CLIMATE HEALTH AOTEAROA

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Climate and Health Alliance

SUSTAINABLE HEALTHCARE AOTEAROA

Climate Health and Sustainable Healthcare in Aotearoa Conference 2025

University of Otago, Wellington with regional hubs and online options.

28–29 July

Ōtākou Whakaihu Waka
UNIVERSITY OF OTAGO

Programme

Monday 28 July 2025

NZST	Title	Speaker
8:00 AM - 8:40 AM	Registration desk open	
8:45 AM – 9.10 AM	**Conference opens. Pōwhiri/welcome - Toa Waaka**	
9.10 AM - 9:29 AM	Housekeeping: Conference co-chairs	
9:30 AM - 10:00 AM	**Session 1:** Interactive session: People, Place & Wellbeing | Tangata, Whenua, Taiao, Hauora	Hana Buchanan
10:00 AM - 10:30 AM	**Keynote address**	**Donna Burns**
10:30 AM - 11:00 AM	Morning tea	
11:00 AM - 12:30 PM	**Session 2:** Iwi, hapū, community led climate action	
11:00 AM - 11:30 AM	**Keynote address**	**Hōri Laking, Holly Thorpe, Dayna Raroa & Josie McClutchie**
11:35 AM - 11:50 AM	**Presentation:** Te Ara ki Kōpū: Te Arawa Climate Change Strategy	Lani Kereopa
11:50 AM - 12:05 PM	**Presentation:** Democracy 2.0? Porirua's Treaty-based Citizens' Assembly on Climate	Simon Wright
12:05 PM - 12:20 PM	**Presentation:** Mate Whenua, Mate Tangata: Taiohi perspectives on mental health and wellbeing in a changing climate	Future Unity: Orini Rokx-Taratu, Santino Morehu-Smith, Wairere Pene, Amanda Dobson, Michele Whiting & Conor Twyford
12:20 PM - 12:30 PM	Questions	
12:30 PM - 1:00 PM	Lunch	
1:00 PM - 1:55 PM	**Workshops:** Kaicycle - Te Whanganui a Tara only	
2:00 PM - 3:00 PM	**Session 3:** Transport and heart health	

NZST	Title	Speaker
2:01 PM - 2:20 PM	**Presentation + video:** Policy approaches to decarbonising the transport sector in Aotearoa New Zealand: modelling equity, population health, and health-system effects	Caroline Shaw
2:20 PM - 2:35 PM	**Presentation:** Workride – Supporting Healthcare Employees Across Aotearoa	Angus Rodney & Aidan Smith
2:35 PM - 2:50 PM	**Presentation:** Geospatial carbon footprinting of dialysis travel: a national data linkage and modelling study	Johanna Birrell
2:50 PM - 2:55 PM	**Presentation:** An exercise in decolonising physical activity for the purpose of planetary health	Jim Cotter
2:55 PM - 3:10 PM	**Presentation:** An interdisciplinary and intergenerational assessment of the heart-health environment, a case of unfathomable inequity	Hannah Berning & Nic Daniels
3:10 PM - 3:20 PM	Questions	
3:20 PM - 3:40 PM	Afternoon tea	
3:40 PM - 4:25 PM	**Session 4:** Climate health impacts and healthcare sustainability	
3:41 PM - 3:55 PM	**Presentation:** Exploring the climate fluctuations on asthma, allergic rhinitis, and eye allergies	Associate Professor Stuti Misra
3:55 PM - 4:10 PM	**Presentation:** Climate change, outdoor labour and health in Aotearoa: case study from first stage interviews with outdoor workers	Isabella Lenihan-Ikin
4:10 PM - 4:25 PM	**Presentation:** Cultivating a Green Starship: A community driven approach	Stephanie Xie, Dr. Niki Harre, Dr. James Hamill & Alicia Jones
4:25 PM - 4:30 PM	Questions	
4:30 PM - 5:00 PM	**Keynote address**	**Azeeza Rangunwala**
5:00 PM - 5:10 PM	**Co-chairs comments and close**	
7:00 PM - 8:00 PM	**Dinner: Cicio Cacio (*registration and pre-payment required*)**	

Tuesday 29 July 2025

NZST	Title	Speaker
8:00 AM - 8:45 AM	Registration desk open day 2	
8:45 AM - 9:00 AM	Housekeeping and welcome: conference co-chairs	
9:00 AM - 10:30 AM	**Session 5:** Reorienting relationships for climate action	
9:01 AM - 9:30 AM	**Keynote address**	**Rhys Jones**
9:30 AM - 9:45 AM	**Presentation:** Mātauranga Māori and Climate Change: Making Sense of a Western Environmental Construct	Dr Ken Taiapa & Summer Wright
9:45 AM - 10:00 AM	**Presentation:** Healing Our First Attachment: Cultural and Ecological Pathways for Mental Health in the Climate Crisis	Matt Jenkins & Sabine Egger
10:00 AM - 10:30 AM	**Political panel**	
10:30 AM - 11:00 AM	Morning tea	
11:00 AM - 12:45 PM	**Session 6:** Sustainable clinical practice	
11:00 AM - 11:15 AM	**Presentation:** Embedding Sustainability in Health NZ: Priorities, Progress, and the Path Ahead	Rick Lomax
11:15 AM - 12:15 PM	**Panel:** Sustainability in clinical specialties	Dr Louise Trent, Dr Rob Burrell, Keith Tallentire, Dr Ricardo Jurawan, Dr Whitney Davis, Dr Karen Danenhauer, Dr Mary Brooker, Dr Sallie Malpas
12:15 PM - 12:30 PM	**Short talk:** Solving the problem of metered-dose inhalers	Hannah Sherratt & Simon Wright
12:30 PM - 12:45 PM	Questions	
12:45 PM - 1:00 PM	Lunch	
1:00 PM - 1:45 PM	**Workshops (optional) activity and lunch continued** Kaicycle - Te Whanganui a Tara only HUB activities	
2:00 PM - 2:30 PM	**Keynote address**	**Vicktoria Blake**

NZST	Title	Speaker
2:30 PM - 3:30 PM	**Session 7:** Health policy and healthcare access	
2:30 PM - 2:45 PM	**Presentation:** Health National Adaptation Plan 2024-2027	Kaeden Watts
2:45 PM - 2:55 PM	**Presentation:** Developing New Zealand's First Vulnerability and Adaptation Assessment	Siddhartha Mehta
2:55 PM - 3:00 PM	**Presentation:** Social vulnerability to climate-related hazards: Indicators to inform action	Kylie Mason
3:00 PM - 3:10 PM	**Presentation:** Primary Healthcare Access in the Face of Climate Change	Darcy Glenn & Dr Tom Logan
3:10 PM - 3:20 PM	**Presentation:** Examining climate change impacts on health service access in Aotearoa New Zealand: An experimental proof-of-concept	Mitchell Pincham, Sam Quinsey, Marcus Blake & Jesse Whitehead
3:20 PM - 3:30 PM	Questions	
3:30 PM - 3:45 PM	Afternoon tea	
3:30 PM - 4:25 PM	**Session 8:** Reorienting education	
3:45 PM - 3:55 PM	**Presentation:** Wilderness Medicine - Its Utility in an Uncertain Future	Robin Barraclough
3:55 PM - 4:10 PM	**Presentation:** Helpless and Hopeless, or Empowered Actors? Understanding the Experiences of Undergraduate Environmental Students in Aotearoa New Zealand	Melissa Boo
4:25 PM - 4:30 PM	Questions	
4:30 PM - 5:00 PM	**Keynote speaker**	**Sheila Babauta**
5:00 PM - 5:15 PM	**Conference closing**	

Taiao. Tangata. Hauora.
Climate Health and Sustainable Healthcare in Aotearoa Conference 2025

This biennial, action-oriented conference brings together diverse research and practice around climate change, health, and sustainable healthcare in Aotearoa and beyond, centralising mātauranga Māori and Indigenous knowledge.

