



Image: GoogleMaps

# Traffic engineers driving social outcomes

*Transportation Group Conference, March 2023*

*Karl Baker, Stantec - Auckland*

# Transport design and access across scales...

## Micro

*Can a toddler safely walk along the footpath?*

*Is the footpath well lit and safe at night?*

*Are universal accessibility standards being met?*



Source: 1News, <https://www.1news.co.nz/2021/05/22/concerns-footpaths-in-aucklands-mount-albert-unsafe-for-disabled-children-and-elderly/>



# Neighbourhood

*How connected is the street network?  
Are modes well integrated?*



*Te Puea Memorial Marae, Mangere, Auckland.*

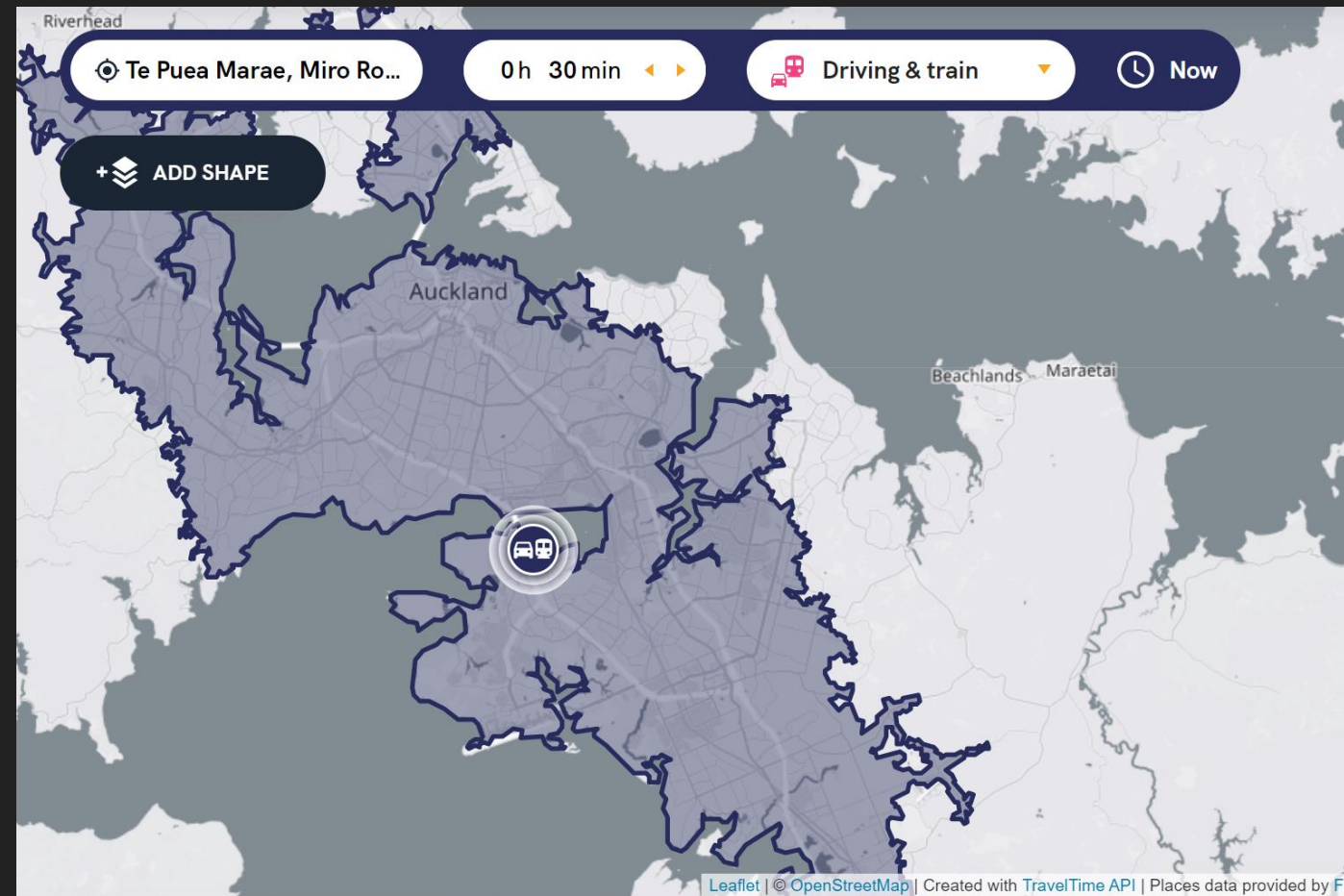
Ameratunga, Shanthi., Spray, J., Anderson, A., Wiles, J., Witten, K., Ofanoa, M. & Burdett, B. (2019, November). *Inclusive Streetscapes: Disabled People and Older Citizens Charting a Roadmap to Equity*. In 5th International Conference on Transportation and Health. ICTH.

