MONASH University

SUSTAINABLE MOBILITY AND SAFETY RESEARCH

The role of e-bikes in overcoming gender inequities in active transport

Dr Lauren Pearson

Sustainable Mobility and Safety Research
School of Public Health and Preventive Medicine

Snapshot of women's health in Australia

More likely to have **2 or more** chronic conditions

Greater risk of mental ill-health at **all stages of life**

2 in 5 women do not meet physical activity guidelines

61% of women in the **lowest socioeconomic** group are overweight or obese

1 in 5 over 65 have osteoporosis

1 in 2 women have experienced sexual harassment

Over 40% report physical and mental health has deteriorated since the pandemic

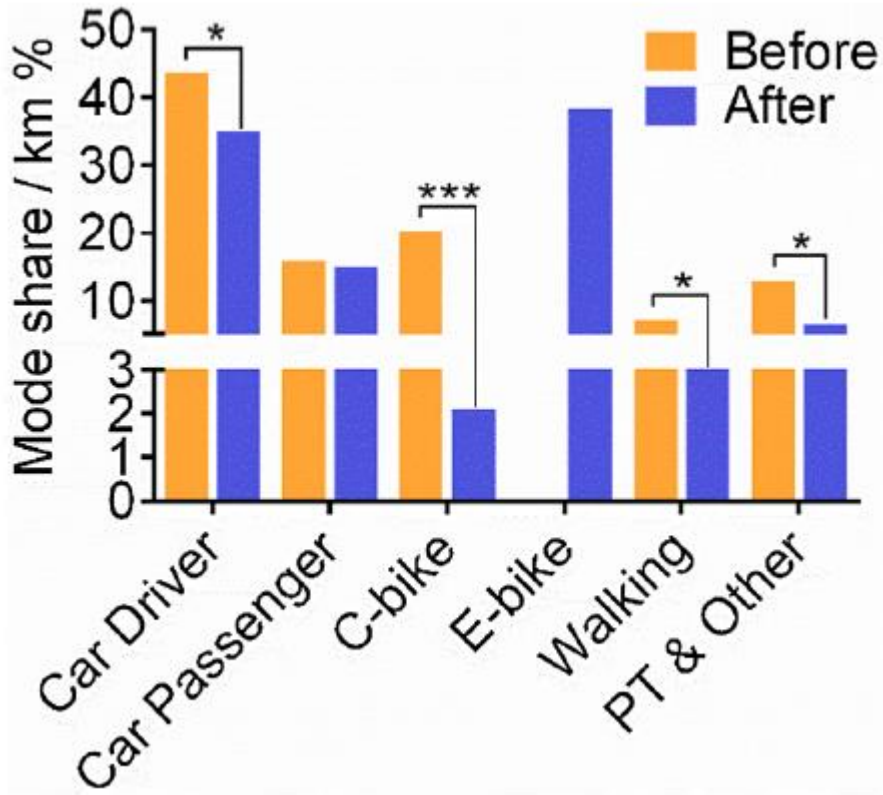
61% of people living with dementia are women

1.6 times as likely to suffer a coexisting mental and physical illness

Australian Government, Department of Health (2020) National Women's Health Strategy 2020-30
Australian Institute of Health and Welfare (AIHW) (2023) The health of Australia's females

Health benefits and modal shift

- E-bikes and health
  - E-bike riding provides physical activity of at least moderate intensity[1]
    - Less than conventional cycling per km, but more than walking[1]
  - E-bike riding can improve cardiorespiratory fitness[1]
  - Physical activity levels have been reported as similar between e-bike riders and conventional riders[2]
- E-bikes and modal shift
  - In order to maximise health gains, we need to shift people out of cars onto e-bikes
  - Limited data on this, but European data indicates a 16-37% drop in car travel, and a doubling in bike travel[3]



