



THE TRANSFORMERS PROJECT

Evaluation, Findings, Implications

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We acknowledge the tradition of custodianship and law of the Country on which the University of Sydney campuses stand. We pay our respects to those who have cared and continue to care for Country.

Executive Summary

The research reported here provides an opportunity for action.

Australia's transport system must change. With road transport responsible for the majority of emissions and car dependence deeply embedded in suburban life, achieving climate targets and improving equity requires a rapid shift toward active and low-carbon modes. The *Transformers* program demonstrates how this shift can begin.

Delivered in Western Sydney in 2025, *Transformers* provided 42 participants with eight weeks of subsidised e-bike access, combined with structured training, guided rides and peer support. This evaluation, drawing on surveys, tracker data and in-depth interviews, shows that when access is paired with education and community, e-bikes can drive meaningful, immediate and lasting change in how people move.

The results are clear and compelling:

- **92% of participants increased their confidence riding**
- **88% would recommend the program**
- **59% reduced their car use**
- **71% said travel became more enjoyable**
- **75% rode more for everyday transport**

Participants used e-bikes frequently and flexibly, completing **459 trips covering over 3,000 km** during the trial, for commuting, shopping, recreation and social activities.

The impacts extended well beyond transport. Participants reported improvements in:

- **quality of life and health satisfaction**
- **mental wellbeing and enjoyment**
- **social connection and community belonging**

Group rides and shared learning environments reduced isolation and created new social networks. And participants consistently identified training, guided rides and peer support as the foundation of their success. The program enabled people many of whom were inexperienced or low-confidence riders to develop practical skills, navigate real-world conditions and build trust in their own abilities. This “supported transition” transformed how participants viewed cycling:

- what was once perceived as risky became manageable
- what felt intimidating became routine
- what was marginal became possible.

For many, this was described as **transformative**—turning hesitation into independence.

Implications for policy and practice

The *Transformers* program offers a clear model for scaling change. To be effective, e-bike programs must move beyond simple subsidies and instead embed access within a supportive system.

1. Pair funding with capability

Subsidies should be combined with:

- practical skills training
- guided rides and real-world learning
- ongoing support for new riders
- culturally inclusive outreach

2. Continue to invest in safe, connected infrastructure: Participants identified unsafe or disconnected cycling infrastructure, lack of secure parking at destinations, and challenges integrating with public transport.

3. Enable long-term affordability: Affordability is a critical issue. We need to encourage the purchase of quality e-bikes, but these are expensive. While most participants wanted to continue, many could not purchase an e-bike without ongoing support.

This pilot demonstrates that behaviour change is possible—even in highly car-dependent contexts. The message from participants is clear: if we build capability, connection and confidence, people will ride.

Acknowledgements

The study concept was developed by Fiona Campbell and Francis O'Neill. The e-bike training program was designed and delivered by Charlene Bordley (Addventagious Bike Community). The evaluation design was initiated by Dr Melanie Crane and led by Associate Professor Jennifer Kent, with preliminary input from Dr Katherine Owen (all from the University of Sydney). Qualitative data collection and analysis was led by Associate Professor Kent, and quantitative analysis by Dr Crane. Quantitative data collection was undertaken by Addventagious staff, and the qualitative data collection process was administered by Ms Dominique Gekas (University of Sydney). Dr Nicole Peel (Western Sydney University) provided research advice throughout the project. Ms Lisa Kollaras (City of Parramatta) provided local contextual advice and supported participant recruitment through advertising. Dr Lara Mottee (QUT) drafted the initial version of the report, with Associate Professor Kent leading data integration and report finalisation. Quantitative sections were drafted by Dr Crane and descriptions of the program by Ms Bordley. All co-authors reviewed and edited the final report.

The delivery of the program was funded by Ms Campbell. The evaluation was funded by the University of Sydney Robinson Fellowship program.

Finally, the team would like to acknowledge and thank the program's participants for allowing us to come on the journey with them.

Statement of positionality

All research, whether quantitative or qualitative, involves elements of subjectivity. It is therefore considered best practice for research teams to acknowledge this and reflect on how their positionality may influence the research approach and interpretation of findings. The core research team has varying levels of experience with riding bikes. This may limit their capacity to fully understand the experience of learning to ride for the first time or adapting to a different type of bicycle. Collectively, however, the team brings extensive experience in researching and supporting sustainable transport transitions. Through this work, they have developed a strong awareness of their own potential biases, as well as the methodological skills required to mitigate their influence. This ensures the research is conducted to a high standard of trustworthiness (in qualitative components) and validity (in quantitative components).

1. Introduction

Australia's transport sector is projected to become the largest source of emissions by 2030. Road transport generates 86% of transport emissions, with passenger cars alone responsible for 42%. The pace of vehicle electrification and renewable energy uptake in Australia is too slow to justify reliance on technology alone. To meet the 1.5°C 2035 climate target, Australia must also cut actual car travel by at least 15%. In rapidly growing cities (such as Sydney and Melbourne), this equates to a 40% reduction in vehicle kilometres travelled (VKT) per person by 2035ⁱ. For Australian households, this means reimagining everyday routines: 40% fewer school drop-offs, 40% fewer car-based supermarket runs, and 40% fewer social gatherings accessed by car.

For over two decades, the urgent need to transition away from car dependence has been recognised in transport policy and planning. In NSW for example, the Connecting NSW Strategy states that "transitioning to net zero transport emissions will require encouraging mode shift" and, under the priority Reduce Transport Disadvantage, "that private vehicle dependence is increasingly burdening household budgets" while the mode shift priority emphasises the provision of car free travel options. In fact, all six priorities for transport can be advanced through increased uptake of e-bikes, supported by targeted education and training programs.

By providing motor assistance, e-bikes reduce the physical effort required for cycling, making longer trips, hilly terrain, and commuting more accessible to a wider range of people, including older adults and those with lower physical capacity. Facilitated by advances in battery technology and growing interest in low carbon, flexible transport options, e-bikes have emerged as a global phenomenon now dominating up to 50% of the market share for bicycle sales in multiple jurisdictions across Europe, Asia and in parts of the USA. In Australia, e-bike uptake has increased notably throughout the first half of this decade, particularly in major cities, with survey and market evidence indicating growing ownership and use for everyday travel rather than recreation. A large national study, for example, found that young adults report higher e-bike ownership than conventional bicycle ownership, while other surveys of Australian e-bike users showed regular use of e-bikes as a transport tool, not simply something for recreation (Washington et al., 2020; Wu et al., 2024).

While the e-bike market is developing rapidly, in most markets, e-bikes that meet acceptable standards for safety and quality are still three to four times more expensive to purchase than regular commuter push-bikes. The option to experiment with the accessibility and freedom of the e-bike, therefore, is inequitably distributed and limited to those who can afford it. Recognising this, e-bike subsidy schemes have emerged around the world, with scholarly reviews revealing 228 schemes operating in Europe and 78 in the Americas (Sutton, 2023). Preliminary evaluations of these schemes show immediate efficacy in addressing e-bike affordability for people on low incomes, as well as success in promoting e-bike use for short trips, often replacing trips by car. While popular world-wide, there remain very few e-bike subsidy schemes of this nature operating in Australia. The *Transformers* scheme was one of these, operating in Parramatta, Western Sydney.



Transformers was small-scale and managed primarily by a Social Enterprise – The Parramatta Bike Hub (PBH, operated by Addvantageous Bike Community), in collaboration with City of Parramatta. PBH partnered with two e-bike providers to give members of the community subsidised access to a bike for an eight-week period. After eight weeks, participants can either continue with a lease at a rate below the market rate, or they can return the bike. A key feature of the program, however, was that it was not simply a subsidised scheme. Over the course of the program, participants developed their skills and confidence through real-world accompanied riding, guided group sessions, and practical education on safety, maintenance, and travel decision-making. Over the course of 2025, 42 people participated in the program.

The aim of the research presented in this report is to evaluate the impact of the *Transformers* e-bike subsidy program, both from the subjective perspectives of users and objective measures of the e-bike experience. The study seeks to inform future policy and program design for active transport initiatives, with the hope of furthering knowledge on the impact and potential uptake of such schemes in the Australian context. More specifically, this research seeks to show that access to equipment and infrastructure alone is unlikely to lead to sustained behaviour change. Instead, sustainable transport transitions must prioritise building capability, safety awareness, and social connection as essential components of long-term change.

2. Methodology

2.1 Case study setting

Transformers operates in Greater Western Sydney - a highly culturally diverse and rapidly growing part of the Sydney Greater Metropolitan Region, home to approximately 2.7 million residents, or around half of the population of the Sydney Metropolitan Region.

Greater Western Sydney is situated on the lands of multiple First Nations peoples, most prominently the Dharug (Darug) Nation, whose Country extends across much of the Cumberland Plain and along the Parramatta, Hawkesbury–Nepean and Georges river systems. For tens of thousands of years, Dharug clans such as the Burramattagal, Wangal, Bidjigal, and Cabrogal maintained deep cultural, spiritual and economic connections to land and waterways, using fire-stick farming, fishing, hunting and complex systems of trade, ceremony and governance to care for Country. The region also borders and intersects with the Countries of the Gandangara, Dharawal/Tharawal, and Darkinjung peoples, reflecting Western Sydney's long history as a place of movement, meeting and exchange. Since colonisation in 1788, these communities experienced profound dispossession, violence and disruption, yet First Nations peoples have remained present in Western Sydney, which today is home to the largest urban Aboriginal and Torres Strait Islander population in Australia.

The region exhibits pronounced socioeconomic diversity, encompassing some of the most disadvantaged communities in metropolitan Australia alongside areas of relative affluence; median household incomes in Greater Western Sydney local government areas remain below the Sydney average, while household sizes are larger and rates of mortgage stress are higher in many suburbs (ABS, 2021). Western Sydney is also one of the most culturally diverse urban regions in the country, with around 41% of residents born overseas, compared with 39% across Greater Sydney, and a majority of households speaking a language other than English at home in several LGAs, reflecting longstanding patterns of migrant settlement since the postwar period (ABS, 2021). Geographically, the region covers a large and varied area extending from established inner west centres to outer growth corridors, characterised historically by lower residential densities and comparatively limited access to high frequency public transport, contributing to higher car dependence than in eastern Sydney. While recent decades have seen significant investment in roads, health, education, and major projects such as the Western Sydney Airport and new metro and light rail lines, access to public transport and urban infrastructure remains uneven across the region. Within the wider Sydney metropolitan area, Western Sydney plays a critical role as the city's primary population growth engine and an emerging employment, logistics and innovation hub, while continuing to face structural challenges related to transport accessibility, spatial inequality, and climate exposure.

Within this context, various community enterprise initiatives have emerged to address inequity and cater to diversity, providing valuable and often uniquely tailored support services to the population. The Parramatta Bike Hub (PBH) is one such service. PBH is a community based social enterprise and active transport facility located along the Parramatta River at Wilson Park, Silverwater, on Wangal Country. It operates as a multipurpose cycling hub designed to increase

access to cycling by combining bike library, education, repair, and community programs in a single, highly accessible location.

PBH is operated by Addventagious, a for purpose organisation that delivers cycling education, confidence-building programs, and wellbeing initiatives for individuals, schools, workplaces, and community groups. Programs focus on safe riding skills, inclusive participation (particularly for women and beginners), and using cycling as a tool for physical health, mental wellbeing, and social connection.

A central component of PBH has always been its Community Bike Library, which allows members to borrow bicycles and cycling equipment rather than owning them, reducing cost barriers, encouraging trial and uptake, and diverting bikes and parts from landfill. This model supports people who may not otherwise be able to afford a bike or who want to try cycling for transport or recreation without long-term commitment. It is from this model that the Hub expanded to offer participants a trial of e-bikes, using existing commercial e-bike lease providers to develop a formalised, subsidised training program - *Transformers*.

2.2 About the program

Transformers was a structured eight-week trial combining e-bike access with skills training, education and supervised riding. The trial was delivered by Addventagious in partnership with the City of Parramatta, suppliers Zoomo and Lug + Carrie, Bicycle NSW, and the University of Sydney. More specifically, the program was led by Charlene Bordley - a leading cycling advocate whose work has significantly expanded participation and inclusivity in cycling across Western Sydney.

Delivered throughout 2025, the program provided participants with financially subsidised short-term access to an e-bike, combined with structured education sessions, guided rides, and ongoing support all provided in a group environment over an eight-week period. Its core aim was to provide supported access to equipment that is often expensive to purchase outright, enabling participants to explore whether e-bikes could provide a more affordable and practical transport option by building the confidence and skills needed to use them for everyday travel.

Promotion across Western Sydney used printed materials, newsletters, word of mouth, and local partnerships, particularly with the City of Parramatta Council, to reach communities facing barriers to cycling such as cost, confidence, and access to equipment. Outreach efforts included targeted engagement at Parramatta Square and Western Sydney University, although this generated limited uptake. Later program tranches were based at Harris Park Community Centre, leveraging existing relationships and aligning with the program's goal of engaging culturally diverse communities with limited access to affordable transport. Interested participants registered online, attended an information session, and completed a practical e-bike skills assessment to confirm their suitability and readiness.

Suitable participants were allocated to tranches scheduled across the year to refine delivery and manage group sizes, with the maximum group size capped at ten. Participants selected either a standard or cargo e-bike and, over eight weeks, attended weekly education sessions combining skills training, safety guidance, and guided rides, while also using the bikes independently for daily travel. The weekly program followed a structured progression from foundational skills to more complex riding environments. Rides were typically planned at around 10 kilometres, based on an average riding pace of approximately 10 kilometres per hour. This allowed sufficient time for skills practice, rest stops, discussion, and supported group riding. In some cases, participants travelled up to 10 kilometres to attend sessions, meaning total riding distance could reach up to 30 kilometres return. Route planning therefore considered participant starting locations to ensure the overall physical load remained achievable and supportive. Ongoing support and safety monitoring were provided throughout, with e-bikes returned at the program's conclusion or earlier if participants withdrew.



Program leader, Charlene, introducing Transformers participants

A key feature of the program was its emphasis on supported learning rather than simply providing access to bikes. It demonstrated a flexible, participant-centred approach, with strong emphasis on support, communication, and safety throughout. Participants developed their skills and confidence through real-world riding, guided group sessions, and practical education on safety, maintenance, and travel decision-making. This approach recognised that access to equipment alone is unlikely to lead to sustained behaviour change, and instead prioritised building capability, safety awareness, and social connection as essential components of long-term uptake.

The trial ran between January and December 2025 and comprised an initial pilot group followed by five delivery tranches using the scheduled described below.

Program Schedule

Session	Focus	Example Route	Key Learning
1		Information session including skills assessment.	
2	Getting familiar with the e-bike and defensive riding foundations	River Walk, Newington Armory, wetlands loop.	Core e-bike setup, controls, braking and balance. Practice smooth starts/stops and safe handling in low-pressure conditions.
3	Hills, gears, and riding together	Parramatta Valley Cycleway, Rydalmere industrial area, Light Rail Active Travel Corridor.	Build confidence using gears and managing hills. Develop group riding skills across shared paths and low-traffic roads.
4	Hazard awareness, road positioning, and introduction to roundabouts	Louise Sauvage Cycleway to M4 Cycleway via Silverwater.	Develop hazard awareness and safe road positioning. Introduce roundabouts with guided practice in low-traffic settings.
5	Linking infrastructure and route decision-making	Harris Park, Alfred Street cycleway, Heritage Triangle, foreshore routes.	Learn to link streets, paths and crossings into viable routes. Compare road vs path choices and practise end-of-trip parking.
6	Exploring the cycling network and infrastructure	Westmead, Parramatta Park, Constitution Hill, T-Way cycleway.	Compare infrastructure types and understand how networks connect across longer distances.
7	Riding in light traffic	Olympic Park loop, Haslams Creek, Woo-la-ra (Silverwater Marker climb).	Build confidence riding in light traffic, focusing on visibility, communication and predictable behaviour.
8	Consolidation, reflection, and program completion	Olympic Park to Bicentennial Park via wetlands	Consolidate skills and confidence. Reflect on progress and return e-bikes.

