Micromobility:
“Fad to Forecast.”
(Research Report 674)

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make
everyday
better.

Micromobility is constantly changing:

E-Scooter

Powered Transport Devices (Waka Kotahi Determination)

E-Bike

Including e-cargo

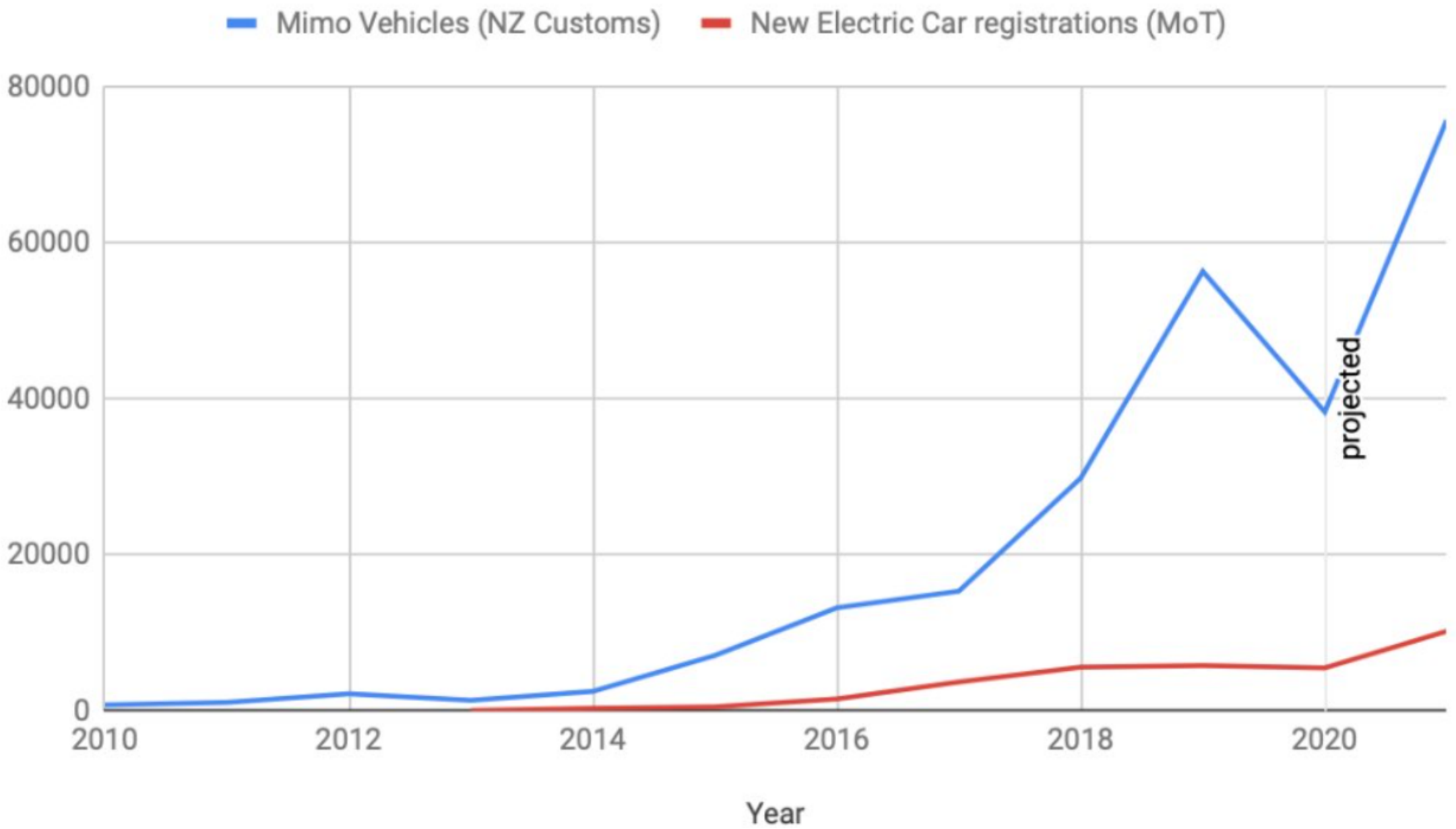
E-Accessible

Powered Wheelchairs

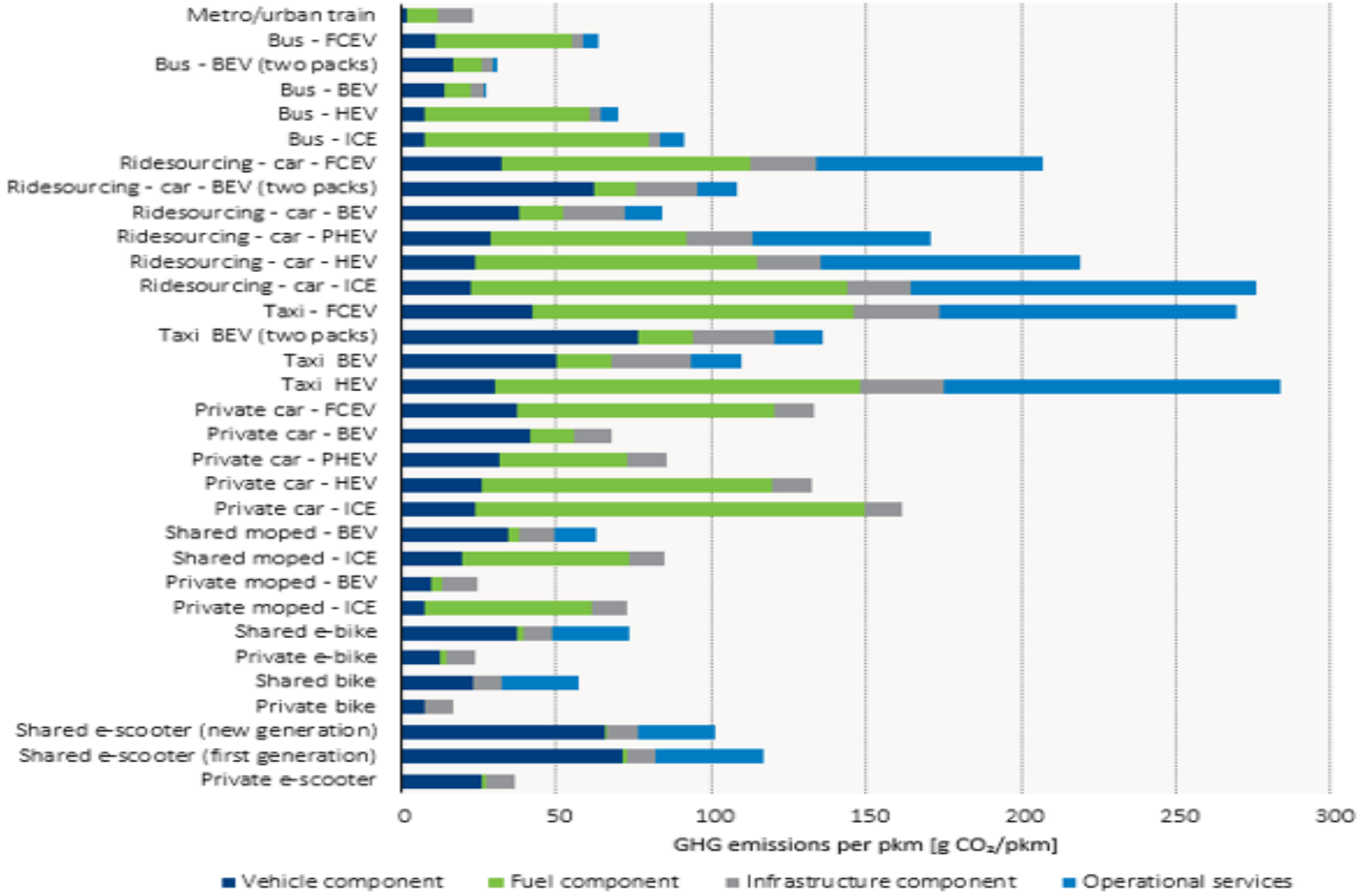
E-Moped

Powered Transport Devices (Waka Kotahi Determination)

NZ micromobility (ebikes/scooters) vs. electric car imports



Source: Oliver Bruce 2021



International Transport Federation (ITF, 2020), Good to Go? Assessing the Environmental Performance of New Mobility (Corporate Partnership Board Report) published 17 September 2020

Figure 3 – Carbon Emissions per passenger km by transport mode (using NZ electricity generation)

Will the growth in use of micromobility be significant enough to change the way we plan and invest in our transport infrastructure?