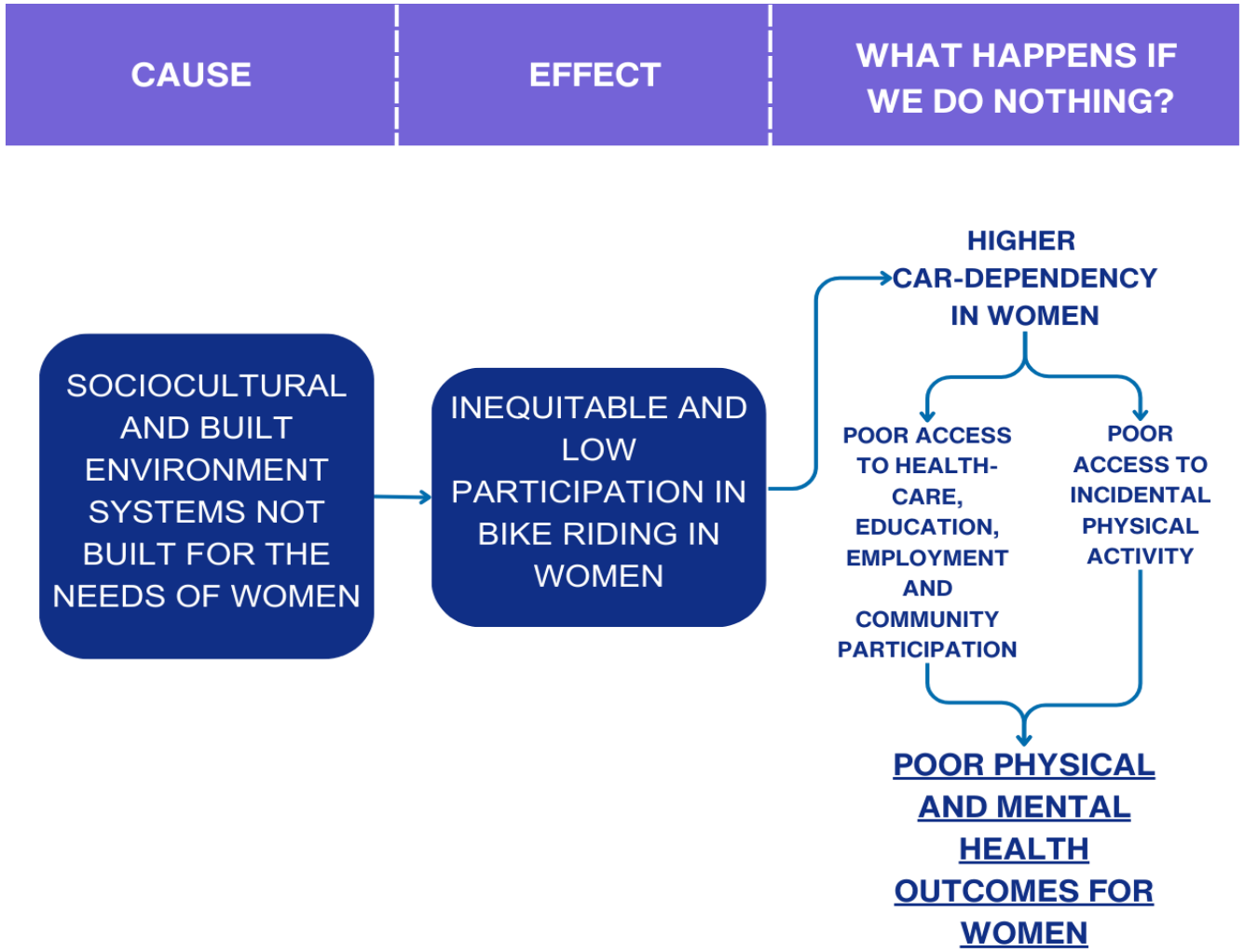
1. Bourne, J. E., Sauchelli, S., Perry, R., Page, A., Leary, S., England, C., & Cooper, A. R. (2018). Health benefits of electrically-assisted cycling: a systematic review. International journal of behavioral nutrition and physical activity, 15(1), 1-15.
2. Castro, A., Gaupp-Berghausen, M., ... & Götschi, T. (2019). Physical activity of electric bicycle users compared to conventional bicycle users and non-cyclists. Transportation research interdisciplinary perspectives, 1, 100017.
3. Sun, Q., Feng, T., Kemperman, A., & Spahn, A. (2020). Modal shift implications of e-bike use in the Netherlands: Moving towards sustainability?. Transportation Research Part D: Transport and Environment, 78, 102202.