Our aim is for delegates to leave feeling locally, nationally, and regionally connected, up to date with innovative clinical and public health practice and energised to integrate new ways of thinking and working for sustainable and equitable health outcomes.

Speakers include international leaders in climate justice, climate health and sustainable healthcare.

In person: Te Whanganui a Tara Wellington

Nordmeyer Theatre, University of Otago, Wellington Campus, 23a Mein Street, Newtown, Wellington with online and hub options

Hub: Tāmaki Makaurau Auckland

University of Auckland Grafton Campus, 85 Park Rd Grafton

Day 1, Monday 28 July: 502-034

Day 2, Tuesday 29 July: 9am – 1pm 502-034 and 1pm onwards 503-020

Hub: Ōtautahi Christchurch

Day 1, Monday 28 July: Ōtākou Whakaihu Waka University of Otago Beavan Lecture theatre and foyer, Level 7, 2 Riccarton Ave, Christchurch

Day 2, Tuesday 29 July: Ōtākou Whakaihu Waka University of Otago Nursing Department Room 3, 72 Oxford Terrace, Christchurch

Hub: Ōtepoti Dunedin

Adams Building, 18 Frederick St

Day 1, Monday 28 July: Room 713 on the 7th floor

Day 2, Tuesday 29 July: morning Seminar Room 713 on the 7th floor, after lunch Seminar Room 033/036 on the Ground Floor

Acknowledgements

This conference would not be possible without the support of our generous sponsors:

Key Contacts

General Inquiries & Te Whanganui a Tara Wellington:

- Professor Alex Macmillan, alex.macmillan@otago.ac.nz
- Summer Wright, summer.wright@otago.ac.nz

Hub: Tāmaki Makaurau Auckland

- Grace Shaw, grace.shaw@auckland.ac.nz

Hub: Ōtautahi Christchurch

- Anna Stevenson, anna.stevenson@tewhatuora.govt.nz

Hub: Ōtepoti Dunedin

- Matt Jenks, Matt.Jenks@southerndhb.govt.nz

COVID-19 and Flu

The health and safety of all participants are a priority. To help protect everyone attending the conference, we encourage the following:

- **Stay home if unwell**: If you feel unwell or have symptoms of flu or COVID-19, please do not attend the event, we can send you a Zoom link to join online.
- **COVID-19 Testing:** We encourage you to test for COVID-19 on the day of the conference.
- **Mask wearing:** Please feel free to wear a mask at any time during the conference if it makes you feel more comfortable.

Keynote Speakers

Sheila Babauta

A daughter of the island of Saipan in the Mariana Islands, Sheila is an indigenous community leader and advocate for decolonization, demilitarization, and environmental justice. Her work spans from the village to regional and global spaces, advocating with organizations such as the Friends of the Mariana Trench, Young Pacific Leaders, and Obama Leaders: Asia Pacific. As an elected official she served in key leadership positions in the CNMI Legislature and led environmental and health initiatives. She is passionate about leadership development, personal growth, and collective healing. Sheila has been recognized as the 2023 "Environmental Champion" and "Environmentalist of the Year" and envisions the transformation of an abandoned shopping mall and resort in her village to serve as spaces for culture, arts, and community.

Vicktoria Blake

Vicktoria has been working in sustainability and conservation for almost 20 years. She became the Sustainability Manager at Bay of Plenty District Health Board in 2019. She led the Climate Change Working Group for Interim Health New Zealand and was Interim Head of Sustainability for Te Whatu Ora | Health New Zealand until February 2024. Vicktoria is now working as the Principal Advisor on Climate Risk and Resilience for Te Whatu. She is a co-chair of Sustainable Healthcare Aotearoa and is on the executive board of the OraTaiao Climate and Health Council.

Donna Burns

Donna Burns is the Chief Executive Officer of the Australian Indigenous Doctor's Association. She is a proud Wiradjuri descendant with extensive experience in executive leadership and Governance with a particular focus on improving Aboriginal and Torres Strait Islander health outcomes, and health system reform. This experience is underpinned by Donna's many decades in the healthcare sector, as a Registered Nurse, with postgraduate qualifications in Emergency Nursing. She previously used this experience to lead her own consultancy work, specialising in organisational change and leadership development. Donna is currently focused on growing and advancing the Aboriginal and Torres Strait Islander medical workforce, while championing a culturally safe health system for all our peoples.

Association Professor Rhys Jones

Associate Professor Rhys Jones Rhys Jones (Ngāti Kahungunu) is a public health physician and Associate Professor in Māori Health at Waipapa Taumata Rau / the University of Auckland. He has a leadership role in Māori Health teaching and learning in the Faculty of Medical and Health Sciences. Rhys's research addresses Indigenous health and health equity, with an emphasis on environmental wellbeing and decolonial approaches to planetary health. He is a passionate advocate for health equity, Indigenous rights and climate justice. Rhys was a founding co-convenor of OraTaiao: The New Zealand Climate and Health Council and is co-director of Climate Health Aotearoa.

Associate Professor George Laking

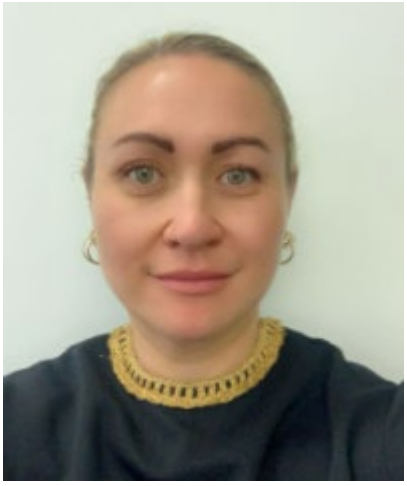
Associate Professor George Laking (Hōri Laking, Te Whakatōhea) is a medical oncologist based in Tāmaki Makaurau, and co-host of the Tāmaki conference hub. George has been an executive member of OraTaiao the NZ Climate and Health Council since its foundation. His primary work is alongside Hei Āhuru Mōwai Māori Cancer Leadership Aotearoa, to develop community-based models of specialist health care. In his spare time George enjoys bikepacking and kayak touring in the whenua.

Josie McClutchie

Josie McClutchie (Rongomaiwahine) is a project coordinator and communications support worker based in Tairāwhiti. Over the past three years, she has been involved in two large Tairāwhiti community-led research projects, which prompted a shift in her line of work. With a background in video and photography, she has moved into project and communications roles, using her visual and organisational skills to support research kaupapa grounded in community. She is currently providing part-time communications support to a Tairāwhiti place-based initiative and values the opportunity this new field of work brings to build stronger local connections and deepen her understanding of the community.