Image source: Hoskins, R., Lee-Morgan, J., Knox, W., Dennis, H., Henry, L., Nathan, L., Smiler R. & Ratana, M. (2019). [Tūrangā ki te marae, e tau ana – Reimagining marae-based kāinga in Tāmaki Makaurau](#). A resource to support urban marae-based housing developments, funded by Building Better Homes, Towns and Cities: Kāinga Tahī, Kāinga Rua, 80 pgs. Auckland: Ngā Wai a te Tūi Press.



# Macro

*What destinations can people reach by different modes?*

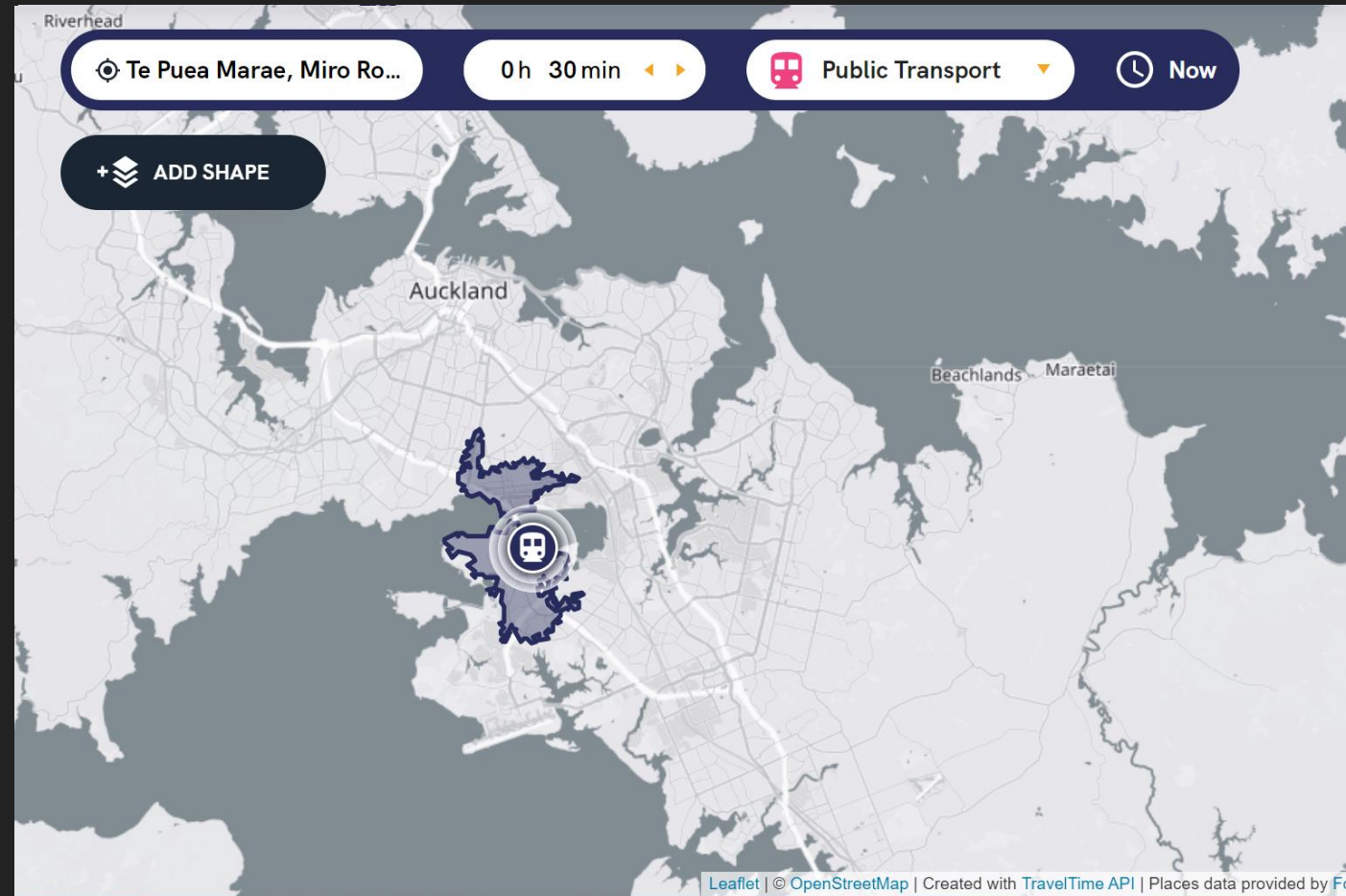


Source: <https://app.traveltime.com/>



