cycling realm, in collaboration with Hamilton City Council. It can also benefit other roading authorities by presenting a practical case study to foster walking and cycling local trips, working with the stakeholders and the community.

Support/Funding Source: NZ Transport Agency (assessment).
Fear and Loathing on the Footpath

Joanne Clendon BCom

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Background: New Zealand law prohibits cycling on the footpath based on wheel size, effectively prohibiting children over four or five years old from legally biking on the footpath. In May 2015, Jo Clendon, a mother of two children petitioned parliament to change the law to allow children under 14 and their accompanying adults, seniors and the disabled to cycle on the footpath.

Description: Challenging the status quo is necessary to create change. However, it can also be confronting and upsetting, especially to groups who already marginalised and experiencing a hostile built environment. This is a tale born of a desire to create opportunities for active transport for children. The story is still unfolding but there are significant lessons to be learned, especially about providing a built environment that is supportive to as many users as possible. It also raises the question of how to do that when the majority view is car-centric, and funding is disproportionately allocated to infrastructure for car based private transport, creating a scarce, sub-standard resource and an ensuing turf war.

Lessons Learned: 1. The footpath is regarded as a scarce and precious resource. 2. Many people are concerned about the quality and safety of the footpath. 3. When you try and change things you upset some people. 4. By providing inadequate and unsupportive built environments we have created several disenfranchised segments of the population, effectively creating a new source of backlash: the elderly and disabled. 5. Change is slow, confronting and difficult.

Conclusions: The footpath is a precious resource, highly valued by many different users. However, in a car-centric society footpaths are given a low priority resulting in poor amenity, especially for the elderly and disabled. There is a significant opportunity to improve footpath amenity in order to support all active transport users.
Benchmarking Cycling and Walking in Six New Zealand Cities

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Background: Benchmarking cities to assess active transport is established internationally, and can be a useful tool for planners, policy makers, advocates and researchers to determine how well cities are promoting active transport, making it safe and reaping the environmental, health and economic rewards of this approach. New Zealand is a car-dominated society with high per-capita carbon emissions. While there has been a recent, modest, policy push to develop urban cycling, overall the policy environment remains unsupportive of active travel. Despite this, there are well-known differences between New Zealand cities in active transport patterns, although until now these have not been examined systematically.

Methods: We attempted to benchmark cycling and walking in the six largest New Zealand cities (Auckland, Tauranga, Hamilton, Wellington, Christchurch and Dunedin). This work used (with permission) the same format as the successful Alliance for Biking and Walking biennial Benchmarking report in the United States of America, modified to the New Zealand context. Using existing data sources and new survey data we reported on inputs (e.g. policies, extent of infrastructure, level of investment, programmes and personnel) and outcomes (including levels of cycling and walking, health outcomes such as physical activity, obesity, and safety for cyclists and pedestrians). Where possible we also reported gender, ethnic and socio-economic differences in outcomes.

Results: The full report is available online at http://sustainablecities.org.nz/resilient-urban-futures/benchmarking/. We will discuss some of the lessons learned from this first attempt at benchmarking. These include issues with engaging local government, dealing with discrepancies in geographic boundaries, limitations of routinely collected datasets, a lack of shared understanding of infrastructure, the funding and sustainability of benchmarking, and who should undertake benchmarking.

Conclusions: Benchmarking cities can be a powerful tool to encourage active transport. This preliminary experience in New Zealand provides useful lessons for other researchers or practitioners interested in this approach.

Support/Funding Source: New Zealand Centre for Sustainable Cities and Department of Public Health, University of Otago, Wellington.
Abstracts: Health, Sustainability, Exhibits

Blokes with Stroke Explore the User-Friendliness of Fitness Facility Environments for Engaging in Physical Activity

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Background: Exercise has substantial benefits for function, health and well-being for all. Despite these benefits, stroke survivors demonstrate very low levels of physical activity and are noticeably absent at fitness facilities. This study aimed to explore what elements contribute towards or limit user-friendliness (accessibility and usability) of fitness facilities for people following stroke in Christchurch, New Zealand.

Methods: Seven male community dwelling stroke survivors and a research physiotherapist used participatory action research (PAR) methodology over an eight-month period. Participants were individually interviewed, engaged in group meetings with other participants and visited fitness centres together and individually. Data from the PAR cycles were analysed inductively for themes.

Results: Three themes about influences as to whether male stroke survivors would participate in exercising at fitness facilities became evident in the data: 1) the stroke survivor’s personal intrinsic motivation and self-efficacy, influenced by stroke related impairment, 2) the built environment, and 3) societal attitudes towards stroke survivors.

Conclusions: In this study, other people’s attitudes, fitness facility’s systems and policies, and local and central governmental legislation for the built environment rendered feelings of inequitable access for stroke survivors. If society does not recognise the need for inclusivity for all citizens, it is likely fitness centres will remain largely inaccessible for stroke survivors.

Support/Funding Source: The Burwood Academy of Independent Living (BAIL) provided financial support for this study to be undertaken.
Young People as Action Takers and Knowledge Makers – Through Enviroschools

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**Background:** Enviroschools is a nation-wide programme that aims to foster a generation of people that instinctively think and act sustainably. The kaupapa of Enviroschools is based on two overarching principles of empowered students and sustainable communities. The action learning cycle is a key tool used to empower students to take action and create knowledge.

**Description:** We explore two student-initiated and student-led sustainability projects focusing on what enabled and empowered the students to take action. One project was driven by a group of primary school students who initiated a petition to ban the single use plastic bag. The other project was driven by secondary school students and focused on the waste management system in the school. The students will talk about their projects and what they have learnt from taking action.

**Lessons learned:** Common themes that emerged are the facilitated nature of the programme which values and promotes student voice. The action learning cycle is an effective tool for students to identify issues and take action.

**Conclusion:** The student-led nature of the Enviroschools programme offers opportunities for young people to be action takers and knowledge makers in their communities.
Climate Safe Housing: Where Mitigation and Adaptation Meet

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Background: Our built environment is affected by rising sea levels and climatic risks. Dunedin homes have poor thermal performance. Climate change is exacerbating the problems for residents in fuel poverty in coastal flood hazard zones. Dunedin’s Second Generation District Plan has been notified and flood hazard zones identified. There is little preparation for the effect of climate change on housing.

Methods: We are undertaking Home Performance Assessments in the proposed hazard zones - involving assessment, diagnosis of problems, and prioritised recommendations. A survey and interviews are conducted on perceptions of climate change and implications for housing and community. To date, 40 survey responses have been received from residents from a sample population of 60. We exhibit climate safe house designs to stimulate dialogue, pinpoint the ‘community of interest’, engage with residents, and educate on the issues.

Results: Preliminary results highlight that most homes assessed experience moisture issues and all suffer thermal efficiency short falls. Furthermore, of all respondents (to date): 40% have to heat their homes every day in winter and 35% need to heat the home most days; Many are considering home improvements or moving out of the hazard zone; 19% are preparing for rising sea-levels; 80% believe central or local government is not doing enough. Feedback and survey results on the designs for the climate safe house along with qualitative interviews will be completed by late March.

Conclusions: Climate change presents challenges on various levels. Human activity is the driving force, and human creativity is crucial to mitigate emissions and adapt to our new environment. Our research will help develop more proactive residents and assist to increase community resilience. We also intend that it will inform the development of adaptation policy, aid the evaluation of adaptation efforts and provide an example of a grass-roots led collaborative effort. Finally, we seek to provide informed input into regional plans and policies.

Support/Funding Source: Otago Community Trust (Funding), Otago Polytechnic (Partner), Energy Efficiency and Conservation Authority, Centre for Sustainability [CSAFE], Initial Volco Trust, Cosy Homes, Dunedin City Council (Support), Enphase Energy (Sponsor).
Well Balanced: Reaching out with Engaged Research

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Background: A museum exhibition can reach out to the community about relevant research. This case study provides an example of collaboration between researchers, science communicators and museum staff.

