Perceptions of Public Transport, Cycling and Walking Among Auckland Drivers

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Executive summary

Introduction

The purpose of this research project was to explore the ability and willingness of Aucklanders to shift their private vehicle trips to public transport, cycling or walking, in order to inform the delivery of interventions and services designed to encourage use of transport modes other than driving.

The impetus for this research was the development of a Transport Emissions Reduction Pathway (TERP) adopted by Auckland Council in August 2022. The TERP aims to give effect to Te Tāruke-ā-Tāwhiri Auckland's Climate Plan, which commits Auckland to halving emissions by 2030 and reaching net zero emissions by 2050. Reaching this ambitious goal relies heavily on reducing transport emissions, and the TERP outlines a clear focus on reducing private vehicle travel, making public transport competitive with driving and to making it safe and attractive to walk and cycle.

The project was developed and undertaken by researchers from Auckland Council's Research and Evaluation Unit (RIMU) and Transport Strategy team, in collaboration with Dynata, an independent research service provider.

Method

From 20 May to 13 June 2022, an online survey was undertaken among a representative sample of Auckland drivers.

At the start of the survey, participants were shown a map, and asked to enter their start and end locations in a search box which placed pins and showed routes on the map. This portion of the survey generated data about the driving trip and equivalent trips by non-car modes, including duration, distance, elevation, and latitude/longitude coordinates for each transport mode version of the trip.

Participants were then asked a series of questions on their perceptions of public transport before being shown the equivalent trip by public transport, as calculated by Google Maps. Questions on perceptions of cycling and walking the trip followed (these were only asked if participants met certain criteria).

The research method was reviewed by Auckland Council's Research Ethics Advisory Group.

A total of 4448 completed responses were received, however only results for those whose trip had a start and end point within the Auckland Major Urban Area (n=2799) are presented in this report.

Key findings about driving trips

Driving trips described by participants were most frequently for the purpose of going to work (35%) followed by a social visit (20%) and shopping (16%). Over half (58%) of the driving trips were undertaken alone – 29 per cent had one passenger and 8 per cent had three passengers.

Two-thirds (64%) of participants took small items on their trip, one third (36%) took medium-size items (e.g. shopping bags) and only 7 per cent took larger items.

The average reported duration of a trip was 28 minutes (when excluding trips with a duration over 3 hours).

Key findings about public transport

Overall, participants reported more negative perceptions of public transport, cycling and walking compared with driving. These results show little variation across demographic characteristics or features of the driving trip (e.g. reason for trip, time of day).

A majority of participants (81%) reported that doing the trip they had described by public transport would be 'much less convenient' than driving and 11 per cent stated it would be 'slightly less convenient'. There were three overarching reasons for this:

- The lack of ease (53% disliked transferring between services, 35% reported it is hard to carry items)
- The amount of time (42% disliked infrequent services, 42% reported it takes too long)
- The lack of reliable services at the right time (40% reported no services at the time of day they travel, 35% claimed it is too unreliable).

No significant differences in perceived convenience were found across different reasons for the trip, items transported, or number of passengers (including child passengers). Differences were also not seen across different days of the week, areas where participants live, or time of day the trip was taken.

Compared with driving, 74 per cent of participants reported public transport would be more stressful and 58 per cent of participants reported feeling less safe from crime and harassment if taking public transport.

Participants were asked how long they thought the trip would take by public transport. The average expected duration of the trip was an hour and 10 minutes. The average trip length calculated by Google Maps was an hour and one minute. These figures are close to double the average perceived duration of the trip by driving (28 minutes).

Only 9 per cent of participants said they would be likely to make the trip by public transport when they were shown how long it would take by public transport (as determined by Google maps). Reasons provided for being unlikely to take public transport are similar to those for why public transport is less convenient: the amount of time, lack of ease and comfort, and concerns around reliability of services.

It is worth noting that the participants did not report cost as a reason they are unlikely to take public transport. Consequently, initiatives to reduce the cost of public transport may have little impact on the likelihood of Auckland drivers to take public transport. Changes to public transport services to make them faster, more frequent, more reliable and safer would be expected to improve public perception of the public transport experience.

Key findings about cycling

Almost half (42%) of participants stated it would not have been possible for them to do the equivalent driving trip by bike.

Safety was the main reason they felt that it would not be possible. Forty-three per cent were concerned with busy roads, 42 per cent felt the route is unsafe, and 36 per cent reported that there

were no cycleways. Limits on personal capability to cycle is an issue for close to a quarter of participants (27% report route is too hilly, 25% lack required fitness, and 20% lack confidence/experience cycling).

Eighty-eight per cent of participants reported that cycling on a regular push bike would be less convenient than driving, and 80 per cent say cycling on an e-bike would be less convenient than driving.

Conclusion

Compared with driving, public transport, cycling and walking were perceived to be less convenient, more stressful, and less safe from crime and harassment for most participants. These results indicate a real need to make public transport competitive with driving, and to make it safe and attractive to walk and cycle, if Auckland's TERP goals are to be met and if public transport, cycling and walking are to take a greater share of transport in Auckland.

The information described in this report can be used by transport professionals to:

- identify priorities for public transport investment to improve speed, comfort, safety and reliability
- prioritise investment in cycling infrastructure to address concerns around safety and connectivity
- inform the development of behaviour-change interventions to complement the above
- implement other transformations as directed by TERP.

Recommendations

Based on the findings of this study, this report makes two recommendations:

- Auckland Council and Auckland Transport to develop and report on key metrics related to quantitative targets for all transport modes, particularly focusing on the differential between private vehicle access and access via shared and active modes.
- Auckland Transport to implement a required project outcome and design review phase for all transport investments which focuses on improving customer perceptions of active and shared modes.

The ultimate purpose of these recommendations is to help create a safe and effective transport system in Auckland. It is hoped that they are considered and adopted by relevant parties.

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1 Introduction

Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan[1] commits Auckland to halving emissions by 2030 and reaching net zero emissions by 2050. Reaching this ambitious goal relies heavily on reducing transport emissions.

While agriculture is the largest contributor to emissions for New Zealand overall (48% for New Zealand overall and only 5% for Auckland[2]), transport is the largest contributor in Auckland, equating to 45 per cent of total emissions (20% of total emissions for New Zealand overall are from transport)[3].

The transport category includes aeroplanes, ferries and ships, trains, heavy vehicles (i.e. large trucks) as well as cars and light commercial vehicles. In 2019, transport emissions from cars and light commercial vehicles (e.g. vans, small trucks) were the largest source of total emissions in Auckland, contributing 27 per cent of total emissions[4].

A Transport Emissions Reduction Pathway (TERP)[5] was adopted by Auckland Council in August 2022. The TERP was developed to give effect to Te Tāruke-ā-Tāwhiri. It includes the aim of reducing transport sector emissions by 64 per cent by 2030. Reducing Auckland's transport emissions to this degree, in less than nine years, requires urgent and significant interventions that drastically alter Aucklanders' transport behaviour. According to the TERP, the main focus required will be to: *Supercharge walking and cycling, use public transport much more and reduce travel where possible and appropriate.*

Background to this project

The research project discussed in this report emerged from the development of the TERP.

In late 2021, while the TERP was being prepared, Auckland Council's Environment and Climate Change Committee requested further and more detailed research into all people's willingness and ability to change travel behaviour, taking note of the equity implications of mode shift, the barriers that people face, and the importance of a just transition[6]. This followed a progress update for the development of the Transport Emissions Reduction Plan[7].

As part of the response to this request, members of Auckland Council's Research and Evaluation Unit (RIMU) worked with council's Transport Strategy team to design and deliver this project.

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[1] https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/Pages/te-taruke-a-tawhiri-ACP.aspx
[2] Source: https://knowledgeauckland.org.nz/media/2534/tr2022-06-aucklands-greenhouse-gas-inventory-to-2019.pdf
[3] For calendar year 2019. Source: https://knowledgeauckland.org.nz/media/2534/tr2022-06-aucklands-greenhouse-gas-inventory-to-2019.pdf
[4] Source: https://knowledgeauckland.org.nz/media/2534/tr2022-06-aucklands-greenhouse-gas-inventory-to-2019.pdf
[5] https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/Pages/transport-emissions-reduction-pathway.aspx
[6] https://infocouncil.aucklandcouncil.govt.nz/Open/2021/12/ECC_20211202_MIN_10127_WEB.htm
[7] Note: The Transport Emissions Reduction Plan was renamed to the Transport Emissions Reduction Pathway when the policy was completed.