We need an objective way to forecast the growth in e-bike and e-scooter trips.

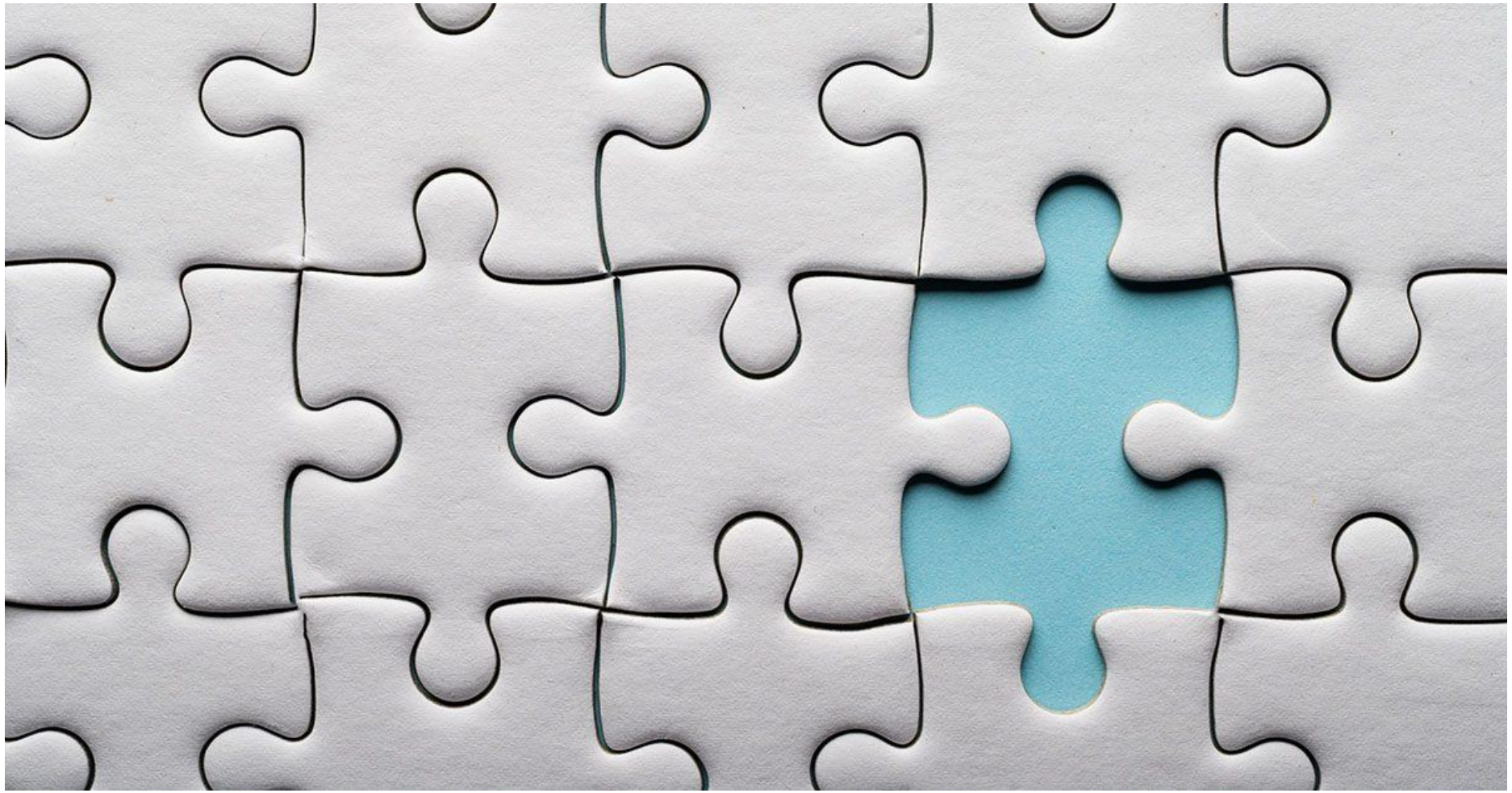