Description: Well Balanced is an interactive, professionally produced exhibition. It provides information about how strength and balance can be improved at any stage of life and allows museum visitors to test their own strength and balance skills. Well Balanced, comprised of nine exhibits, was displayed at the Otago Museum for ten weeks over the 2016/17 Christmas school holidays and was seen by an estimated 5000+ people. Creation and display of this exhibition was a collaborative effort. It was supported by staff associated with the Ageing Well National Science Challenge. Research for the exhibits, preliminary design and text for exhibit panels and a take-away brochure were done by students enrolled in SCOM 406 Exhibitions & Interpretation at University of Otago’s Centre for Science Communication. The Otago Museum provided professional design, construction and display. Feedback was collected through surveys, observations of museum visitors and interviews with staff and students involved in development of the exhibition.

Lessons Learned: An effective aspect of the Well Balanced exhibition is its interactive nature, which provides opportunities for visitors to challenge themselves and to learn how to improve their balance and strength. Simple suggestions that can be applied throughout life are useful hooks to engage visitors. Different visitors were drawn to different exhibits, with each exhibit engaging some visitors.

Conclusions: Collaborative efforts are an effective way for researchers to engage with the public. Collaboration with museums provides access to public venues which attract visitors of many ages and from many walks of life.

Support/Funding Source: Funding for creation of the exhibition was provided by the Ageing Well National Science Challenge and the University of Otago CARE research theme.
Abstracts: Built Environment and Urban Design

Innovative Measurement of Children's School Travel Behavior and Perceptions on their School Travel Routes

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Background: A complete understanding of built environment attributes associated with children's school travel behaviour has been limited to date due to lack of sensitivity in built environment measures. The aim of this study was to utilise new technology (interactive online-mapping; softGIS) to capture children's school travel routes and modes, and perceptions about their school route, neighbourhood safety and traffic around their school.

Methods: A cross-sectional study of 1102 children aged 9-12 years across 19 schools was conducted in Auckland, NZ. An online softGIS survey was used to measure children’s travel mode and route to school, and environmental perceptions. SoftGIS allows plotting a route to school and recording written participant reports of environmental and social experiences on the route, which can be simultaneously analysed with register-based Geographic Information Systems data. Qualitative data were analysed thematically using NVivo 11. Descriptive statistics were generated using SPSS Statistics 24.

Results: Car (46.2%) was the most frequently reported travel mode followed by walking (33.9%), public transportation (12.3%), bike (3.9%), scooter (3.2%) and skateboard (0.5%). The proportion of children who were able to draw their route was higher in active travel (AT) modes (97.7-100%) than in passive travel (PT) modes (79.3-79.5%). Children using AT commented more about the physical environment (e.g., hill, road and crossing) on their route and reported enjoyment of actively travelling; whereas themes arising from children using PT were related to perceived time and distance (e.g., long, fast and quick). Chauffeured children perceived there to be less traffic around school and lower neighbourhood safety than those using other travel modes.

Conclusions: SoftGIS methodology is a useful tool to gain in-depth understandings of children’s school travel behaviour and environmental perceptions. Physical environment, traffic and safety are important factors in understanding children’s school travel.

Support/Funding Source: Health Research Council of New Zealand
An Active Transport to School Route Data “Atlas” for Dunedin

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Background: The Built Environment and Active Transport to School (BEATS) Study has generated a large amount of space-time route data that is not immediately available in a suitable format (either separate paper maps or tables of data) for easy and useful research, professional and public consumption. This paper will feature map visualisation techniques to render these data as an "atlas", together featuring the many attributes collected.

Methods: High school students (n=740; age: 15.5±1.4 years; 53.4% females) from all 12 schools in Dunedin (New Zealand) hand drew their route to school on a paper map which was subsequently digitised using GIS. Adolescents were asked to mark ‘safe’ and ‘unsafe’ areas along the route and provide comments for ‘unsafe’ segments. Other attribute data such as mode of transport to school and identity of school were also collected. These data were aggregated into route density data, also using a GIS.

Results: The “atlas” features thematic flow maps of the various attributes of transport to school data (active or otherwise). Spatial patterns in the attributes were revealed (e.g. distinct zones in the north and south of the city). Non-safety data was split into six distinct classes (traffic, intersections / crossings, built environment, natural environment, drivers/pedestrians, social factors) with clusterings being revealed by maps (e.g. clustering of traffic-related or social issues).

Conclusions: Using spatial and space-time visualisation can reveal patterns in a complex route dataset (i.e. the BEATS Study dataset) that would otherwise be hard to make visible or would otherwise be invisible.

Support/Funding Source: National Heart Foundation of New Zealand, Lottery Health Research Grant, University of Otago Research Grant, Dunedin City Council, and internal grants from the School of Physical Education, Sport and Exercise Sciences, University of Otago.
The Neighborhood Environment and Activity in New Zealand Adolescents

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Background: The aim of this study was to estimate the associations of GIS-determined and perceived walkability components in individual residential buffer zones with accelerometer-assessed moderate-to-vigorous physical activity (MVPA) and sitting time (ST) in adolescents.

Methods: The Built Environment in Adolescent New Zealanders (BEANZ) study was conducted in two cities (Auckland and Wellington) during the 2013-2014 academic school years. The exposure measures were GIS-based and perceived walkability components for residential buffers. Road network buffers were calculated around participant’s residential addresses using the sausage buffer approach at 250 m, 500 m, 1 km, and 2 km scales. A 25 m radius was used for the buffers. Data were analysed using Generalized Additive Mixed Models in R.

Results: Data were analysed from 524 participants (15.78 ± 1.62 years; 45% male). Participants accumulated ~1.9 hr/day of MVPA and ~5.9 hr/day of ST during accelerometer wear-time (~13.8 hr/day). The estimated difference in MVPA between participants with the minimum and maximum observed values on the composite subjective environmental index of activity-friendliness (perceived land use mix - diversity, street connectivity and aesthetics) was equivalent to ~43 min/day and for the objective environmental index of activity-friendliness (residential density and number of parks within 2 km distance from home) was ~28 minutes of MVPA/day. When both indices were entered in a main-effect model, both indices remained significantly correlated with MVPA with sex as a moderator. The predicted difference in sedentary time between those with the minimum and maximum observed values on the subjective index of non-sedentariness was ~68 min/day.

Conclusions: This is the first study to provide a combined assessment of the contribution of subjective and objective indices of activity-friendliness to the explanation of adolescents’ MVPA and ST.

Support/Funding Source: This work was funded by the Health Research Council (HRC) of New Zealand [grant number: 12/329].
Do Changes in the Walkability of the Built Environment Lead to Changes in Walking Behaviour? A Comparison of Home Movers and Stayers

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Background: A number of studies have found associations between the built environment and physical activity, particularly walking. Most studies to date have been cross-sectional, the evidence that changing the built environment will lead to changes in walking behaviour is weak. Our study examines how changes in neighbourhood walkability influence levels of walking in the local area. Changes in walkability may occur as a result of moving house or, for those who do not move, changes in the built environment.

Methods: We used household survey data from the GoWell Research and Learning Programme. Between 2011 and 2015, 121 (11.4%) of the participants moved house. Measures of walkability were calculated for 2011 and 2015 as a product of intersection density (connectivity) and dwelling density. Mean walkability scores were calculated for respondents’ immediate neighbourhood (data zones) intersecting with the area of 400 m radius around respondents’ home. Changes in levels of walkability of neighbourhoods of participants who moved home (n=121) were compared with those of participants who remained in the same property (n=961). The relationship between changes in walkability and repeated measures of walking frequency was examined.

Results: Across all respondents mean walkability score for their neighbourhood increased from 1.1 in 2011 to 1.31 in 2015, with a mean change in walkability of 0.22 (p<0.01). A higher score indicates the built environment is more positive for walking. Those that moved house had a mean change in walkability of 0.51 compared with 0.17 for those who did not move. Further results will show relationships between walkability and frequency of walking, measured on two occasions. We report will results comparing changes in walking between those who move house compared with those who experience changes to the built environment in their existing home location.

Conclusions: This longitudinal study of a natural experiment adds to the evidence base of causal relationships between the built environment and walking, comparing people who moved house at some time over a four-year period with others who did not. We provide evidence for policy makers regarding how changes to the built environment and the design of new housing developments may best encourage walking.