Azeeza Rangunwala

Azeeza Rangunwala is a medical scientist and currently the Africa Coordinator of the Global Green Healthy Hospitals programme based at GroundWork, an environmental justice organisation and the African strategic partner of Health Care Without Harm. Her previous role was as Assistant Director; Research, Policy and Capacity Building at Gauteng Department of Health, where key areas were research, policy formulation and managing projects that are in line with Sustainable Development Goals (SDG) and the National Development Plan (NDP). Additional work experience includes at the National Institute for Communicable Diseases (Project Coordinator and Scientist) and the University of Pretoria (Project Scientist). She has an M.Med.Sc degree and is a Global Senior Atlantic Fellow for Health Equity. She serves on the Justice, Equity, Diversity and Inclusion advisory board/Global Gas and Oil Network (GGON), a network of NGOs working to phase out fossil fuels, and on the advisory board for the Physicians Association for Nutrition (PAN) South Africa.



Dayna Raroa

Dayna Raroa (Ngāti Porou) is an artist, creative practitioner, and community researcher based in Te Tairāwhiti. Raised on her whānau whenua in Rangitukia, her work is grounded in whakapapa, whenua, and the strength of her East Coast community. Through Te Weu Charitable Trust, she supports Māori-led responses to climate and environmental issues, centring Indigenous knowledge and lived experience. Dayna also contributed to the Tairāwhiti Citizens' Assembly, helping facilitate and guide conversations on land use and systems change. Her creative practice—spanning mixed media, and community-led projects is shaped by aroha, deep relationships, and a commitment to the people and place she calls home.

Professor Holly Thorpe

Professor Holly Thorpe (PhD) is a sociologist working in Te Huataki Waiora Division of Health at the University of Waikato, New Zealand. She is passionate about working across disciplines to understand the social, cultural and gendered complexities of youth and women's health and wellbeing. Since moving back to her hometown of Tairāwhiti, she has been collaborating with community researchers and partners with a focus on the impacts of climate change on health systems and community health and wellbeing.

Kaicycle Urban Farm and Composting is a local charity that supports communities to take climate action through reducing waste and emissions by recycling their food waste and growing kai regeneratively.

Regenerative, organic kai growing is practiced following the Hua Parakore framework. This means observing and working with the local eco-system to nourish and protect soil to grow nutrient-dense kai. Kaicycle runs a composting service, where food scraps from homes, offices and small businesses are collected by e-bike and recycled into living compost, which is used on the farm, donated to community groups and occasionally sold.

Kaicycle offers educational workshops, farm visits, open days, events and Team Experiences. The kai grown is donated to community groups that distribute it to those in need, including as the Home of Compassion and Newtown Community Centre.

Alongside climate and community resilience, Honouring Te Tiriti o Waitangi is at the heart of Kaicycle. The team sees their food and compost hub as being central to kai sovereignty, community-based mitigation, sequestration and adaptation.

Workshop Monday 28 July: Healthy soil – healthy plants – healthy people

Join us in an exploration of soil, the interface between life and death for us humans. Soil is precious and teeming with life. Conventional agriculture and climate change are depleting and killing soils.

We'll discuss what healthy soil is and why it's so important, the implications of soil health on plant health, climate change vulnerability, and how to nurture healthy soil with a regenerative, organic approach.

Workshop Tuesday 29 July: Composting 101

Learn how to take climate action with your food scraps, make great compost, and keep the rodents out! Composting done well creates a nourishing treat for your garden soil while reducing household waste and CO_2 emissions and protecting native species. We'll kōrero about different types of household composting, what can and can't go in, and troubleshooting common issues. Bring your composting questions along!

Alice Boultbee

Alice was raised with the animals, plants and soil on a self-reliant farm in Wales. Alice is the proud mama of two beautiful tamariki. Her career has been varied, spanning roles in events, advisory, comms, facilitation and training, digital transformation and strategic planning across membership organisations, NGOs, unions, education orgs and the public service. She's been practicing organic gardening and sustainable living in Te Whanganui-a-Tara for over two decades. Two years ago, Alice realised that she wanted to change her life and follow her passions. She quit her office job, enrolled in a master's degree, and then joined the Kaicycle team! She's honoured to be part of Wellington City Council's Climate and Sustainability Fund review panel.

Kate Walmsley

Kate might be the biggest composting nerd you'll ever meet. She's turned hundreds of compost piles in all weather, done a photoshoot on top of compost, and helped set up a nationwide network of community composters. She hasn't yet tried cooking food in hot compost, but it's on the list. Kate holds a BSc Hons in Biotechnology and has been with Kaicycle for nearly a decade. What captured her head and heart was the great potential to address so many of the issues we face in our modern world through improving soil health and composting as a vehicle to do it. She is particularly interested in localised, community-embedded composting and food systems that build local resilience and wellbeing.

Transport and Locations:

We encourage sustainable transport options for attendees in person and at the hubs and have some suggestions below.

Te Whanganui a Tara Wellington:

Te Whanganui a Tara has good public transport options, including buses and trains. A Snapper card is preferred for easy payment. Alternatively, the Nordmeyer Theatre is approximately a 30-minute walk from the CBD. Transport from the airport to the city is also convenient, with the Airport Express (AX) bus, which does not require a Snapper card. Plan your journey at https://www.metlink.org.nz/journey-options

A venue map to the Nordmeyer Theatre is available here: https://www.otago.ac.nz/__data/assets/pdf_file/0032/249089/venue-map-621467.pdf

Hub: Tāmaki Makaurau Auckland

The University of Auckland Grafton Campus is located opposite Auckland City Hospital and is easily accessible by bus or train. It's just a 5-minute walk from Grafton Train Station. Use the AT Journey Planner to plan your trip to the Tāmaki Makaurau hub: https://at.govt.nz/bus-train-ferry/journey-planner

A venue map for Grafton Campus is available here: https://www.auckland.ac.nz/assets/on-campus/our-campuses/campus-maps/grafton-campus-map.pdf

Hub: Ōtautahi Christchurch

Christchurch has a well-connected public transport system, with buses running regularly across the city. The venue at Ōtākou Whakaihu Waka University of Otago (Christchurch campus) accessible on foot, by bike, or via public transport. Use the Metro Journey Planner to plan your trip: https://go.metroinfo.co.nz/mtbp/en-gb/journey-planner/content/favorites

Hub: Ōtepoti Dunedin

The Adams Building, University of Otago is centrally located and easily accessible by bus, walking, or biking. Most city bus routes stop nearby, and the campus is within walking distance of the city centre. Plan your trip using the Orbus Journey Planner: https://www.orc.govt.nz/orbus/journey-planner/

Waiata:

Hūtia te rito o te harakeke	If you remove the shoot of harakeke
Kei hea te kōmako e kō?	From where will the kōmako sing?
Kī mai, kī ahau	If you say to me
He aha te mea nui	What is the most important thing in this
Te mea nui o tēnei ao?	world?
Māku e kī atu, kia koe	My response to you is,
He tāngata, he tāngata	It is people, it is people.