2.3 Data collection

For the purposes of evaluation, a mixed-methods approach was deployed, with a primary emphasis on qualitative data collection. The process involved three online participant surveys at different stages throughout the program, a 45-minute in-depth interview with participants, and the use of tracker data from trackers attached to each bike. More detail of data collected, timing and its use in the study is provided in Table 1.

Table 1: Data Collected

Data Source	Description	Stage / Timing	Use in the Study
Online Survey (10 mins each)	- Subjective recall of travel behaviour (usual transport mode, trip destinations, distance and time spent travel). - Health measures: minutes of physical activity using the validated one item scale (Milton, 2008), quality of life using the WHOQoLBREF validated scale (overall and environmental domains) (Murphy et al., 2000) and social isolation using the Ending Loneliness together 1-item scale (ELT, 2021) and the 3-item University of California UCLA score (Russell, 1996). - Subjective evaluation of bike confidence, efficacy, motivation. - Travel behaviour (mode/destinations accessed). - Socio-economic and demographic data (age, income, household composition, level of education, ethnicity).	3 surveys: 1. before commencement of the trial 2. in weeks 6-8 of the 6-week trial (FU1*) 3. 3 months after the completion of the trial (FU2*)	Quantitative evaluation
In-depth Interviews (online, zoom) (30-60mins)	Interviews examined participants' experiences of e-bike use during the trial, including motivations, patterns of use (how and when), and perceived advantages and disadvantages. They also addressed post-trial intentions, anticipated barriers to continued use (e.g., cost, infrastructure, practical constraints), and potential enablers (e.g., incentives, facilities, increased confidence). Participants' travel histories were captured to contextualise responses, including prior modes and observed changes in travel behaviour.	During (after the sixth week of the trial, at a date selected by the participant)	Qualitative evaluation
Usage data	Trackers provided by See.Sense were attached to each designated bike to monitor number and duration of trips and where the e-bike was ridden as well as surface quality and near miss data.	During	Triangulation

*FU – Follow up surveys 1 and 2

As outlined in Table 1, two sources of quantitative data collected over the course of the project. Online surveys captured self-reported travel behaviour, health outcomes, and participant characteristics. Delivered at three time points: prior to the intervention, immediately following the trial, and at approximately eight-week follow-up. The survey provided insights into the experiences of the intervention as well as short-term and sustained changes. In addition, usage data were collected through See.Sense e-trackers attached to each e-bike during the trial period. These data provided detailed insights into actual riding behaviour, including trip frequency, duration, and routes taken, and were used to complement and triangulate findings from the survey and qualitative components of the study.

Participant Recruitment

Broadly, the target population for this research project were participants in the *Transformers* Scheme. Participants were recruited through the Parramatta Bike Hub and invited to take part in a six-week e-bike trial. Inclusion criteria specific to the research project were:

- Live, work or study in the Parramatta Council area.
- Be proficient enough in spoken and written English to ensure the clear communication of instructions and meaningful participation in survey and interview tasks.
- Be willing to participate in three surveys and one in-depth interview over the course of the eight-week trial.

The research project recruited 29 participants in tranches of up to nine people using a staggered step wedged design, guided by the rate at which people signed up to the *Transformers* Scheme. Participants were recruited through social media, local Council advertising and events/marketing, and word of mouth. Participants in the trial first completed an EOI and were then contacted by the project team with a link to complete the first survey as well as a request for suggestions for a date and time for the in-depth interview to occur between weeks four and eight of the trial.

Ethics

Ethical approval for the project was obtained from the University of Sydney Human Research Ethics Committee (Ref: 2024/HE001643). All participants were provided with a Participant Information Sheet if they indicated their interest in the EOI stage. They were advised they could opt out of the research component any stage. All participants provided informed consent, which was reconfirmed during the interview.

Statistical Analysis

Data analyses were conducted for small sample sizes using conservative and nonparametric analysis. Descriptive analysis of survey data was conducted across the three data waves (baseline, FU1 and FU2). Frequencies of proportions were calculated across all quantitative health and transport outcomes. Likert scale responses were predominantly collapsed from five to three point categories for analysis to strengthen statistical robustness. Changes in outcomes between baseline and post-intervention follow-up were assessed using paired

statistical tests. Paired-samples t-tests were used for continuous variables, while Wilcoxon signed-rank tests were applied to ordinal outcomes. Sensitivity tests were undertaken to reduce type ii errors of the small sample size characteristics of the study with initial significance set at $p < 0.2$. All tests were two-tailed with reported significance set at $p < .05$.

E-tracker data was cleaned to remove data recorded outside the tranche ranges and unassigned to participants. Speeds over 35km/hr were removed as unlikely to be at a speed made by the bicycles in the study (48 observations were removed). The top speed for unassisted pedal bicycles used in the study is 25km/hr. Trips between 25km/hr and 34km/hr were included as possible when peddling, especially downhill. It was highly possible based on participants sharing and GPS spatial patterns that journeys with/without a return trip along the light-rail were being undertaken. This would explain some outliers. Other outliers for distance, speed and duration may be due to individuals having joined group rides at a slower speed, shorter distance or time however ridden further/less, faster/slower, shorter/longer times on their own. Analysis of frequencies (total, mean, median) and range (s.d, IQR) were taken of all trips made by individuals and the whole sample.

All statistical analyses were conducted using Stata version 15 (StataCorp, College Station, TX, USA).

Qualitative Analysis

All interviews were conducted by a single researcher (Kent). After each interview, the interviewer wrote a post-interview coding memo which was combined with interview transcripts to form the data for analysis (Lincoln and Guba, 1985).

Analysis was undertaken in stages during and after data collection, using both manual and automated methods. As a first step to summarise the data and gain familiarity across the themes and discussions, the research team used the AI tool, Co-Pilot, training the tool to extract core thematic quotes and attributes from transcripts (positive experiences; negative experiences; the value of the *Transformers* project; changed travel behaviour; infrastructure; skills and confidence; recommendations for future programs). In parallel, two members of the team applied an *a priori* thematic coding frame manually to both transcripts and memos based on the concepts of social practice theory (after Shove et al., 2012, as reviewed by Kent, 2021), with particular focus on the integration of barriers and enablers as material, emotional and socio-cultural. From there, the team used axial coding to synthesise the Co-Pilot coded attribute data with the thematic coding (following Christou, 2024) to inform the themes presented in this report.

To establish trustworthiness, the team applied Lincoln and Guba's framing to satisfy the conditions of credibility, transferability, dependability and confirmability (Lincoln and Guba, 1985). Bias was minimised and accuracy enhanced through regular peer debriefing throughout the analysis process and the use of reflexive journaling. In addition, post-analysis, five participants were contacted 'member check' interpretations. Finally, the contextual details provided through this report and the use of quantitative survey data ensure the research is transferable to other contexts as well as traceable for future research.



Integration

While a mixed-methods approach is adopted for the project, the research findings presented in this report are centred on the qualitative interview-based component of the study, with survey and tracker data used to validate the reliability of the qualitative thematic analysis given the sample is a pilot study. As such quantitative outcomes are indicative and demonstrate possible correlations and the potential for a larger study to be conducted to provide higher statistical power.

3. Results

Participants in the *Transformers* trial reported changes in travel behaviour during the program, increased confidence, and strong appreciation for the program's structure and support. The trial enabled participants to replace car trips with e-bike journeys, explore new areas, and engage more actively with their communities. Overall, the findings presented a positive experience with e-bikes in Western Sydney and with the program, regardless of previous experience cycling in urban areas.

The following section first reports the results of the quantitative components of the study which is followed by the qualitative data which details participants' emotional and practical responses to the e-bike experience, factors that affected their ability to cycle and their intentions for cycling after the trial.

3.1 Participant characteristics

Participant characteristics are presented in aggregate form (Table 2) consistent with quantitative reporting conventions, while individual attributes are selectively incorporated into qualitative analysis to contextualise participant experiences.

Table 2: Baseline characteristics of participants (n=27)

Sociodemographic characteristics		N(%)
Gender	Female	15 (56%)
	Male	11 (41%)
	Non-binary	1 (4%)
Age	26 to 35	3 (11%)
	36 to 45	3 (11%)
	46 to 55	8 (30%)
	56 to 65	11 (41%)
	66+	1 (4%)
	missing	1 (4%)
Employment status	Employed Full time	14 (52%)
	Employed Part time/Casual	5 (28%)
	Volunteer	1 (4%)
	Student	1 (4%)
	Retired/Pensioner	4 (15%)
	Other	2 (7%)
Last time rode a bike?	In the past month	16 (59%)
	In the past year	8 (30%)
	In the past 5 years	3 (11%)
Own a manual bike	Yes	22(81%)
	No	5 (19%)
Ever used an e-bike	Yes	12 (44%)
	No	15 (56%)
Modes of transport used regularly*	Bus	21(78%)
	Car (alone)	23 (85%)
	Car (pool)	5 (18%)
	Train/metro/light rail	21 (78%)
	Ferry	8 (30%)
	Taxi/uber	9 (33%)
	Bicycle	10 (37%)
	Walk	21 (78%)
Main reason for joining the trial	Environment	4 (15%)
	Exercise	5 (18%)
	Avoid car use	7 (26%)
	Get places easier	3 (11%)
	Save money	2 (8%)
	Access to bike paths	2 (8%)
	Enjoy transport	4 (15%)
Stage of contemplation	Thinking about e-bike	11 (41%)
	Ready to start riding	14 (51%)
	Started riding e-bike and ready to commit	2 (8%)

**responses not mutually exclusive*

The sample is slightly skewed toward women (56%), with most participants aged between 46 and 65 years (71% combined), suggesting an older cohort. Over half were employed full time (52%), though a notable proportion were retired or pensioners (15%) or working part time/casually (28%), indicating a mix of working and semi-retired individuals. Cycling experience was generally recent, with 59% having ridden in the past month and 81% owning a manual bike, although less than half (44%) had ever used an e-bike. Participants reported diverse transport habits, most commonly using cars (85%), public transport such as buses and



trains (both 78%), and walking (78%), highlighting multimodal travel patterns. The main motivations for joining the trial were avoiding car use (26%), exercise (18%), and environmental concerns (15%). In terms of readiness to adopt e-bikes, over half (51%) were ready to start riding and 41% were already considering it, suggesting a largely motivated group with positive intentions toward e-bike uptake.

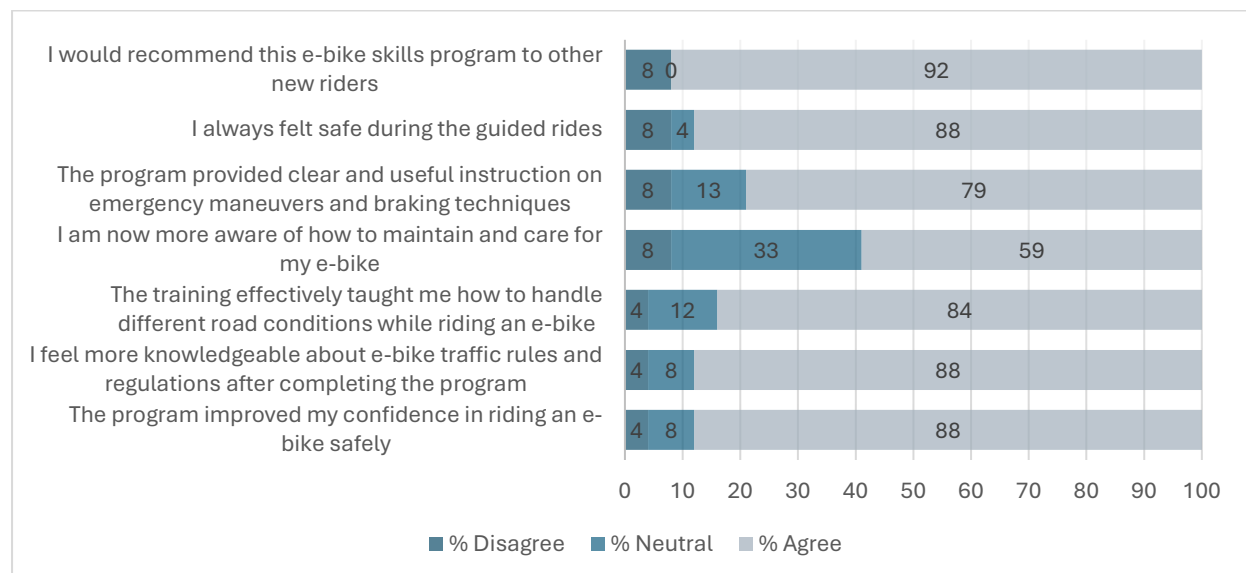
Taken together, the sample largely reflects a group of novice or infrequent cyclists embedded in travel routines that do not include the use of a bike, suggesting that the trial engaged participants for whom e-bike uptake represented a meaningful behavioural shift rather than an extension of existing cycling practices.

3.2 Quantitative analysis

Attitudes towards the program

At FU1 – towards the completion of the program - participant perceptions were overall positive, with 88% stating that they would recommend the program to other new riders (Figure 1). The majority strongly agreed that the program had given them skills and knowledge gaining confidence in riding (67%), handling difficult roads (63%), feeling safe (59%) and knowledgeable (59%). One participant had a more challenging experience, and noted a lack of family support and a negative experience with route-finding as issues in interviews and open-ended responses.

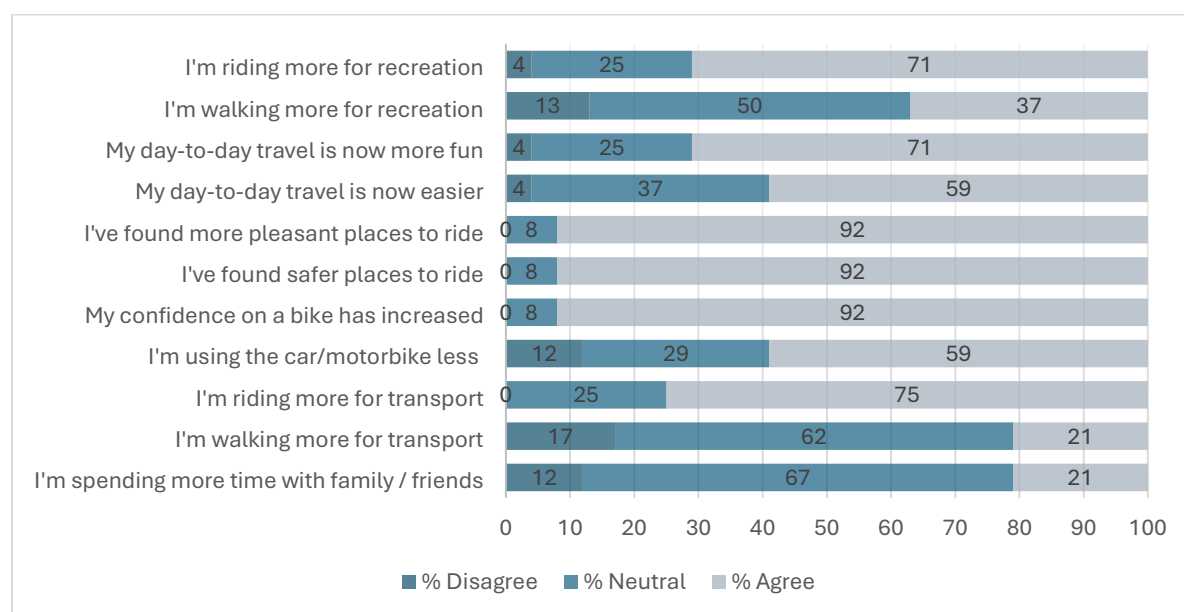
Figure 1: Attitudes towards the program “to what extent do you agree or disagree with the following” (n=24)



Perceptions about the program

At FU1, overall perceptions about the program were positive (Figure 2). Almost all agreed that their confidence on the-bike had increased (92%), that they were able to find more pleasant places to ride (92%) and these were safer places (92%). More than half also agreed that they were riding more, particularly for recreation (51%), and that they were using the car less as a result of the program (59%). Most also said that their daily travel was now more fun (71%).