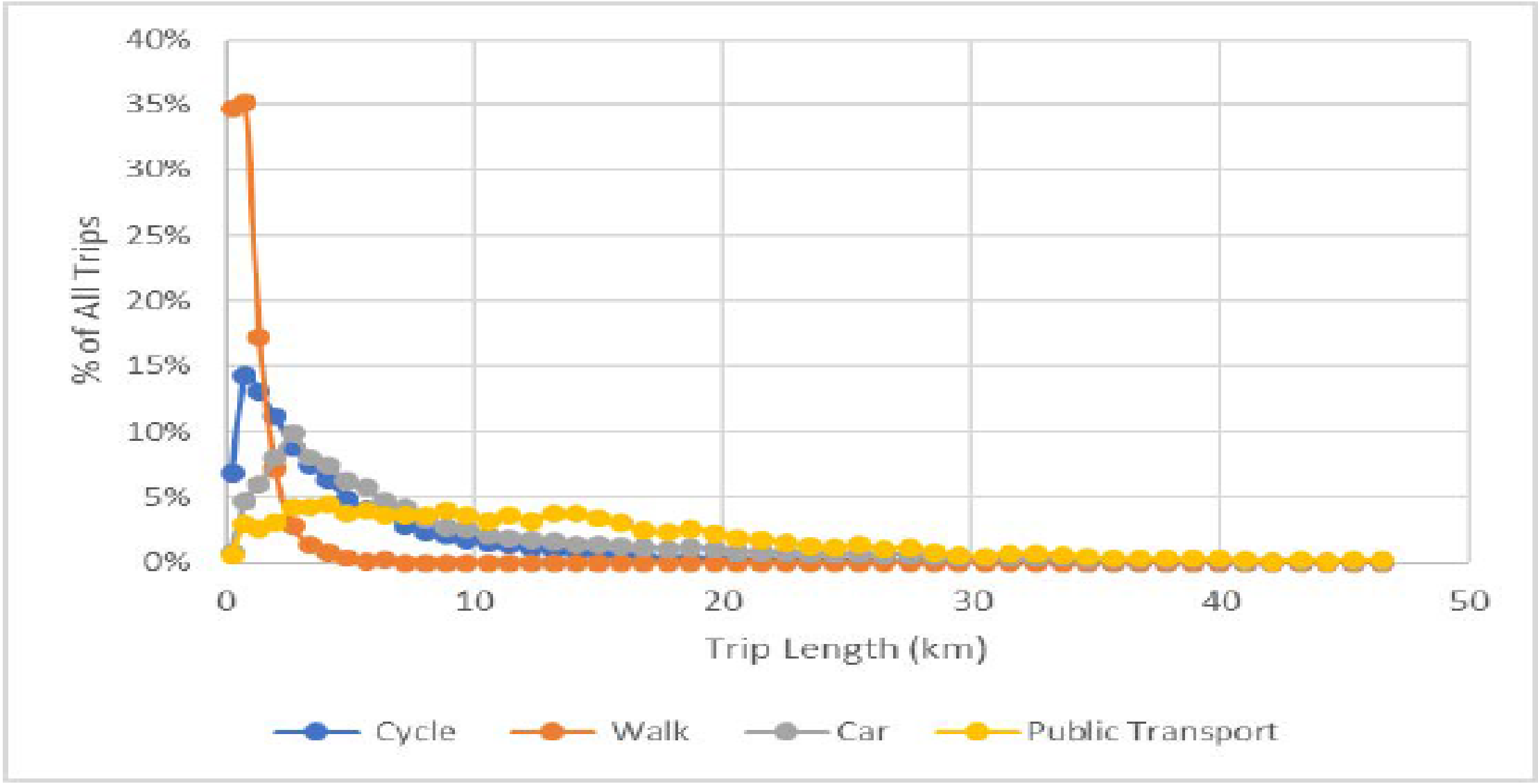
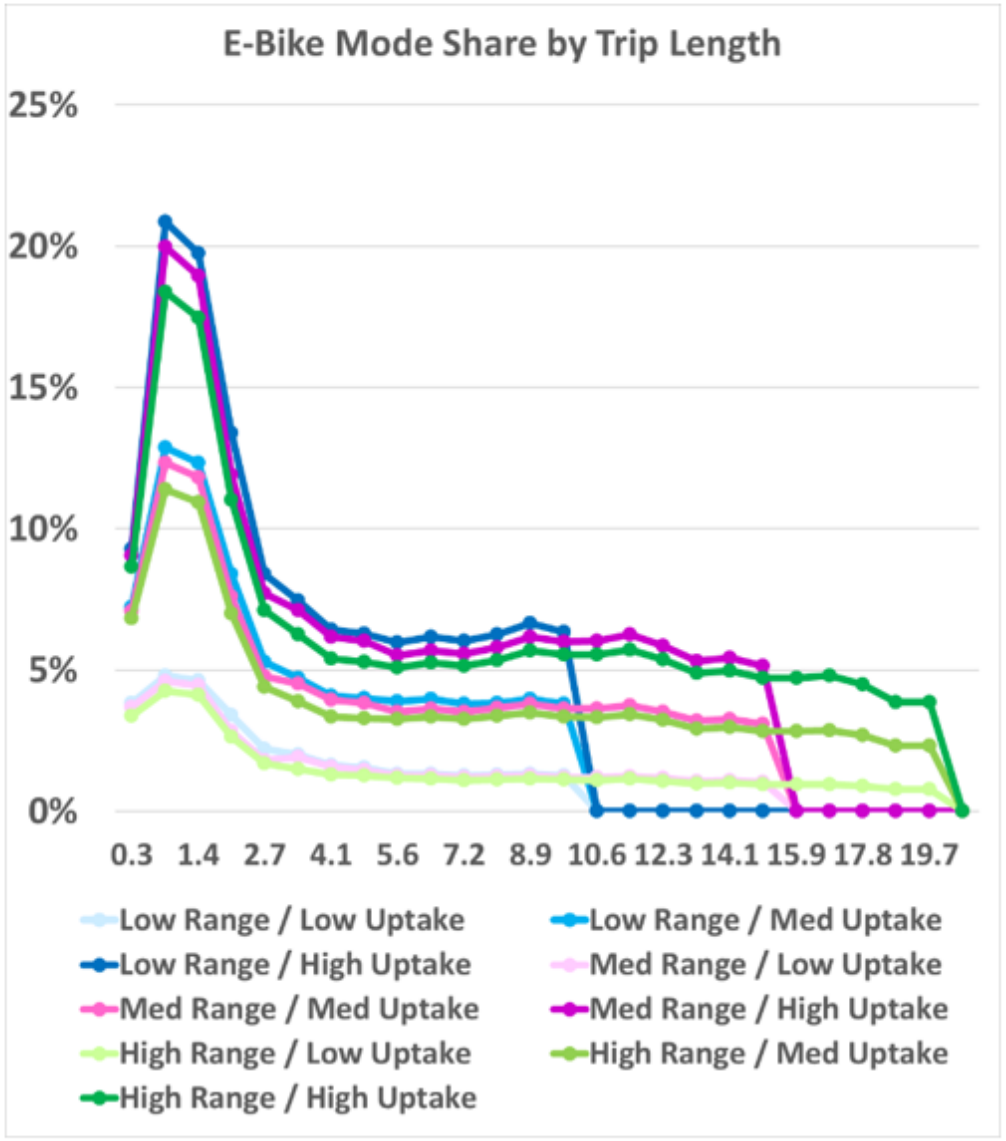