Whakapapa: a whakatauākī of Meri Ngāroto, Te Aupōuri

Link: https://www.youtube.com/watch?v=u2U_U9X6gik

Kaiwaiata in video: Jordan Whakaruru

Abstracts:

Lani Kereopa

Te Urunga o Kea: Te Arawa Climate Change Working Group

Te Ara ki Kōpū: Te Arawa Climate Change Strategy

Te Arawa has a vision and strategy to ensure the health and survival of future generations in this time of climate breakdown. Te Ara ki Kōpū: Te Arawa Climate Change Strategy is built upon the ongoing story of Te Arawa resilience and adaptation – including how we prepared for and survived the effects of overpopulation; adaptation to new climates, food systems; and natural hazards like Te Korokoro o te Parata – the whirlpool that nearly swallowed the Te Arawa waka on our voyage to Aotearoa. Māori resilience in general has been seen and acknowledged during every natural disaster and hazard that has occurred in Aotearoa from the Tarawera eruption in 1886 to the covid pandemic in 2020. Our whakapapa connections mean our communities can pull together quickly in times of need. Our cultural infrastructure means we can house, feed, clean, and support multitudes of people as necessary. And our cultural values mean we prioritise being of service to wider communities in need, even as systemic racism continues to actively break down our networks and resilience. In spite of this, our marae-based papakāinga residential communities, built upon whakapapa relationships and which make up the backbone of hapū and iwi, are not recognised or protected within local, regional or central government systems or policies. In fact, the opposite is the norm - with town planning, zoning and policy actively dismantling our traditional hapū and iwi communities. Māori resilience to climate breakdown can only occur once local, regional and central government intentionally and actively stop impeding the rights and ability of hapū and iwi to rebuild our own resilience, and fulfil the Crown's Te Tiriti obligations which would allow us to adapt, and mitigate climate impacts using our own tikanga – our own ways of knowing, to meet the needs of our own unique communities.

Simon Wright

Royal New Zealand College of General Practitioners, Te Reo o Ngā Tāngata: The People Speak and Trust Democracy

Democracy 2.0? Porirua's Treaty-based Citizens' Assembly on Climate

Democracies worldwide are at a crossroads. As governments grapple with issues like climate change, poverty, housing, and equity, traditional democratic processes are proving incapable of meeting these challenges. The need for innovations that enable meaningful public participation has never been greater.

Globally, citizens assemblies, an expression of deliberative democracy in which a representative 'mini-publics' learn about, discuss and propose actions, have emerged as one of the most effective ways of engaging ordinary citizens in policy and decision-making for complex issues such as climate change. While New Zealand has been slow to catch the 'deliberative wave', a number of assembly processes have been trailed in recent years. This presentation will focus on the most ambitious of these recent experiments in democratic innovation: the Porirua Assembly on Climate.

This is a story of collaboration between Ngāti Toa Rangatira and The People Speak, a community organisation focused on Treaty-based climate action. Together they established the Porirua Community Leaders Forum and organised the Porirua Assembly on Climate. Together they designed

the Assembly process based on a 3-house model with a rangitahi forum that contributed youth voice to the Assembly. Over 5 sessions, assembly members became expert in local climate issues and developed a vision for Porirua and recommendations across 6 themes. These will be presented to the Community Leaders Forum in June. The Porirua City Council and Greater Wellington Regional Council have committed to formally responding to the recommendations.

This presentation will cover this story of the Treaty- and community-based climate action, note some outcomes (e.g. some participants are already starting to lead climate action as a result of their experience) and consider whether this is a model that could be usefully used in other places.

Future Unity: Orini Rokx-Taratu, Santino Morehu-Smith, Wairere Pene, Amanda Dobson, Michele Whiting, Conor Twyford & Rebecca Gillett

Papa Taiao Earthcare, Enviroschools Te Upoko o te Ika a Māui, University of Canterbury

Mate Whenua, Mate Tangata: Taiohi perspectives on mental health and wellbeing in a changing climate

Climate change is increasingly being recognised as a crisis for children and young people's health and wellbeing, impacting particularly harshly on poor, Indigenous, migrant, disabled, and displaced taiohi / youth in ways that entrench existing inequities (IPCC, 2023). Of all affected groups, children are the populations who will live the longest with the health impacts of climate change (Clark et al, 2020; Kotzé & Knappe, 2023; Lancet, 2024). Yet to date, they have largely been excluded from participation in climate change adaptation processes, including here in Aotearoa New Zealand.

Recent waves of climate protest and litigation have helped catalyse renewed interest in deliberative processes like climate assemblies as opportunities to engage young people's voices. In this presentation, we discuss taiohi/young people's engagement in a recent community-driven climate assembly in Porirua. From mid-2024, taiohi from 9 schools and colleges across Porirua participated in a series of climate change hui, organised by a collective of environmental educators. Through this process, tamariki and rangatahi explored their connection to Te Awarua o Porirua and its degradation. The environmental, social and cultural impacts were the basis for the exploration of action. In February, they came together for a Taiohi Wānanga for Climate - connecting, creating and sharing kōrero. Through waiata, art and spoken word, they explored their voices, and shaped their own values and kaupapa. From that process, Future Unity was born. Taiohi who were able and committed to having their voices heard then attended the Porirua Assembly on Climate, sharing their values, waiata, poems and speeches to the Mana Whenua and community streams of the Assembly.

Our presentation will discuss how young people's experience of engaging in the Wānanga and Assembly process, taking fun, creative and culturally appropriate approaches grounded in connection to the whenua, has helped support their agency, leadership, mental health and wellbeing.

Caroline Shaw

Ōtākou whakaihu waka/University of Otago Wellington

Policy approaches to decarbonising the transport sector in Aotearoa New Zealand: modelling equity, population health, and health-system effects

Background: Health co-benefits are a key potential advantage of transport decarbonisation policy. However, health effects will occur in the context of existing transport–health inequities and

decarbonisation policies will themselves affect inequities. This research examined the effects of national decarbonisation pathways for transport on population health, health inequity, and health-system costs in Aotearoa New Zealand.

Methods: We modelled the health, health-system, and environmental impacts of two pathways to net zero for transport developed by the New Zealand Climate Change Commission using a proportional multistate lifetable model. The behaviour pathway emphasised reduced driving, increased cycling and use of public transport, and light vehicle electrification, while the technology pathway focused on vehicle electrification. We simulated changes in health effects through the pathways of physical activity, air pollution (PM2·5 and NO2), and injury for the Aotearoa New Zealand population from 2018 to 2050. We modelled impacts for Māori and non-Māori. We also calculated changes in health-system costs and transport greenhouse gas emissions.

Findings: Both pathways show improvements in population health, reductions in health-system costs, and reduced lifecycle greenhouse gas emissions compared with baseline, although health gains were substantially larger in the behaviour pathway. Health gains were 20–30% larger for Māori than non-Māori in both pathways, although more HALYs were gained by Māori in the behaviour pathway. For the cohort aged 0–4 years in 2018, healthy life expectancy differences between Māori and non-Māori reduced by 0·5% in the behaviour pathway over their lifetime. HALYs gained by Māori and non-Māori were altered substantially depending on assumptions about the equity of the implemented pathway.

Interpretation: Decarbonising transport might improve overall population health, save the health system money, and reduce health inequities between Māori and non-Māori. Pathways that increase physical activity have a larger effect on population health than those that rely on low-emission vehicles. The effects on inequity between Māori and non-Māori are larger in the behaviour pathway than in the technology pathway, but dependent on how equitably policies supporting decarbonisation are implemented.