Unfortunately, several unforeseen circumstances including covid-19-related restrictions, prevented the project findings from being completed in enough time to be fully incorporated into the development of the TERP. However, the results remain relevant for understanding Aucklanders' transport choices.

1.1 Previous research

The findings described in this report contribute to the broad literature on transport and travel behaviours, within New Zealand and overseas. Previous research has identified factors that impact behaviours, explored perceptions of transport modes, and includes diary-style studies to record travel behaviours (such as the New Zealand Household Travel Survey[8]). These are discussed briefly below.

Factors that affect travel behaviours include income, gender, age, location, housing density and reasons for the trip. For example, people with higher incomes are more likely to own and use a private car than low-income households (Klein and Smart, 2015), and families with children use cars more often than one-person households (Dieleman, Dijst and Burghouwt, 2002).

Women can have significantly different travel needs and behaviour compared to men, however, transport planning in Auckland has traditionally not accounted for gender differences (Ng and Acker, 2017). Public transport planning has historically focused on catering for peak movements to and from major employment areas such as the city centre, implying that public transport services may not be readily available when required by women (Jahanshahi, Jin and Williams, 2015). Women are more likely to trip chain (i.e. have trips with multiple stops such as running errands or grouping several activities into one trip without returning home between each activity) compared to men, combining multiple stops during one trip (e.g. leaving work, picking up children, and grocery shopping all in one trip) and so women tend to value flexibility over time savings in their travel choices (Garrett, 2014).

Poor accessibility to non-car modes of transport because of location has been seen as a challenge for rural communities (see for example, Fitzgerald, 2012). However, pressures for increased housing and cheaper land has led to urban sprawl and poor accessibility even in urban areas (Power, 2012). A major tenet of the literature available on regional development and neighbourhood design is that compact built environments reduce people's need to drive (Cervero and Kockelman ,1997; Ewing and Cervero, 2001; Ewing and Hamidi, 2015). In general, high-density urban environments, with a range of destinations in close proximity reduce car reliance and support walking, cycling and public transport opportunities. On the other hand, low-density suburban environments with low levels of land-use diversity tend to be more car-dependent. Auckland Council's Future Development Strategy acknowledges this relationship by recommending that most new housing is developed in existing urban areas close to public transport routes, infrastructure and urban amenities (e.g. services, schools, parks).

In addition to demographic and location factors, psychological factors such as symbolic motivations (e.g. identity, status and power) and emotional motivations (e.g. self-esteem and pleasure) impact travel behaviour (Steg, 2005).

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[8] https://www.transport.govt.nz/area-of-interest/public-transport/new-zealand-household-travel-survey/

Auckland-based research has explored motivators, barriers and perceptions of public transport. For example, the Quality of Life Project in 2022 asked participants about ease, frequency, safety from crime or harassment, reliability, affordability and safety from catching covid-19[9]. Auckland Transport has undertaken and commissioned several unpublished studies around perceptions of public transport. These studies showed that participants generally hold negative perceptions of public transport. For example, one such study investigating barriers to public transport for non-public transport users reports:

- 48 per cent of participants answered public transport takes too long to get to where they want to go,
- 44 per cent have to take multiple services, and
- 40 per cent answered public transport is not reliable[10].

Previous research has not collected information about Aucklanders' travel behaviour such as where they are travelling from and to by car, for what purpose, or what other transport modes might be available to make the same trip. This kind of information is important to target both service improvements and to develop behavioural interventions to influence travel choices. The research described in this report aims to address this knowledge gap.

1.2   Purpose of this study

The purpose of this research project was to explore the ability and willingness of Aucklanders to shift their private vehicle trips to public transport, cycling or walking. It did so by asking a sample of Auckland residents who drive a private vehicle to describe their most recent driving trip, providing them with alternatives (produced by Google Maps), and asking them about their perception of travelling by those alternative modes (refer to section 2.1 for more details).

The initial objectives of this study were very broad. They included:
- Compare the driving trip to non-car modes defined by Google Maps, in particular:
  o Identify and map trips where there is a negative perception of non-driving modes and trips that are substantially worse (e.g. longer in duration, higher in cost, or involve multiple transfers), to target service improvements
  o Identify and map trips where there is a negative perception of non-driving modes and trips are equal or better (e.g. shorter or equal in duration, lower or equal in cost) in order to target behavioural interventions to address misperceptions and change habits
- Identify suburbs, and sub-populations across Auckland where access to non-car modes is poorest
- Determine what percentage of driving trips could feasibly be replaced by public transport trips if services are sufficiently fast, frequent and reliable
- Determine what percentage of driving trips could feasibly be replaced by e-bike trips.

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[9] https://www.qualityoflifeproject.govt.nz/wp-content/uploads/2022/11/20221110_QoL2022-Auckland-report-final.pdf
[10] Unpublished AT and The Purpose Business 2023 study.

Some of the objectives of this study were unable to be achieved because of unforeseen challenges with the quality and subsequent analysis of equivalent trips generated by Google Maps. However, the data collected provides good insight into the perceptions of Aucklanders about non-car modes.

1.3   This report

The report is structured as follows: Section 2 (Background) describes the research method, outlines the final sample and several important limitations to the survey. Sections 3 to 7 present findings, namely an overview of the reported car trip (Section 3: Describing the driving trip), followed by participants perceptions of public transport (Section 4: Perceptions of public transport), cycling (Section 5: Perceptions of cycling as an alternative), walking (Section 6: Perceptions of walking as an alternative) and general attitudes (Section 7: General attitudes towards driving). The report concludes with a discussion (Section 8: Discussion). Further details are provided in the Appendices (Appendix 1: Questionnaire and Appendix 2: Participant sample).

As outlined in Section 2.2 below, this report presents results for a subsample of the full sample.

1.3.1   Behaviour and behaviour change

A focus of this research is to understand Aucklanders' travel behaviours and options to change those behaviours in favour of non-car travel modes. The term 'behaviour' describes what a person does, the actions they perform. Behaviour does not include thoughts or emotions, but these can influence behaviour. There are many models in scientific literature to explain how behaviour occurs (e.g. Theory of Planned Behaviour, Fogg Behaviour Model, Transtheoretical Model, COM-B Model). The details of these models vary, but most describe behaviour as being the result of both internal factions (e.g. thoughts and emotions), and external factors including the physical and social environment.

The COM-B model (see Figure 1) describes behaviour as the result of an individual's capability to do that behaviour (i.e. the physical and psychological skills), motivation (both automatic and reflective), and the opportunity (both social and physical as afforded by the environment) (Michie, Van Stralen, West, 2011).

Figure 1: COM-B Model of Behaviour
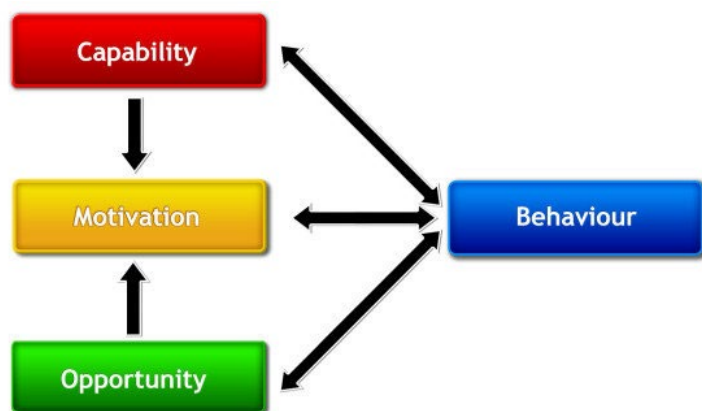
Changes in behaviour can be brought about through 'behaviour change interventions'. These interventions can take many forms, for example, the Behaviour Change Wheel describes categories of

policy that can bring about changes in behaviour including regulation, service provision and communication/marketing (Michie, Van Stralen, West, 2011).