Despite well known benefits, bike riding participation is low

- Only 1.8% of trips in Victoria are made by bike
- Inequities in participation – for every one woman riding a bike, there are two men

Gender inequities in bike riding

- More women are car-dependent, associated with poor health and social outcomes
- Worsening with urban sprawl
  - Over half of population growth in peri-urban fringe with limited access to PT and active transport opportunities



Substantial knowledge gaps

- To increase participation safely, need to understand who is interested in riding a bike, what prevents them, what may encourage them
- Limited research in Australia, focused on people already riding a bike
- Limited qualitative research to understand underlying factors influencing decisions

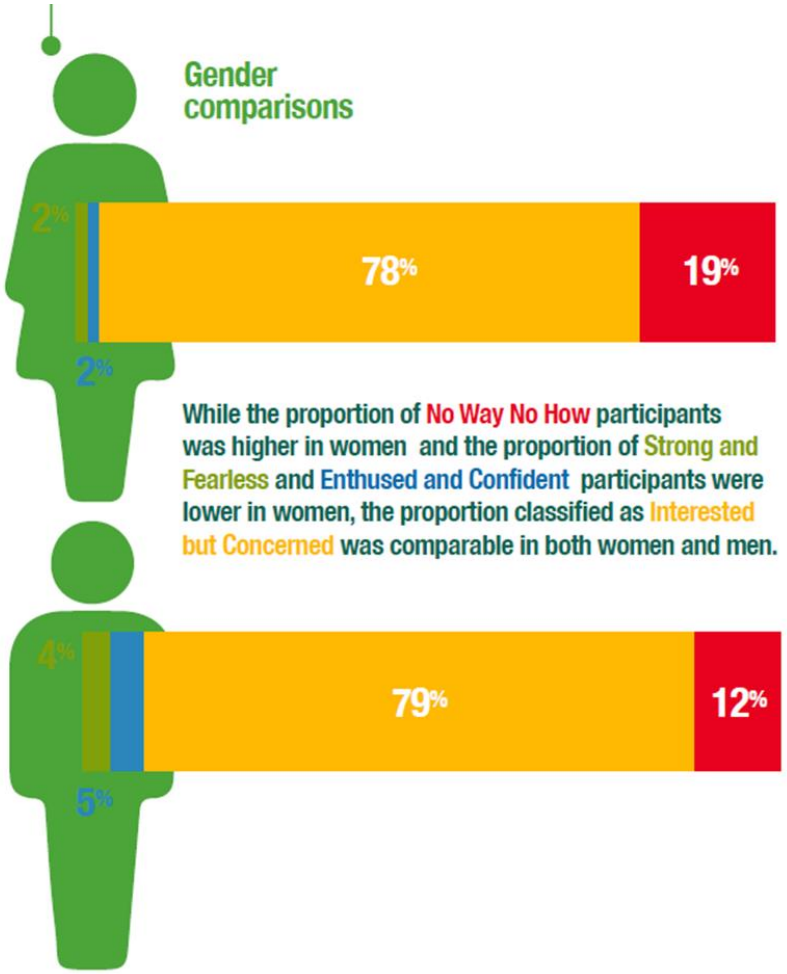
Cycling Typologies in Victoria Survey

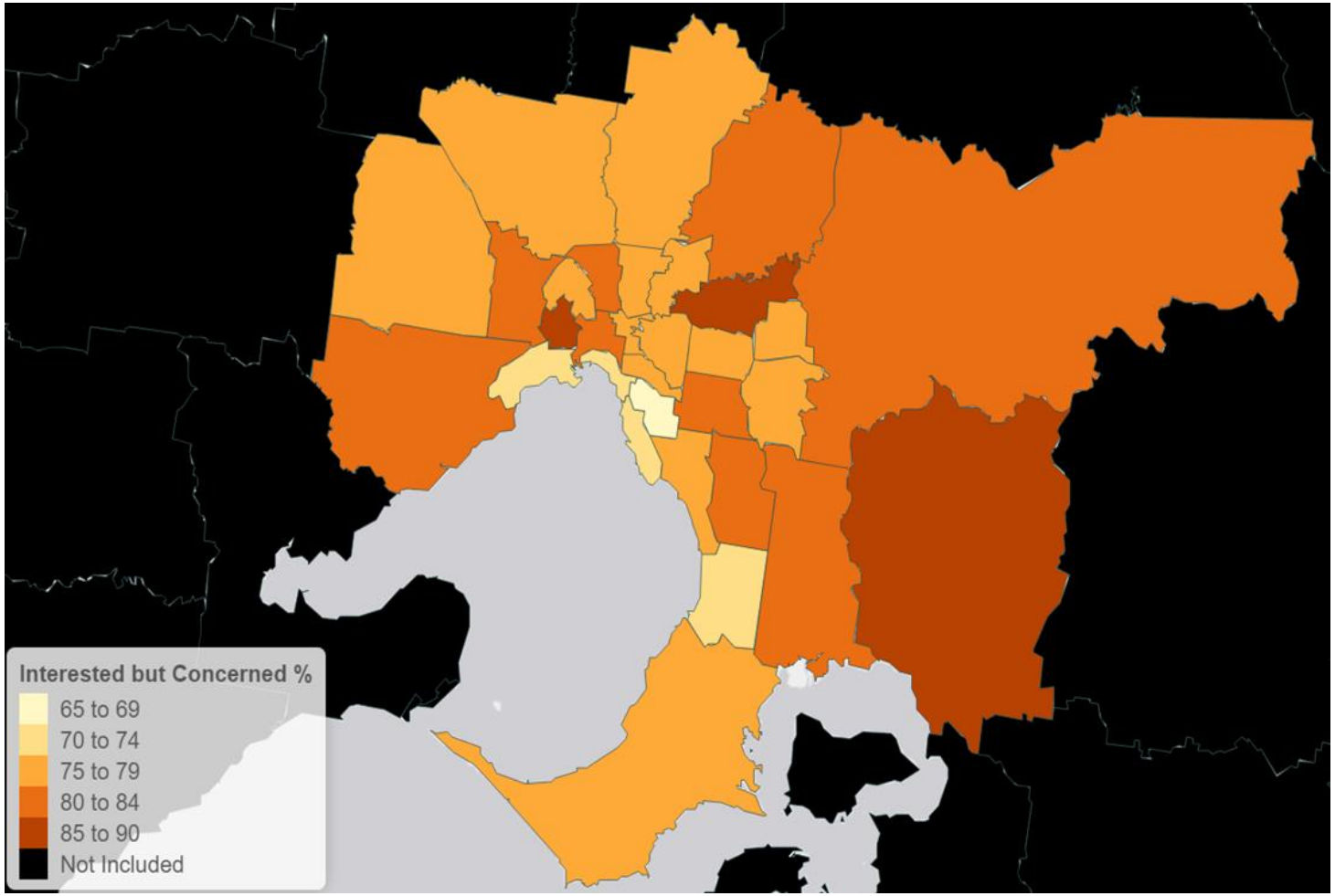
- For efficient planning, need to **quantify** and **understand** interest in bike riding

- Geller Typology; *Strong and Fearless, Enthused and Confident, Interested but Concerned & No Way No How*[2]
- Online survey in local government areas (LGAS) of Greater Melbourne and a selection of regional councils