# Macro

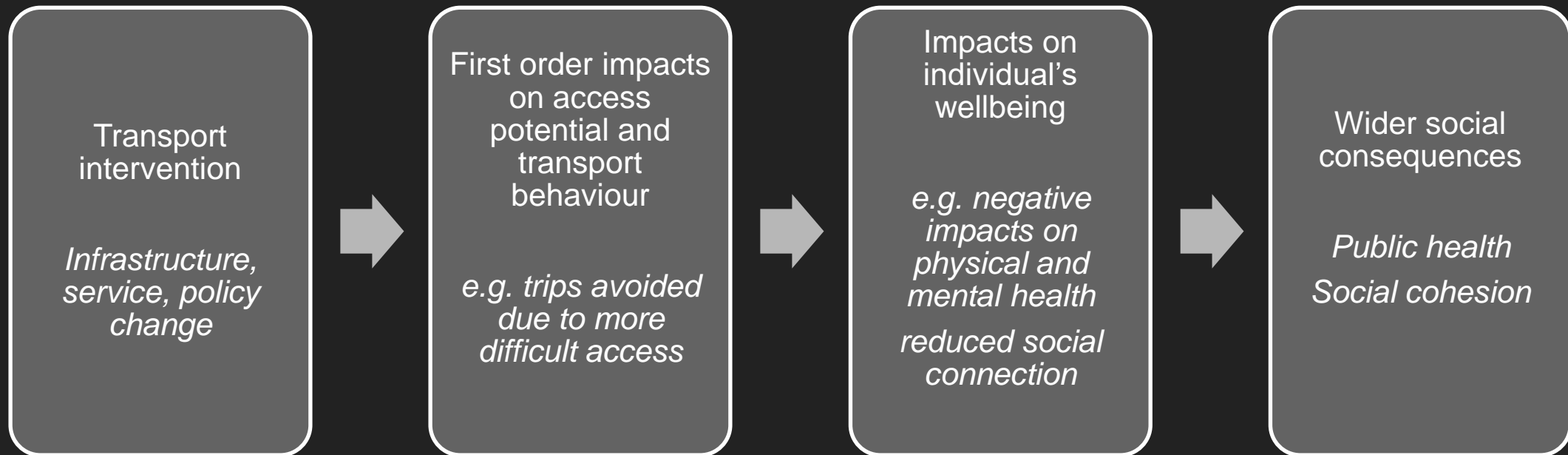
*How far can a 14-year old travel independently?*



Source: <https://app.traveltime.com/>



# What do we mean by social impact?



Drawing inspiration from:

Curl, Angela, A Watkins, C McKerchar, D Exeter and A Macmillan (2020) *Social impact assessment of mode shift*. Waka Kotahi NZ Transport Agency research report 666.

Lucas, Karen, & Jones, P. (2012). Social impacts and equity issues in transport. *Journal of transport geography*, 21, 4-112.