Figure 2: Behaviour change wheel
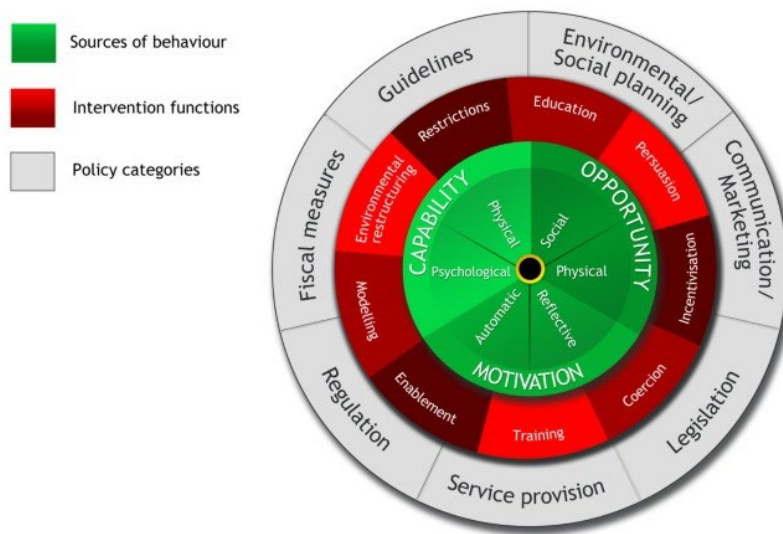
'Behaviour change intervention' is not synonymous with marketing or advertising. Often the interventions with the strongest impact on behaviour are in the design of services and the built environment. In transport, services can include, for example, the system to pay for public transport, number of transfers in a trip, or the frequency of trains. The built environment can include, for example, lighting on a cycleway, bus shelters, or the condition of the footpath travelled to get to a train station.

2 Background

2.1 Research method

Between 20 May to 13 June 2022, an online survey of drivers in Auckland was undertaken that:

- collected information on a recent car trip the participant had taken (including trip destination, purpose, time and day, and items transported)
- collected their perceptions about taking the same trip by another mode (public transport, cycling, or walking).

The survey was designed by RIMU in collaboration with the Transport Strategy Team and Dynata, an independent research service provider, who programmed and administered the survey. The project design was reviewed by Auckland Council's Research Ethics Advisory Group (reference 001-2022).

The survey started by collecting information on a recent car trip participants had taken. Participants were shown a map and asked to enter their start and end locations in a search box which placed pins and showed routes on the map. They were then asked to confirm which version of the route best matched their trip (see Figure 1 for an example). Completing this portion of the survey generated data about the driving trip and equivalent trips by non-car modes (e.g. duration, distance, elevation, as well as latitude/longitude coordinates for each transport mode version of the trip).

Figure 3: Survey map collecting information on driving trip
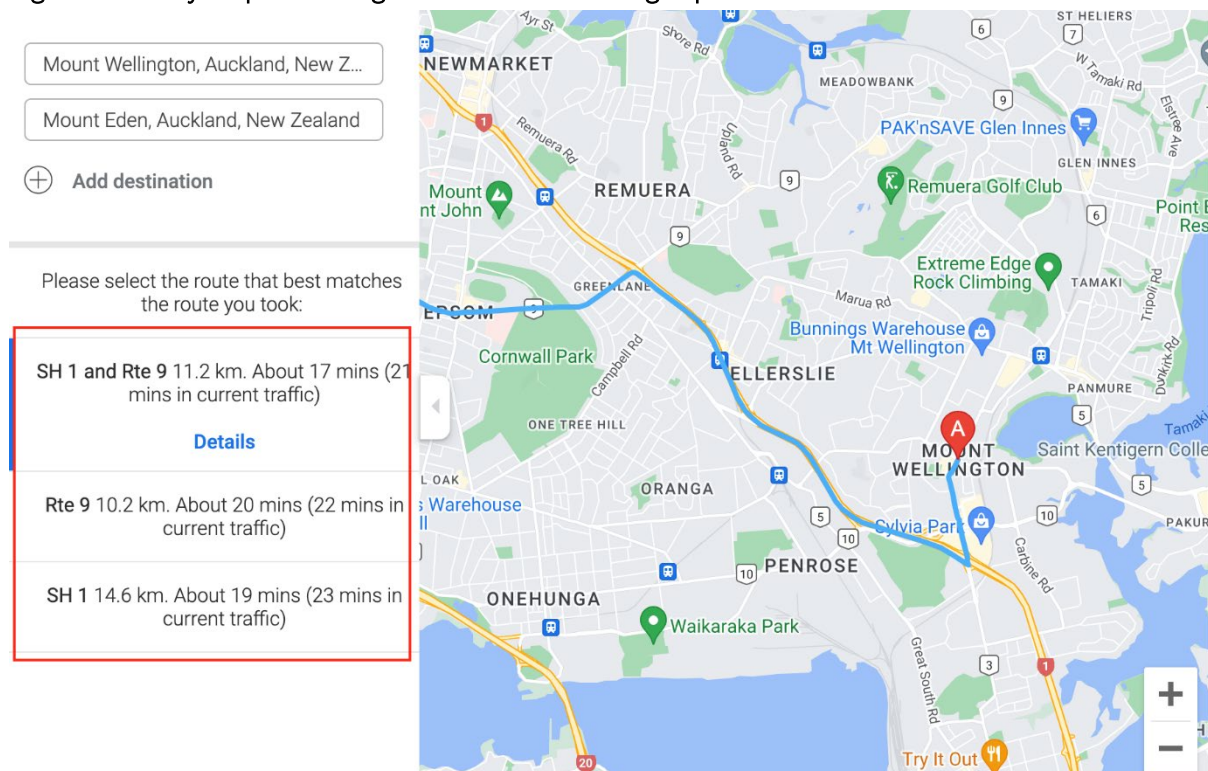
Participants were then asked a series of questions on their perceptions of public transport before being shown the equivalent trip by public transport, as calculated by Google Maps. Questions on perceptions of cycling and walking the trip followed (these were only asked if participants met

certain criteria as described below). Participants were then asked some attitudinal questions and finally their demographic characteristics. The questionnaire is in Appendix 1: Questionnaire.

Participants' responses to questions about their driving trip determined which later sections of the survey they were shown. Participants were <u>not</u> shown the series of questions about public transport, cycling, or walking if they indicated in the survey as having limited mobility or a disability that makes using these modes of transport very difficult or impossible[11]. Participants were shown the cycling questions if their driving distance was under 15km and were shown the walking questions if their driving distance was under 5km.

Figure 2 illustrates the survey flow. The black boxes in the diagram show how most participants (n=2352) went through the survey, and the grey boxes show sections asked of smaller proportions of participants (cycling n=1509 and walking n=465).

Figure 4: Questionnaire structure overview
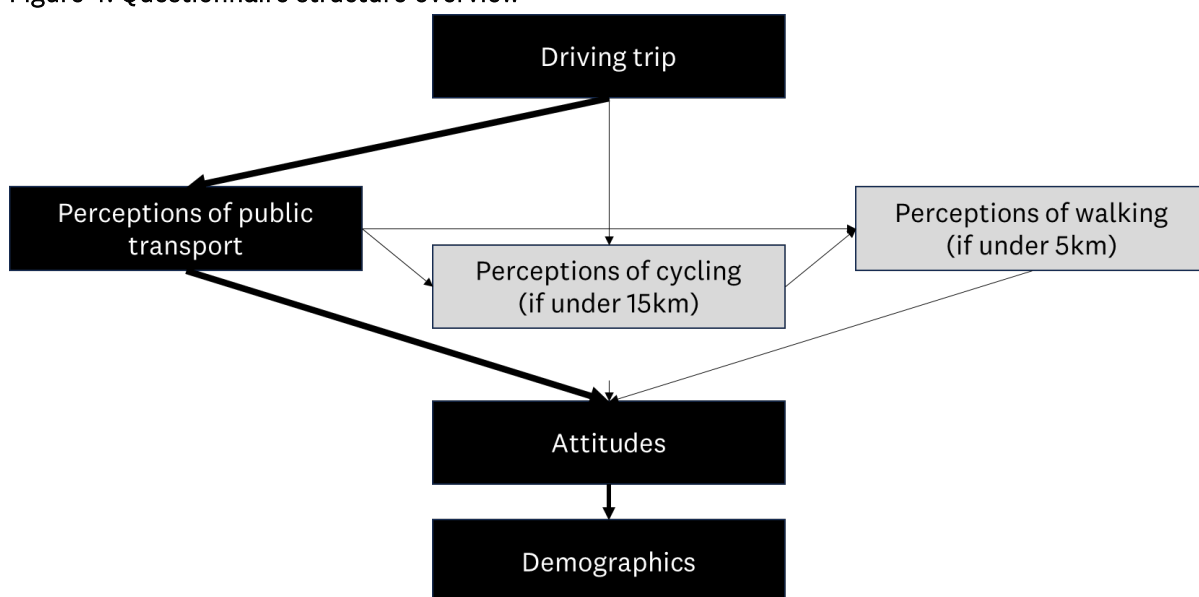
Data collection was administered by Dynata, who manage an independent commercial research panel. At the time of data collection, New Zealand was coming to the end of the omicron covid-19 variant outbreak and was in the orange traffic light setting which imposed some restrictions (e.g. face masks required indoors and on public transport)[12].