Angus Rodney & Aidan Smith

Workride

Workride – Supporting Healthcare Employees Across Aotearoa

Preface: Workride is New Zealand's ride-to-work benefit program, enabling employees the ability to cost offset 32-63% off their chosen bike, e-bike and e-scooter through our pre-tax salary sacrifice program. What does that mean? Employers provide a free to offer, cost-neutral benefit program that improves staff retention, wellbeing, and engagement, all while reducing Scope 3 emissions through encouraging and incentivising staff to travel by bike for their daily commute.

Purpose: To illustrate the impact of getting more people on bike / active modes for the health care workforce and wider community across Aotearoa. Cycling to work reduces stress, improves physical health, and enhances the public realm - closely aligning with the CHSH 2025 theme of '*climate change and mental health and wellbeing*'. This presentation will show how low-barrier benefits programmes like Workride can meaningfully contribute to health, wellbeing, and climate resilience across Aotearoa New Zealand's health sector.

Focus: This short presentation will introduce the Workride program and share early outcomes from healthcare organisations. We'll focus on how Workride supports a reduction in Scope 3 emissions,

improved mental wellbeing, and healthier lifestyles. Highlighting three organisations of different shapes and sizes that are using Workride to support staff and make a drive impact:

- **Arvida Group**, One of NZ's largest aged care providers (2,500+ employees), where Workride is supporting physical and mental wellbeing.
- **Forte Health**, a large private surgical hospital in Ōtautahi Christchurch - where Laura Hercus, Sustainability Manager of Forte Health, is using Workride to help reduce **Scope 3 emissions** of her staff and encourage healthy habits.
- **Brooklyn Medical Centre**, illustrating the everyday impact of active commuting and the wider ripple effects of riding to work within a smaller organisation. (Parking + encouraging others to give it a go).

We'll also preview what's next: Workride's upcoming public transport benefit, designed to give more kiwis options around a benefit program that supports their commute - especially where biking isn't viable.

Johanna Birrell

The University of Sydney

Geospatial carbon footprinting of dialysis travel: a national data linkage and modelling study

Patient travel to and from healthcare facilities contributes to the carbon footprint of health systems, yet is rarely included in calculations due to methodological challenges. People receiving in-centre haemodialysis typically travel three times per week to dialysis units for treatment. This can result in a substantial travel burden, particularly for those living in rural areas. This study aimed to calculate emissions (tonnes of carbon dioxide equivalent (tCO2e)) resulting from patient travel to dialysis units across Aotearoa (2006–19) and model future unit locations that minimise travel.

The AcceSS and Equity in Treatment for kidney disease (ASSET) platform provided linked administrative data on patients' dialysis modality and residential location. Individualised driving routes to the nearest unit were calculated for outpatient in-centre haemodialysis recipients (n=7,006). Travel distance, time and emissions were estimated at patient and regional levels using national vehicle fleet profiles and fuel-specific emission factors.

Between 2006 and 2019 the number of people receiving in-centre haemodialysis increased from 1,241 to 2,112, and estimated travel-related emissions increased from 792 to 1,258 tCO2e per year. In 2019, patients collectively travelled over 6.7 million kilometres to receive haemodialysis.

To identify opportunities for improving access and reducing emissions, we modelled potential dialysis unit locations using density maps and location-allocation analysis. Travel time and emissions were compared under multiple service configuration scenarios. Our model identified five new optimal unit locations that could substantially reduce both patient travel burden and emissions (by 19% and 22% per year respectively), particularly in rural and underserved regions. Establishment of ten new sites was predicted to reduce travel time by 24% and emissions by 31%.

This study demonstrates the feasibility of integrating routinely-collected health data with geospatial modelling to support sustainable service planning. These methods can be adapted for other health services to enhance decarbonisation and minimise travel burden for patients.

Jim Cotter

Ōtākou Whakaihu Whaka / University of Otago, and Climate Health Aotearoa

An exercise in decolonising physical activity for the purpose of planetary health

Focus and purpose: To (i) draw attention to critical and fundamental flaws in the overwhelmingly dominant Westernised approach to Physical Activity for Health, particularly in the way it is researched, taught and commodified as exercise (e.g., "Exercise is Medicine" TM), and (ii) juxtapose with Indigenous perspectives (e.g., Atua Matua).

Highlights: Indigenous peoples' and planetary health would benefit from an open critique and reframing of the "Principles of Exercise" that are currently accepted and propagated in academia, sport, and lay populations, and which guide exercise training for human health or performance. These principles include: Diminishing returns; reversibility of fitness; specificity of training for fitness outcomes; etc. More useful principles might instead include: 1. Humans are genetically destined both to require physical activity and to avoid it. Personal responsibility is problematic. 2. Likewise for exposure to environmental stressors, particularly engaging with gravity, e.g., orthostasis. 3. Exercise (i.e., physical activity planned for fitness or health, such as gong to the gym or sports training) is both identical and opposite to Physical Activity per se (i.e., moving for necessity or pleasure, such as gardening or active transport). 4. We are living outside most planetary envelopes, due in part to the three points above. 5. Unfathomably more lives within our own and other species stand to gain or lose. Every decision counts. 6. We might therefore reverse our thinking and focus from "What is the least I need to do (for health or fitness)?", to "What am I prepared to do?" 7. Indigenous knowledge has immense potential in helping us refocus from exercise to physical activity.

Hannah Berning & Nic Daniels

University of Canterbury & University of Otago

An interdisciplinary and intergenerational assessment of the heart-health environment, a case of unfathomable inequity

Background: Heart health (HH) and the approach to its management reflect dominant cultural contexts (e.g., Western values, knowledge, and systems, which have strengths but also limitations and unaccounted costs. Indigenous knowledge and perspectives are concurrently marginalised, yet important for decolonisation and valuing intra- and inter-generational equity and sustainability. Western systems regard people and their health as somewhat autonomous, intra-generational and independent from the biosphere. Herein lies inequity that may amplify greatly for future generations and environments.

Methods: As an interdisciplinary research team, we (a) identified categories that shape the HH for current and future generations (e.g., treatment, education); (b) compiled and summarised research, clinical guidelines, and public policy sourced from subject matter experts; (c) filled gaps therein and incorporated relevant Te Ao Māori frameworks; (d) categorised NZ Health Research Council (HRC) funding; and (e) discussed key evidence and messages via dialogic conversations in a 3-day wananga. With consideration of the Living Standards Framework, six representative cases were developed to display how the built-in environment can impact current and future heart health.

Outcomes: Western (knowledge) systems emphasise are overwhelmingly on medical and biological factors and treatment, which receive 95% of HRC funding for cardiovascular health, and focus on

maximising lifespan within the current generation(s). Yet, it is disconnected from nature and contributes to unsustainability, thereby acting against the HH of future generations. Te Ao Māori emphasises connection to whenua and whānau, with clear concern for future generations and non-human life. The cases illustrate the enormity of HH inequity propagating intra- and inter-generationally, but also alternative pathways for HH. For example, today's HH environment contributes (directly and indirectly) to humanity living outside most planetary boundaries and jeopardising HH of potentially >10,000 *times more* future people. Changes required for an equitable future include honouring Te Tiriti o Waitangi and connecting to intergenerational and holistic views.