Support/Funding Source: The study received funding from Scottish Government, NHS Health Scotland, Glasgow Centre for Population Health, NHS Greater Glasgow & Clyde, Glasgow Housing Association and University of Glasgow (Grant Number 16597-01). LM and AE are supported by the UK Medical Research Council Neighbourhoods and Communities Programme (MC_UU_12017/10).
Abstracts: Cycle Skills Training

South Dunedin Cycling Project

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Background: Rates of cycling for transport among New Zealand primary and secondary school students dropped to their lowest between 2008-2012. At the same time there was a reduction in physical activity levels for school-aged children and an increase in numbers of parents driving their children to school. In 2014, Dunedin City Council developed the South Dunedin Cycling Project (SDCP) to improve cycling skills, road safety knowledge and confidence to enable children and adolescents to increase frequency of cycling as part of their everyday activities.

Description: The results of a pilot cycle skills training (CST) project showed parents were concerned about lack of on-road cycling experience. As a result, the SDCP gave students more on-road experience. The programme taught students Grade 1 and Grade 2 cycle skills and included follow-up led rides along selected routes. Members of the community were trained to deliver the training. Bicycles were provided for students who needed them. Sports cycling skills sessions were also offered.

Lessons Learned: To increase practice time during CST, bicycle provision was necessary for students attending low decile schools. The provision of led rides offered students 2-3 additional hours of on-road training thereby addressing parental concerns about lack of on-road cycling experience. The extension sports activities increased manoeuvrability and balance skills and proved popular across age groups with primary and secondary school students.

Results: During 2012-2016 period, more than 3,000 Dunedin children and adolescents participated in the CST at school. Schools reported that both age groups enjoyed the programme. Although some community trainers came from school communities the majority were Physical Education students from the University of Otago, as the programme fitted their applied learning goals. Students at two participating primary schools were so enthusiastic about CST that their schools set up their own Bikes in Schools programmes.

Support/Funding Source: Dunedin City Council, New Zealand Transport Agency, Sport NZ, Otago Community Trust and Kiwisport.
Effects of Cycle Skills Training Programme on Children's Cycling-Related Behaviours, Confidence and Knowledge

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Background: Cycle skills training (CST) courses conducted in a traffic free environment can improve children's cycling-related skills and knowledge. This study examined the effects of CST on rates of cycling, cycling confidence and skills, and knowledge of road rules in primary school children.

Methods: Children (n=442; age: 11.0±0.9 years; boys: 52.2%) from three schools in Dunedin (New Zealand) participated in a CST programme with traffic-free and road cycling components and cycling skills assessment. Children completed pre-training and post-training surveys about cycling-related behaviours, confidence and knowledge. Data were analysed using chi-square tests and paired t-tests.

Results: After CST, there was a 7.5% increase in the proportion of children who reported having experienced cycling on the road (pre-training to post-training: 78.8% to 86.3%), a 1%-2% increase in children who cycled ≥1/week (36.2% to 38.1%), regularly cycled to school (7.7% to 8.8%) and preferred cycling to school (40.2% to 41.9%) (all p<0.001). After CST, a greater proportion of children reported being very confident to cycle in a park/reserve (73.9% to 84.6%) and on the road (41.8% to 54.9%), but fewer children were very confident to cycle to school (62.8% to 62.2%; 0.6% decrease) (all p<0.001). Compared to pre-training, children significantly improved knowledge of cycling-related laws and road rules after CST (average knowledge score: 83.0±10.0% to 93.3±8.1%; p<0.001). Most children who completed practical cycling skills assessments were deemed competent in most of the assessed skills (overall competence score: Grade 1 (n=390): 94.5±14.2%; Grade 2 (n=231): 86.8±13.0%).

Conclusions: In children, CST improved cycling-related road safety knowledge and confidence to cycle in parks/reserves and on the road and had positive but minimal effects on cycling behavior and preference for cycling. Future research should examine whether additional interventions including parents, schools and built environment changes are necessary for increasing the rates of cycling to school in children.

Support/Funding Source: Dunedin City Council, New Zealand Transport Agency, Sport New Zealand, Otago Community Trust and Kiwisport.
Comparison of Cycling-Related Habits, Confidence, Support and Knowledge among Children and Adolescents from Dunedin, New Zealand

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Background: Previous studies examined the effects of cycle skills training (CST) programmes in children. Whether current CST programmes should be modified for adolescents remains unknown. To inform future design of CST for adolescents, this cross-sectional study compared cycling habits, confidence, support and knowledge of road rules among children and adolescents.

Method: A total of 438 girls (233 children [age: 11.0±0.9 years; 3 primary schools]; 205 adolescents [age: 13.8±0.8 years; 2 secondary schools]) from Dunedin, New Zealand completed a paper questionnaire about cycling-related habits, confidence, social support and knowledge at the start of the CST programme. Data were analysed using chi-square tests and independent t-tests.

Results: Children cycled more frequently compared to adolescents (20.7% vs. 9.9% cycled ≥1 time/week; p<0.001). Although few children and adolescents regularly cycled to school (1.8% of children and 0.6% of adolescents), a greater proportion preferred cycling to school (21.2% of children and 7.5% of adolescents; p<0.001). Compared to children, adolescents perceived themselves less confident cycling in parks/reserves (children vs. adolescents: 64.6% vs. 59.0%) or to school (51.4% vs. 27.7%) and more confident to cycle on the road (29.5% vs. 41.0%) (all p<0.05). Adolescents received less encouragement from parents (children vs. adolescents: 62.8% vs. 31.0%), peers (21.2% vs. 9.9%) and school (60.1% vs. 25.7%) to cycle to school (all p<0.05). Both groups had good knowledge of the road rules with no significant difference between the groups (children: 82.8±10.4%; adolescents: 85.0±9.8%; p=0.08).

Conclusions: Children and adolescents had sufficient knowledge of road rules, yet lacked the confidence and encouragement to cycle for transport. Compared to children, adolescents cycled less frequently, were less confident to cycle in parks/reserves or to school, and received less social support. Future CST interventions for adolescent girls should focus on improving cycling skills, increasing confidence, providing social support and encouraging cycling for transport and recreation.

Support/Funding Source: Dunedin City Council, New Zealand Transport Agency, Sport New Zealand, Otago Community Trust and Kiwisport.
Effects of Cycle Skills Training on Cycling-Related Confidence, Habits, Knowledge and Practical Skills in Adolescent Girls

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Background: Cycle skills training (CST) improves cycling knowledge and skills in primary school children. The effects of CST in female adolescents remain unknown. This study examined the effects of CST on cycling-related confidence, habits, knowledge of road rules and practical skills in New Zealand adolescent girls.

Methods: Adolescent girls (n=126; age: 13.8±0.7 years) from two secondary schools in Dunedin, New Zealand, participated in CST program in 2015-2016. Cycling-related confidence, habits and knowledge of road rules were assessed using paper surveys during first and last CST session. Instructors subjectively assessed participants’ cycling skills in a traffic free (Grade 1) and lightly trafficked environment (Grade 2) during the CST program. Data were analysed using paired t-test and chi-square tests.

Results: Compared to the pre-training assessment, a greater proportion of adolescents after CST had experience of cycling on the road (pre: 77.8%; post: 86.8%; p=<0.001) and reported being very confident to cycle in the park/reserve (pre: 59.5%; post: 73.0%; p<0.001), on the road (pre: 33.3%; post: 42.9%; p<0.001) or to school (pre: 20.5%; post: 28.8%; p<0.001). Few adolescents regularly cycled to school before and after CST (pre: 2.4%; post: 3.2%; p<0.001) and reported cycling as a preferred mode of transport to school (pre: 6.3%; post: 6.3%). After CST, adolescents significantly improved knowledge of cycling-related laws and road rules compared to the pre-training assessment (pre: 84.6±10.5; post: 91.7±7.9; p<0.001). Most adolescents who completed practical cycling skills assessments were deemed competent in most of the assessed skills (overall competence score: Grade 1 (n=120): 91.9±20.9%; Grade 2 (n=74): 97.6±5.7%).