# Social outcomes from transport interventions are both positive and negative

## First-order transport impacts:

Improved regional-scale access (by car) *but local severance and mode shift to driving*

## Second-order impacts on individual wellbeing:

Improved participation in social and economic opportunities (for some) *but reduced for others and health disbenefits from mode shift to driving*

## Broader social consequences

Improved regional social cohesion? *But reduced local cohesion, public health costs.*

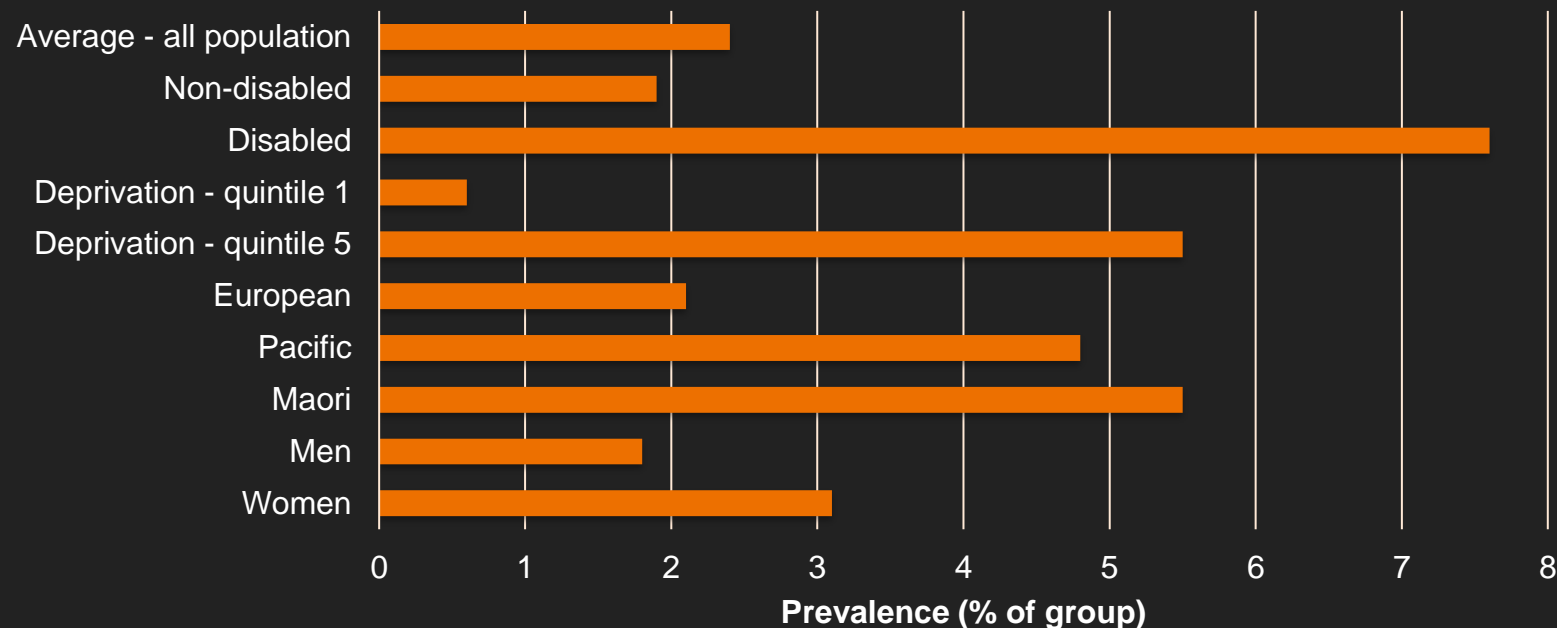


Image source: Hoskins, R., Lee-Morgan, J., Knox, W., Dennis, H., Henry, L., Nathan, L., Smiler R. & Ratana, M. (2019). [Tūranga ki te marae, e tau ana – Reimagining marae-based kāinga in Tāmaki Makaurau.](#)



# The social *distribution* of outcomes is critical

Prevalence during last 12 months of having a medical problem but not visiting a GP due to lack of transport, New Zealand 2020/21, adults (aged 15+).



Source of data: Ministry of Health, [NZ Health Survey 2020/21](#)





# How do we do things better?

1. Think about distinct user groups and transport needs
2. Be aware of systemic biases in our tools
3. Find better measures and gather new data

# Think about distinct user groups and needs

We often think about 'average users', aggregate outcomes... and users organised by mode: 'drivers', 'cyclists', 'pedestrians'.

But we give less thought to the range of social groups using the transport network - and their distinct needs.

Special attention required to avoid unintended negative consequences for social groups that face other forms of socio-economic disadvantage.



Source: Waka Kotahi (2022), Doran, B., Crossland, K., Brown, P., & Stafford, L. (2022). *Transport experiences of disabled people in Aotearoa New Zealand* (Waka Kotahi NZ Transport Agency research report 690).