Associate Professor Stuti Misra

The University of Auckland

Exploring the climate fluctuations on asthma, allergic rhinitis, and eye allergies

Focus: Climate change is a globally recognised crisis that threatens health and wellbeing. Lung health is highly susceptible to the effects of climate change, especially the allergic respiratory diseases (ARD) – asthma, hay fever and allergic eye diseases. Given the ARD conditions form the most common allergies in NZ and worldwide, affecting a third of the population, understanding how climate changes affect ARD is crucial to limiting the negative impacts that are projected to occur on human health and on inequities. Despite the significant anticipated impacts of climate change on health, there are no studies in NZ on climate change and allergic respiratory disease. Recognising that Māori communities are predicted to be disproportionately affected by climate-related health challenges, particularly asthma, allergic rhinitis, and eye allergies, our project seeks to generate sustainable, culturally responsive solutions that enhance both immediate health outcomes and long-term well-being.

Purpose: This project investigates several aspects of climate change: weather, air pollution, and airborne allergens such as pollen and mould, and how these factors affect ARD. Our aim is to explore the effects of climate change on ARD using novel data-driven approaches, then to develop a prediction model employing machine learning and artificial intelligence (AI) tools, specifically for early diagnosis of asthma and eye allergies.

Key Highlights: We will discuss the two methods: 1) a retrospective exploration of how our environment (weather and air quality) has changed over the last two decades and how this relates to asthma, hayfever and eye allergies outcomes; and 2) prospective monitoring of airborne allergens and analysing how pollen and spore data relates to asthma and allergies in Auckland. The project will develop individualised risk profiles for the development of asthma and allergic eye conditions, thus enabling healthcare providers to initiate timely and targeted treatment strategies.

Isabella Lenihan-Ikin

University of Oxford

Climate change, outdoor labour and health in Aotearoa: case study from first stage interviews with outdoor workers

In Aotearoa New Zealand, people who work outdoors—due to prolonged outdoor exposure to heat stress, air pollution and extreme weather events—have been identified as a population group susceptible to climate related health risks (Savage, 2006; Te Mana Ora, 2023; Ministry for the Environment and Stats NZ, 2020; Glavinovic *et al.,* 2023). Despite the recognition of these risks in

scholarship, there remains a critical research gap in understanding the lived experiences of outdoor workers and their perspectives on climate-induced health impacts.

This presentation is of a case study that sits within a wider qualitative research project that seeks to understand:

- The perception(s) of climate-health risks;
- How workers cope and adapt to these risks (if any); and
- Their perspective on the solutions to the health impacts of climate change going forward, and where and by whom these solutions rest with.

Specifically, this case study presents the early findings from an interview(s) with research participants, who work in outdoor industries in Aotearoa. The case study reflects on, and responds to the following questions:

- In what ways is the concept of 'health' shaped or redefined by climate change? What climate change events, if any, are significant for outdoor workers?
- What are the unique aspects of working outdoors that affect vulnerability, if any, to climate change?
- How do outdoor workers perceive the relationship between health and working outdoors? And the environment and working outdoors?
- What are coping strategies, if any, that outdoor workers employ in the face of climate-induced health risks?

Through centering the lived experiences of outdoor workers in Aotearoa, this case study offers critical insights in the intersectional fields of climate, health and labour justice in Aotearoa New Zealand.

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Stephanie Xie, Dr. Niki Harre, Dr. James Hamill & Alicia Jones

The University of Auckland

Cultivating a Green Starship: A community driven approach

There is an urgent call for healthcare organisations to "incentivise, normalise, and exemplify" (Lenzen et al., 2020) climate-safe models of care (Ebi et al., 2021) and for healthcare professionals to play a central role in communicating the need for an accelerated response (Watts et al., 2021). Successful bottom-up initiatives within healthcare organisations have been conducted, and a key strength of this approach is that staff on the ground have contextual and process-oriented knowledge that contributes to effective change (Rothenberg, 2003).

In 2023 a Greening Starship Community of Practice (CoP) was created. It met on a bi-monthly basis and brought together a multidisciplinary, cross-campus network of 23 staff; 80 staff were additionally engaged via regular communications and project updates. In our presentation, we will discuss the impacts of the CoP and offer a brief discussion of the suitability of such an approach at Starship and in other health settings. We hope that this work will contribute to the growing interest and literature around transitioning towards sustainability-focused healthcare, especially as being ”sustainable” is a shared responsibility and requires collective attention and participation.

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Ken Taiapa (Ngāti Porou, Rongowhakaata), Helen Moewaka Barnes (Ngāti Wai, Ngāti Hine) & Summer Wright (Ngāti Maniapoto)
Whāriki Research Centre, Climate Health Aotearoa, Ora Taiao

Mātauranga Māori and Climate Change: Making Sense of a Western Environmental Construct

In Aotearoa, the discourse and concept of climate change is largely driven by colonial values and norms. These reflect the same philosophical, ideological, and theoretical frameworks that underpin the colonial, capitalist systems that have been responsible for driving the ecological crises we currently face. Consequently, the range of solutions tend to exist within dominant social, political, economic, and cultural frameworks. As a counterpoint, Indigenous knowledge systems such as mātauranga Māori are grounded in relational understandings of the world and intrinsic commitments to kaitiakitanga and reciprocal engagement with everything in nature to uphold the mana of all our relatives. Sporadically we are invited to engage with climate change as a concept and determine how we, as Indigenous Peoples, are able to act within this, however this is often lost in translation with little to no support to enable implementation.

This presentation explores how climate change framings can present barriers and restrictions to our approaches however, participants in this study also give voice to mātauranga Māori, grounded in whakapapa and tūpuna learnings. From a te ao Māori space they speak to our ability to ground practice in relationships with te taiao. Rather than a narrow framing, this supports holistic and integrated pathways. This comes at a cost, which we frame as the ‘work that we do’ as Māori and indigenous peoples when faced with colonial concepts and strictures. The implications include limitations on how Māori relationships with whenua can heal people and places. We argue that these shifts and struggles occur across multiple domains and are an often-invisible colonising force, colonising both mind and practice. Here, participants give voice to decolonising processes and practices needed to counter this.

We offer this as a contribution towards broadening understandings on the relationship between hauora of tangata and whenua.

Matthew Jenkins & Sabine Egger

National Hauora Coalition, Elemental Health, Health NZ

Healing Our First Attachment: Cultural and Ecological Pathways for Mental Health in the Climate Crisis

As climate change accelerates, its psychological consequences: eco-anxiety, solastalgia, and ecological grief, are becoming increasingly evident. These responses speak to a deeper rupture: the loss of our first attachment… to the natural world. This presentation explores that disconnection through the lens of attachment theory and cultural psychiatry, proposing that industrialisation and colonisation have disrupted ancestral relationships with land, water, and sky, generating forms of collective distress.

We draw on global Indigenous frameworks, including Māori principles such as kaitiakitanga (guardianship) and whakapapa (relational identity), alongside perspectives from First Nations, Sami, and our own Celtic-Druidic traditions. These diverse systems of knowledge share an understanding of the Earth as kin and offer pathways to psychological and ecological healing rooted in reverence, reciprocity, and relationality.