Figure 5.4 Distribution of the existing 'market' of trips for each major mode, by trip length



Factors in mode shift

- Trip range for micromobility modes
- Preferences between micromobility modes
- Uptake (% of people who’d consider micromobility for a trip)
- Current mode



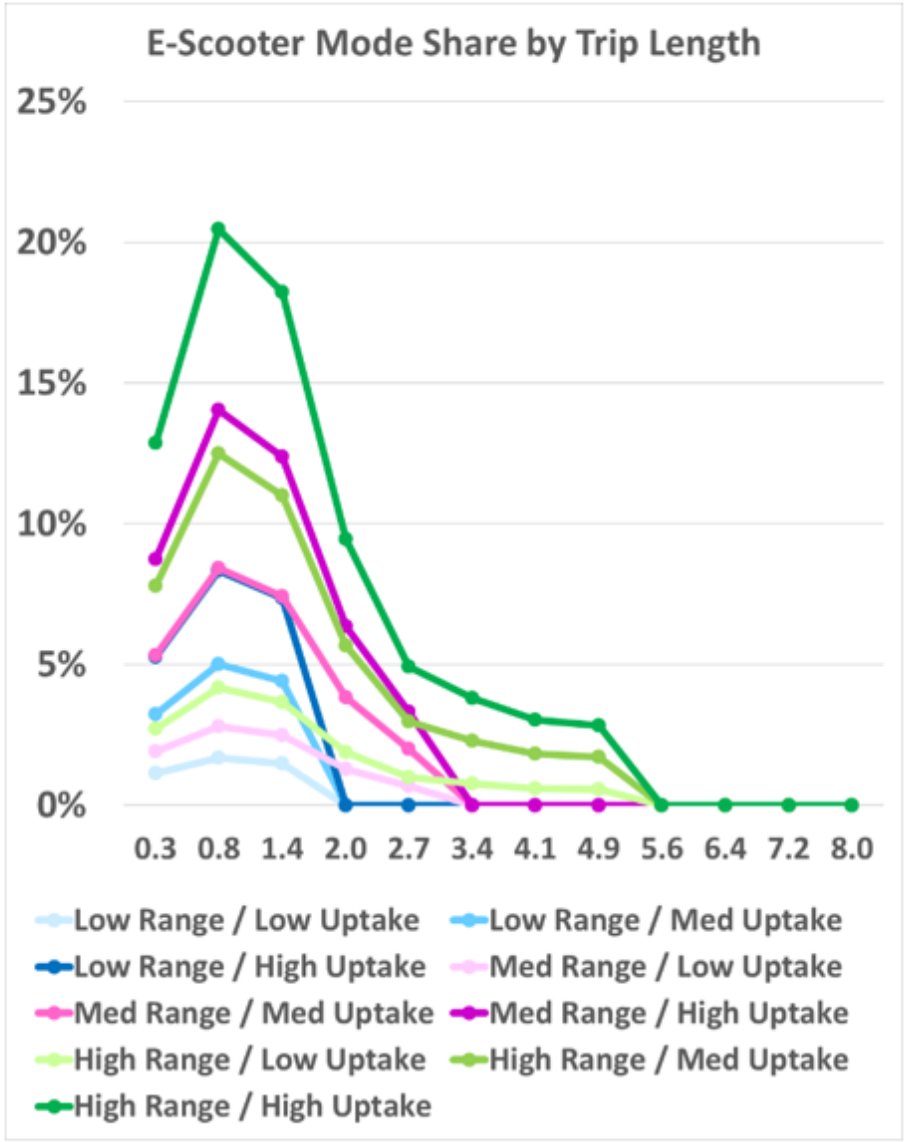


Figure 3 - Expected E-Scooter and E-Bike mode share by trip length, for various scenarios

Table 2 - Expected ranges of mode shift away from existing modes

Initial Mode	Mode Shift		
	To E-Scooter:	*To E-Bike:*	*To E-Accessible:*
Walk	3% - 15%	3% - 16%	< 0.2%
Cycle	0%	34% - 46%	0%
Car	0.2% – 1.2%	1.3% – 6.1%	< 0.1%
PT	1% - 3%	3% - 10%	< 0.3%

Mode Shift to Micromobility

Land-use	Modelled scenarios	Mode share range
Major city – CBD	• High uptake scenario for e-scooters • Medium uptake scenario for e-bikes	• E-scooter mode share: 1.6%–5.7% of all trips • E-bike mode share: 4.9%–5.1% of all trips
Major city – fringe (~5 km radius)	• Medium uptake scenario for e-scooters • High uptake scenario for e-bikes	• E-scooter mode share: 1.0%–3.4% of all trips • E-bike mode share: 7.7%–8.1% of all trips
Major city – suburban	• Medium uptake scenario for e-scooters • Medium uptake scenario for e-bikes	• E-scooter mode share: 1.0%–3.4% of all trips • E-bike mode share: 4.9%–5.1% of all trips
Regional city – CBD/fringe	• Medium uptake scenario for e-scooters • Medium uptake scenario for e-bikes	• E-scooter mode share: 1.0%–3.4% of all trips • E-bike mode share: 4.9%–5.1% of all trips
Regional city – suburban	• Low uptake scenario for e-scooters • Low uptake scenario for e-bikes	• E-scooter mode share: 0.3%–1.2% of all trips • E-bike mode share: 1.8%–2.0% of all trips

Factors Affecting Mode Shift to Micromobility

Proximity of routes to ‘attractive’ destinations.