Figure 2: Behaviour and perceptions on completing the eight-week program



Destinations accessed by bicycle

Participants were asked about the destinations they accessed on the e-bike, such as places of work or education, shops and services, recreational area, friends' places or schools. At FU1, the majority of participants reported travelling to local shops, or to open recreational areas at least weekly. One person indicated they commuted to work daily at this time, and one indicated that they visited recreational areas daily. At FU2 participants were asked whether they accessed any of these destinations either using a bike or an e-bike. Travel by both modes was reduced, with about half of participants noting they did not travel to any of the destinations on a bike/e-bike at this time (Table 3).

Table 3: Destinations accessed in the past eight weeks

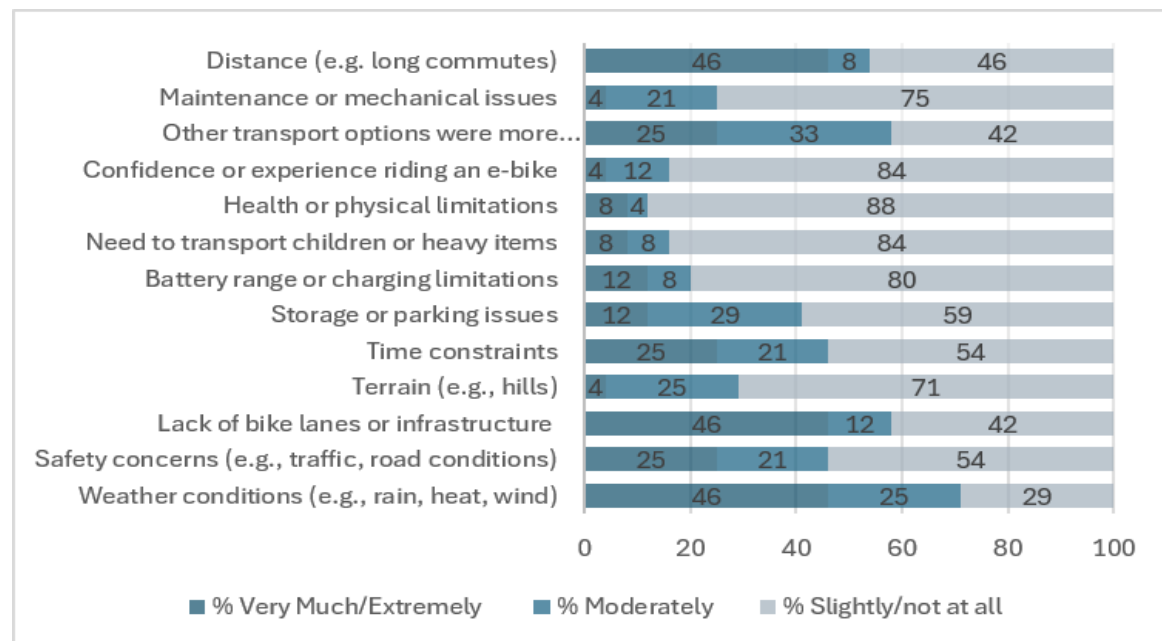
		FU1 (n=24)		FU2 (n=22)	
		n	%	n	%
Local shop or supermarket	Never/not once	5	22	10	46
	Once over the last 8 weeks	4	17	3	14
	Once every few weeks	3	13	3	14
	Once a week	4	17	4	18
	2-3 times a week	7	30	2	9
	Daily	0	0	0	0
Work, education or training institute	Never/not once	10	43	14	64
	Once over the last 8 weeks	0	0	1	5
	Once every few weeks	2	9	1	5
	Once a week	4	17	2	9
	2-3 times a week	6	26	3	14
	Daily	1	4	1	5
Takeaway shop, restaurant, cafe, pub or bar	Never/not once	6	26	11	52
	Once over the last 8 weeks	2	9	1	5
	Once every few weeks	8	35	3	14
	Once a week	3	13	4	19
	2-3 times a week	4	17	2	10
	Daily	0	0	0	0
Local services (e.g. bank, chemist, library, doctor)	Never/not once	7	30	13	59
	Once over the last 8 weeks	3	13	2	9
	Once every few weeks	3	13	4	18
	Once a week	7	30	2	9
	2-3 times a week	3	13	1	5
	Daily	0	0	0	0
Open recreation area (e.g. park or other green space)	Never/not once	2	8	7	33
	Once over the last 8 weeks	1	4	1	5
	Once every few weeks	5	21	6	29
	Once a week	6	25	3	14
	2-3 times a week	9	38	4	19
	Daily	1	4	0	0
Family or friend's house	Never/not once	14	61	18	82
	Once over the last 8 weeks	2	9	1	5
	Once every few weeks	5	22	1	5
	Once a week	1	4	2	9
	2-3 times a week	1	4	0	0
	Daily	0	0	0	0

Barriers to participation

Towards the end of the program, participants were asked about the things that prevented them from using the e-bike more for transport or recreation (Figure 3). For transport-related barriers:

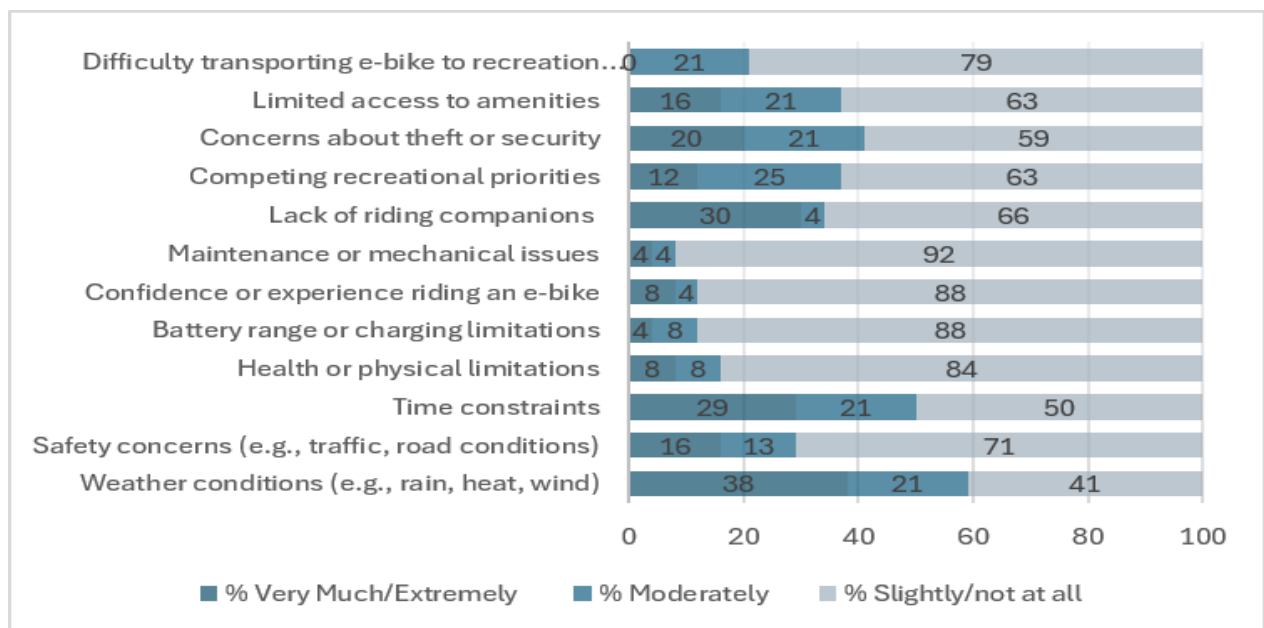
distance, weather and lack of bike infrastructure prohibited use at FU1) were noted as high reasons for not using the e-bike over the period of eight weeks (very much or extremely – all 46% at FU1). Barriers such as battery power, health limitations, maintenance and the need to transport children or heavy items were reported only slightly or not at all by participants.

Figure 3: Barriers to e-bike use (transport) (n=24)



For recreational purposes (Figure 4), barriers to using the e-bike for recreation were rated less severely, with the highest being for weather (38% very much or extremely concerning at FU1), lack of riding companions (30%) and time constraints (29%).

Figure 4: Barriers to e-bike use (recreation) (n=24)



Social support

A series of questions asked whether participants felt supported to use their e-bike for transport and recreational purposes during the program. Figure 5 shows the level of agreement with social support provided by friends and family for transport purposes. The majority felt they agreed or strongly agreed they had someone they could ask for help about e-bike commuting and that their family supported their use of an e-bike for transport (both 67% agreement at FU1). Agreement was higher for recreational purposes with all reasons asked receiving more than 60% agreement (Figure 6).

Figure 5: How supported do you feel using your e-bike for transport? (n=24)

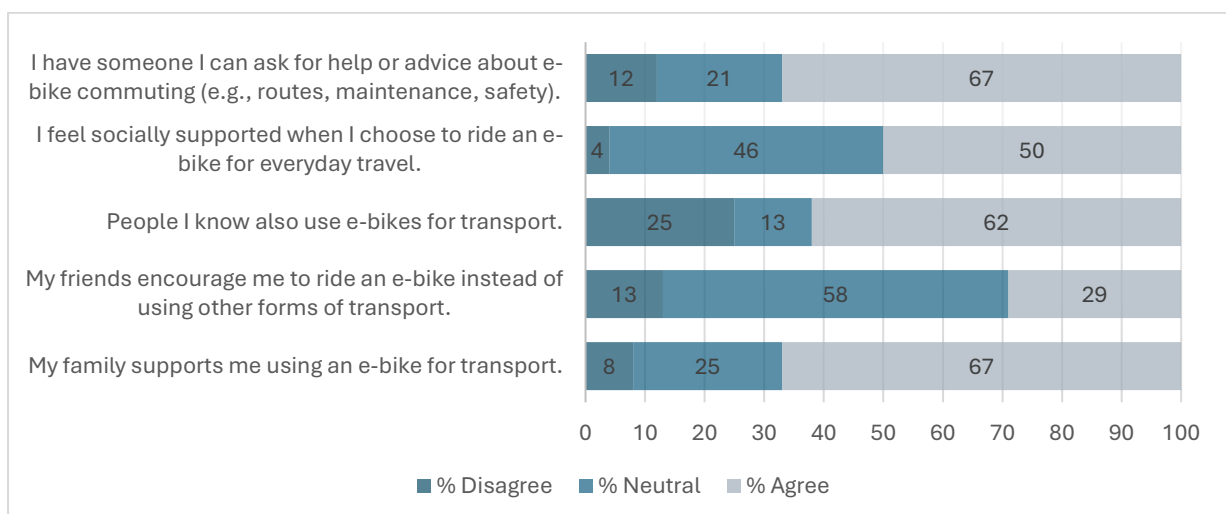
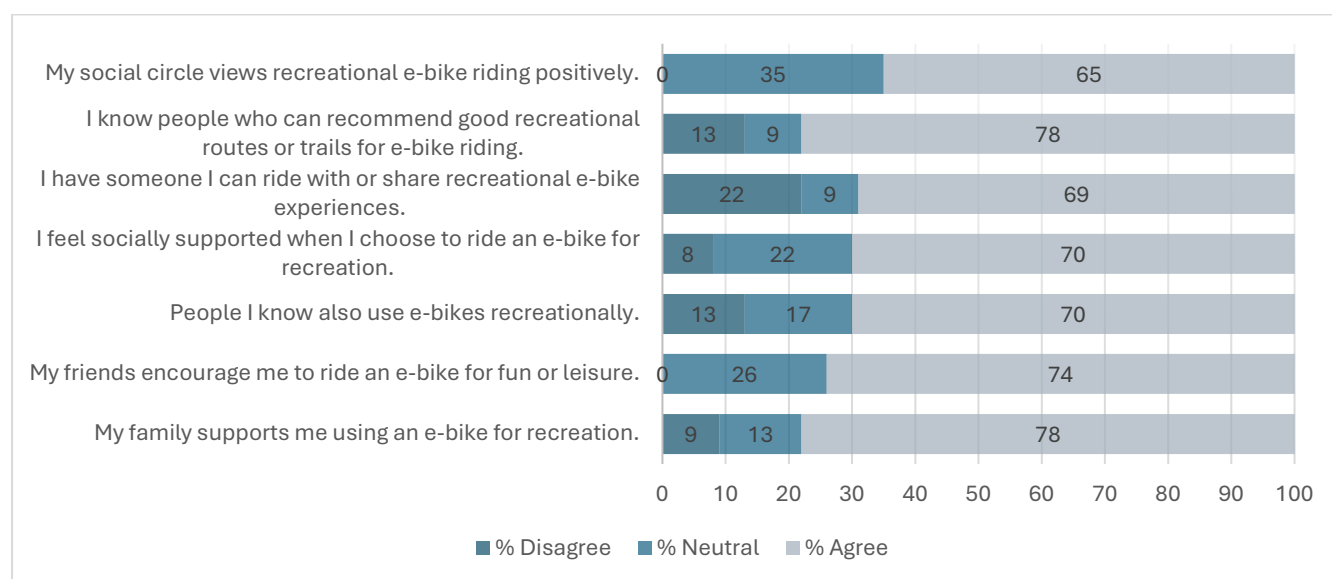


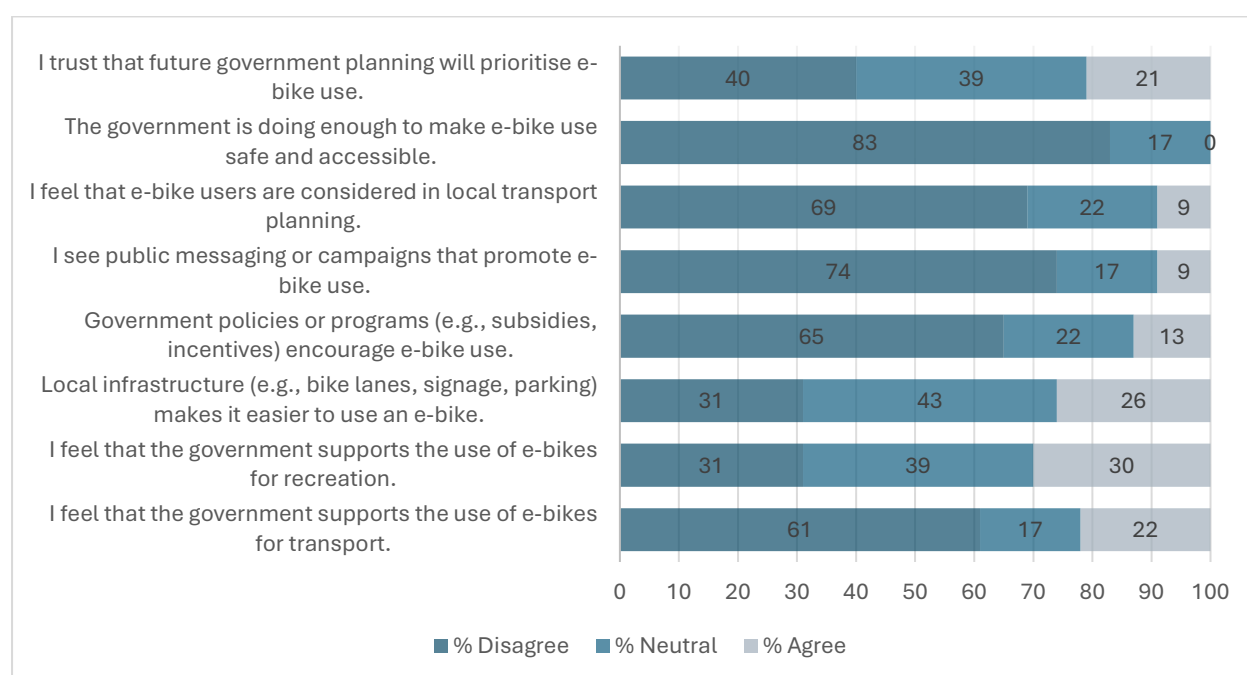
Figure 6: How supported do you feel using your e-bike for recreation? (n=24)



Perceptions about government intervention

Towards the end of the eight-week program participants were asked about their agreement with a series of questions about government support for e-bike use (Figure 7). Agreement was generally low with only one person strongly agreeing that the government supports the use of e-bikes for recreation, the majority either disagreeing or were neutral in their assessment. Similarly, participants noted low agreement that the government will prioritise e-bike use. The majority felt that government policies and programs did not encourage e-bike use, that government wasn't doing enough to make e-bike use safe and accessible, or that e-bike users weren't considered in local transport planning. Perceptions were also low in agreeing that public messaging or campaigns promote e-bike use.