# Be aware of systemic biases in our tools

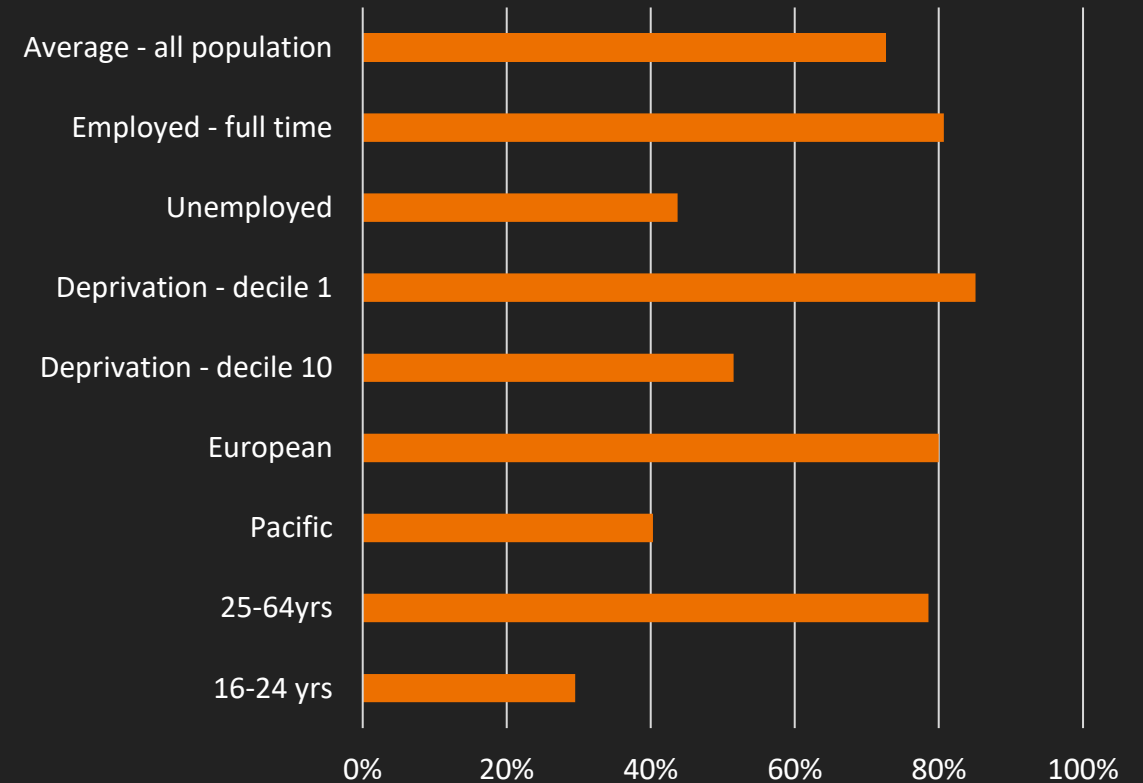
Our economic evaluation approaches generally aggregate benefits – and don't communicate *who* benefits.

While vehicles are easier to measure than people, providing for vehicles involves systemic biases to those that drive.

Our design standards prioritise 'design vehicles' over 'design people'.

- Where possible disaggregate impacts not just by mode, but by key social groups
- Use findings of traffic and economic models cautiously...alongside other factors.

*Percentage of population group holding a full driver license, New Zealand 2018, people age 16+. Source: Motu, 2021.*



# Expand our range of information sources

Capturing information about impacts of transport interventions across diverse groups:

- In-depth interviews
- Surveys
- Customer insights techniques
- Disaggregating quantitative information like model outputs by social group where possible



Source: Auckland Transport (2018) [https://at.govt.nz/media/1977266/tra\\_at\\_activemodes\\_publicrelease-1.pdf](https://at.govt.nz/media/1977266/tra_at_activemodes_publicrelease-1.pdf)



# In summary

- Many of the positives that we are trying to achieve with our transport interventions are ‘social’
- All transport interventions benefit someone – the critical question is for whom? And where do the negatives fall?
- There can be significant unintended negative social impacts and understanding these requires thinking about both short-run direct impacts and longer-term more complex consequences
- As a profession, we can do better by:
  - Explicitly considering the diversity of transport needs across social groups
  - Being aware of systemic biases
  - Expanding our range of information sources.



# Working together

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