Quality and safety of route infrastructure.

Attractiveness of mode alternatives.

Maturity of network / transport culture.

Amenity and aesthetic value of routes.

Socio-economic factors.

Forecast Mode Share for Micromobility

Overall, **e-scooter mode share could increase to up to 5.7%** mode share**, e-bikes mode share up to 8.1%,** depending on a range of context factors.

Up to **5.7%** mode share

Up to **8.1%** mode share

Mode shift to Public Transport

Scenario	Context	Effect
Central business district (CBD)/fringe (~5 km radius)	• High levels of public transport • High availability of micromobility	• 2% decrease in car trips • 6% increase in public transport patronage
CBD/fringe (~5 km radius)	• High levels of public transport • Low availability of micromobility	• 1.5% decrease in car trips • 3% increase in public transport patronage
Suburban	• High levels of public transport • High availability of micromobility	• 1% decrease in car trips • 9% increase in public transport patronage
Suburban	• High levels of public transport • Low availability of micromobility	• 0.5% decrease in car trips • 6% increase in public transport patronage
Suburban	• Low levels of public transport	• 0.5% decrease in car trips • 7% increase in public transport patronage

Factors Affecting First Mile / Last Mile Use Of Micromobility

- Presence / maturity of mobility as a service (MaaS) .
- Quality of public transport provided.
- Availability of shared micromobility.
- Provision for micromobility parking at connection points.
- Ability to take devices onboard public transport services.
- Maturity of micromobility culture in the location of interest.

Mode Shift to Micromobility: Whole Trips

Up to a **9% increase** in PT trips

Overall, ‘first mile last mile’ use of micromobility in conjunction with public transport is expected to **increase public transport trips by up to 9%,** depending on a range of context factors, and **decrease car trips by up to 2%**.

Inclusive access

Enabling all people to participate in society through access to social and economic opportunities, such as work, education, and healthcare.

Healthy and safe people

Protecting people from transport-related injuries and harmful pollution, and making active travel an attractive option.

Economic prosperity

Supporting economic activity via local, regional, and international connections, with efficient movements of people and products.

Environmental sustainability

Transitioning to net zero carbon emissions, and maintaining or improving biodiversity, water quality, and air quality.

Resilience and security

Minimising and managing the risks from natural and human-made hazards, anticipating and adapting to emerging threats, and recovering effectively from disruptive events.

To maximise the overall contribution of micromobility to wellbeing and liveability, **21 interventions** have been developed for practitioners to consider when planning micromobility initiatives.

- Prioritise aesthetic safe routes for investment
- Provide clear signage for parking areas, speed
- Introduce grant / subsidy schemes for purchase
- Forecast space required on public transport
- Plan for micromobility role in resilience

“ More than 90% of trips won’t shift to micromobility.

But the demand for micromobility trips will be 3 to 5 times more than for push-bikes.

If transport infrastructure programmes takes 5-10 years to implement, start now.

https://www.nzta.govt.nz/assets/resources/research/reports/674/674-Mode-shift-to-micromobility-infographics-for-practitioners.pdf

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A note to the audience

- This presentation is based on research report RR 674 – *Mode Shift to Micromobility*.
- While Waka Kotahi NZ Transport Agency provided investment, the research was undertaken independently, and the resulting findings should not be regarded as being the opinion, responsibility or policy of Waka Kotahi or indeed of any NZ Government agency.
- Waka Kotahi is established under the Land Transport Management Act 2003. The objective of Waka Kotahi is to undertake its functions in a way that contributes to an efficient, effective and safe land transport system in the public interest. Waka Kotahi funds innovative and relevant research that contributes to this objective.
- People using this research should apply and rely on their own skill and judgement and, if necessary, they should seek appropriate legal or other expertise regarding its use.

WAKA KOTAHI
NZ TRANSPORT AGENCY

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https://www.nzta.govt.nz/resources/research/reports/674