Figure 7: Perceptions about government support for e-bikes (n=24)



Post intervention intentions and use

At FU1 participants were asked about their future intentions to use an e-bike (Table 4). The majority (n=15) intended to investigate purchase of another e-bike, and 2 participants intended to continue using the-bike they had by signing up to a paid subscription. By FU2 five participants indicated that they still had access to an e-bike, indicating either continuation with the subscription or a new purchase. Only one participant stated that they would not ride an e-bike again.

Table 4: Intentions and use of e-bikes following the program (FU1 and FU2)

Intentions and use towards the end of the program		N=24
What are your next steps in terms of having and using an e-bike?	Keep the e-bike you're currently using.	2 (9%)
	Return the-bike you are using and purchase another e-bike or e-bike subscription.	15 (63%)
	Return the-bike you are using and go back to using your old bike.	5 (22%)
	Return the-bike you are using and not ride an e-bike again.	1 (4%)
Intentions and use at 3 months		N=22
Do you currently have access to an e-bike?	% yes	5 (23%)

Changes in health outcomes

Physical activity

Table 5 shows the average and mean(sd) reported days and minutes of physical activity (PA) across the sample and waves. The average number of days participants participated in PA was 4 days/week across all three waves. The difference in minutes of PA between baseline and follow-up time points was not statistically significant. PA was not significantly different from baseline to FU1 ($t(19)=0.16$, $p=0.874$) and from baseline to FU2 ($t(20)=0.682$, $p=0.504$).

Table 5: Changes in physical activity from before and after the e-bike intervention.

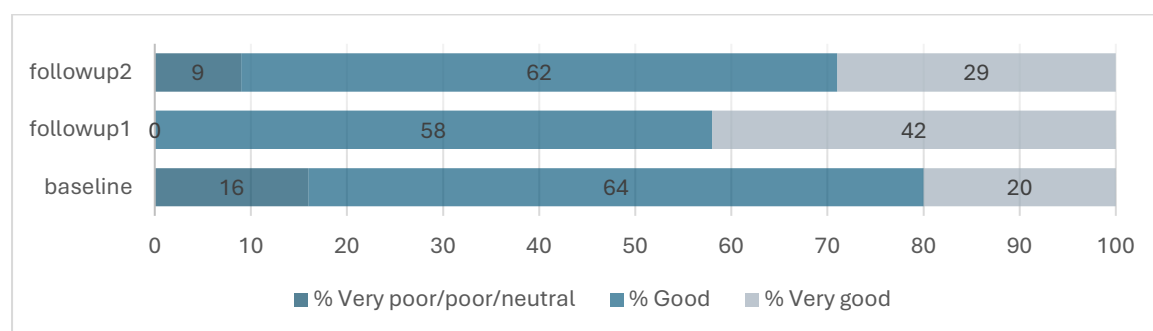
Wave	N	Median (IQR)	Mean (sd) Days	Mean (sd) minutes	Mean change β (SE)	95% CI	p- value
Baseline	25	4 (3-5)	4.2 (1.63)	126.0 (48.99)			
Follow up 1	24	4 (3-6)	4.13 (1.87)	123.8 (56.17)	3(18.71)	-36.16 to 42.16	0.874
Follow up 2	21	4 (3-4)	3.71 (1.42)	111.4 (42.58)	12(17.60)	-24.84 to 48.84	0.504

Quality of life

To assess changes in quality of life (QoL) we used the Australian version of the WHOQoLBREF. Overall quality of life was compared between baseline, FU1 and FU2. Figure 8 compares the frequency of responses across the sample of participants. At baseline $n=4$ participants reported less than good QoL. Overall QoL was higher post intervention at FU1 compared with baseline with no participants reporting less than good QoL overall at the end of the eight-week intervention. The within person differences in QoL at FU1 (Median(IQR) 4(4-5)) were significantly higher than reported at baseline and the effect was large ($z=2.44$, $p = 0.031$, $r=0.55$) suggesting the program had a positive impact on overall QoL. At FU2, at 3 months post intervention QoL overall remained higher than baseline however had slightly decreased from FU1. These differences were modest and also not statistically significant ($z = 1.21$, $p = 0.257$, $r=0.27$).

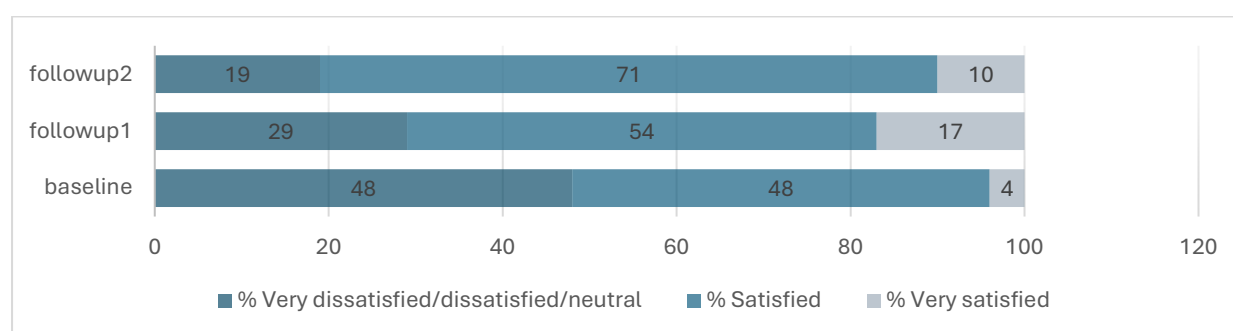
This suggests participants' overall quality of life improved significantly through the eight-week intervention, with no participants reporting less than good quality of life at follow-up, and although scores declined slightly three months later, they remained higher than baseline, suggesting sustained benefits.

Figure 8: How do you rate your quality of life over the past 2 weeks? (WHOQOLBREF)



The single item WHOQOLBREF question for Health satisfaction was also compared pre/post intervention. Health status was positively skewed (median(IQR) baseline=4(4-4), FU1 and FU2 both =4(4-5)). Overall health satisfaction increased from baseline to FU1, with more people satisfied or very satisfied at the end of the eight-week intervention than at baseline. Figure 9 contains frequency of responses across the likert scale as percentages. Where 52% of participants (n=13) reported positive satisfaction (satisfied or very satisfied) with health at baseline, by FUP1 this changed to 71% and rose higher at FUP2 to 81%. Post-intervention FU1 health satisfaction was statistically higher than scores reported at baseline, and the effect size was large ($z=2.21$, $p = 0.039$, $r=0.49$). When compared with baseline, FU2 health satisfaction remained significant and the effect size also large ($z=2.81$, $p = 0.001$, $r=0.63$). This suggests that health satisfaction was positively associated with the intervention and was maintained over time.

Figure 9: How satisfied are you with your health over the past 2 weeks?



The Environmental health domain of the WHOQOLBREF included eight questions which were collated into a final score out of 40. The eight items are listed in Table 6 below as a mean(sd), (with responses from 1-5 very poor to very good) across the sample at baseline, FU1 and FU2.

Table 6: Change in environmental health questions from the WHOQOLBREF

WHOQOLBREF Environmental domain questions	Baseline* (n=25)	Follow up 1 (n=24)	Follow up 2 (n=21)
<i>How safe do you feel in your daily life?</i>	4.12 (0.6)	4.46 (0.66)*	4.38 (0.59)
<i>How healthy is your physical environment? (e.g., pollution, noise, climate)</i>	3.76 (0.66)	4.04 (0.75)	4.10 (0.70)*
<i>Have you enough money to meet your needs?</i>	3.52 (1.05)	3.71 (0.96)	3.71 (1.15)*
<i>How available to you is the information you need in your daily life?</i>	3.88 (0.88)	4.17 (0.76)	4.52 (0.60)*
<i>To what extent do you have the opportunity for leisure activities?</i>	3.84 (0.90)	3.75 (0.94)	3.86 (0.85)
<i>How satisfied are you with your transport?</i>	3.64 (1.19)	3.67 (1.13)	3.86 (0.91)
<i>How satisfied are you with the conditions of your living place?</i>	3.76 (1.09)	3.88 (2.23)	3.91 (1.00)
<i>How satisfied are you with your access to health services?</i>	4.2 (0.82)	4.04 (1.04)	4.24 (0.63)

*mean(sd) given for each individual variable in score. * Mean difference to baseline <p0.05

Median and mean scores for the group over time are indicated in Table 7. Mean differences in participants WHOQOLBREF Environmental questions as a domain (Eqol) were not significantly different from baseline to FU1 ($t(19)=-0.58$, $p=0.569$), however differences were significant between baseline to FU2 ($t(20)=-2.65$, $p=0.016$) suggesting some improvement in quality of life, environmental domain over time.

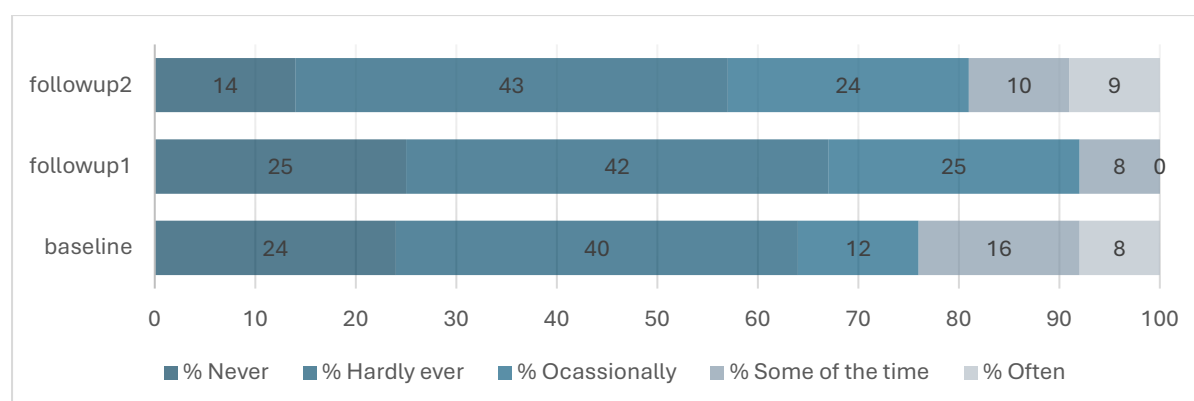
Table 7: Changes in Environmental QoL from before and after the e-bike intervention.

Wave	N	Median (IQR)	Mean (sd)	Mean difference β (SE) (n=20)	95%CI	p-value
Baseline	25	31 (29-32)	30.72 (3.86)			
Follow up 1	24	32 (28.5-34)	31.71 (4.34)	0.55 (0.95)	2.54 to 1.44	0.569
Follow up 2	21	32 (31-35)	32.57 (3.68)	1.85 (0.70)	3.31 to 0.39	0.016

Loneliness

Figure 10 shows changes in loneliness using the Ending Loneliness together (ELT) single item score. Feeling lonely (ELT) was reported by participants proportionally more at baseline than at follow-up, with 24% reporting some of the time or often lonely at baseline, and only 8% reporting some of the time at FU1 on completion of the intervention. Feelings of loneliness (some of the time or often) then increased to 19% by FU2 suggesting the program may have had a positive impact on social isolation and loneliness. These differences indicate some positive correlation. Overall compared to baseline, changes in feelings of loneliness were not statistically significant at $p < 0.05$: FU1 ($z = 1.70$, $p = 0.148$, $r = 0.38$) nor FU2 ($z = -0.90$, $p = 0.383$, $r = -0.20$).

Figure 10: How often do you feel lonely? (ELT)



Loneliness was also assessed using the 3-item UCLA Loneliness Scale, which measures perceived social isolation. Responses to the three items were scored on a five-point scale consistent with the ELT measure and summed to create a total score ranging from five to 15, with higher scores indicating greater loneliness. Mean and median scores at baseline and follow-up are presented in Table 8.

Table 8: Changes in social isolation from before and after the e-bike intervention.

Wave	N	Median (IQR)	Mean (sd)	Mean difference β (SE)	95% CI	p-value
Baseline	25	6 (5-9)	7.52 (3.49)			
Follow up 1	24	6 (4-8)	6.54 (2.64)	0.85 (0.49)	-0.18 to 1.88	0.101
Follow up 2	21	7(6-9)	7.71 (2.87)	-0.1 (0.61)	-1.38 to 1.18	0.872

Mean loneliness scores were lower at FU1 compared to baseline, suggesting a possible reduction in social isolation through the course of the program. At FU2, three months after the program, mean loneliness scores rose to baseline levels, again suggesting the interactions throughout the program were providing a buffer to isolation. These changes, however, were not statistically significant at $p < 0.05$. Using paired t-tests, differences in social isolation was not significantly different from baseline to FU1 ($t(19)=1.72$, $p=0.101$) and from baseline to FU2 ($t(19)=-0.16$, $p=0.872$).

Tracker data

Table 9 provides a summary of the e-tracker data collected for the study participants. In total there were 459 trips made by participants. The average number of trips made by participants was 48.4 trips, however this ranged between eight and 130 trips suggesting a wide variance. The number of days participants used their e-bike was an average of 21 days with the shortest period being 4 days and the longest being 36 days. The average duration of activity was 32 minutes and the average distance travelled was 6.49km, with the greatest distance travelled being 31km. The average speed of travel was 15km/hr, with most travelling 11-18km/hr (IQR), noting the maximum speed determined for inclusion set at 35km/hr. The total distance travelled by the group was 3,049km.

Table 9: Group average trips made, average and total time active, distance, speed

Sample	Mean (Sd)	Median (IQR)	Total (N)
Total # trips	48.42 (27.75)	40 (31 – 58)	459
Duration (minutes)	32.11 (26.07)	23 (12 - 49)	14,913
Distance travelled (km)	6.49 (5.77)	4.32 (2.31 – 8.65)	3,049
Speed (km/hr)	14.71 (5.95)	14.09 (10.88 - 17.95)	-

Individual averages and total trips are included in Table 10.