2. Geller R. Four Types of Cyclists. Portland, OR: Portland Office of Transportation; 2006.

Potential for bike riding in Victoria



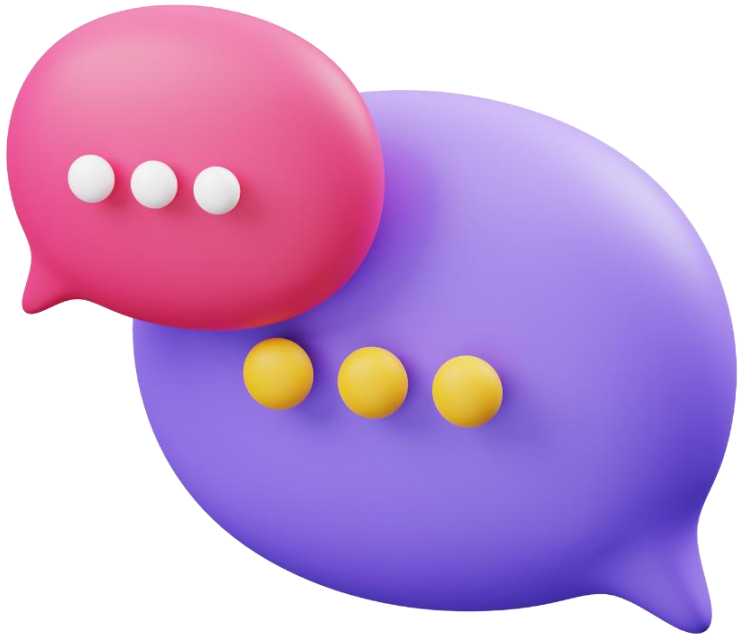


Next steps: Getting Around Victoria Survey

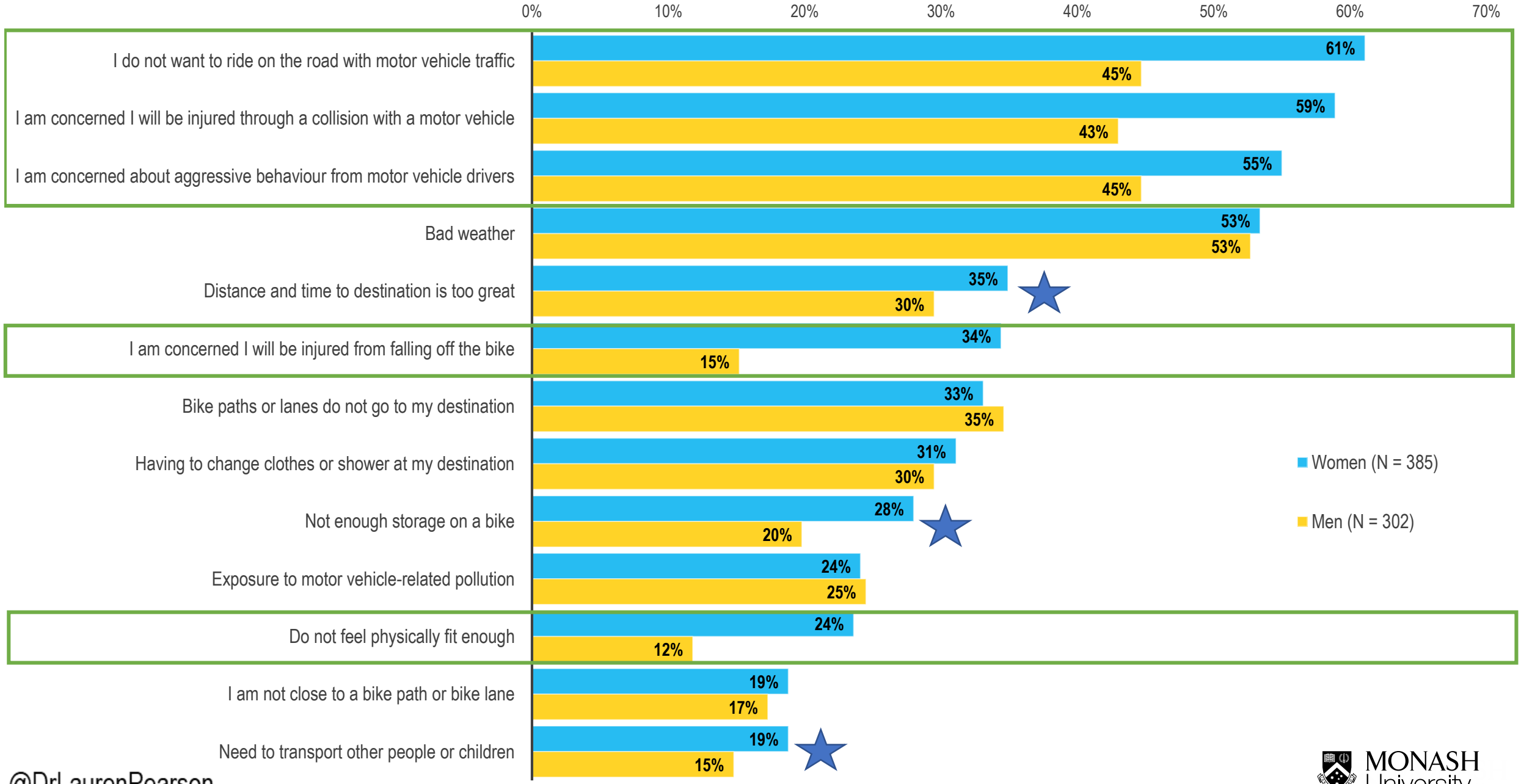
- Huge potential for increase in bike riding – what is preventing people? What would encourage them?
- Important to quantify barriers and enablers
- Online survey to quantify the prevalence of barriers to and enablers of cycling in Greater Melbourne

Unpacking the explanations through interviews with potential riders

- Interviewed 40 people who were ‘Interested but Concerned’ in riding
- 20 women, 20 men across Greater Melbourne
- Deep-dive on barriers, enablers and solutions