2.1.1 Terminology: trip and journey

It is common practice in transport literature to distinguish between a 'trip' and a 'journey'. A trip describes travelling from one location to another. A journey comprises of multiple trips to different locations (i.e. trip chaining) such as running errands.

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[11] Q15 and Q16 collected information about participant and passenger mobility (see Appendix 1: Questionnaire).
[12] https://www.policycommons.ac.nz/covid-19-policy-resources/covid-19-timeline/covid-19-timeline-2022/

The survey asked participants to describe a recent 'trip' and these trips could contain multiple stops at different locations (and so would more appropriately be described as a journey).

Perceptions surrounding non-car modes for trips and journeys are different; it is not appropriate to combine these when reporting on perceptions of non-car modes. Most trips described by participants were single-stop trips (as opposed to journeys). This report only includes trips participants described as being between their home and a single destination in their response to the map question described in Figure 1. As a result, the term 'trip' is used throughout this report.

Some participants answered the map question described in Figure 1 by including a single destination which categorised it as a trip (and not a journey). However, their open response comments indicate that the trip described was part of a larger journey (see comments following Figure 13).

2.2 Overview of the sample

The sample consisted of members of the Dynata panel who lived in Auckland, as well as members of Auckland Council's People's Panel.[13] A total of 4448 complete responses were received, 3238 of which were from the People's Panel and the remaining 1210 responses were from the Dynata panel (however, as discussed in the next section not all responses have been included in this analysis). A response rate of 1.3 per cent was achieved from the Dynata panel. These participants received $1 to complete the survey, as part of Dynata's incentive scheme. For the People's Panel, a response rate of 16 per cent was achieved and participants went in the draw to win one of four $100 e-gift vouchers. Broad quotas were applied across gender and age groups.

Inherently contradictory answers were excluded from the analysis, for example statements that the driving trip was completed in an EV and, when considering the cost of the trip, they thought about petrol.

Participant responses have only been included in this report if the trip they described had a start and end point within the Auckland Major Urban Area (see Figure 3). This is because access to non-car modes outside of this area have been deemed by the Transport Strategy team to be incomparable with those inside.

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[13] https://www.aucklandcouncil.govt.nz/have-your-say/have-your-say-through-peoples-panel/Pages/join-the-peoples-panel.aspx

Figure 5: Start points of the trips included in this report.
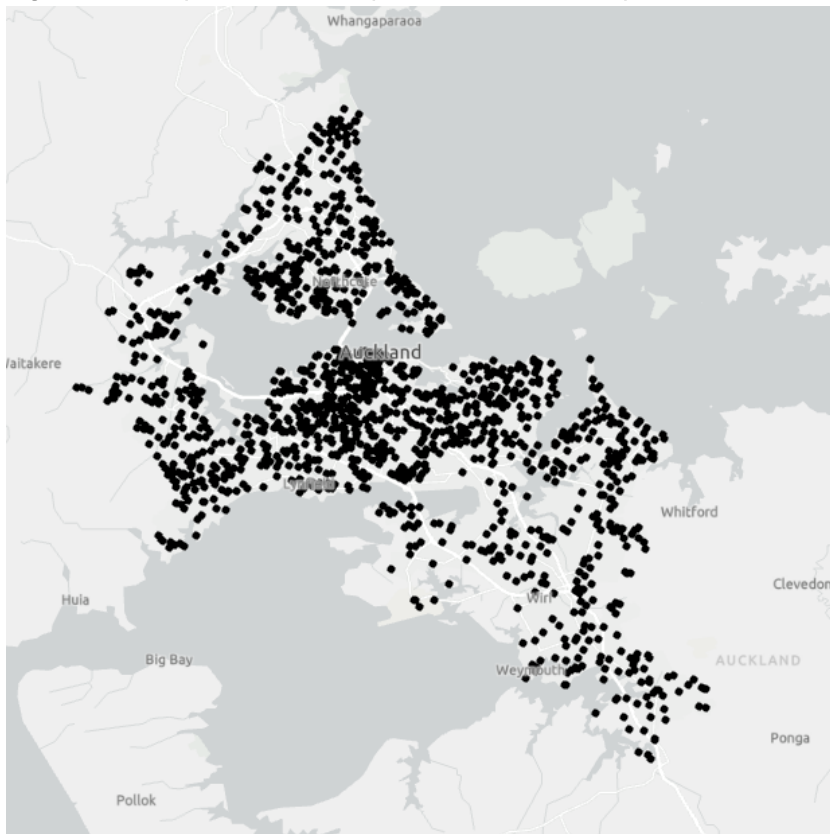
Survey responses were analysed by RIMU using both spatial analysis and statistical analysis software. Results were tested for statistical significance and differences in likelihood are reported. Open-text responses were coded and are reported as themes.

A sample of 2799 responses are discussed in this report. Demographic characteristics of the sample are described in Table 1. Selected cross tabulations of the participants sample are in Appendix 2: Participant sample.

Table 1: Participant sample

	Count	Percentage (%)
Gender		
Male	1333	48
Female	1376	49
Another gender	11	0
Prefer not to say	79	3
Age		
15-39	718	26
40-59	1236	46
60+	760	28
Ethnicity (multiple choice)		
European	1883	72
Asian	505	19
Māori	251	10
Pacific	127	5
Other	114	4
Area where participants live*		
North Auckland	594	21
West Auckland	466	17
Central Auckland	1011	36
East Auckland	351	13
South Auckland	377	13
Limited mobility or disability that makes the following very difficult or impossible (multiple choice)		
Using public transport	252	9
Cycling	366	13
Walking moderate or long distance	460	16
No problems doing any of the above	2227	80

*Note: Participants selected the area in which they live from the options displayed in the table as opposed to a suburb or statistical area with a defined geography. Participants may have varied interpretations as to the boundaries of East Auckland, for example, and may have inconsistently recorded their location.

2.3 Limitations

As mentioned previously, some survey questions resulted in poor quality data being collected and prevented all the stated objectives of the project being achieved. This is disappointing but not entirely unexpected as the objectives of this project were ambitious and required the development of innovative (therefore untested) data collection techniques.

There are several limits to this study:

- The design of the survey may have led participants to describe their most recent substantial trip rather than the most recent trip, if that recent trip was minor or spontaneous.
- Technical details of how the survey was programmed to calculate trips using non-car modes were not made available to RIMU, which prevented diagnosing and resolving errors in the survey dataset (e.g. public transport trips taking hundreds of hours).
- Some survey questions generated unexpected responses. For example, some participants reported their driving trip cost several hundred dollars. When asked what they were thinking

about when they gave that value, participants included the cost of the groceries that they purchased. The intention of this question was to gather information on the cost of the driving trip, **excluding** any activities undertaken along the way or at the destination. More rigorous cognitive testing and/or piloting of the survey could have identified and mitigated such unintended interpretations.

Considering these limitations, this report focuses on responses to survey questions that produced reliable data – namely questions about perceptions of public transport, cycling and walking.

3 Describing the driving trip

3.1 Reason for trip

The most frequently reported reason for participants most recent trip was going to work (35%) followed by a social visit or entertainment (20%) and shopping (16%) (see Figure 4). Nine in ten (90%) participants reported one reason for their trip, 8 per cent reported two reasons and 2 per cent reported three reasons.