Conclusions: Participation in CST improved cycling confidence and cycling-related knowledge but did not substantially change cycling to school behaviours or preferences in adolescent girls. Therefore, CST should be one component of the comprehensive efforts to increase the rates of cycling for recreation and transportation among adolescents.

Support/funding source: Dunedin City Council, New Zealand Transport Agency, Sport New Zealand, Otago Community Trust and Kiwisport.
“Sigue la Huella” An Example of a Global Approach to Promote Physical Activity

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Background: The aim of the “Sigue la Huella” programme was to determine the current situation of schools in Huesca, in the north of Spain, regarding sedentary lifestyle problem, and organise strategies to promote physical activity within a participatory research dynamic.

Description: The objective of the programme was to design, implement and assess the different strategies aimed at promoting healthy habits in the entire educational community. The intervention, following a social-ecological approach, was applied by following a curricular channel and an extracurricular channel. Regarding the first, the intervention was mainly carried out through the school subjects (for example, school Physical Education), through tutorials, the organisation of playtimes and the launch of an interdisciplinary project. In the non-curricular channel, important aspects to be highlighted are a teacher training programme, a physical activity programme for teachers, dissemination of the information and engagement of the families.

Lessons Learned: Every year, based on the results obtained, the interests of the centre are revised and the programme is re-orientated with the teachers of the school.

Conclusions: The results obtained to date are positive, having achieved, among other effects, a considerable increase in the levels of moderate to vigorous physical activity, and a decrease of sedentary time (Murillo, García, Julián y Generelo, 2014) in students, as well as a modification of some factors related to burnout and the engagement of teachers.

Support/Funding Source: This research was supported by the European Programme INTERREG V A Spain-France-Andorra (POCTEFA) 2014-2020. Specifically, this research was funded by CAPAS-Cité project (EFA095/15).
A Project-Based Learning Intervention to Promote Active Commuting to School in Spanish Children

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Background: In youths, active commuting to school contributes to higher levels of physical activity (Chillón et al., 2010), improve their cardiorespiratory fitness (Larouche et al., 2014). This behaviour is associated with improvement of academic skills (Haapala et al., 2014), and also with higher levels of happiness and well-being. In addition, active commuting to school leads to the reduction of traffic congestion, and the increase of social interactions (Rissel et al., 2009).

Description: Schools have great potential to promote physical activity. Applying project-based learning can be a relevant strategy to foster behaviour that will help promote active commuting to school (Kokotsaki et al., 2016).

Lessons Learned: Based on a diagnostic assessment, the intervention project lasted for 10 weeks and was applied to 100 children aged 10 and 11 years from a primary school in Huesca (Spain). We used a quasi-experimental methodology with a control school (50 individuals) and an experimental control (50 individuals). The teachers from the school and from the different knowledge areas participated in the design of the intervention programme. The programme focused on different action that were significant for students: family (informative meetings on the benefits of walking to school, about family support); the local police (pedestrian training; information for the community (creating signs and distinguishing elements of the project); city-related actions (using safe routes), and the school (learning tasks, week on active commuting to school).

Conclusions: For the project to be successfully applied, a lot of coordination between the different agents who have an influence on active commuting was required. To this end, sustained actions in time during the intervention were necessary, fostering intersectoral relationships, and connecting the curricular and community channels.

Support/Funding Source: This research was supported by the European Programme INTERREG V A Spain-France-Andorra (POCTEFA) 2014-2020. Specifically, this research was funded by CAPAS-Cité project (EFA095/15).
Active Living Behavior and Health Apps in Y-Generation: Do They Really Work?

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Background: The consumer market is burgeoning with new smart devices and physical activity monitoring apps, yet little research has supported their accuracy and impact on the active living (AL) of their users. The aim of the present investigation is to evaluate how young subjects, most from the so called Y generation, have been using health apps and the impact of these new technologies on their AL behaviors.

Methods: In a descriptive study, 591 undergraduate students, aged 21±4 years, were evaluated regarding their use of mobile devices and health apps. The data was collected by using a semi-structured questionnaire adapted from the Pew Research Center. To evaluate the AL behavior, the International Physical Activity Questionnaire (IPAQ), which evaluates physical activity and sedentary behaviors, was used. Subjects were classified as insufficiently active (<1000 kcal/week), moderately active (1000 to 2000 kcal/week) and highly active (>2000 kcal/week). Demographic characteristics, AL and sedentary behaviors between those who use or not health and physical activity related apps were compared using $\chi^2$ and unpaired t-tests.

Results: Among all subjects, 89\% were users of smart phones. Of those, 70\% had used at least one time a health app. Among all health apps used, the most frequently were physical activity (38\%) and diet monitoring (30\%) apps. Quality of life, weight control and physical performance were the most prevalent reasons for using these technologies. Only 41\% and 51\% of women and men, respectively, met the minimal recommendation (≥1000 kcal/week) of physical activity. No differences were found for AL (kcal/week) and sedentary (sitting time) behaviors when those who had smart phones where compared to those who have never had such devices. Similarly, no differences were found when those who had used health apps were compared to those who had never used any health apps (table 1). Results were not different when energy expenditure and sitting time was compared between those who had exclusively used (3005±4103 kcal/week and 8.3±3.9 hours/day) or not (2513±3509 kcal/week and 8.2±3.4 hours/day) physical activity related apps (p>0.05).

Conclusions: Although highly used, mobile smart phones and health related apps were not effective in changing AL behaviors of undergrad students from Y-generation. Future research is needed to ensure the effectiveness of these new technologies.

Table 1. Demographic characteristics and active living behaviors between health apps users and non-users.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Health Apps</th>
<th></th>
<th></th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Users</td>
<td>non-users</td>
<td>(n = 169)</td>
<td></td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>21±3</td>
<td>21±4</td>
<td></td>
<td>0.96</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>66.7±13</td>
<td>66.9±15</td>
<td></td>
<td>0.87</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>169.0±9.1</td>
<td>169.1±9.6</td>
<td></td>
<td>0.69</td>
</tr>
<tr>
<td>BMI (kg/m\textsuperscript{2})</td>
<td>23.0±4.4</td>
<td>23.1±4.5</td>
<td></td>
<td>0.78</td>
</tr>
<tr>
<td>Active Living (kcal/week)</td>
<td>2754±3706</td>
<td>2489±3525</td>
<td></td>
<td>0.21</td>
</tr>
<tr>
<td>Sitting time (hours/day)</td>
<td>8.1±3.3</td>
<td>8.2±3.4</td>
<td></td>
<td>0.67</td>
</tr>
</tbody>
</table>

BMI - body mass index
Promotion of Healthy Habits through a Participatory Action Research Process Focusing on Physical Activity

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Background: There is a global problem today with respect to practicing physical activity (PA), especially in populations with underprivileged socio-economic, cultural and educational levels. A clear example of this type of population is the gypsy ethnic group. As expressed by Piedra de la Cuadra (2009), PA and sport do not form part of their lives or of the community. This situation is worse in the case of women due to a lack of education in childhood and to the responsibilities they have to assume from early on in life regarding family obligations. Therefore, the purpose of this programme is to promote a shift towards a healthier lifestyle and habits in a group of low socio-economic status women through PA.

Description: The healthy habits promotion programme included 13 adult gypsy women (aged 26 to 56 years) who, through a participatory research-action process, participated in the programme design. Different agents of influence from the programme environment (e.g., social workers, school directors, teachers, etc.) actively contribute to the design and revision of the intervention programme based on their needs and demands. PA is a key element of the programme when addressing the modification of other healthy habit-related behaviours (González, Bobadilla, Castro, Osorio y Roco, 2013).

Lessons Learned: The application of a healthy habit modification programme in this type of population requires a slower activity pace. It is essential to involve the study participants in the design process.

Conclusions: Positive effects are shown throughout the programme such as the high level of commitment and participation in the programme activities.