Table 10: Individual trips made, average and total time active, distance and speed

id	Total days travelled (n)	Total # trips (n)	Mean (sd) time (mins)	Total mins active	Mean (sd) distance (km)	Total km travelled	Mean (sd) speed (km/h)
1	6	14	52.33 (14.69)	330	9.21 (1.61)	62	13.13 (1.79)
2	4	13	51.5 (43.05)	206	10.61 (9.03)	42	16.89 (2.77)
3	27	51	42.41 (27.40)	1145	9.66 (6.33)	261	16.80 (2.87)
4	18	20	49.61 (17.49)	893	14.99 (4.97)	270	21.80 (4.40)
5	5	8	16 (16.01)	80	2.12 (0.61)	11	9.43 (1.92)
6	18	21	47.67 (23.56)	858	10.94 (5.33)	197	17.04 (2.96)
7	11	27	18.82 (15.43)	207	4.60 (3.27)	51	18.07 (4.13)
8	30	88	31.13 (29.52)	996	8.42 (9.24)	278	16.70 (4.44)
9	24	45	20.84 (18.71)	521	4.83 (5.16)	124	16.50 (5.69)
10	20	130	14.25 (17.92)	352	3.90 (5.39)	106	19.27 (7.06)
11	4	13	56 (21.18)	224	12.75 (6.22)	51	15.93 (6.41)
12	15	26	38.93 (23.82)	584	7.37 (4.86)	110	14.14 (3.68)
13	21	51	20.38 (17.53)	428	4.22 (3.76)	89	14.40 (3.52)
14	20	40	18.2 (15.43)	364	3.91 (2.40)	78	19.18 (5.92)
15	24	46	15.46 (12.75)	371	3.19 (1.74)	77	17.87 (6.52)
16	12	31	37.75 (19.81)	453	7.02 (3.54)	84	14.60 (3.01)
17	15	38	32.53 (31.06)	488	5.30 (4.26)	80	9.85 (3.09)
18	5	13	44.8 (30.46)	224	10.07 (8.39)	50	20.09 (9.10)
19	25	73	33.4 (21.14)	835	4.29 (2.58)	107	9.43 (3.81)
20	8	18	31.38 (27.41)	251	5.56 (3.58)	44	15.15 (9.32)
21	21	40	30.67 (29.58)	644	4.79 (3.57)	101	10.92 (3.71)
22	13	33	51.69 (32.32)	672	8.77 (5.53)	114	14.18 (8.80)
23	18	35	33.95 (31.66)	611	6.47 (5.95)	116	12.22 (4.37)
24	14	35	41.86 (23.55)	586	7.08 (4.30)	99	11.0 (3.02)
25	29	86	22.28 (21.71)	646	2.95 (3.16)	86	7.91 (3.36)
26	22	58	50 (31.91)	1100	9.37 (6.86)	206	14.86 (6.01)
27	15	31	38.33 (21.03)	575	6.16 (2.82)	92	12.64 (2.75)
28	10	24	17.70 (18.88)	180	4.38 (6.96)	45	13.64 (5.84)
29	5	12	16.40 (15.08)	89	2.95 (1.87)	17	16.61 (7.59)

Quantitative summary

Overall, participants reported very positive experiences of the eight-week e-bike program. By the end of the intervention, most participants felt the program had equipped them with the skills and knowledge needed to ride confidently and safely, including on more challenging roads. Nearly nine in ten participants said they would recommend the program to other new riders. Participants also reported greater confidence riding an e-bike, improved ability to identify safe and enjoyable routes, and greater enjoyment of their daily travel. More than half

reported riding more often, particularly for recreation, and many felt they were using their car less as a result of participation.

The e-bike was used for a range of transport and recreational purposes during the program. The most common destinations accessed by bicycle were local shops, recreational areas, workplaces and education settings. Recreational destinations were particularly prominent, with many participants riding to parks and green spaces at least weekly. Three months after the intervention, however, bicycle and e-bike use had declined across most destination types, with around half of participants reporting no bicycle trips to many of the destinations examined. This reduction is consistent with the finding that only a minority of participants still had access to an e-bike at the three-month follow-up.

Participants identified several barriers that limited more frequent e-bike use. For transport trips, distance, weather conditions and inadequate cycling infrastructure were the most commonly reported obstacles. Recreational riding was perceived as less constrained overall, although poor weather, limited time and not having companions to ride with remained notable challenges. In contrast, concerns such as battery range, bicycle maintenance, health limitations, or carrying heavy items were generally reported as minor barriers.

Social support for e-bike use was generally strong. Most participants felt they had family encouragement and someone they could ask for advice about riding, particularly for recreational cycling. Despite this positive interpersonal support, views about government support for e-bike riding were largely negative. Participants commonly felt that governments were not doing enough to support, promote or prioritise e-bike use, and that e-bike users were inadequately considered in transport planning and safety initiatives.

The program also appeared successful in generating ongoing interest in e-bike use. At the completion of the intervention, most participants intended to purchase an e-bike or continue with an e-bike subscription, and only one participant indicated they did not intend to ride an e-bike again. Three months later, approximately one quarter of participants still reported having access to an e-bike.

Changes in health and wellbeing outcomes were mixed. Self-reported physical activity levels remained relatively stable throughout the study, with no statistically significant changes in the number of days or minutes of physical activity undertaken each week. In contrast, measures of quality of life showed more favourable results. Overall quality of life improved significantly following the intervention, with no participants reporting poor quality of life at the end of the program. Although scores declined slightly three months later, they remained above baseline levels. Satisfaction with health also increased significantly following the intervention and these improvements were maintained at the three-month follow-up.

Results from the environmental domain of the WHOQOL-BREF indicated modest improvements over time. While changes immediately following the program were not statistically significant, environmental quality-of-life scores were significantly higher three months after the intervention. Improvements were observed in perceptions of safety, access to information, satisfaction with the physical environment and the ability to meet daily needs, suggesting potential longer-term benefits associated with participation.



Measures of loneliness and social isolation showed some indication of improvement during the intervention. Participants reported lower levels of loneliness at the end of the program, and scores on the UCLA Loneliness Scale suggested reduced perceived social isolation. However, these improvements largely returned to baseline levels by the three-month follow-up and were not statistically significant. This pattern suggests that program participation may have provided a temporary social benefit that diminished once the intervention concluded.

Objective tracker data demonstrated substantial engagement with e-bike riding during the intervention period. Across participants, 459 trips were recorded, covering a cumulative distance of more than 3,000 kilometres. Participants used their e-bikes on an average of 21 days, with rides averaging 32 minutes in duration and 6.5 kilometres in length. Considerable variation in riding behaviour was observed, indicating that while some participants used the e-bike occasionally, others incorporated it regularly into their everyday activities. Overall, the tracker data confirm that participants actively engaged with the e-bikes throughout the program period.

3.2 Qualitative analysis

Of the 27 participants engaged in the quantitative analysis, 23 participants participated in the interview phase. The following section reports the results of data analysis of these interviews by telling a story from the ways the e-bike was used, the positive and negative experiences as articulated by respondents, the impact of the program, and participant intentions once the program had finished.

Coming to the trial

Interviews began with questions about participants' day-to-day lives, including household composition, typical trip generators, and available travel options. Most participants lived in couple-based households, while a smaller number lived alone or in shared arrangements. Prior to the trial, travel behaviour was strongly oriented toward private car use, with public transport and walking also commonly reported, and cycling playing a relatively minor role. Most participants had only occasional or no prior experience with e-bikes. Consistent with this, most participants felt that before the program their confidence in cycling was low to moderate, with relatively few participants self-identifying as confident riders.

Experiences Riding an E-Bike

“So, where did you ride the bike?”....

After initial introductions, the interviews would progress to general questions about the way the e-bike was used. This was often met with detailed and enthusiastic descriptions of adventures, destinations and experiences. For example, Lois¹ - who used the e-bike for errands, grocery shopping, and trips to Parramatta - proudly described how she felt confident to ride to Parramatta train station by herself during the daytime, and even take her bike on the train:

“From my house to the train station, I ride that in the daytime many times. Yes. So, yeah, I'm quite confident. I'm very familiar with the route ...to get to the train station”. - Lois

Lois also became more confident riding at night, after joining a large group ride, and was excited to share plans to ride again in the warmer months (interviews were conducted in winter):

“I once joined a group of people, and they rode in Sydney CBD for a total of 26 kilometres at night! I think since then, even in the future I think yeah, I'm alright to ride in the nighttime. Yeah, but nowadays it's too cold.” – Lois

Skyler used the e-bike to commute to work, replacing bus and light rail trips:

¹ All participant names have been changed to protect anonymity.

“My office is space in Parramatta. When I did have the e-bike I rode all the way from home.–
Skyler

The e-bike enabled Shirley to travel further than she would on her manual bike, including trips to the gym and to her volunteering in her local area. She typically avoids driving in general, preferring to walk, cycle, or use public transport. The e-bike made using active transport rather than public transport more feasible, especially for uphill journeys and longer distances:

“...most of the volunteering I do is really apart from Sydney Olympic Park, [it] is in Canada Bay Council area. So it's quite local to me. I either walk, cycle or take public transport to all of those places, but I have a few months ago joined a gym which is on the northern side, which involves travelling uphill. So, I have never attempted to get there on my own manual bike. I've been wanting to try an e-bike for a while. And I just thought this is effortless to get to the gym to do my full class or whatever I want to do there, cycle home and not feel absolutely exhausted by the end of it, like knowing that I'm getting exercise. I'm out there and doing that active transport, which I definitely see the benefits too.....it got me further afield than I would normally be comfortable.” – Shirley

Julia replaced many car trips with bike rides, including grocery shopping, library visits, and café outings. At the time of interview, she was avoiding driving altogether as a result. Others used the e-bike for commuting, recreational activities and errands. For example, Chris mentioned he mostly used his to “go to the gym at West Ryde” because there was a good bike path most of the way. Similarly, Felix mentioned he used his bike recreationally, just to experiment with biking in the local area, and explore designated bike paths. Lois used the e-bike for commuting to work, because “it’s more fun than driving”.

On two wheels in a four wheeled world: environmental shapers and cultural contexts

A central aim of the qualitative component of the study was to provide deeper insights into some of the barriers and enablers to e-bike use in the context of participation in the trial. Although transport professionals often focus on the role of infrastructure in supporting transport transitions, the evidence suggests that socio-cultural and psychological barriers and enablers are also important. This is particularly the case for those assuming a new transport mode in an urban context where that mode has traditionally been marginalised. This section traverses this mix of determinants, starting with participants’ experiences with infrastructure and the materiality of the bike itself.

Experiences with infrastructure and the (heavy) reality of an e-bike

Most participants reported that dedicated cycleway infrastructure (such as a separated lane or shared bike paths) boosted their confidence. They spoke of feeling safer, and more able to relax and enjoy the ride. Importantly, however, they reported that the program had taught them how to locate these dedicated paths, and plan routes accordingly:

“I was so surprised to find out there are so many bike routes; “Yeah, so that's much more than I thought. So if I ride, if I need to ride a little bit long distance, then I think I might be able to find the-bike specific route for me to ride down so I will feel more confident”. – Lois

Through the program, Skyler who was already a confident rider, learned of all the new dedicated cycle routes that are being constructed in her local area, which enabled her cycling:

“The routes are all changing. We're getting all this new infrastructure. Yeah. And the infrastructure is fantastic. As I said, I wouldn't, I wouldn't have known that in those areas that there's such good bike paths, not just shared paths, but bike paths that although on roads, are separated” - Skyler

Although many were pleasantly surprised to learn there was more cycling infrastructure available than they realised, most relayed experiences of unsafe infrastructure and disconnected networks (see also table x below). Concerningly, there were several stories where the risk to safety was associated with other e-bike users as well as than cars:

“I've just found ... the roads around Epping ...there are a lot of sort of hoons that go on courier bikes and things like that. I find that a bit sort of freaky as well because cars just are not looking out for bicycles... I found that a bit worrisome.” – Ryan

Participants also faced physical challenges because of the weight of the e-bike, and the fact it didn't handle and store like a normal bike when not in use:

“And for me, it was atrocious because ... I'm actually quite short and I found the e-bike too heavy, too large, too high. I couldn't get used to it at all.” – Shirley

The weight of the-bike also came up in the context of combining bike trips with public transport or with trips by car:

“Look, it's not too bad. It's more just the physical weight of the bike. So manoeuvring it through the station and, you know, on taking the lift down to the platform, but then having to wait for the lift because there's a whole bunch of other people who also need to take the lift. And then physically getting it onto the train when there's quite a big gap between the platform and the train. And then depending on the time of day, it can be quite busy. And so then you kind of feel like you're in the way in the vestibule of the train.” – Bethany

“It's so heavy. It's such a heavy bicycle that I can't just pop it in the car” – Ryan

An inability to park the-bike safely was also a common infrastructural issue, with participants being afraid to leave a bike that wasn't their own in less than secure places:

“Well, we only stick to the local because like with this, maybe if I had my own bike, it might be different, but like I have to take the battery out when we go and we have to try and find some place to lock it up. And the battery is quite heavy. Maybe with my own bike, I wouldn't bother taking the battery out, but because I'm renting this bike, I don't want anything to happen.” - Eleanor

Skyler, Lois and Ryan also mentioned a lack of secure parking at their destinations as a barrier to using the e-bike more frequently:

“I get worried about my bike stolen... Yeah, I like to feel secure to like to park anywhere. Because for example, like, close to the bus stop. Yeah. Because sometimes I do take [the] M2 bus to go to the city. Yeah....I don't feel safe to lock near there. – Lois

“I don't like going shopping or to the local shops because there's nowhere safe to leave the bike, yeah. Yeah, let alone an e-bike, which I know that, you know, people are more susceptible to steal. Yeah, absolutely. You have to carry that very heavy battery around. You know, it's hard enough carrying a few bags of shopping when you're walk, like walking home or, you know, if you don't have the car to put everything.” - Skyler

“I think what I've learned with the e-bike too is it's so, I mean, I would have loved to have used the e-bike, but there's really not many places I could have parked it ... I would have been worried about parking it at the Ridge Street parking station in case it got stolen.” - Ryan

Fred also reported that the lack of secure parking was a barrier to taking the-bike on shorter-trips to the shops:

“It's only a couple of blocks, but there's no infrastructure for like safely parking your bike in the supermarket. And the same for when I went to my GP, there was no way for me to like really securely park my bike anywhere that made me feel confident. So, I've noticed that quite a lot around the outskirts of Parramatta. Like in the CBD, it's fine. There's lots of really great places. But once you start getting towards Westmead or Rose Hill, yeah, the excitement about bicycling is, it starts to wane, you know?” – Fred

Some participants, however, reported that ease of parking an e-bike compared to a car was a key enabler for them to choose the e-bike as a mode of transportation. For example:

“or the like shopping and things like that, I'd prefer to use the e-bike just because it was easier and more fun as well to get on the e-bike rather than take the car for like a short trip anyway. It just felt just as fast taking the e-bike and just simpler not having to try and find parking or things like that.” – Florence

Julia reflected that she has changed her habit of avoiding Parramatta CBD for everyday trips, because of the ease of parking that the e-bike brings, compared to driving:

“I've got a favourite cafe in Parramatta that I ride to now that I would have not gone to as the parking's terrible in Parramatta. I love if I go to Westfield, I can park like near the library. I just have no reason to *drive* into Parramatta really. And like, I don't want to.” – Julia

Experiences with (car)culture

In addition to the structural – built – context, travel behaviour is also shaped by cultural contexts including shared beliefs and values about what is “normal”, “desirable” or “acceptable” in cities. Several participants – particularly those with low confidence at the beginning of the program - reflected fears over personal safety while riding their e-bike in urban areas and associated this with feeling as though they were an outsider. Some of these fears came from a lack of confidence in their own skills, which the program supported them through.

For others, their personal fears were exacerbated by external social factors, such as the disapproval of family, and cultural attitudes in society towards cycling in urban areas.

Mai and Shirley mentioned that their families were hesitant for them to travel by e-bike because they felt it was unsafe for them. They indicated that this concern was broadly about travelling alone by bicycle and on busy roads. While Mai valued the independence and mobility offered by the e-bike, she only felt safe when she was travelling in a group. Shirley also mentioned that she had discussed riding a bike with her son, and he was not all that encouraging:

“Not denigrating it, but I mean my son, who lives in Canada, I've spoken to him about riding bikes. I think he was feeling cautious for me. ‘Oh, I wouldn't fancy doing that.’ When I say I've gotta get somewhere by 9:00 and it's peak hour traffic, you know, he say ohh, don't, you know? Wouldn't go on the road, but can't avoid it sometimes.” - Shirley

For others the idea of being an ‘outsider’ came to the fore when they attempted to combine the e-bike with public transport. Although Sebastian and Ryan experienced increased confidence during the group ride, they reported feeling intimidated about taking the e-bike onto the train, citing concerns about others’ perceptions:

“...going on public transport is intimidating with the e-bike because you feel that people are sort of, will have an issue with it.” – Ryan

“So, we went to West Ryde train station and even then, the e-bike that we had felt it was it was actually too big for the train. Yeah, it's because of the wheels, I guess it felt massive. Like, we're on the front of the doors and it's just like it was a little bit busy. But it felt like, you know, it was a bit of a public nuisance bringing my bike on the train. It wasn't like normal time, but it was just, it was moderately busy. It wasn't like super packed, but it was a little bit.” – Sebastian

What a difference an expert makes!