Those who reported they were travelling to work were more likely to be describing a journey taken on a weekday (48-38% compared with 8% on Saturday or 4% on Sunday). Trips for the purpose of a social visit/entertainment (39-49% compared with 11-19% on weekdays) or shopping (26-28% compared with 11-17% on weekdays) were more likely to occur on the weekend.

Participants aged under 60 years were more likely to be travelling to work (40% under 60 compared with 20% over 60). No notable differences were seen across gender or ethnicity.

Figure 6: Reasons for the trip (n=2797) (%)
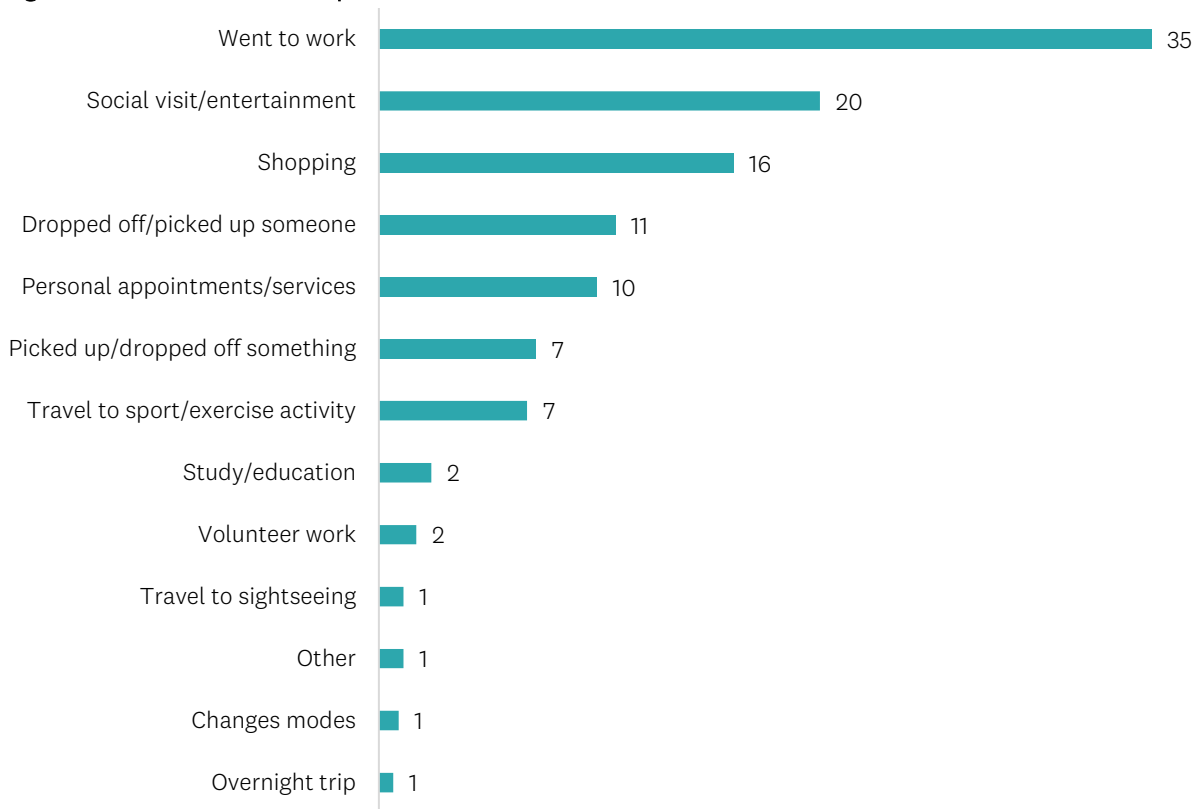
Note: Multiple responses allowed, therefore total does not sum to 100.

3.2 Passengers

Over half (58%) of the driving trips described by participants were undertaken alone. Twenty-nine per cent had one passenger and 8 per cent had three passengers.

Participants who were going to work were more likely to be travelling alone (48% compared to with 1 other person 16%, 2 other people 10%). Those who were travelling for a social visit/entertaining were less likely to be travelling alone (11% compared with one other person 22%, 2 other people 22%, 3 other people 38%, 4 other people 44%).

Figure 7: How many passengers participants travelled with (n=2799) (%)
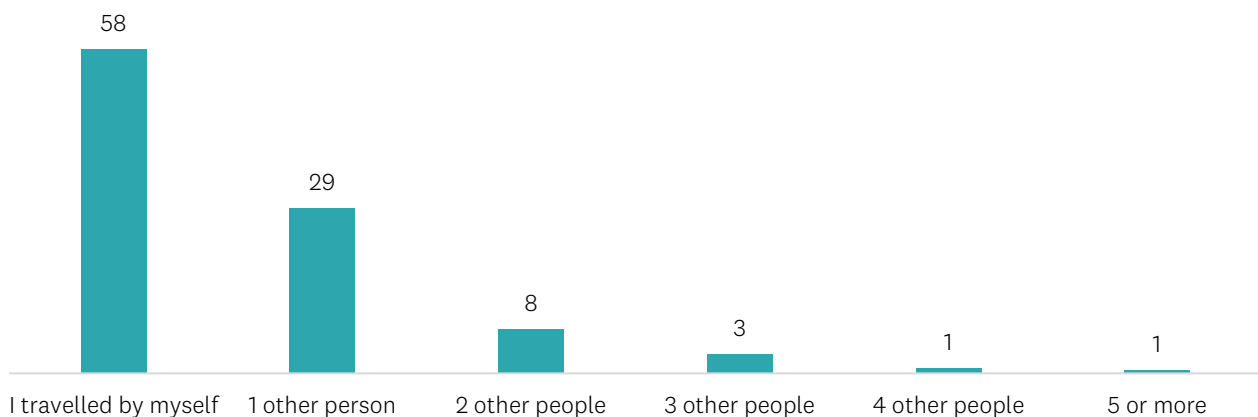
Of those participants who had one or more passengers, 30 per cent of these passengers were children and 70 per cent were adults.

Participants who were travelling with children were more likely to report the reason for their trip as being to drop off or pick up someone (34% travelling with 1 child, 32% travelling with 2 children, compared with 16% travelling with adults) or travelling to sport/exercise activity (14% travelling with 1 child, 12% travelling with 2 children, compared with 5% travelling with other adults).

Those who were travelling with other adults were more likely to report the reason for their trip as shopping (22% travelling with other adults compared with 12% travelling with 1 child and 9% travelling with 2 children).

Female participants were more likely to be travelling with one child (24%) compared with males (16%) who were more likely to be travelling without any children.

Figure 8: How many passengers were children aged 15 or under (n=1181) (%)
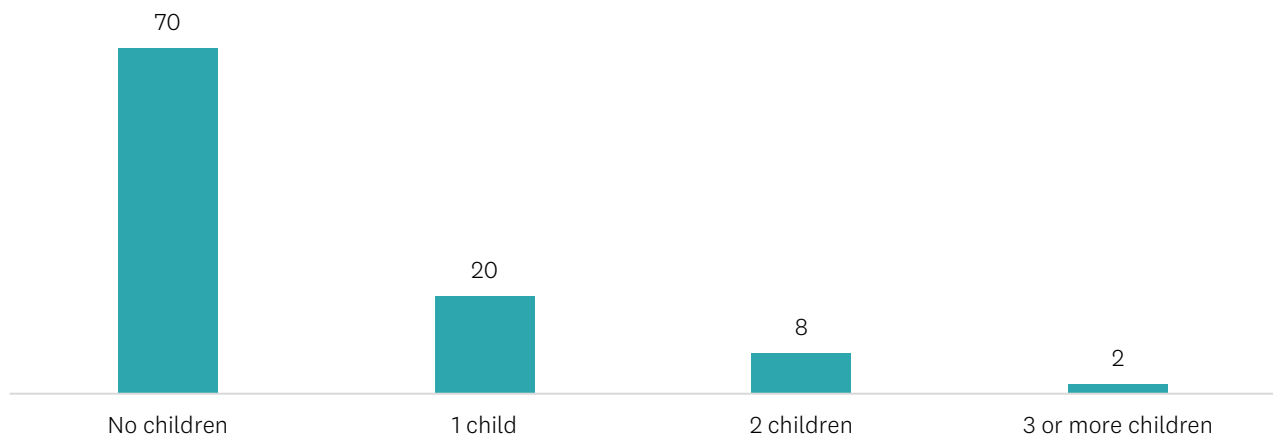
Note: Results are of those who travelled with one or more other people.