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Abstracts: Cycling

Understanding Culture in Cycling Advocacy

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Background: Cycling has increasingly been advocated in health promotion, sustainability discourses, urban planning and in the context of tourism. Much research has approached cycling somewhat narrowly as a transport practice adopting an objectivist-rationalist approach. That is, it advocates for (more) cycling on the grounds that it is a healthy, pollution and congestion reducing activity which pivots on the assumption that it can be logically and rationally promoted and adopted. Spinney (2009) critiques such reductive approaches that have focussed on ‘push and pull’ variables (such as time, cost, environment) that do not explain why people choose (or not) to pursue cycling. What such approaches ignore are the cultural meanings of cycling which pattern: who cycles, when, and with what social meanings and relevance. Indeed, approaches differ markedly and operate on a spectrum of understandings not all of which are compatible, and may indeed contradict one another.

Methods: This study reflects upon ethnographic data gathered with ‘serious leisure’ cyclists to reveal the specific ways that they approach and understand their cycling activities

Results: The study reveals that cyclists undertake their activities within the context of particular social meanings focussing on health and always in relation to their working lives. That is, as a ‘de-sportified’ activity – such that it is loosely-structured, non-competitive, and socially connective. Such revisions adhere to particular middle-class life worlds and aspirations regarding active aging and ‘responsible’ citizenship.

Conclusions: The study suggests that an understanding of the role of culture must be central to cycling policy, provision and programmes.
Beyond Slap-bands and Drink Bottles - Encouraging Everyday Biking

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**Background:** The Bikes Welcome Charitable Trust aims to grow everyday bike use. Our model is demand driven, and aims to demonstrate that everyday people ride bikes, that bikes mean business and that bike parking encourages bike use and patronage of businesses.

**Description:** Is bike parking a ‘canary in the mine’ when it comes to gauging how our local authorities and businesses view bike use, whether they see cycling as sport and recreation or a valid transport mode for everyday activities?

When we treat biking as an activity for weekends, when it is restricted to mountain bike parks, recreational trails and school biking tracks, then we effectively marginalise it. We are missing opportunities to change behaviour and realise the benefits of active transport. How do we change the pervasive viewpoint that cycling is a sports and recreational activity, not an everyday activity? And what role does bike parking play in that?

**Lessons Learned:** 1. Transport biking is a relatively new concept in NZ. 2. Leadership is key, and often lacking. 3. Recreational programs and events are more attractive to local authorities and funders. 4. Community led models are emerging, but face obstacles. 5. Silos and ‘villages’ restrict the efficacy of both change programs and funding.

**Conclusions:** We get more people biking when we give people safe places to ride, develop a safe supportive environment, build their ability, and grow their desire. Programs and funding for urban cycling in NZ are in their infancy creating many challenges and opportunities for creativity, leadership and cooperation. Community led initiatives such as the Bikes Welcome model are part of the solution, a multi-faceted solution, for growing transport biking in New Zealand, and beyond.
Adolescents’ Perceptions of Safety Along Routes to Dunedin Secondary Schools:
Is Perception Biased?

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Background: Perception of the safety of the route to school is one of the key factors determining whether adolescents will use active modes of transportation to school. This study examined the spatial distribution of digitised routes to school in male versus female adolescents using the recorded observations regarding the perception of ‘safety’ along those digitised routes.

Methods: High school students (n=740; age: 15.5±1.4 years; 53.4% females) from 12 schools hand drew their route to school on a paper map which was subsequently digitised. Adolescents were asked to mark ‘safe’ and ‘unsafe’ areas along the route and provide comments for ‘unsafe’ segments. To examine interaction of the abstract perception of safety with respect to the objective measures of the built environment comments were classified into specific categories and tested using the chi-square distribution for significant differences between genders.

Results: School routes were broken into segments of safe and unsafe (24.7% female versus 21.0% male, p=0.223) where the students provided written comments about safety of the route to school on 235 (67.7%) of 347 ‘unsafe’ segments. Four distinct perceptions of ‘unsafe’ areas were determined from the student comments on the maps:

1) built environment characteristics (roads/intersections/lack of footpaths; 123 (55.2%) of unsafe segments; 18.4% females versus 14.4% males; p=0.136),
2) traffic safety (vehicles/traffic; 77 (34.5%) of unsafe segments; 10.9% females versus 10.1% males; p=0.722);
3) personal safety (people/dogs/street lighting; 45 (20.2%) of unsafe segments, 6.1.0% females versus 6.0% males; p=0.988) and
4) other (weather/winds/glare; 17 (7.6%) of unsafe segments, 1.0% females versus 3.7% males; p=0.013).

Conclusions: Built environment features, traffic safety and to a lesser extent personal safety concerns were the main factors related to the perception of safety along the routes to school among Dunedin adolescents. Male students were significantly more likely to perceive ‘other’ factors as unsafe.

Support/Funding Source: National Heart Foundation of New Zealand, Lottery Health Research Grant, University of Otago Research Grant, Dunedin City Council, and internal grants from the School of Physical Education, Sport and Exercise Sciences, University of Otago.
Long-Term Effects of Cycle Skills Training in Children and Adolescents

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Background: Although cycle skills training (CST) for children improves cycling knowledge and skills in the short-term, long-term effects are unexplored. This study examined the long-term effects of CST on cycling habits, confidence, road safety knowledge and social support in children and adolescents.

Methods: Ninety-one students (52 children; 39 adolescents; 75.8% females; 11.8±1.8 years; 2 schools) completed CST in Dunedin, New Zealand. Cycling habits, confidence, road safety knowledge and social support were assessed by pre-training, post-training and follow-up surveys (6-9 months after CST). Data were analysed using chi-square tests and independent t-tests.

Results: The proportion of students who cycled ≥1/week increased from pre-training (26.5%) to post-training (29.7%) and decreased at follow-up (27.5%) (all p<0.05), whereas cycling to see friends (pre-training: 0.41±0.98 days/week; follow-up: 0.36±1.01 days/week; p=0.746), for sport training (pre-training: 0.43±1.11 days/week; follow-up: 0.38±0.98 days/week; p=0.730) or rates of cycling to school (pre-training: 5.5%; follow-up: 4.4%; p=0.082) did not change significantly. Students’ preference for cycling to school increased from pre-training (26.4%) to post-training (33.0%) and decreased at the follow-up (23.1%) (all p<0.05). From post-training to follow-up assessment, students increased perceived confidence to cycle on the road (45.1% vs. 65.9%; p<0.001) and to school (52.2% vs. 58.0%; p<0.001) and retained knowledge of cycling-related laws and road rules (overall knowledge score: 92.5±8.7% vs. 93.2±7.7%; p=0.450). Compared to pre-training, a lower proportion of students received substantial parental encouragement to cycle (24.1% vs. 23.0%; p<0.001), whereas peer encouragement remained low (4.6% vs. 4.6%; p=0.653) at follow-up.

Conclusions: Six to nine months after participation in CST, children and adolescents retained knowledge of road rules and perceived further increases in cycling confidence, although cycling habits and social support for cycling remained low and unchanged. To ensure the long-term impact, future CST interventions should involve follow-up activities, engage parents and encourage cycling for transport and recreation.

Support/funding source: Dunedin City Council, New Zealand Transport Agency, Sport New Zealand, Otago Community Trust and Kiwisport.
Abstracts: Active Transport to School

Auckland’s Recipe for Obesity – Key Results from the Healthy Auckland Together Monitoring Report 2017

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**Background:** It is recognised that the wider environment influences population levels of physical activity, nutritional intake and rates of obesity. We describe a range of indicators that represent trends in physical activity, nutrition and obesity and consider the impact of the Auckland environment on these outcomes.

**Methods:** Indicators were developed for monitoring physical activity, nutrition and obesity in Auckland. This second edition of the report included further indicators of the key environmental determinants of these health outcomes. Seven health, local government and transport data sources were selected for use, based on their specificity to Auckland and regularity of reporting.

**Results:** Twenty-one percent of Auckland four year olds are above a normal weight, with 15% overweight and 6% obese. This varies by ethnicity with 58% of Pacific and 72% of Māori children are a normal weight, compared with 85% of all other children. The proportion of Māori (7%) and Pacific (15%) children classed as obese has decreased since 2012 (8% and 18% respectively), while there has been no change for all other groups. Adult obesity rates continue to rise, from 24% in 2007 to 27% in 2015. There has been little change in the proportion of adults who meet nutrition (36%) and physical activity (44%) guidelines. Active transport makes up 4% of all trips to work. The rate of public transport utilisation continues to rise. In 2015, 43% of all children used active transport to get to school, significantly less than 46% in 2014. Gaps are evident: whereas there are large studies reporting body mass index, physical activity and nutrition outcomes, there are limited datasets which capture the environmental determinants, aside from the transport and open space environments.