In our clinical work in primary and secondary care settings across the Waikato, we are trying to co-facilitate nature-based interventions—including therapeutic horticulture, ecotherapy, and elemental meditation—through a structured model developed within our practice, Elemental Health.

We argue that reconnecting with nature is not a lifestyle enhancement but a form of psychological repair and cultural recovery. A cross-disciplinary, cross-cultural framework—centred on equity, sustainability, and ecological belonging—offers a means to navigate both personal and planetary health crises. Our presentation contributes to the growing evidence base for climate-conscious mental health care in Aotearoa and calls for integrated approaches that honour place, culture, and the land itself.

Ko au te whenua, ko te whenua ko au – I am the land, the land is me.

Rick Lomax

Health New Zealand | Te Whatu Ora

Embedding Sustainability in Health NZ: Priorities, Progress, and the Path Ahead

As one of New Zealand's largest employers and a major public sector emitter, Health NZ has both the opportunity and responsibility to lead on environmental sustainability and climate change interventions. Our healthcare system must not only care for people but also protect the planet that sustains them.

This presentation will provide an update on the progress made since the last conference and outline the next steps in Health NZ's sustainability journey. We will highlight the four strategic priorities guiding our national approach:

1. **Embedding Sustainability in Decision-Making and Culture**
   Sustainability is being integrated into key strategic documents, clinical planning guidance,

infrastructure business cases, and hospital design processes—ensuring it becomes a core part of how we operate.

2. **Decarbonisation**
   We've achieved a 14% reduction in total measured emissions and a 24% reduction in Scope 1 and 2 emissions between FY22/23 and FY23/24. Our fleet is now 17% electric. We've allocated $60 million in co-funding for energy transition and efficiency projects, implemented a $12 million coal boiler replacement programme, and are exploring innovative energy procurement strategies to further reduce emissions.

3. **Environment in All Practice**
   We're advancing waste diversion, sustainable procurement, and operational improvements. This includes pilots in waste minimisation and recycling, and initiatives to increase reuse, reprocessing, and remanufacturing—reducing reliance on single-use devices.

4. **Climate Adaptation**
   While this presentation may touch briefly on adaptation, a more detailed exploration will occur in a dedicated session (Vicktoria Blake's session).

Together, these efforts reflect Health NZ's commitment to a healthier, more sustainable future for all New Zealanders.

Panel: Sustainability in clinical specialties

Dr Louise Trent
Dr Rob Burrell
Keith Tallentire
Dr Ricardo Jurawan
Dr Whitney Davis
Dr Karen Danenhauer
Dr Mary Brooker
Dr Sallie Malpas

Hannah Sherratt
Health New Zealand | Te Whatu Ora

Recovering resources from Metered Dose Inhalers: Lessons learnt from an innovative trial in the Bay of Plenty

Metered Dose Inhalers (MDIs) are challenging to recycle due to their complex construction, the presence of residual pharmacologically active ingredients and high global warming potential (GWP) propellants. For context, HFA-134a has a GWP 1,430 times that of CO_2, while HFA-227ea is 3,220 times more potent.

In New Zealand, nearly 3 million MDIs are prescribed annually. Currently, the residual gases in these devices are not recovered or destroyed, allowing potent greenhouse gases to escape into the atmosphere.

In April 2025, Health NZ, in collaboration with a technology provider (name pending confirmation), launched a six-month pilot to test a community-based collection and innovation system and technology to recovery materials. The trial, based in the Bay of Plenty, included nine collection points across Tauranga Hospital, Whakatāne Hospital, and local pharmacies.

Early results are promising. Even with just 66 MDIs collected, the trial demonstrated the technical feasibility of safely dismantling devices and recovering both propellants and materials. Extrapolating from this, recycling 1,000 MDIs could prevent approximately 8,800 kg CO_2e emissions.

This pilot aims to inform the potential for a national MDI recycling scheme and share insights into establishing other innovative healthcare initiatives.

Simon Wright

Royal New Zealand College of General Practitioners

SMART Asthma Therapies: Better for Patients, Better for the Planet

Since the release of the 2020 national asthma guidelines, prescribing of budesonide+formoterol has risen sharply, particularly in dry powder inhaler (DPI) form. This shift is delivering real benefits: patients and their families are less burdened by illness, workers can be more productive, and better preventative therapies keep patients out of hospitals.

The environmental benefits associated with these changes are also significant. Metered-dose inhalers (MDIs) contain propellants that are extremely potent greenhouse gases. A single salbutamol MDI has the same climate impact as burning 12 litres of petrol. With 1.2 million dispensed annually, that's a massive carbon footprint for a medicine now considered second-line. Reducing the use of SABA MDIs will help protect both patients and the planet.

This presentation will briefly outline a joint Te Whatu Ora-Royal NZ College of General Practitioners campaign to speed the uptake of the 2020 Asthma Guidelines by GPs to achieve the win-win of patient and planet benefits.

Kaeden Watts

Manatū Hauora – Ministry of Health; Institute for Commonwealth Studies

Health National Adaptation Plan 2024-2027

Introduction: Climate change has been described as the biggest global health threat of the 21st century (Costello et al 2009; Ghebreyesus et al 2023). The first Health National Adaptation Plan (HNAP), published by the Ministry of Health, is an important step towards placing health considerations at the forefront of the climate response of Aotearoa New Zealand. The HNAP has been developed as an action arising from New Zealand's first National Adaptation Plan, setting the strategic direction, and providing national level priority actions for health-focused adaptation to climate change. This presentation will provide a high-level overview of the impacts of climate change on human health and wellbeing and share the highlights of this report, alongside discussing method, value, policy significance, and how the HNAP will drive progress on climate change adaptation and resilience in the health sector.

Findings: Given the wide-ranging health impacts of climate change and our intention to take a comprehensive approach to health-focused adaptation, the actions identified in the HNAP encompass

a wide range of areas and activities. There are 26 actions within the HNAP aimed at addressing and adapting to climate-induced impacts on population health and the health system itself. These actions are grouped under the following five broad focus areas:

Significance of the work for policy and practice: The HNAP is the first strategy from the New Zealand Government to tackle the intersection of climate change and health. The HNAP is an important step towards placing health considerations at the forefront of the climate response in Aotearoa New Zealand, setting the strategic direction and providing national-level priority actions for health-focused adaptations to climate change. The strategic direction of the HNAP will impact all areas of the health system, from policy to practice, ensuring that long-term climate-impacts on population health, the health system, and the wider determinants of health are considered and addressed.

Siddhartha Mehta

Ministry of Health, Public Health Agency

Developing New Zealand's First Vulnerability and Adaptation Assessment

The Ministry of Health is commissioning a Climate Vulnerability and Adaptation (V&A) Assessment to identify and address climate-related health risks across Aotearoa New Zealand. This initiative is a key action in the Health National Adaptation Plan (HNAP) and aligns with World Health Organization (WHO) recommendations for strengthening climate resilience in health systems.

The V&A Assessment will provide a robust, evidence-based foundation for future iterations of the HNAP, the National Climate Change Risk Assessment (NCCRA), and other statutory planning under the Climate Change Response Act. It will also support Health New Zealand, iwi, hapū, local authorities, and communities in understanding and responding to localised climate-health risks.