3.3 Transporting items

Two-thirds (64%) of participants took small items on their trip, one third (36%) took medium-size items (e.g. shopping bags) and only 7 per cent took larger items.

Participants transporting large items were most likely to be travelling for the purpose of picking up or dropping off something (18% compared with 3-8% for other trip reasons). Those transporting medium-sized items were more likely to be going to work (44%), sport/exercise (49%), study/education (54%), picking up/dropping off something (42%) or shopping (38%) compared with other trip reasons (personal appointment 24%, social visit 33%).

Figure 9: Items participants took on their driving trip (n=2799) (%)
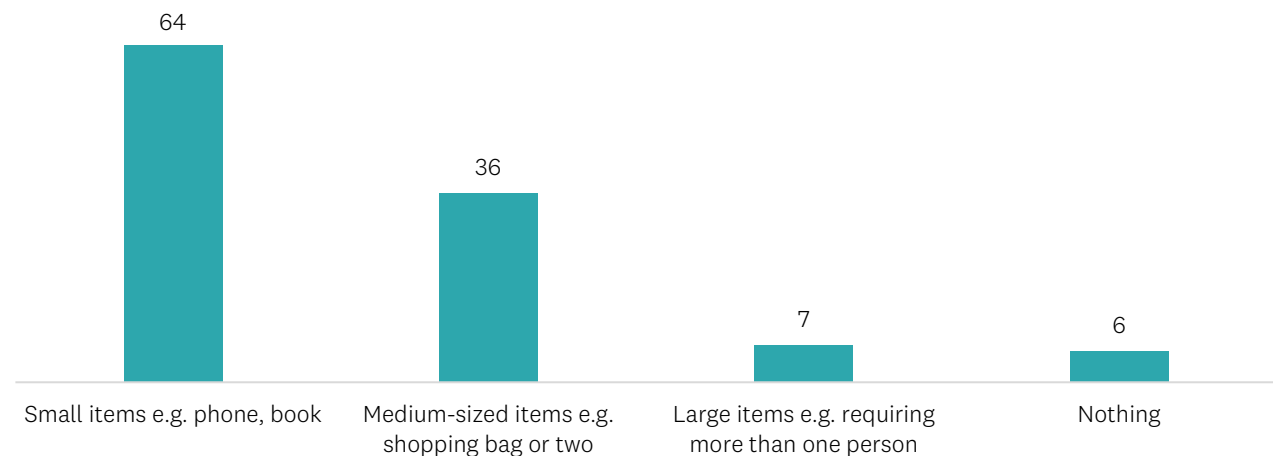
Note: Multiple responses allowed, therefore total does not sum to 100.

3.4 Vehicle fuel

The largest proportion of participants reported driving a petrol vehicle (78%). Much smaller proportions reported driving diesel (9%), hybrid (9%), battery electric (3%) or plug-in hybrid (1%) vehicles.

Figure 10: Vehicle fuel (n=2799) (%)
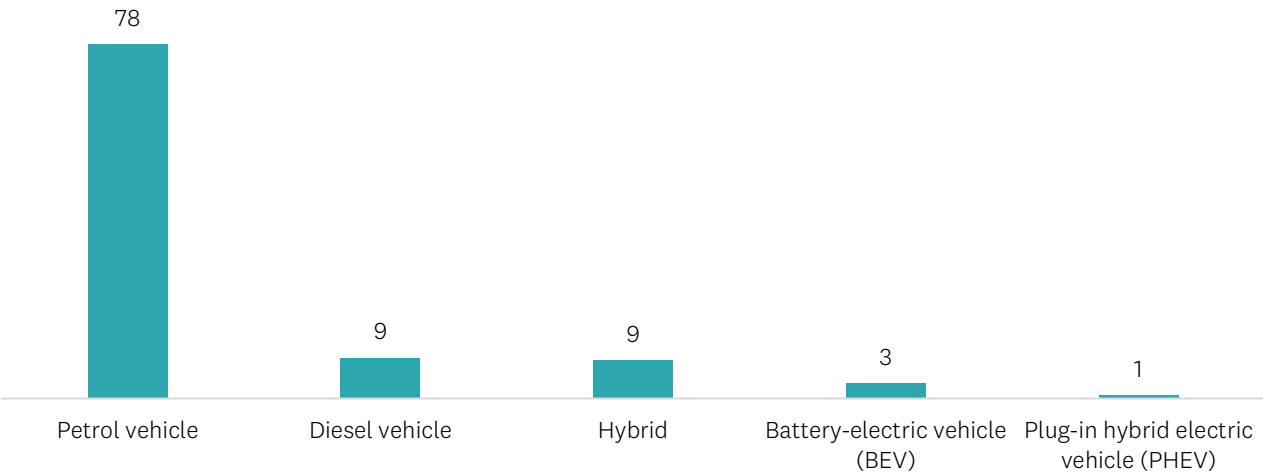
3.5 Trip times

Participants were asked how long they thought their driving trip took. Eighty per cent of trips were reported to take between 11 and 60 minutes. A small proportion (5%) of participants reported trips taking over an hour. The mean (average) reported duration of a trip was 37 minutes, and the median was 25 minutes[14]. The longest reported trip duration was 23 hours and 55 minutes. When trips reported to be over three hours in duration are excluded, the mean (average) trip duration becomes 28 minutes and the median 25 minutes. The strong skew in the distribution of trip durations suggests some outlier trips in the dataset.

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[14] Between 2018 and 2021, the average car trip leg duration reported in Household Travel Survey (HTS) across New Zealand was 16 minutes. **This metric is not directly comparable to the average for data collected in this study as it is New Zealand-wide.** Traffic and road conditions vary across the country and participant responses in this study are limited to the Major Urban Auckland Area. Additionally, data for the HTS is collected as a diary as opposed to a description of one recent trip.

Figure 11: Perceived duration of driving trip in hours and minutes (n=2717) (%)
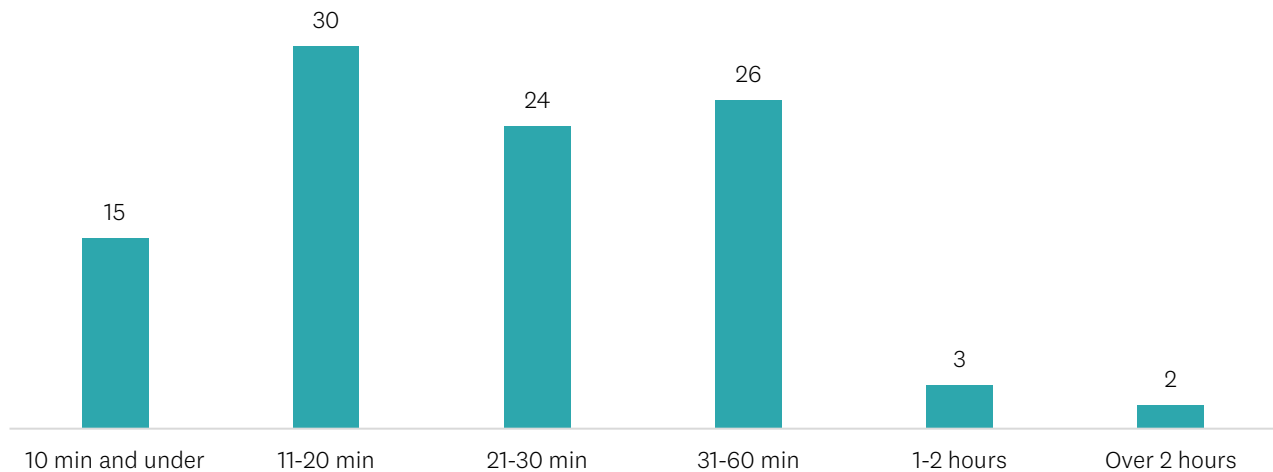
Participants who reported living in central Auckland tended to report a shorter driving trip duration than those living elsewhere. When analysis was restricted to trips with a duration of three hours or less, participants living in central Auckland have the shortest average trip duration of 23 minutes. Other areas have an average between 28 and 33 minutes.