**Conclusions:** We describe a significant drop in the rate of obesity amongst Pacific and Maori children. Yet large inequities remain, and there is no sign of progress in reducing adult obesity. Improvements in some environmental determinants such as public and active transport infrastructure have not yet translated into improvements in physical activity. There remains an urgent need for ongoing monitoring of the environmental determinants of physical activity, nutrition and healthy weight.
A Longitudinal Study of the Mode of Commuting to School in Spanish Children and Adolescents: The UP&DOWN Study

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Background: Active commuting (i.e. walking or cycling) to/from school contributes to increase physical activity levels in children and adolescents and consequently, has health benefits. This study analysed the change of active/passive modes of commuting to and from school measured at 3 time points in Spanish children and adolescents.

Methods: This longitudinal study comprised a total of 840 Spanish children and adolescents (49.8%, girls) aged from 8 to 16 years at baseline, recruited from schools in Cádiz and Madrid, respectively. Mode of commuting to school was self-reported by students using a questionnaire at baseline, 1-year follow-up and 2-year follow-up. Distance was objectively measured using Google maps software using the family address at baseline. Chi-square test was used to compare the mode of commuting (active vs. passive) to/from school among children and adolescents. McNemar test was used to compare the mode of commuting (active vs. passive) to/from school at the 3 time points (i.e. baseline vs. 1-year follow-up; baseline vs. 2-year follow-up; and 1-year follow-up vs. 2-year follow-up).

Results: Around 60% of children and adolescents commuted to/from school actively (mainly walking) at 3 time points (i.e. 60.2% at baseline, 58.8% at 1-year follow-up and 59.8% at 2-year follow-up). No significant differences were observed among the proportion of children versus adolescents who use active transport to school at 3 time points (i.e. 63.3% vs. 59.6% at baseline, 58.0% vs. 59.0% at 1-year follow-up and 58.7% vs. 60.1% at 2-year follow-up, respectively, all, p>0.05). In addition, no significant differences were observed among the modes of commuting (active vs. passive) to/from school at the 3 time points (all, p>0.05). Overall, children and adolescents lived at 2,144±955 m from school at baseline.

Conclusions: Most of the Spanish children and adolescents are active commuters to school, yet their mode of commuting remains to be constant in a 3-year period. Further interventions to promote active commuting to school are needed in order to achieve health and environment benefits.

Support/Funding Source: This study was supported by the DEP 2010-21662-C04-00 (DEP 2010-21662-C04-01, DEP 2010-21662-C04-02, DEP 2010-21662-C04-03, DEP 2010-21662-C04-04) RYC-2010-05957 grants from the National Plan for Research, Development and Innovation (R + D + i) MICINN.
Interventions for Promoting Active Commuting to School: An Updated Systematic Review

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Background: Active commuting to school has been recognized as potential avenue to increase the daily physical activity levels in children and adolescents. However, active commuting to school has declined over time, and interventions are needed to reverse this trend. The main aim in the current study was to update the previous review published in 2011, following the same methodology and addressing the quality and effectiveness of new studies identified in the recently published scientific literature.

Methods: A systematic review was conducted to identify intervention studies of active commuting to school published in the scientific literature from February 2010 to June 2016. Five electronic databases and a manual search were conducted. Detailed information was extracted, including a quantitative assessment comparing the effect sizes, and a qualitative assessment using an established evaluation tool. The Cohen’s d was divided into five levels: trivial (Cohen’s d ≤ 0.2), small (>0.2), moderate (>0.5), large (>0.8), and very large (>1.3). Evaluation of Public Health Practice Projects tool included six dimensions being rated on a three-point scale: strong, moderate, or weak.

Results: We identified 23 interventions that focused on active commuting to school. These interventions were carried out in primary and secondary schools, in America, Oceania, and Europe and mainly in the United States (11/23). Almost all the interventions used quasi-experimental designs (20/23), and most of the interventions reported a small effect size on active commuting to school (14/23). The quality assessment was rated as weak in most of the studies (21/23).

Conclusions: More research with higher quality study designs, such as randomized controlled trials describing the appropriate method of randomization, should be conducted to further evaluate interventions and determine the most successful strategies for increasing active commuting to school.
Chicken or Egg? The Importance of School Transport Norms

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**Background:** Much effort and attention has been given to cycle skills training and other interventions for children at primary and intermediate schools. Indeed, a number of best practice primary and intermediate/junior high schools have emerged as part of model walking and cycling community initiatives and other concerted planning. However, there appears to be a significant gap in promoting cycling to secondary school especially by girls. Research in Palmerston North showed significant differences between a single-sex girls’ school and a single-sex boys’ school. While this potentially highlights the importance of gender, given other similarities in the size and decile level of the schools, and similar road environments, it also suggests that school transport norms are important determinants of cycling to secondary school.

**Methods:** Focus groups with secondary school students were supplemented by document analysis (in particular, school travel information) and analysis of cycle routes to schools. In addition, interviews were conducted with parents of year 8 students.

**Results:** There is often a lack of information about transport options for parents and caregivers of students who are making the transition to secondary school. In addition, facilities for those who bike to school are often limited in schools where there is low participation in cycling to school. At some schools there are strong norms around walking especially among girls. These norms are reinforced by lack of incentives and encouragement to ride a bike.

**Conclusions:** Norms around cycling to school are typically much more positive for boys than for girls. Secondary schools need to consider how they can consciously shape norms to create a positive image of cycling to school. In particular, they need to be more proactive at assisting students who are about to transition to secondary school, and their parents and caregivers, with information about active transport options.

**Support/Funding Source:** Massey University Living Lab, Palmerston North City Council.
“It Hasn’t Been in Our Field of View”:
Active Transport, School Policy and Leadership in Neo-liberal Times

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Background: School choice and school zoning policies have implications not only for education but also for public health, transport and environmental sustainability. This paper reports findings from interviews with principals (n=11), or deputy principals (n=1), from secondary schools in Dunedin, New Zealand that participated in the BEATS Study, with a particular focus on the perceived effects of neoliberal school choice policies on active transport to school (ATS).

Methods: Semi-structured interviews explored school leaders’ perceptions of ATS, school neighbourhood environment, school’s policies for ATS, road safety procedures around the school and personal travel habits. All interviews were transcribed verbatim and imported into the qualitative data analysis software HyperResearch. Interviews were coded following a general inductive approach.

Results: Analysis of the interviews illustrates that neoliberal policies, which increase school choice for students and families, have contributed to complex and often problematic practices of transport to school. Interviewees highlighted Dunedin’s unique topography and weather, combined with concerns around safety during drop-off and pick-up times, traffic congestion, and students’ bus behaviours, as particularly challenging. Many described the lack of ATS as due to large catchment areas, combined with student/parental convenience of being driven/driving to school. None of the participating schools had policies to directly change student behaviours around ATS. The ‘problem’ of the lack of ATS was positioned as a parental choice, rather than something with which the schools should interfere. Many interviewees confessed that ATS was not a school policy priority area.

Conclusions: School principals acknowledge that school choice contributes to multiple challenges related to ATS. Despite ATS not being identified as a high priority for the schools, interviewees’ responses suggest there is promise in working with students and parents to develop policies to mitigate the effects of school choice on ATS.

Support/Funding Source: This work was supported by the Health Research Council of New Zealand Emerging Researcher First Grant (14/565), National Heart Foundation of New Zealand (1602 and 1615), Lottery Health Research Grant (Applic 341129), University of Otago Research Grant (UORG 2014) and Dunedin City Council.
Incorporating Active Living Principles into Statutory Planning:  
A Successful Case Study within Canberra, Australia

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**Background:** The vision for Canberra is to be a healthy, active city that is well connected, compact and equitable. To deliver this, the Australian Capital Territory (ACT) Government is implementing specific changes to its statutory plan, the “Territory Plan”, to mandate the inclusion of active living principles into all developments.