In each case, participants described having ‘good enough’ access to infrastructure for cycling, yet emphasised that it was the support and knowledge sharing that raised confidence to a standard where biking felt comfortable. All participants reported that their confidence and ability on the-bike had been lifted through the program, often associating this with the guided part of the program and riding within a group:

“I think the program gave me the confidence to actually get onto the roads and to use the-bike more as well because like, because I have to go on roads in order to get to a cycleway from my house, I don't know how confident I would have been doing that without [the program].” - Florence

“The training I think [...] Give me more, more confidence to, to ride on the street on the road in Australia basically.” - Lois

Lois went on to explain how her prior hesitation to riding an e-bike was informed by her experience as a motorist:

“...because of all the experience, I think it's safer, it's not that dangerous like I thought before, because when you drive...when you see those people riding the bike, you feel you don't like to hit them, so you need to drive very carefully. So, you just feel it's a little dangerous to ride right on the street, on the road. Because of this experience I just feel more confident. ... I just think that's not that dangerous like I expected.” - Lois

Aila reported feeling more confident not only about riding but about route choice:

“But the more I go with the groups, the more I am confident and also following the [bikepaths]. The way Charlene just reads the map and all that. So I think the more you learn, the more confident you become to take it further.” – Aila

Even for those participants such as Fred, who was already confident on the e-bike and in his cycling skills, said he unexpectedly gained confidence following the practical instruction:

“I just didn't even, I didn't think there was that much to learn, to be honest, but there's a lot to learn about cycling well and cycling safely. And so, it was a surprising amount of information. Just things like how do you position yourself on a bike when you're going down a hill or up a hill or like how do you plan, like look ahead and plan for like what, when you come to a stop, What foot are you going to put on the ground? And is the surface level and all those kinds of things that you just don't, you just think it's like riding a bike, right? Like it's, how hard can it be? But there's a lot of things to consider to do it well and to do it safely that I hadn't really thought of before.” – Fred

Fred was not alone in discovering how little he knew about riding safely:

“Confidence and discipline is what I learned from the program....you realise when you're with the instructor that you don't know so much.” – Maya

“I thought that I knew a lot, but I still learned quite a lot. So it was fantastic”. – Skyler

Relatedly, for participants who had experience riding a pedal bike, there was the expectation that riding the e-bike would be similar. Many, however, were surprised at how different the riding experience was, and the additional skills they needed to learn to be safe with the e-bike on urban roads. Aila explains:

“...having those skills session [made me realise] - actually this is different to a standard bike. This is what you need to be aware of and just all those tips that they were able to teach us and just the skills revision of the, you know, the road rules, revision of the etiquette, just being safe, the safety things, making sure that you're being able to stop in a specific amount of time on an E-bike”- Aila

David had a similar experience, not expecting the e-bike to be any different to riding a manual bike, but was surprised at how much more he could do on an e-bike compared to his conventional bike, such as travelling longer distances to the city from his home:

“It's interesting, I've had access to e-bikes before, I've had access to conventional bikes, but I think I've made much more use of it since I've been part of *Transformers*, like it has transformed my, understanding of the potential. [...] I never thought I can get from my home to the city on the e-bike in an hour or less...that it was possible and that I could do it safely. And it's, yeah, it's these nudges that sort of get me there because I wasn't anywhere near to thinking about that before this.” – David

Mental and physical benefits of the program

Many participants described experiencing a sense of emotional uplift as a result of the program, associating riding with joy, happiness, fun, and a feeling of youthfulness. Participants often attributed this to the calm attitude of the instructor, the safety-orientation of the program, and the level of detail provided in the instruction:

“the endorphins from riding ... and seeing all these different places that I had either driven past and never really looked at or noticed it was so amazing.. it's brought me so much joy.”- Florence

"But I think the odd thing with me is there's a lot of this stuff about older women being disconnected and, you know, change your life when you're getting old. And I think that a really good note for my case is actually feel younger, invigorated, connected. [...]. It's really had some unexpected positivities around that for me.."- Grace

Many also mentioned social connection as a benefit they'd not expected when they joined:

“It's a great feeling. I'm happy. Makes me happy that I have made new connections, new friends, physically, mentally.” – Aila

Others, such as Joe, felt that the community that he became a part of through the program was important for his future aspirations to ride more:

“What was I grateful for? I'm in a little bike club community now and so we have a little WhatsApp group and things like that.” – Joe

Aila also appreciated being part of a local community of cyclists, and having a support network because of the program:

“I think as a newbie that's why you need to have support network around you, not just have Charlene but have others who. Ohhhh that's OK. I can try that. And the [WhatsApp] chat, I think that I would say that the relationship that we've built overtime. But the building of relationship is a good thing and having connections which is humanly and fabulous in any situation, apart from the skill you obtain. The girls have started another riding group for us. So we are having conversations already and planning to do this or that go on this night. Some of them went to the Vivid - all that because of this. So I think the relationship building and being part of a local community. There's so so much to learn from each other.” - Aila

Chris also reflected the social benefit of the group rides, and Sebastian noted similar social benefits describing the program as a “good opportunity just to meet new people.” And while Fred noted that he would have purchased his e-bike “with or without the program”, he really appreciated the value of the social connection through the group rides:

“I wouldn't have recognised the value in riding in a group without the program. And I wouldn't have recognised the opportunities that are available beyond the program” - Fred

Skyler agreed, saying that in addition to the skills, the social connection of the group rides was a key benefit:

“I think the program has been great because it's also it's a social thing. I think I met quite a few people with similar interests and being able to now connect with them to say, hey, would you like to go for a social ride or to catch up to do something around, you know the city or you know, around our community. It's very I think it's important to meet like-minded people especially you know you've got work people, you've got other friends but not everybody enjoys the same hobbies as you.” - Skyler

Florence also spoke excitedly about the social connection of group riding through the program and had used that as a motivation to join multiple other group rides through the eight-week period:

“We did a night ride in the city. So we (two program participants) jumped onto the train with the bikes and met a group in the city and did like a tour on bikes, which was really yeah, it was really good. It was a little bit frightening. We were using cycleways but some of the other cyclists were so fast and like that was pretty intense, but I've done others” – Florence

In addition to the benefits of connection and community, participants also mentioned mental and physical health benefits more explicitly.

Some older participants had recently realised that soon they'd not be able to drive a car and cited the e-bike as a source of reliable freedom of movement and independence, while also being an important form of exercise:

“I mean, but I (will) have other people to drive me and there's public transport (when I can no longer drive), when I become a pensioner... that is what's in my head at the moment. If I had to give up my car, it's part of my freedom being given up - just get up and run anywhere I want anytime. And personally, it's a huge contributor to my personal welfare and wellbeing that I feel I am capable of doing this like that. I don't want to depend on people when I can”. – Aila

“Yes, now I've taken another pedal bike (from PBH) for three months. Because I wanted to continue that because this was just an excuse to get me back on track. And I'm back on track. I realized it is doing a lot of good things for me. – Maya

Priti also suggested that the benefits of e-bike riding on health and wellbeing through a program like *Transformers*, were particularly important for supporting the older generations:

“I think everyone should give more support for those programs like (the instructor) is running, like the Rusty Riders course. A lot of people that I talk to, those people in my age, in their 60s, they want to ride, ...they really want to, but they are scared, they're scared like me.” – Priti

Some, like Eleanor, reflected on the positive effects they'd experienced from simply being in the outdoors:

“I mean, it's lovely to be out in the fresh air [riding] and on a bike you can [also] travel” - Eleanor

Grace, and also Fred and Imogen, openly shared that the program had benefited their relationships with their significant others, as well as their own mental wellbeing:

“So recreation, stress relief, spending time with my partner, so bringing us together on common ground in our relationship has been a really unexpected thing. A bit of adds to the romance, like relationship building for a couple” – Grace

Fred and Imogen – a couple - were interviewed together, and this was a central theme for them, taking the time to share the details of upcoming adventures in the future:

“[...] just to get out with each other as a couple on the weekend and go riding to places and what that what those positive experiences mean for your relationship and other things as well” - Fred

“And what now?” Intentions Post-Trial

Some participants indicated that they would not continue with an e-bike. This was most often associated with the significant cost of purchasing a bike and an inability to afford a rental offering in the absence of the subsidy offered during the *Transformers* program. As Karen shared:

“So for me, it was trailing an e-bike as a way to do it fairly economically. Like Charlene's type of bike that she has is about \$3,000. I looked it up. I think it would be better to buy a brand new one, but I think I'd have to work out, you know, for me, I want to pay off my mortgage and get some of my health concerns [addressed].” – Karen

Skyler also worried about the cost, and was aware that the cheaper range e-bikes were dangerous:

I actually have a couple of barriers that that have that have paused me from wanting to purchase one. I guess the number one...is the cost of an e-bike... I understand there's lower range, but they're very dangerous as yeah, [I see it] happening on the news, it's frightening. It really is. -Skyler

Nonetheless, a significant positive outcome of the program was that almost all participants indicated they would continue cycling with a pedal bike and/or look to buy an e-bike in the future using the knowledge they'd gained from the program:

“Yes, definitely. I will ride my normal bike a little bit more [now].” -Lois

“Like, I feel like even though it is a financial thing for me, I feel like I need to find a way to get an e-bike because it just brought me so much convenience and joy and like community spirit as well that it's probably good for my mental health. As well as did the convenience of it all. [...] If I was to give up my car, I'd do just the e-bike, but I feel like maybe I need to find a way to have both because I definitely want to keep riding it's brought me so much joy.” Florence

“I would be very scared to just go and buy a e-bike with the little knowledge I had with my little push bike. No, I would never do that. But with the ... confidence, as I said, I am doing research and see if I would like to invest in a very expensive [one].” - Aila

Participants who did indicate they either had or would purchase an e-bike, were excited about continuing with the skills they learned during the program within their everyday lives. At the time of interview, Priti and Grace had purchased e-bikes and were planning rides:

“Yes, I actually intend to ride to my part time work. Yeah. On the little e-bike. So yeah, I am going back to the-bike riding. Yeah, I really enjoy what I had learned. If I don't use it, I will lose it. So I'm going to use it.” – Priti

“I got a new e-bike for Christmas. It was ordered and purchased about 3 weeks ago. And it is beautiful. It's a sparkly one. It's just, I love it. And I'm so excited to, we're actually planning our holidays around some-bike riding activities, maybe going down to Canberra and riding down there. So it's actually opened up this idea of bike holidays and us bicycling together and me riding my bike down to go visit mum as well.”- Grace

Grace also shared how her new e-bike, will give her more opportunities to go further locally in Sydney:

“I think I'm planning to go on the metro and go over to Marrickville. I mean, I live here, but it's like I can go to with my, with our bikes and go enjoy cafe culture in Marrickville and just get on the metro and come back like this....getting onto ferries and really using the public transport network to open up the opportunities.” – Grace

Imogen intends to sell her pedal bike and join her partner Fred on more weekend rides:

“My plan is to sell my push bike and get an e-bike so I can have rides with Fred during the weekends.” - Imogen

Fred already had an e-bike before the program, and he echoed Imogen's plans: “Yeah, we want to explore, because there are a lot of beautiful places to explore!”.

Suggestions for future improvements from participants

For Future Transformers programs

During the in-depth interviews participants were asked to reflect their experiences in the *Transformers* program and make any suggestions on how such a program could be improved in the future. Suggestions ranged from detail covered in the materials and selection of participants, to offering more flexibility on timing of the rides for the practical component of the program.

While the questions did ask participants for improvements, during the interviews participants had rated the *Transformers* e-bike trial as transformative and were overwhelmingly positive. The structured training, community support, and guided access to e-bikes were seen as essential—not just for enabling cycling, but for fostering long-term behavioural change, confidence, and wellbeing. As such, improvements were focused on investing more into the program to make it more scalable and thus an enabling wider and more inclusive participation. A summary of the key suggestions are detailed in Table 11.

Table 11: Suggestions for Future transformer programs

Theme	Summary of responses	Participant
Changes to materials covered, program detail and offerings	Emphasise the mental health and lifestyle benefits of cycling in program messaging, including for older adults and the social connection.	Julia, Grace
	Expanding the program to other LGAs and offering training for culturally diverse communities. Broaden program beyond Parramatta; collaborate with other councils.	Aila
	Combine rusty riders training with e-bike sessions for beginners; extend to younger riders; provide community support for older adults.	Priti
	“Yeah, if the rusty riders and the e-bike actually together, yeah, the rusty riders first before the actual e-bike riding will be much, much better for those people like me.”	
	Offer lighter bike options for easier transport integration	Grace
	Provide guidance on e-bike options and features for different user needs; continue promoting route planning tools like CityMapper; maintain strong support and education on safe cycling practices.	David
	Provide written handouts and interactive videos on legal rules and safety; share information on bike insurance and post-purchase essentials;	Fred & Imogen
	Initial rental process was inconvenient (delays, pickup far away); Zoomo bike unsuitable for her height; needed financial support for Lug+Carrie.	Rosalie
Post-program continuity and support	Offer social continuity and improve group communication to stay connected with the group beyond social media post-program. “...another reason I guess I might have I joined it was you know I might have been able to find some riding companions when this was all over yep but and I like I'm not on Facebook so Charlene said there was some group on Facebook so I wouldn't be able to join that”	Eleanor, Julia, Grace

Theme	Summary of responses	Participant
	Offer social support for to keep up confidence with group riding between key destinations. “.. in a particular area, like in Newington, not everybody would be working at Parramatta, I guess, but children, how they do the walking bus or bike. Some kind of a bike bus thing, you think, so that if people are moving from location A to B, yeah, it could be different. We could sign up for that and then that would give more confidence.”	Mai
Practical – Changes to the guided part of the program	Improve communication and route planning support during rides by providing route maps. Provide recorded routes (e.g., via Strava) to help participants replicate rides. “But yeah, sometimes there are delays, sometimes there are people’ maybe late today to the ride, or like maybe they have to change course.” - Felix	Bethany, Mai, Felix, Eleanor, Julia
	Segment groups, particularly where they are lacking confidence or require additional support. Smaller groups and longer sessions, catering to individual needs and ability and giving different options. Slower pace and more time to reflect. “So yeah, just I just take things really slowly and need to be small group, small distance, have a good chat, you know about how did you? You know, reflections each time on how you’re coping with it. That would be helpful. It’s hard once you get to 10 people you know and having to cover a lot of information.” - Shirley	Eleanor, Shirley, Bethany, Florence, Mai, Maya
	Offer night riding sessions to teach situational awareness “And so it would be good, I think, if the <i>Transformers</i> program offered at least one session in the evening, just to show people like the night and day difference.”	Fred & Imogen
	Include public transport integration into the practical component of the course, more diverse routes, and advocate for better infrastructure. "It would have also been good if we'd perhaps even done something where you went into the city and brought the-bike back on public transport or something like that [...] if we had included something where we got onto the heavy rail or where we got onto the metro with all of our e-bikes, that would have been really good.." - Ryan	Fred & Imogen, Ryan



For Policy-makers and government

Participants also made recommendations for policymakers and governments working to improve active transport mode share amongst citizens. The majority of participants made suggestions for government investment in infrastructure to promote better cycling connectivity and increase safety with dedicated bike paths, but they also reflected on possibilities for the policy incentives and rule changes to foster behavioural changes needed in Australian society. Table 12 below details direct quotes from participants highlighting their recommendations.