Twenty-one per cent of those living in central Auckland reported a trip duration of 10 minutes or less, and 38 per cent reported a duration of 11-20 minutes. Those living in south Auckland reported longer driving trip durations with 8 per cent of trips being 1-2 hours in duration (between 1 and 4% for other areas).

Figure 12: Perceived duration of trip in hours and minutes, by region (%)
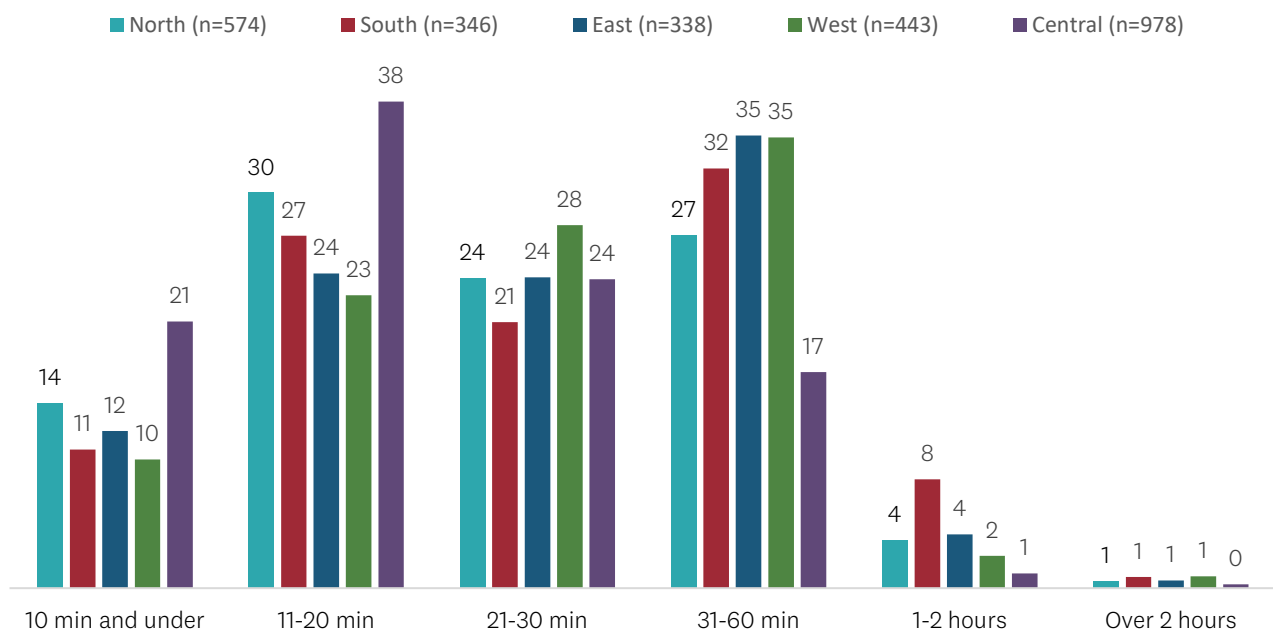
Note: Results are of trips with a duration of 3 hours or less.

4 Perceptions of public transport

After participants were asked questions about their recent car driving trip, they were then asked a series of questions related to doing that same trip by public transport. Results discussed below are for 2352 participants who did not indicate having limited mobility or a disability that makes public transport very difficult or impossible.

4.1 Perceptions of convenience

When asked to rate how convenient they would have found the car trip to do by public transport, the overwhelming majority (92%) of participants stated it would be less convenient than driving. Only 3 per cent stated that public transport would have been more convenient.

No significant differences in perceived convenience were found across different reasons for the trip, items transported, or number of passengers (including child passengers). Differences are also not seen across different days of the week, areas where participants live, or time of day the trip is taken.

However, older participants were more likely to report the trip would be much less convenient compared with younger participants (15-39 years 70%, 40-59 years 83%, 60+ years 88%). Participants who identified as NZ European/Pākehā were more likely to report the trip as much less convenient (86%) compared with Samoan (69%), Chinese (69%) or Indian (65%). Chinese participants (4%) were more likely than NZ European/Pākehā (1%) to report the trip would be much more convenient than driving.

Figure 13: How convenient the driving trip would have been to do via public transport (n=2352) (%)
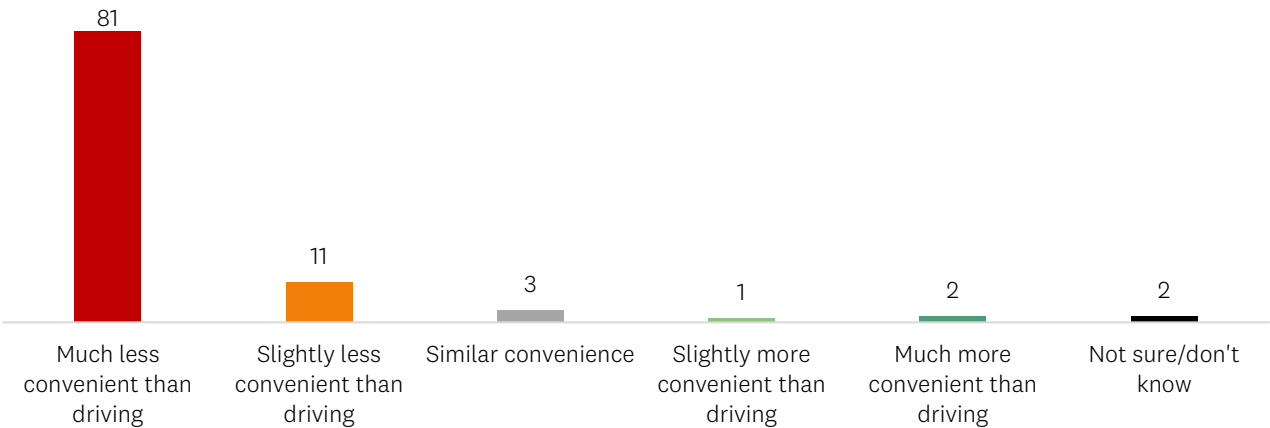
Participants who reported the trip would be less convenient than driving were asked why they thought it would be less convenient and were provided a list of reasons to choose from. The most frequently reported reasons selected related to having to transfer between more than one bus/train/ferry (53%), followed by services being too infrequent (42%), and services being too slow/taking too long (42%) (Figure 12).

Figure 14: Top 10 reasons why public transport would be less convenient than driving the same trip, among those who answered that the trip would be much less or slightly less convenient than driving (n=2164) (%)

Reason	%
I have to transfer between more than one bus/train/ferry	53
The services are too infrequent	42
The services are too slow/takes too long /don't have the time	42
Few or no services run to my destination at all or at the required time of day	40
It's too hard to carry the things I need to take with me	35
The services are too unreliable	35
It's too hard to plan the trip	33
Barrier travelling to/from bus stop, train station, ferry terminal	28
COVID-19 and general hygiene concerns	25
Dislike wearing a mask on public transport	14

Note: Multiple responses allowed, therefore total does not sum to 100.

Twenty-two per cent of participants (n=474) provided an open-ended reason why public transport was inconvenient, under the broad category of other. Many of these comments were back coded into the answer options provided in the survey as illustrated in Figure 12.

Comments included in the theme of 'services are too slow/takes too long/don't have the time' included the need to get up earlier in the morning, dislike of waiting for services, and inefficient use of limited time. For example,

> *It would double my travel time to nearly 2.5 hours return* – Central Auckland, 9am Monday[15]

> *I was only able to be away from home for a short time (I have a child to look after), therefore adding an hour to the trip makes it infeasible* – North Auckland, 2pm Wednesday

Comments provided in the theme of 'too hard to carry things I need with me' illustrate the impracticality of public transport as an option for that trip. Their comments referred to transporting pets, groceries, product/equipment for work such as chainsaws, and luggage.

> *My trip was also a trip to do laundry, it [would] have been a fair amount to take on public transport* – Central Auckland, 3pm Sunday

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[15] Quote captions reference the trip start location and date/time to the nearest hour.

I take two dogs to work, and I can't do that on public transport – Central Auckland, 6am Tuesday

Not practical for my job as I need to transport stock – West Auckland, 9am Monday

The theme 'barriers travelling to/from bus stop, train station, ferry terminal' included this being too far from the trip origin, a dislike of walking, and a lack of car parking at the stop/station/terminal.