Barriers to riding a bike for transport by gender



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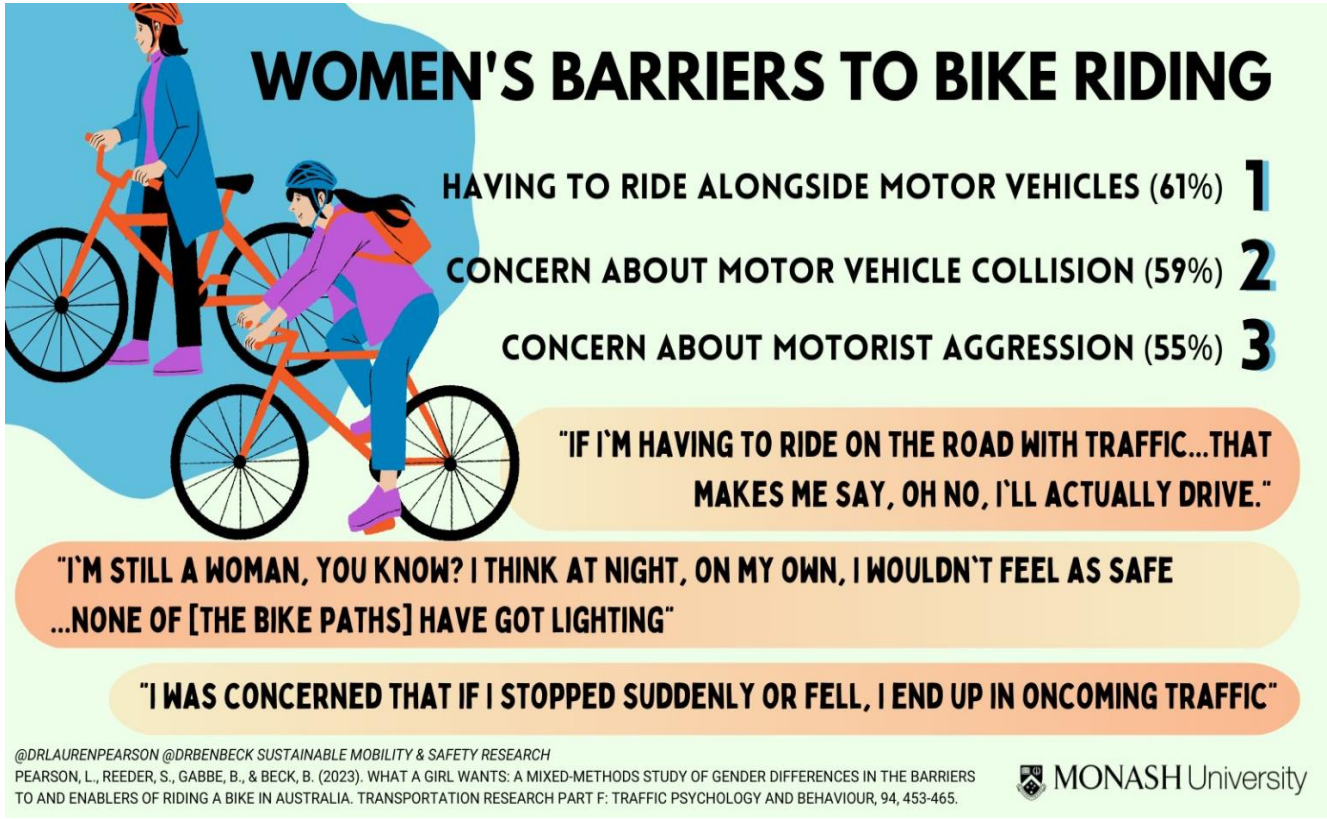
Qualitative themes