Table 12: Participants’ suggestions for Government and Policy-makers

Suggestions	Quotes	
More education about cycling and road rules – <i>Transformers</i> program and in the community	“Well, what about things like investing in more education and, you know, programmes, you know, for example, if this kind of a programme was. “ [...] “Also then I feel like there needs to be more awareness of the-bike rules. As a pedestrian, I didn't even know really about shared paths, so that, you know, could be more visible. [...] “I mean, I definitely would advocate for this programme to be more available, particularly the subsidised Bike options as well, because it just made it more attractive and more convenient to start.”	Florence
	“The training I think, yeah, definitely like for example, like my for myself. Give me more, more confidence to, to ride on the street on the road in Australia basically. But before I do not feel because not you do not see that many, many bicycles on the road. “	Lois
	“We need these people like Charlene going out there and saying, look, this is how you ride a bike. This is the speed you should go. This is how you should distance yourself from other road users, et cetera.”	Karen
	“maybe more messaging around it and like having people familiar with them, not just as like, oh, the delivery rider goes like 40 kms an hour on the footpath, but like actually an active mode of transport.”	Rosalie
Encouraging youth cycling and safety awareness through schools	“There needs to be this kind of safety awareness more... It would be great to get something into the schools.”	Joe
	“I think the youth of today has to get on to the, cycling. [...] And if the policies are in right place, we can save the generation, by encouraging them into, using cycle, group cycling, the physical activity where they talk, they really don't look at the phones, and that gives them a physical activity. [...] I don't know if government can subsidise, put them in cycle, you know, so the schools can have cycles.”	Maya
Encouraging cycling in communities	“..maybe a local government or state government maybe run some like events to encourage everyone to bring. I suspect many, many household like has a bike in there in the garage. Like I think and then maybe run some like event, maybe every maybe OK, maybe every season, maybe every 3 two or three months and then run some some big event and encourage people to.”	Lois
	“To empower new e-bike users. No, no one should be limited to where they'd want to go on a bike.”	Sebastian
Financial and policy incentives to encourage	“When I went to West Ryde, I didn't know you couldn't bring it [the bike] on the bus [...] they didn't tell me that she was just the bus driver was just waving her hand like, no, no, no. Oh, I'm just like, What's like, kind of like,	Sebastian

Suggestions	Quotes	
behavioural change towards bikes	what's the problem? I was thinking I was going to write a report, but then I Googled and make sure I was like, okay, you can't bring you can't bring bikes on the bus. And now they're even making it illegal to take e-bikes on trains. Which I do not know why. If they actually do that, then I think I probably just wouldn't buy an e-bike. Really. I would just completely stop thinking about it because if I wanted to go anywhere far. And then maybe you know I ran out of battery um they was like you know what am I going to do if I run out of battery or I just don't feel like riding all the way back home?"	
	"I think the first thing they should reduce the fare for the public transit, public transport. And then for the transportation like for example the bus, they should encourage people to really think a little bit more about way that they go out. Yeah so but that's hard."	Lois
	"I think the Australian approach, unfortunately, has been to make the car less attractive. So the financial penalties on the drivers, rather than the more positive way, which is actually incentivising people to ride. And they do that in other jurisdictions in other countries, and it is a successful approach. So we have a lot to change here in Australia if we're really, really serious about trying to you know, get cars off the road because as you said, Fred, it is so ingrained in us as a culture that that's how you've been around from age 17."	Fred
	"It was financially more accessible, I think, even if people didn't intend on the health benefits, I think there would be just a way of increased personal health benefits and community benefits. Yeah, really accessible, really accessible ride the programs [...] I do think we need to incentivise people and I think that that should be just rather than not the norm. I think we should see incentives as a very short cost for the long run that we had the incentive of the half price bikes. Yeah. And I think that would play a big part in attractiveness of the programme and the novelty of the programme."	Julia
Improving physical infrastructure through constructing more dedicated bike lanes, better	"Well, more parking for e-bikes in shopping centers. In, you know, a lock, yeah, that people would feel secure. You know, it's, they probably have them in the city, but our way, they don't, that I mentioned about the Parramatta Square that down, down there." "More-bike paths I guess but that's happening I think it seems slow"	Eleanor

Suggestions	Quotes	
connectivity between suburbs and more secure parking at destinations.	“Actually, building out separated infrastructure to just say, look on these roads. Everyone just slow down a bit.”	Bethany
	"Having more infrastructure, like more dedicated bike paths. I definitely, get out the most in the places where I know that there is going to be bike infrastructure and where I like feel comfortable going."	Ariene
	“I want my kids to get out, to ride bicycle and enjoy it. And they enjoy it when there is proper infrastructure around when we live in an area that's easy.”	Felix
	“I would be looking at particularly the infrastructure in terms of making sure that the bicycle the cycleways actually didn't have curbs, that you had to get up on. There's one at North Parramatta which it's got a light saying that you can cycle. Within Parramatta anyway, maybe there needs to be a bit more between the hubs where there's a lot of cycle ways in, say, suburbs nearish to each other, but then to get between the suburbs there's a few roads that you need to go on so. “	Florence
	“For me, and bearing in mind the vast experience of me, is being as a driver with cyclists, and but being a cyclist on the road, it's kind of that constant worry. Unless it's dedicated cycle lanes with the raised ridges, which I think they've, they've got their own safety issues. It's the need to provide the dedicated bike lanes, something I don't know how feasible it is on the routes. But then at certain parts it was you can't really cycle over it cause it was pedestrian and it just makes it like, wow, you're trying to do this for ease and to be fit and healthy and to take cars off the road, but they don't make it easy for you. [...] Obviously, health and safety, personal things like that. I think it's quite real. It didn't even cross my mind beforehand, but it during the trial which helps bring it to front of mind.”	Joe

Qualitative summary

The qualitative interviews provide rich context for the quantitative findings and reveal how the Transformers program influenced participants' travel behaviour, confidence, wellbeing and future mobility aspirations. While the survey results demonstrated increases in confidence, quality of life and intentions to continue riding, the interviews show how these changes were experienced in participants' everyday lives and why the program was often described as transformative.

Most participants entered the program with limited experience riding e-bikes and relatively low confidence in cycling, particularly in urban environments. Prior to participation, travel was dominated by private car use, with cycling playing only a minor role in most participants' transport routines. Through the program, participants reported incorporating the e-bike into a wide range of everyday activities, including commuting to work, shopping, social visits, volunteering, gym attendance and recreational outings. Many described replacing car or public transport trips with e-bike journeys, while others reported travelling to destinations that previously felt inaccessible by conventional bicycle. These experiences align closely with the quantitative findings that participants increased their confidence, discovered new routes and destinations, and perceived their daily travel as more enjoyable.

A consistent theme throughout the interviews was the extent to which the e-bike expanded participants' perceived mobility. Riders frequently described travelling further, more often and with less effort than they had previously thought possible. The electric assistance reduced concerns about hills, fatigue and longer distances, making active travel a realistic option for a broader range of people. Participants often spoke with enthusiasm about new destinations they had discovered, the freedom of independent travel, and the possibility of reducing reliance on cars. These accounts help explain the strong quantitative findings relating to increased confidence, enjoyment of travel and intentions to continue using e-bikes after the program.

The interviews also provided important insights into the environmental and social contexts that shaped participants' riding experiences. Consistent with the survey findings, dedicated cycling infrastructure was viewed as a significant enabler of riding. Participants reported feeling safer, calmer and more confident on separated cycleways and shared paths, and many were surprised to discover how much cycling infrastructure already existed within their local area. However, interviews also revealed ongoing concerns about gaps in cycling networks, interactions with motor vehicles, insecure bicycle parking and the practical challenges of managing relatively heavy e-bikes. Secure parking emerged as a particularly salient issue, with participants frequently expressing concerns about theft when leaving e-bikes at shops, transport interchanges and other destinations. These findings reinforce the quantitative evidence identifying infrastructure and safety concerns as key barriers to greater e-bike use.

Importantly, participants highlighted that infrastructure alone was not sufficient to support behaviour change. Many described cultural barriers associated with cycling in a predominantly car-oriented environment. Several participants discussed fears about riding on roads, perceptions that cycling was unusual or unsafe, and concerns expressed by family members about their decision to ride. Others described feeling uncomfortable bringing e-bikes onto

public transport or navigating spaces where cycling did not feel normalised. These findings suggest that behavioural and social barriers may be as important as physical infrastructure in shaping transport choices and help explain why confidence-building interventions are critical for encouraging new riders.

One of the strongest themes to emerge from the interviews was the value of the guided learning and practical support provided through the program. Participants repeatedly emphasised that access to an e-bike alone would not have produced the same outcomes. Rather, the combination of professional instruction, route guidance, group rides and ongoing support helped them overcome fears and develop practical skills. Participants described learning how to navigate roads safely, identify suitable routes, position themselves in traffic and manage the different handling characteristics of e-bikes. Even participants who already considered themselves experienced cyclists reported learning new skills and gaining confidence. These accounts provide a compelling explanation for the large improvements in riding confidence reported in the survey data and suggest that education was a central mechanism through which the program achieved its outcomes.

The interviews also revealed substantial wellbeing benefits that extend beyond transport. Participants frequently associated riding with feelings of joy, freedom, relaxation, accomplishment and renewed independence. Several described feeling younger, more energetic and more connected to their community as a result of participation. For older participants in particular, the e-bike represented an opportunity to maintain mobility and independence as they aged, reducing concerns about eventual dependence on driving. These reflections strongly support the quantitative findings showing significant improvements in overall quality of life, health satisfaction and environmental quality-of-life measures following the intervention.

Social connection emerged as another particularly powerful outcome. Many participants joined the program expecting to learn cycling skills but did not anticipate the relationships and sense of community that developed through the group rides. Participants described making new friends, joining cycling groups, establishing communication networks and developing ongoing riding partnerships. Several participants reported that these connections motivated them to continue riding and increased their confidence to explore new destinations. Some also described positive impacts on their family relationships, with cycling becoming a shared recreational activity with partners and family members. These findings help explain the reductions in loneliness and social isolation observed quantitatively, even though the statistical changes were modest and not sustained at the three-month follow-up. The qualitative data suggest that the social benefits of the program were meaningful and widely valued by participants.

Participants' intentions following the program were overwhelmingly positive and closely mirrored survey results. While affordability emerged as a significant barrier to purchasing an e-bike, most participants indicated they intended to continue cycling, either by purchasing an e-bike, taking up a subscription service or riding their existing bicycle more frequently. For many, the program had fundamentally altered their perceptions of cycling and expanded the range of travel options they considered feasible. Participants often framed future e-bike ownership as



an investment in their health, wellbeing, mobility and social participation. Even among those unable to purchase an e-bike immediately, there was a strong desire to continue riding in the future.

Overall, the qualitative findings indicate that the Transformers program delivered benefits that extended well beyond increased cycling. Participants described gains in confidence, mobility, social connection, independence, wellbeing and community participation. While the quantitative results demonstrate measurable improvements in quality of life, health satisfaction and riding confidence, the qualitative findings reveal the mechanisms underlying these changes. Together, the findings suggest that the program's success was driven not simply by access to an e-bike, but by its integrated approach combining equipment, skills training, social support and guided riding experiences. This combination enabled participants to overcome both practical and psychological barriers to cycling and fostered meaningful changes in how they moved through and experienced their local communities.

4. Discussion

This study set out to evaluate the impacts of the *Transformers* e-bike subsidy program for low-income populations in Western Sydney, with a focus on both subjective user experiences and objective indicators of behaviour change. Using a mixed-methods approach, the findings provide rich insight into how e-bike subsidy schemes operate in practice, the benefits they can deliver, and the structural, social and cultural barriers that shape their effectiveness. Overall, the findings suggest that the program generated meaningful changes in confidence, mobility, wellbeing and travel behaviour for many participants, while also highlighting important constraints that limit the scalability and long-term sustainability of such interventions in Western Sydney.

E-bike subsidies as catalysts for behaviour change

A key finding from the interviews is that access to an e-bike through the subsidy program acted as a catalyst for experimentation and trial, rather than simply substituting an existing cycling habit. Participants used the subsidised e-bike to test new trip purposes, distances and routes that they would not have attempted on a conventional bicycle or by foot. This included commuting to work, travelling to train stations, shopping trips, recreational rides, and social outings. These reported changes align with the program's intention to support actual behaviour change, rather than symbolic or attitudinal shifts alone.

Importantly, participants did not describe the e-bike as merely replacing one active mode with another. Instead, many described replacing car trips and public transport trips—particularly short or medium distance journeys—with e-bike travel. This suggests that e-bike subsidies may be particularly effective in car oriented suburban contexts such as Western Sydney, where distances, hills and limited local services often make walking or traditional cycling impractical. The e-bike's ability to mitigate terrain and distance emerged as a decisive enabler, supporting its role as a distinct mobility option rather than a niche recreational device.

The importance of structured support alongside financial subsidies

While the subsidy lowered the financial barrier to e-bike access, the findings indicate that financial support alone would have been insufficient to achieve the reported outcomes. Participants consistently emphasised the value of the program's structured training, skills development and group rides, particularly for those with low confidence or limited recent cycling experience. Learning how to manage speed, braking distances, positioning on the road, and interactions with traffic was critical in transforming initial apprehension into confidence.

This suggests that the effectiveness of e-bike subsidy schemes is highly contingent on complementary nonfinancial supports, especially for low income and older participants. For several individuals, the program functioned as a form of “guided re-entry” into cycling, addressing fears rooted in safety, skill decay and unfamiliarity with contemporary road conditions. Without this structured support, some participants—such as those who experienced falls or near misses early in the trial—may have disengaged entirely, reinforcing rather than reducing mobility exclusion.

This again challenges dominant transport paradigms reliant on the provision of infrastructure often in the absence of considerations of the skill required to take up a new mode of travel, epitomised by the maxim of *build it and they will come*. Infrastructure is necessary, but not sufficient to change transport behaviour, particularly in the context of transition to a mode that is culturally marginalised, traditionally objectively dangerous, and subjectively yet logically less comfortable than the private car.

Confidence, identity and emotional responses as mechanisms of change

Beyond practical travel outcomes, the findings highlight the central role of emotional and identity-based changes in sustaining behaviour change. Participants frequently described feelings of joy, youthfulness, empowerment and renewed independence, particularly among older adults and women. These emotional responses were not incidental; they shaped participants' willingness to persist through challenges such as traffic exposure, unfamiliar routes, or adverse weather.

The social dimensions of the program were especially influential. Group rides, shared learning environments and informal peer networks helped normalise cycling and reduced feelings of isolation or vulnerability. For some participants, riding in a group reframed cycling from an individual risk to a collective activity, increasing perceived safety even in challenging urban environments. These findings suggest that subsidy schemes that foster social belonging and collective identity may be more effective than those focused narrowly on individual cost-benefit calculations.

Structural and cultural barriers limiting everyday e-bike use

The findings revealed tensions between the promise of e-bikes as flexible, multimodal transport and the realities of infrastructure and social norms that have not adapted to their widespread use.

The program introduced participants to cycling infrastructure that many had previously been unaware of, with several expressing surprise at both its extent and quality. As participants developed riding skills and confidence, infrastructure was reported as less of a deterrent than it had been prior to the program. Nonetheless, participants consistently identified persistent structural barriers, particularly in relation to fastmoving traffic, gaps in cycling infrastructure, and limited access to secure parking outside major centres. While participants valued dedicated cycleways where they existed, many described having to navigate busy arterial roads or poorly connected networks, which undermined confidence when riding alone.

Secure parking emerged as a particularly salient issue for participants, who were understandably risk averse about theft. The need to remove heavy batteries, the absence of racks at supermarkets and medical facilities, and concerns about theft at transport interchanges reduced the attractiveness of the e-bike for short, routine trips.

Addressing these constraints requires coordinated investment in cycling infrastructure that recognises the difference between a pedal bike and an e-bike. Crucially, however, this

investment must be backed up with education, training and support, so that those seeking to use it are aware it exists.

Integration with public transport: promise and friction

The findings also highlight a tension between the theoretical promise of e-bikes as a first and last mile solution and the practical challenges of integrating them with public transport. Although some participants successfully combined e-bike travel with trains, others experienced the bikes as too heavy, bulky or socially awkward to manage in busy stations or carriages. Feelings of being a “public nuisance” or unwelcome user indicate that social norms and system design have not yet adapted to widespread e-bike use.

This suggests that e-bike subsidy schemes should be understood not only as transport interventions but as system level experiments that expose misalignments between emerging modes and existing infrastructure, rules and cultural expectations.