**Description:** The Heart Foundation worked with the ACT Government, industry and university sector to define six active living principles. A line-by-line Territory Plan gap analysis was then undertaken identifying potential changes. Sixty-three recommendations for incorporating Active Living Principles into the Territory Plan were developed following seven broad categories:

- Revise the Statement of Strategic Directions;
- Incorporate Active Living Principles into all zone objectives;
- Amend the relevant rules and criteria in all zones;
- Include character statements in Precinct Codes to support active living;
- Review and update General Codes that relate to active living;
- Include active living terminology within the Territory Plan Definitions; and
- Amend the relevant rules and criteria in the Estate Development Code.

The ACT Government has accepted most of these recommendations and has written Draft Variation 348: Incorporating Active Living into the Territory Plan.

**Lessons Learned:** There are three crucial lessons in incorporating active living into statutory planning. Firstly, collaboration between government and non-government organisations is an effective tool for implementing change. Secondly, skilful advocates supported by strong evidence, need to build ongoing trusting relationships with key decision makers to effect change. Thirdly, there is an appetite to fight chronic disease through changes to the built environment and codification is seen by politicians and planners as readily available, effective and implementable tool to achieve this.

**Conclusions:** It is possible to incorporate health and active living into statutory planning given time, commitment and resources.

**Support/Funding Source:** This research was undertaken with the generous support of The ACT Government.
Measuring the Relationship between the Neighbourhood Built Environment and Children’s Active Transport Behaviours and Perceptions

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Background: Many studies have shown that adults’ physical activity and active transport behaviours are associated with features of the built environment. Until recently, standard 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.

Methods: 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, New Zealand. Data were 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.

Conclusions: 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 policy plans in New Zealand to improve both the liveability of the built environment and create environments that encourage active transport behaviours in school children.

Support/Funding Source: Health Research Council of New Zealand.
Making Sustainable Changes in a Health Oriented Organisation

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**Background:** Community and Public Health, a division of the Canterbury District Health Board strongly promotes a Health in All Policies approach. This requires strong development of partnerships with many agencies that impact on health outside of the health sector. It also means that we as an organisation look for opportunities to model some of the behaviours and practices that we work with others to achieve for our region. With a divisional staff of just over 100 we had a perfect opportunity identify some innovative and sustainable ways to make changes to improve health and wellbeing.

**Description:** The presentation will describe the development of an in-house sustainability program piloted as “Zero Hero’s”. The program focused on gathering of information, self-identification of changes that could be made and this pulled together into a comprehensive program supported by an ongoing sustainability group. While there is never a one size fits all approach the journey of identifying what would work for us included experimenting with other models before finalising a series of six stages that teams could work through and ways to keep people motivated and make sustainable changes. The presentation will focus on the lessons learned and changes achieved that are hopefully not unique to our organisation and could be used elsewhere.

**Lessons Learned:** The most obvious lesson is that ‘not everyone gets it’, and what will motivate people is varying and often surprising. Some changes can easily be made by individuals. Other changes need broader organisational change which can be more complex but ultimately reap very big paybacks as will be shared in the presentation. There is a lot of work already happening in this space but picking something off the shelf that does not have buy in is much less likely to be successful.

**Conclusions:** Sustaining behaviour change is not easy but even small difference in practice can have some surprising outcomes and is well worth the effort involved.
Travel Demand Management to Change the Travel Behaviour of Commuters Returning to Work in Central Christchurch

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Background: Organisations totalling 6000 employees are moving back into the central city as part of the Christchurch earthquake recovery. The dominant mode of commuting is currently by car (84% in the 2013 census). The Greater Christchurch Healthy Commuter programme encourages those moving back into the city to mode shift away from single occupancy car trips and into walking, cycling, carpooling and public transport.

Description: Before their move we surveyed employees of 8 businesses about their travel mode, their motivations and future commuting intentions. We used this data to inform the programme presentations and messages. These were followed by one-on-one discussions with 696 individuals to break barriers to uptake. Monitoring and initiatives to support alternative travel followed.

Lessons Learned: Prior to people moving back into the central city 76% of trips were by single occupancy vehicle, 13% by bike, 5% carpooled, 4% walked and 3% took the bus. After taking people through the programme and asking about their travel intentions, respondents reported that 29% of trips would be by car, 24% by bike, 7% by carpool, 10% walking and 31% by bus. The most important considerations for people about transport were avoiding difficulty finding a car park, not being stuck in traffic, saving money and supporting health and wellbeing. We used the “Healthy Commuter Programme” as it had a positive message and supporting data.

Conclusions: The programme is effective in raising the profile and possibility of trying new mode choices for commuting to the central city as it includes: (a) understanding peoples’ motivations and weaving this into the programme; (b) raising awareness and how to use alternatives; (c) creating desire by promoting the benefits of alternatives; and (d) breaking down any barriers to participation.

Support/Funding Source: Great Christchurch Urban Development Strategy, Christchurch, New Zealand.
Modes of Commuting to University and Reasons for Mode Choice among Chilean Students

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Background: Active commuting could be a strategy to increase physical activity levels in university students, however, there are no studies describing commuting patterns to university and main reasons to choose mode of commuting in Chilean students. Therefore, the aim of this study was to investigate the mode of commuting to university and reasons for mode of commuting choice among Chilean students.

Methods: A total of 496 university students (21.27±0.25 years; 69% women) from Valparaíso state (Chile) were recruited via convenience sampling in class. Participants completed a paper-based questionnaire with their personal data, usual mode of commuting to and from university and the main reasons to choose the mode of commuting. Participants were classified as active commuters (walking or cycling) and passive commuters (bus, car or another motorized transport). Descriptive analysis of mode of commuting to and from university and main reasons to choose mode of commuting both for passive and active commuters was performed. Comparisons between mode of commuting go and from university were analysed by McNemar test.

Results: Chilean university students were mainly passive commuters (68.88%) to and from university. Bus was the main mode of commuting used with differences between to and from university (go=55.2%, from=59.3%; p<0.001), followed by walk (go=28%, from=26.4%; p=0.134), and car (go=8.7%, from=6.0%; p=0.001). The main reasons to choose mode of commuting for passives commuters were longer distances (go=44%, from=43%) and short travel time (go=22.1%, from=23.5%), whereas shorter distance (go=59.2%, from=56.6%) was the main reason for active commuters.

Conclusions: University Chilean students are mainly passive commuters choosing the bus as the main mode of commuting to and from university. Distance was the most common reason determining students' mode of commuting to university.

Support/Funding Source: This study was supported by the Project of Incentive for the Academic Units of Pontificia Universidad Católica de Valparaíso, Chile (Ref:037.294/15).
**School Neighbourhood Environment and Active Transport to Secondary Schools in Dunedin, New Zealand**

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**Background:** Rates of active transport to school (ATS) among adolescents are low internationally and have been declining in recent decades, in part due to changes in urban form. Rates of ATS among Dunedin adolescents living within 4 km of their school are low and vary greatly between the schools. Micro- and macro-scale features of the built environment may positively influence patterns of ATS, yet the effect of features within Dunedin’s school neighbourhood environments on adolescents’ use of ATS remains unknown. This study will examine the association between the school neighbourhood built environment and the rates of ATS across all twelve secondary schools in Dunedin, New Zealand.

**Methods:** This observational study extends the Dunedin-based Built Environment and Active Transport to School (BEATS) Study. Micro-scale school neighbourhood environment characteristics within a 500-metre street-network buffer-zone around each secondary school will be physically assessed using Systematic Pedestrian and Cycling Environmental Scan (SPACES). Geographic Information System-based spatial analysis using four street-network buffer-zones (500 m, 1.0 km, 1.5 km and 2.25 km) around each school will provide objective macro-scale walkability indexes. School-specific ATS rates and adolescents’ perceptions of the route to school collected as a part of the BEATS Study will complement micro- and macro-scale measures. Schools will be grouped based on above-average, average or below-average rates of ATS. Built environment characteristics and adolescents’ perceptions of their route to school will be compared between three groups of schools using ANOVA.