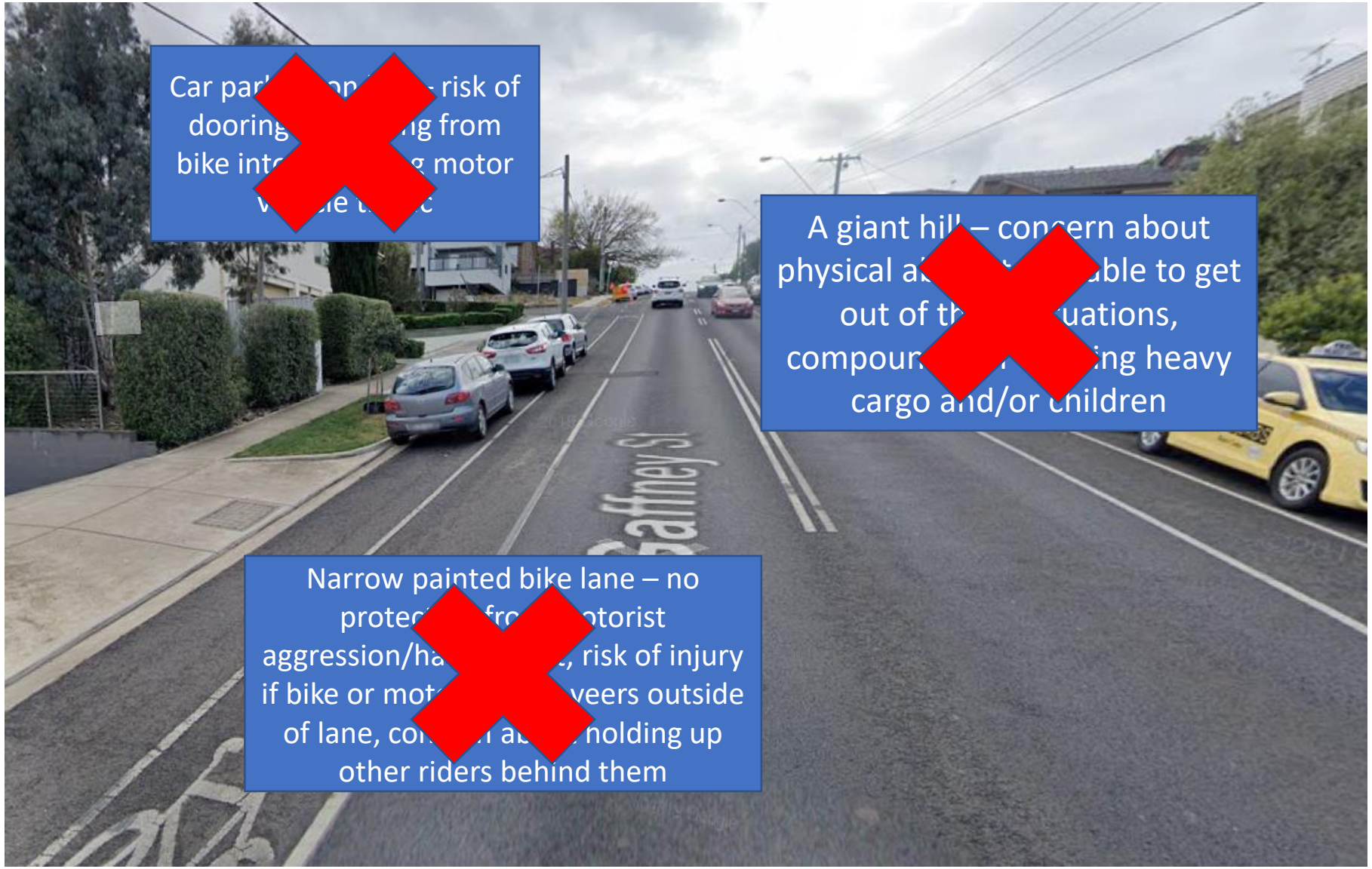
- Concern about riding through areas where personal safety at risk
- Concern about falling from their bike and into oncoming motor vehicle traffic
- Lack on confidence riding in a hyper-masculine environment – having to "keep up" and "make space" within motor vehicle traffic and with other riders
- All of these are compounded by knowing that in these situations, they rely on their physical fitness



Bringing it together

- Women want to ride bikes, but they also want to survive the day


Car parking on left – risk of dooring and falling from bike into oncoming motor vehicle traffic
A giant hill – concern about physical ability to be able to get out of these situations, compounded if carrying heavy cargo and/or children
Narrow painted bike lane – no protection from motorist aggression/harassment, risk of injury if bike or motor vehicle veers outside of lane, concern about holding up other riders behind them


Car par[illegible] risk of dooring [illegible]ng from bike into [illegible]g motor [illegible]
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Gaffney St

The diversity of e-bikes

Pearson, L., Gabbe, B., Reeder, S., & Beck, B. (2023). Barriers and enablers of bike riding for transport and recreational purposes in Australia. *Journal of Transport & Health*, *28*, 101538.
Pearson, L., Reeder, S., Gabbe, B., & Beck, B. (2023). What a girl wants: a mixed-methods study of gender differences in the barriers to and enablers of riding a bike in Australia. *Transportation research part F: traffic psychology and behaviour*, 94, 453-465.