Equity implications and affordability post-trial

A critical equity finding relates to participants’ post-trial intentions. While most expressed a strong desire to continue cycling, the high upfront cost of e-bike purchase remained a major barrier. Several participants explicitly noted that without the subsidy, e-bike ownership would be unattainable in the short term, even when perceived benefits were high.

A low-cost pedal bicycle represents a low-risk experiment—if it is not used, the loss is negligible. An e-bike, by contrast, entails a significant financial and psychological investment, making non-use more consequential and adoption more cautious. While participants experienced substantial benefits during the trial, post-trial affordability constraints were a serious barrier to long-term transition pathways. Without ongoing affordability mechanisms, introductory subsidy schemes can only temporarily alleviate exclusion from e-bike use based on cost, without delivering durable mobility change. This highlights a potential risk of “trial without transition”, where participants experience the benefits of e-bike use but are unable to sustain them once program support ends. From a policy perspective, this raises questions about the design of subsidy schemes, including whether longer term leasing, staged ownership, or complementary financial incentives are required to avoid reinforcing inequities.

Implications for policy and program design

Taken together, the findings suggest that e-bike subsidy schemes can deliver substantial benefits to low-density urban contexts, including increased mobility, reduced car dependence, improved wellbeing and stronger social connection. However, their effectiveness depends on being embedded within a broader ecosystem of training, infrastructure, social support and affordability mechanisms.

For policy-makers, the results point to the need for integrated approaches that combine subsidies with:

- investment in safe, connected cycling infrastructure;
- secure end-of-trip facilities in suburban centres;
- culturally sensitive training and community based delivery models; and
- longer term affordability pathways for low income participants.

In this sense, the *Transformers* program functioned not only as a subsidy scheme but as a demonstration of what is possible when financial access is paired with human centred support. The challenge moving forward is to translate these insights into scalable, equitable and durable policy interventions that support sustained behaviour change.

Study Scope and Next Steps

This is a pilot study with limited participant numbers. This means that the quantitative results are only indicative of the findings that need to be determined in a larger population sample. Analyses were conservative, relying on analyses for small sample sizes and nonparametric data. However, pilot testing was necessary to determine if the study had the potential to be scaled up, and the results suggest it does.

The rich detail provided in interviews both supports and was supported by the quantitative data. Our participant reflections were unequivocal: infrastructure combined with support and education enables sustainable transport in Western Sydney.

The future direction of this project must be to scale the program, supporting more people with the environments, knowledge, and community to reshape how they travel.



Appendix 1: Baseline Survey

Transformers Baseline Survey*

This survey is about your experiences with the Transformers e-bike subsidy program. It is part of an evaluation led by Dr Jennifer Kent at the University of Sydney. Participation is voluntary and confidential. You may withdraw at any time.

How often do you think you will use an e-bike for the following destinations (select one):

Local shop or supermarket

Work, education or training

Restaurants / cafes / bars

Local services

Recreation areas

Family or friends

School/childcare

Other destinations

Options: Daily / 2-3 times a week / Weekly / Less often / Never

Have you ever tried an e-bike?

Yes

No

Have you ridden a conventional bike?

Yes

No

Do you own a conventional bike?

Yes

No

Do you own an e-bike?

* The survey instruments included in this Appendix are adapted from the original Qualtrics versions used in data collection. For clarity and presentation within this report, questions have been reformatted (e.g., matrix questions converted to lists, response options consolidated, and layout simplified). No substantive changes have been made to question wording, response categories, or measurement constructs.

Yes

No

What has stopped you from using or buying an e-bike before now?

Cost

Weather

Safety

Infrastructure

Terrain

Time

Storage

Battery range

Carrying children/items

Health limitations

Confidence

Convenience of other transport

Maintenance issues

Distance

Options: Not at all → Extremely

How confident are you riding an e-bike in the following situations?

Rain

Heat

Night riding

Traffic

No bike lanes

Shared paths

Bike lanes

Hills

Various trip distances

Options: Not at all confident → Extremely confident

In the past 7 days, on how many days did you do 30 minutes of physical activity?

Every day

6 days

5 days

4 days

3 days

2 days

1 day

None
Prefer not to say

Over the past 2 weeks, rate how you feel about your... (1–5):

Safety
Physical environment
Financial situation
Access to information
Leisure opportunities
Mobility

How often do you feel the following?

Left out
Isolated
Lonely
Lack companionship
Options: Never → Always

How satisfied are you with the following?

Transport
Housing
Health access
Your health
Options: Very dissatisfied → Very satisfied

How would you rate your quality of life?

Very poor → Very good

How supported you feel using your e-bike for transport?

My family supports me using an e-bike for transport.
My friends encourage me to ride an e-bike instead of using other forms of transport. People I know also use e-bikes for transport.
I feel socially supported when I choose to ride an e-bike for everyday travel.
I have someone I can ask for help or advice about e-bike commuting (e.g., routes, maintenance, safety).
Options: Strongly disagree → Strongly agree

How supported you feel using your e-bike for recreation?

My family supports me using an e-bike for recreation.
My friends encourage me to ride an e-bike for fun or leisure.

People I know also use e-bikes recreationally.

I feel socially supported when I choose to ride an e-bike for recreation.

I have someone I can ride with or share recreational e-bike experiences.

I know people who can recommend good recreational routes or trails for e-bike riding.

My social circle views recreational e-bike riding positively

Options: Strongly disagree → Strongly agree

How do you rate government support for e-bikes?

Government support transport

Government support recreation

Infrastructure quality

Policies/incentives

Public messaging

Consideration in planning

Safety efforts

Future trust

Options: Strongly disagree → Strongly agree

Gender:

Male

Female

Non-binary / third gender

Prefer not to say

Age:

18–24

25–34

35–44

45–54

55–64

65–74

75+

Prefer not to say

Education:

Below Year 12

Year 12

TAFE/trade

Bachelor

Postgraduate

Other

Household income (weekly):

\$600–999
\$1000–1999
\$2000–2999
\$3000+
Prefer not to say

Country of birth: _____

Years in Australia:

<2
2–5
4–9
>10

Language at home:

English only
Other (specify)

Dwelling type:

House
Townhouse
Apartment

Neighbourhood type:

Houses
Townhouses
Apartments
Mixed

Housing tenure:

Owned outright
Mortgage
Rented
Other

Household type:

Couple with children
Single parent



Other family
Couple no children
Group
Lone person

Suburb: _____



Appendix 2: Follow-up 1 Survey (4-6 weeks)

Transformers Follow-Up 1^{*}

This survey is about your experiences with the Transformers e-bike subsidy program. It is part of an evaluation led by Dr Jennifer Kent at the University of Sydney. Participation is voluntary and confidential. You may withdraw at any time.

Overall, how satisfied were you with the e-bike used?

Options: Extremely satisfied / Somewhat satisfied / Neither / Somewhat dissatisfied / Extremely dissatisfied

Why were you satisfied?

Why were you not satisfied?

How satisfied were you with the 6-week guided rides?

Options: Extremely satisfied / Somewhat satisfied / Neither / Somewhat dissatisfied / Extremely dissatisfied

To what extent do you agree:

The program improved my confidence

I understand e-bike rules better

I can handle different road conditions

I know how to maintain the-bike

I felt safe during rides

I would recommend the program

Options: Strongly agree → Strongly disagree

Feedback on training:

Did you join the Facebook group?

^{*} The survey instruments included in this Appendix are adapted from the original Qualtrics versions used in data collection. For clarity and presentation within this report, questions have been reformatted (e.g., matrix questions converted to lists, response options consolidated, and layout simplified). No substantive changes have been made to question wording, response categories, or measurement constructs.

Yes / No

Why or why not?

Have any factors significantly affected your use over the past 8 weeks?

How has your travel changed?

Options: Very different / Somewhat different / About the same

How often did you use the e-bike for:

Shops | Work | Hospitality | Services | Recreation | Social | School | Other

Options: Daily / 2–3 times a week / Weekly / Less often / Never

Since having the e-bike have you:

Spent more time with others

Been riding more (transport/recreation)

Using car less

More confidence

Travel easier and more fun

Options: Strongly agree → Strongly disagree

Barriers to Use (Transport)

Weather, safety, infrastructure, terrain, time, storage, battery, carrying needs, health, confidence, convenience, maintenance, distance

Options: Not at all → Extremely

Other barriers:

Barriers to Use (Recreation)

Weather, route availability, time, health, battery, confidence, maintenance, transport access, social factors, competing interests, security, amenities

Options: Not at all → Extremely

Other barriers:

How confident are you riding an e-bike in the following situations?

Rain

Heat

Night riding

Traffic
No bike lanes
Shared paths
Bike lanes
Hills
Various trip distances
Options: Not at all confident → Extremely confident

In the past 7 days, on how many days did you do 30 minutes of physical activity?

Every day
6 days
5 days
4 days
3 days
2 days
1 day
None
Prefer not to say

Over the past 2 weeks, rate how you feel about your... (1–5):

Safety
Physical environment
Financial situation
Access to information
Leisure opportunities
Mobility

How often do you feel the following?

Left out
Isolated
Lonely
Lack companionship
Options: Never → Always

How satisfied are you with the following?

Transport
Housing
Health access
Your health
Options: Very dissatisfied → Very satisfied

How would you rate your quality of life?

Very poor → Very good

How supported you feel using your e-bike for transport?

My family supports me using an e-bike for transport.

My friends encourage me to ride an e-bike instead of using other forms of transport. People I know also use e-bikes for transport.

I feel socially supported when I choose to ride an e-bike for everyday travel.

I have someone I can ask for help or advice about e-bike commuting (e.g., routes, maintenance, safety).

Options: Strongly disagree → Strongly agree

How supported you feel using your e-bike for recreation?

My family supports me using an e-bike for recreation.

My friends encourage me to ride an e-bike for fun or leisure.

People I know also use e-bikes recreationally.

I feel socially supported when I choose to ride an e-bike for recreation.

I have someone I can ride with or share recreational e-bike experiences.

I know people who can recommend good recreational routes or trails for e-bike riding.

My social circle views recreational e-bike riding positively

Options: Strongly disagree → Strongly agree

How do you rate government support for e-bikes?

Government support transport

Government support recreation

Infrastructure quality

Policies/incentives

Public messaging

Consideration in planning

Safety efforts

Future trust

Options: Strongly disagree → Strongly agree

Future plans:

Keep bike / Buy another / Return to old bike / Stop using e-bike / Other

Final Comments

Anything else you would like to share?

Details



First name: _____
Last name: _____



Appendix 3: Follow-up 2 Survey (4-6 weeks post trial)

Transformers Follow-Up 2*

This survey is about your experiences with the Transformers e-bike subsidy program. It is part of an evaluation led by Dr Jennifer Kent at the University of Sydney. Participation is voluntary and confidential. You may withdraw at any time.

Do you currently have access to a normal bike (not an e-bike)?

Yes / No

Do you currently have access to an e-bike?

Yes / No

Reasons for Not Having an e-Bike - to what extent do the following apply:

Cost | Storage | Safety | Health | No need | No interest | Weather | Infrastructure | Prefer other transport | Negative experience | Other

Options: Very applicable / Somewhat applicable / Not at all applicable

Have you kept in contact with the Transformers program?

Yes / No

Have any major factors affected your travel over the past 8 weeks?

How different is your day-to-day travel from now compared with before the program?

Options: Very different / Somewhat different / About the same

Please explain:

Bike Use

How often did you use a bike (any type) for:

* The survey instruments included in this Appendix are adapted from the original Qualtrics versions used in data collection. For clarity and presentation within this report, questions have been reformatted (e.g., matrix questions converted to lists, response options consolidated, and layout simplified). No substantive changes have been made to question wording, response categories, or measurement constructs.

Shops | Work | Hospitality | Services | Recreation | Social | School | Other

Options: Daily / 2–3 times a week / Weekly / Less often / Never

Since having the e-bike have you:

Spent more time with others

Been riding more (transport/recreation)

Using car less

More confidence

Travel easier and more fun

Options: Strongly agree → Strongly disagree

Barriers to Use (Transport)

Weather, safety, infrastructure, terrain, time, storage, battery, carrying needs, health, confidence, convenience, maintenance, distance

Options: Not at all → Extremely

Other barriers:

Barriers to Use (Recreation)

Weather, route availability, time, health, battery, confidence, maintenance, transport access, social factors, competing interests, security, amenities

Options: Not at all → Extremely

Other barriers:

How confident are you riding an e-bike in the following situations?

Rain

Heat

Night riding

Traffic

No bike lanes

Shared paths

Bike lanes

Hills

Various trip distances

Options: Not at all confident → Extremely confident

In the past 7 days, on how many days did you do 30 minutes of physical activity?

Every day

6 days

5 days

4 days
3 days
2 days
1 day
None
Prefer not to say

Over the past 2 weeks, rate how feel about your... (1–5):

Safety
Physical environment
Financial situation
Access to information
Leisure opportunities
Mobility

How often do you feel the following?

Left out
Isolated
Lonely
Lack companionship
Options: Never → Always

How satisfied are you with the following?

Transport
Housing
Health access
Your health
Options: Very dissatisfied → Very satisfied

How would you rate your quality of life?

Very poor → Very good

Final Comments

Anything else you would like to share?

Details

First name: _____
Last name: _____



Appendix 4: Interview Guide

Interview Guide: Experiences and impacts of an e-bike subsidy scheme “Transformers”

Interviews with participants in a subsidised e-bike trial conducted towards the end of the trial. Each interview lasted between 30-60 minutes.

Research question

- What are the benefits and barriers of e-bike subsidy schemes in Western Sydney?

Introduction and overview of interview process

- Welcome and thanks in advance for time.
- Confirm consent to record the interview.
- Introduction of researcher and the research project.
- Researcher will explain how the information collected in the interview will be used, the confidential nature of the interviews, and that the participant has the opportunity to withdraw at any time.

Interview topics and questions

Topic	Key questions (prompts in bullet points)
Household situation now	Can you tell me about your family and household at the moment? • Number and age of children if any • Number and age of others regularly residing at the household • Employment type, regularity and location
Transport practices now	Can you tell me about the way you travel now? • E-bike use • Car ownership and use • Use of PT and walking etc • Access to infrastructure (public transport, local services etc).
Travel history, socialisation and aspirations	How do most of your friends travel? How did you travel to school as a child?

	When did you get your drivers' licence, if ever?
	When you think about the next 10 years, how would you most like to be travelling on a day-to-day basis? Can you imagine a future without a car?
Transport before e-bike	We're going to talk about the time before you got the e-bike. • Car ownership and use • Use of PT and walking etc • Access to infrastructure (public transport, local services etc). • Have you thought about trying an e-bike before? What about this time that encouraged you to try now?
Use of the e-bike	Can you talk me through some of the trips you've been using the e-bike for? • Where • When • Why • Who with • Prompt for information on as many trips as possible. Can you tell me about the best/worst experience you've had on the e-bike?
Enablers of the program	Can you tell me about your experience of the pilot program (explore the training from Parramatta Bike Hub, learning in a group setting, the social rides, learning how to use an e-bike vs just receiving the e-bike?) What did you find particularly helpful? (prompt with aspects of the program) Would you have been as confident in trying an e-bike without the 6 weeks training? What were the key benefits from the training program? What might have been done better?
Intentions	What are your thoughts right now on whether you'll keep using the e-bike? Can you tell me a bit about why you're thinking this way? • Structural and functional aspects (safety, distances etc) • Emotional aspects (comfort, freedom, restricted etc) • Cultural/social aspects ("I've felt like I belong" etc)
Recommendations	If you could give those in power some tips on how to make e-bikes more attractive for people, what would you say?



Closing

- Researcher briefly summarises interview findings.
- Researcher offers to share transcripts with interviewee and seeks permission to contact interviewee should anything need clarification.
- Researcher thanks the participant.

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Ethical Statement

This research was conducted in accordance with Human Research Ethics Committee guidelines (Approval Number: (Ref: 2024/HE001643). All participants provided informed consent, and data is anonymised to ensure confidentiality.

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