**Implications:** Understanding school neighbourhood characteristics and their association with the ATS in adolescents will inform the design and modification of school neighbourhood environments and contribute to the development of future ATS interventions.
Active Living Professional Development Series:  
Walkshops, a Practical Education Program for Government Employees

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**Background:** The vision for Canberra is to be a healthy, active city that is well connected, compact and equitable. To deliver this vision and improve the long-term health of the community, the Minister for Planning and Land Management is incorporating six active living principles into the Australian Capital Territory’s (ACT) statutory planning framework (*the Territory Plan*).

**Description:** The Heart Foundation (ACT) was commissioned to deliver a professional development program to ACT Government practitioners on the incorporation of active living principles into their daily work practices. Workshops were delivered in the form of practical, in the field, ‘walkshops’. Each of the six ‘walkshops’ focused on a different principle identifying the importance of urban design and planning to support the implementation of that principle. ‘Walkshops’ were held in different locations throughout Canberra and were led by active living experts, supported by government officials. Participants were asked to make their way to the ‘Walkshops’ using an active travel mode such as walking, cycling or catching a bus. This was coined the ‘Active Travel Challenge’.

**Lessons Learned:** Firstly, all participants identified that the series was effective, educational and an ideal way for Government practitioners to learn by applying theory into practice through ‘walkshopping’. Secondly, the ‘Active Travel Challenge’ was an effective tool for participants to identify barriers using an active travel mode. Finally, ongoing professional development in this space is needed within Government, private sector and the general community.

**Conclusions:** It is possible to incorporate health and active living outcomes into the work practices of Government employees. Professional development ‘walkshops’ are a popular, successful, cost effective way to educate government practitioners.

**Support/Funding Source:** This program was undertaken with the generous support of the ACT Government.
Abstracts: Environment and Nature

Park-Based Physical Activity Interventions for People with Disability: An Integrative Review

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**Background:** Park-based physical activity interventions improve health outcomes in the general population, but it is unknown if the evidence could be translated to persons with disabilities. We conducted an integrative review to synthesise the evidence for park-based physical activity interventions for persons with disabilities and compared the evidence across the lifespan (i.e. children and adolescents, young, middle and older adults).

**Methods:** Major electronic databases were searched from inception until the last week of November 2016 using keywords “parks”, “health” and “disability”. A hand search of previously published systematic reviews and citations of included articles was also made. Both qualitative and quantitative studies were assessed for eligibility. Studies were deemed eligible if the intervention was conducted in a park environment in people with some form of disability (e.g. physical, sensory, psychological and developmental impairments) and used a biopsychosocial health outcome. Methodological quality was assessed using Crowes Critical Appraisal Tool and key findings were extracted.

**Results:** Six quantitative and three qualitative papers (nine studies) were included. We found no papers including young or middle-aged adults. There was a positive trend of improved physical, psychological, social and spiritual health in children and older adults with disabilities as well as disability specific related impairments.

**Conclusions:** Children and older adults with disabilities demonstrate health improvements from park based physical activity interventions. To mitigate the negative health outcomes of physical inactivity and associated health conditions, there is a need for health professionals to advocate for parks as an environment for population and community-based physical activity for people of all ages and abilities.

**Support/Funding Source:** Collaboration for Ageing Research Excellence (CARE) Summer Student Scholarship.
Accessibility and Usability of Community Parks and Playgrounds in the Greater Wellington Region

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Background: Public parks and playgrounds are an environment for leisure activity, which all generations can enjoy at low or no financial cost. Evaluating the accessibility and usability of parks and playgrounds is crucial because their design, environment (natural and built) and safety could restrict participation of persons with disabilities. We evaluated the accessibility and usability of 21 public parks and playgrounds in three metropolitan cities of New Zealand. We also aimed to compare the accessibility and usability by deprivation level (high and low) and park type (destination or neighbourhood).

Methods: Twenty-one parks were evaluated in total. A stratified random sampling was used to select 18 parks (six from each city). Three additional parks were purposely selected (one from each city). The parks and playgrounds were evaluated using a customized tool. Data were analysed using descriptive statistics.

Results: None of the parks we evaluated met the national standards and/or international guidelines for park and playground design. Across all the parks, we identified potential accessibility and usability issues with car parking spaces, path surfaces and play equipment as well as lack of lighting and fencing. Amenities (e.g. toilets and drinking fountains) were more likely to be present in destination parks. Parks in areas of higher deprivation were less likely to have accessible car parking spaces and main paths wider than 1.5 metres.

Conclusions: Our evaluation identified park design, environmental and safety limitations, which could inhibit participation of persons with disabilities across the lifespan. A larger, more comprehensive evaluation of parks and playgrounds is required.
Incorporating Inclusive Design in Architectural Practice: A Qualitative Study Exploring Architectural Design Student’s Experiential Learning

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Background: The built environment can facilitate or impede an individual’s ability to actively participate in society. Currently, Inclusive Design tends to follow behind other priorities in the design and construction of New Zealand’s built environment, thus creating a challenge for those with disability. However, architects and designers are well placed to influence built environment outcomes and thus enable equitable access for all.

Methods: This qualitative study explored architectural design students’ perceptions of Inclusive Design, and the influence of experiential learning on their design practice. Mobility equipment such as a wheelchair, frame or crutches, were used to gain an insight into navigating a familiar built environment with a ‘disability’. Twenty four of the 65 students participated in group or individual interviews to establish the students’ response. Data from the interviews were analysed for themes.

Results: Three themes became evident: 1) Inclusive design was perceived as challenging, 2) Appreciation for the opportunity to learn about the perspectives of people with disabilities, and 3) Change of attitude toward inclusive design. Experiential learning had fostered reflection, changes in attitude and the realization that inclusive design should begin at the start of the design process. Students appreciated the opportunity to “walk in someone else’s shoes” to gain a different perspective of a familiar environment and thus be better able to understand and justify design that allows for equitable access for all.

Conclusions: The experiential learning investigated in this study provided opportunities for in-depth understanding and an empathetic approach to designing inclusively. However, in order for architects to be advocates and experienced practitioners in designing inclusive environments, experiential learning, coupled with positive examples of inclusive design may need to be continually embedded in architectural education. Lastly, until inclusive design becomes mandatory, New Zealand, like other countries, will continue to provide a challenging built environment for individuals with disability.

Support/Funding Source: We wish to acknowledge the support of ARA staff to enable the experiential exercise to take place on its campus.
An Outdoor Learning Approach to Healthy Living

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**Background:** Outdoor education programmes have a profound impact on their students with the effect being stronger in longer-term programmes (York Consulting, 2015). Questions have been asked about the effect of this outdoor learning on students’ relationships with themselves, with others in society and with the environment they live in. In particular, how do participants transition and adapt back to the city environment after camp?

**Methods:** This research presents the outcomes of a social constructivist approach to understanding the transition of twenty four year 10 (age 14) girls from St Cuthbert’s residential outdoor programme at their remote Kahunui centre, back to their home and school environments. The purpose of this research was to: 1) Explore the girls’ perspectives on their learning as they transitioned from the environmental, sustainability, and holistic health focus of the centre to their subsequent re-entry into their city school and family environment; 2) What lifestyle adaptations occurred as a result of the personal growth and learning that occurred during the outdoor experience? I used interviews, observations, and parental feedback to gain insights into the girl's perceptions of healthy living, their values relation to the environment, their concepts of sustainability, and their role in both the home and school.

**Results:** Results indicate that for many families the transition of their daughter home was demanding. Quay (2016) refers to the learning in the outdoors as of value not just because of content or process, but because through this learning we learn a new way of being. The participants in this study provided insights into lifestyle alterations and strategies they adopted as they adapted back to the city and into their home environments.

**Conclusions:** This study identified how a holistic approach to healthy living learned through a remote outdoor learning experience enhanced the perceived health, environmental awareness, and sustainability practices of the students involved.
Working together we can take new steps towards a healthier and more sustainable future.

Thank you for joining us on this journey!

We look forward to continuing to work together with you.

Active Living and Environment Symposium 2017
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