Turbo
COSMOS
MAVIC

Planning for the diversity e-bikes

- E-bikes are often heavier, longer, and can be difficult to maneuver
- What does this mean for planning?
  - Parking that does not require lifting
  - Charging capabilities
  - Limiting tight turns
- Examples internationally of community-managed bike cages – reclaiming 1 parking spaces for space for 8 regular size bikes or 2-3 cargo bikes

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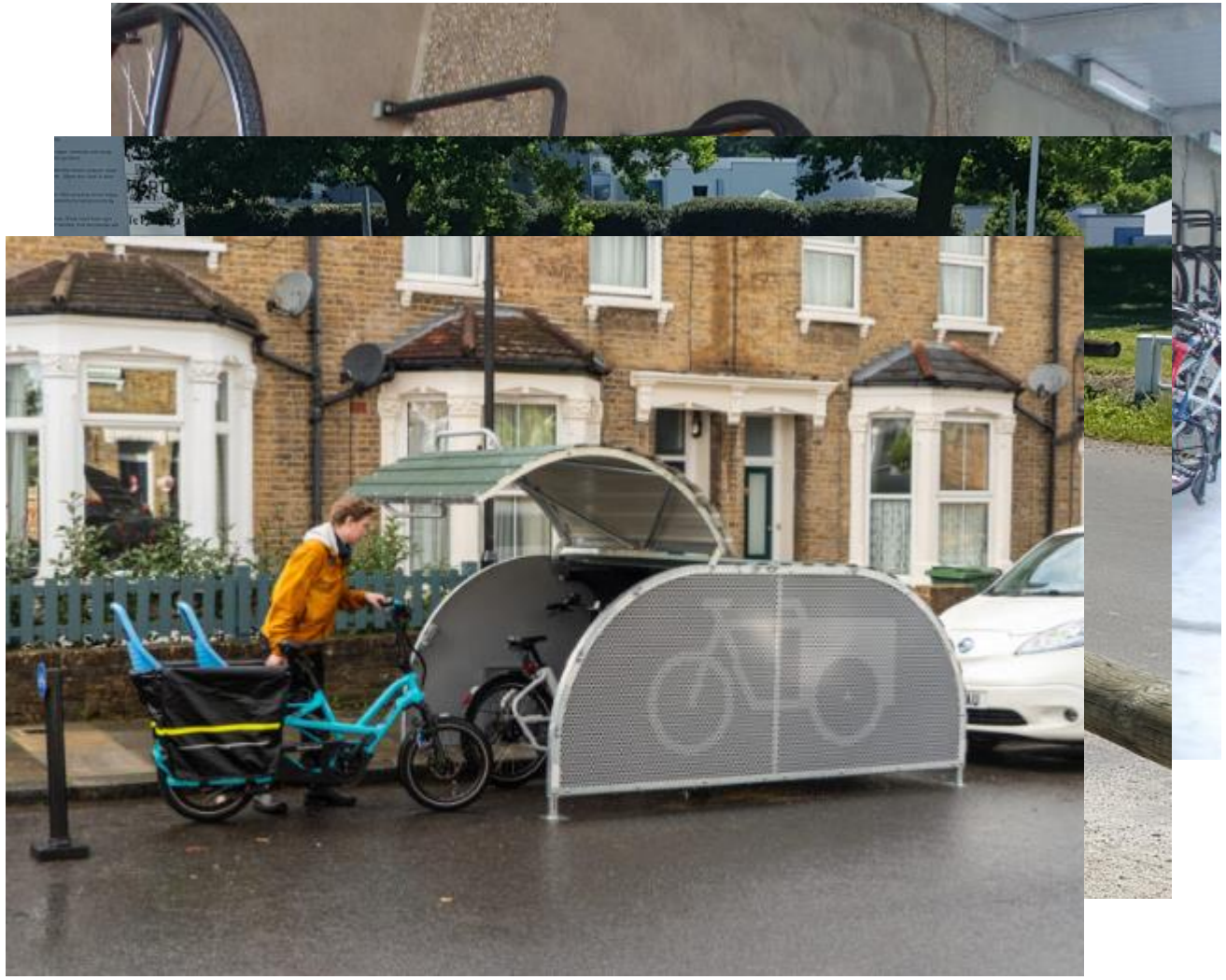

Bringing it all together

- We have huge potential for equity and health gains through e-bikes, particularly for women
- While the number one barrier to getting more people on bikes is having to ride on the road, e-bikes play a role in overcoming gendered barriers
- **Are we designing spaces to accommodate the diversity of e-bikes?**

8. Beck, B., Winters, M., Thompson, J., Stevenson, M., & Pettit, C. (2021) Spatial variation in bicycling: a retrospective review of travel survey data from Greater Melbourne.

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Lauren.Pearson@monash.edu

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