The assessment includes:

- A comprehensive review of local and regional evidence on climate-related health risks;
- Development of a conceptual framework and testable hypotheses for factors that modify these risks;
- Creation of a reusable, updateable climate-health model tailored to New Zealand's unique demographic, geographic, and sociocultural context.

The model will enable the evaluation of adaptation and mitigation strategies using methods that are transparent and defensible in public policy contexts. The project prioritises actions that enhance community resilience, reduce emissions, and improve health equity—particularly for climate-vulnerable populations and communities.

This presentation will share the assessment's approach and early insights and invite discussion on how this information can be applied.

Kylie Mason

Environmental Health Intelligence New Zealand (EHINZ), Massey University (Wellington)

Social vulnerability to climate-related hazards: Indicators to inform action

Not everyone will be equally affected by the negative impacts on health and wellbeing from climate-related hazards. Social vulnerability indicators identify populations and geographic areas that are more vulnerable to the negative impacts of climate-related hazards (such as extreme weather events,

floods, heatwaves and wildfires). Vulnerable population groups may be more sensitive to the impacts of hazards, and/or less able to prepare for, cope with, recover from or adapt to a hazard.

This short talk will present New Zealand's suite of social vulnerability indicators, which have recently been updated with data from the 2023 Census. Indicators cover ten dimensions: exposure; children; older adults; health and disability status; enough money to cope with crises/losses; social connectedness; hazard awareness; safe, secure and healthy housing; food and water security; and decision-making and participation. Using the indicators, we can examine patterns of vulnerability across the country, changes over time, and for some indicators, analyse differences by ethnic group.

Key findings reveal changes in vulnerability from 2018 to 2023, including population ageing, and increasing rates of household crowding, children experiencing household food insecurity, and adult psychological distress, as well as decreasing rates of households without access to a mobile phone, internet, or motor vehicle. Some geographic parts of New Zealand have higher levels of vulnerability across a range of indicators and dimensions. Disparities in vulnerability indicators were also found across ethnic groups.

The social vulnerability indicators provide valuable insights and intelligence to inform disaster risk management and climate adaptation work, to help meet the needs of New Zealand's diverse communities. Integrating social vulnerability information and hazard information (such as from the Extreme Climate Index) at a local level can provide valuable insights on local climate-related risks, to inform work on climate resilience-building and adaptation work.

Darcy Glenn & Dr Tom Logan

University of Canterbury

Primary Healthcare Access in the Face of Climate Change

There is a global physician shortage. News reports going back to 2021 note the impact of early retirement, burnout post-COVID, and a lack of interest in new graduates entering the family care field. The ability to get a timely appointment is the #1 barrier to primary care access in New Zealand.

Climate change has the potential to exacerbate the situation. Sea-level rise is expected to flood coastal clinics and homes. Where do affected patients seek care? Additionally, climate migration will introduce new patients into the healthcare system. Do receiving communities have enough resources to handle these, potentially, high-needs patients? Both climate impacts will not be limited to immediately exposed practices. They will have larger implications for the wider primary care network.

We calculated the travel times between the GP's office and residences. Demographic information on ethnicity, socioeconomic status, and residency is connected to the residents. Cost, very low cost access clinic status, availability, full-time equivalent hours, and office hours outside of a typical 9-5 were applied to the doctors' offices. Access was then calculated by matching patients with doctors using the same matching algorithm as the US's doctor residency matching program. This method allows patients to select doctors that meet their needs on 4 out of the 6 A's of access: accessibility, availability, accommodation, and acceptability. Doctors' preferences were able to be adjusted to reflect circumstances when clinics may 'limit' their books.

We then stress-tested the primary healthcare system with multiple climate scenarios, including: sea-level rise flooding the clinic, climate migration causing a sudden increase in the number of patients,

and patients needing additional appointment time to handle the plethora of direct climate health impacts. We expect the potential loss of accessibility to the directly affected population and a wider decrease in services due to overcrowding.

Mitchell Pincham[1], Sam Quinsey[2], Marcus Blake[2] & Jesse Whitehead[1*]

[1] Te Ngira: Institute for Population Research, University of Waikato, New Zealand

[2] Centre of Australian Research into Accessibility, Deakin Rural Health, Deakin University, Australia

Examining climate change impacts on health service access in Aotearoa New Zealand: An experimental proof-of-concept

Aims: To develop a proof-of-concept methodology to rapidly estimate accessibility to health services in Aotearoa in the context of extreme weather events.

Methods: An exploratory quantitative analysis used publicly available geospatial data to estimate distance to nearest GP and hospital for every address (2.3 million) in Aotearoa under 'normal' conditions. The road network dataset was then modified to reflect closures following Cyclone Gabrielle and access to health services estimated under new conditions. Estimates of access to services post Cyclone Gabrielle and under normal conditions were compared.

Results: The exploratory results revealed the extent of service access disruption due to Cyclone Gabrielle related road closures. Approximately 80,000 addresses were isolated from a GP, with approximately 100,000 addresses isolated from hospital services. Increased travel distances of more than 1 km affected approximately 38,000 and 101,000 addresses requiring increased travel to a GP and hospital respectively.

Conclusions: This research demonstrates a viable approach to creating dwelling-level accessibility datasets and evaluating the impacts of extreme weather on health service access. Future work will focus on refining the methodology and assessing its feasibility for health service providers to enhance care coordination in times of crisis.

Dr Robin Barraclough

FRNZCGP, British Mountain Medicine Society

'Wilderness Medicine - Its Utility In An Uncertain Future'

Already under pressure, our healthcare infrastructure, systems, people, and patients are beginning to buckle under the increasing frequency and severity of natural disasters. Disasters, supercharged by an unchecked climate emergency. The presentation will show how these issues were part of the motivation behind a six week wilderness medicine elective organised and ran here in the South Island of Aotearoa, New Zealand. And, how through wilderness education clinicians can learn a set of highly transferable skills not taught in formal settings allowing them to perform during these disasters. Additionally, the presentation will show that 'pivoting' wilderness medical practice away from its traditional role in supporting 'adventure tourism', to become an important part of the adaptation and mitigation process is a pragmatic and logical response to an increasingly uncertain future.

Melissa Boo

Te Whare Wānanga o Waitaha | University of Canterbury and affiliated research groups: Environmental Psychology Research Group (UCEP), Hei Puāwaitanga: Sustainability, Citizenship & Civic Imagination Research Group, Learning for Earth Ako Futures (LEAF) Research Cluster

Helpless and Hopeless, or Empowered Actors? Understanding the Experiences of Undergraduate Environmental Students in Aotearoa New Zealand

For young people, learning about the climate crisis can elicit a range of emotional responses, from sadness and grief to inspiration and determination. Furthermore, those who enrol in climate, environmental, and sustainability programmes at university are learning even more about climate challenges, which can contribute to more frequent or intense affective experiences. As such, engaging with these topics can not only affect students' commitment to their studies, but it can also affect their mental health and wellbeing.

This presentation will share preliminary findings from a PhD research project that aims to develop a more nuanced understanding of the emotions, motivations, and experiences of young people in Aotearoa New Zealand, as well as transdisciplinary takeaways from academic literature. By better understanding young people's affective experiences, practitioners can foster learning environments that support students' mental health and wellbeing while learning about these subjects. These findings can not only inform policies and practices within the local context of Aotearoa New Zealand but also present opportunities for future research in other regions.