I would have to walk for 30 minutes to get to a bus stop in the dark – West Auckland, 6am Wednesday

The bus stop is halfway between the school and the house – West Auckland, 8am Tuesday

Not all comments in the other option were able to be back coded into the provided answer options but were coded into new themes, as shown in Figure 13.

Figure 15: 'Other' reasons given by participants as to why public transport is less convenient than driving (chart shows counts)

Reason	Count
Bad, wet weather	59
Multiple stop trip	40
Safety concerns	37
Travelling with children	33
Not appropriate for trip reasons	19
Business travel	19
Need flexibility, accommodate unplanned travel	17
Wellbeing/personal ability reasons	16
Unpleasant environment	16
Public transport is not possible/inconvienent/general dislike	12
Travel for vehicle maintenance	10
Concern about return trip	9
PT is expensive/driving is cheaper	8
Being sick	2

Note: Multiple responses allowed.

A total of 59 participants provided a comment that related to bad, wet weather. These include comments about bus shelters lacking protection and getting wet in the walk to/from stops.

It was pouring with rain – East Auckland, 3pm Tuesday

Unpleasant/inadequate bus shelters in less than ideal weather. Dangerous walking environment around bus routes – Central Auckland, 8am Thursday

Multi-stop trip comments highlight the complexities of household travel patterns, with participants referring to running errands to multiple locations as well as doing things after work or on the way back home[16].

> *On my way to work I have to stop off to pick up the work mail from the PO Box. Also twice or three times a week I have to stop off to collect provisions for staff morning tea. I cannot get on and off buses conveniently and the trip would take a ridiculous amount of time* – Central Auckland, 8am Monday

> *Running errands on the way back would have been impossible by public transport, e.g. shopping, gym, doctor visit* – West Auckland, 6am Thursday

Safety concerns includes comments about travel at night, pedestrian safety getting to the stops/waiting at the stops, feeling threatened by other passengers, and concern for children's safety without car seats.

> *I might get there OK, but would feel very unsafe coming home by that method later at night*- West Auckland, 5pm Tuesday

> *It is not safe for women to travel on the bus and then walk a long distance at night* – Central Auckland, 6pm Wednesday

> *It's not safe using public transport especially at night in south Auckland* – East Auckland, Friday 8pm

Travelling with children includes comments about dropping-off/picking-up children, the amount of gear required to travel with children, safety concerns, or the ability of children to cope with the experience of public transport (getting to stops, appropriate behaviour).

> *I have a 3-month-old baby and all the gear to go with her* – Central Auckland, 11am Tuesday

> *Hard for child to walk to and from stops* – North Auckland, 9am Tuesday

> *Travelling with two young kids and keeping them occupied without disrupting other passengers is hard, particularly on the return trip (after 2 hrs walking around the zoo)* – Central Auckland, 10am Wednesday

Not appropriate for trip reasons includes comments about travel to, for example, the airport, funerals, medical appointments, driving lessons, and moving house.

> *Collecting arrivals from overseas, luggage, etc* – North Auckland, 1pm Thursday

> *Due to the nature of my medical appointment* – Central Auckland, 11am Monday

Business travel included comments about travelling for work such as to visit clients, site visits, and use of free company vehicles.

> *I see clients and needed to travel to two more locations on the day* – North Auckland, 11am Monday

> *I travel to and from work destinations, I don't just work in one place, I am a wholesale* – Central Auckland, Wednesday 11am

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[16] Note: the driving trip described by participants in the map question of the survey had a single destination even though these comments demonstrate their trip is or can usually be part of a larger chain of trips.

Need flexibility/to accommodate unplanned travel included comments about being in control of when travel happens and not being restricted to a schedule, running late, valuing a sense of freedom, and a want to be able to respond to any emergencies.

> *Taking my own car, I depart at a time that suits me. Not a time that suits the public transport schedule* – Central Auckland, 4pm Wednesday

> *I enjoy the comfort, freedom, and independence of having my own vehicle* – South Auckland, 6am Thursday

> *If I have to leave work for an emergency* – West Auckland, 6am Wednesday

Unpleasant environment described concerns about other passengers (e.g. loud, rude, general dislike of crowds/people) and lack of seating at stops as well as on vehicles.

> *No seating or bus shelter* – West Auckland, 10am Tuesday

> *Too crowded with school passengers* – East Auckland, 8am Thursday

> *Having to wait in the wet and cold, plus sitting next to other people, especially if personal hygiene is an issue for them, gross!* – South Auckland, 8am Wednesday

While there were no notable differences in response by area or gender, some differences were found by age and ethnicity, for example:

- Younger participants were more likely to say services are too infrequent or too unreliable (too infrequent: 48% aged 15-39, 41% aged 40-59, 38% aged 60+; too unreliable: 46% aged 15-39, 35% aged 40-59, 23% aged 60+). Transferring between more than one bus/train/ferry was more likely to be an issue for those aged 40-59 (53%) or 60+ (57%) compared with those aged 15-39 (46%).
- Participants who identify with an Asian ethnicity were more likely to report services being too infrequent (52%) compared to those who are Māori (36%), Pacific (33%), or European (40%).

4.2 Stress relative to driving

When asked how stressful the trip would have been to complete by public transport compared with driving, 74 per cent of participants reported the trip would be more stressful including 53 per cent reporting it would be much more stressful. Twelve per cent of participants reported the trip would be less stressful.

Figure 16: How stressful the trip would have been to be completed by public transport compared with driving (n=2352) (%)
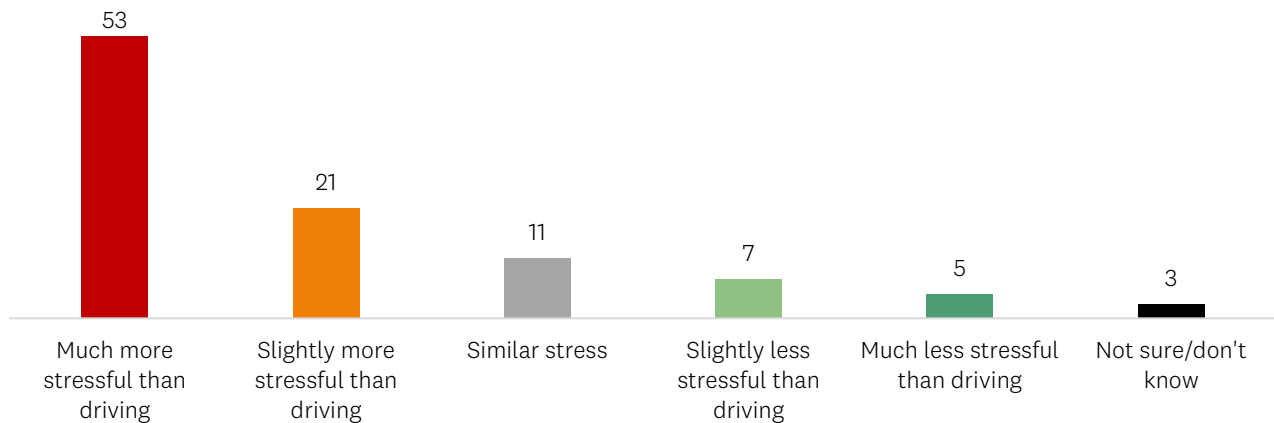
Male participants were more likely to report the same trip by public transport would be 'much less stressful than driving' (6%) compared with females (4%). Female participants were more likely to report the same trip by public transport would be 'much more stressful than driving' (56%) compared with males (49%).

Older participants were more likely to report the trip would be 'much more stressful than driving' (40-59 years 55% and 60+ years 56%) compared with younger participants (15-39 years 46%). Younger participants were more likely to report the trip would be 'slightly more stressful than driving' (15-39 years 28%) compared with older participants (40-59 years 19% and 60+ years 17%).

4.3 Perceptions of safety

Participants were asked to rate how safe from crime and harassment they would have felt. The largest proportion (32%) reported they would feel a similar degree of safety. However, 58 per cent reported they would feel less safe (much less safe 29% or slightly less safe 29%).

Figure 17:How safe from crime and harassment participants would have felt doing the trip by public transport compared with driving (n=2352) (%)
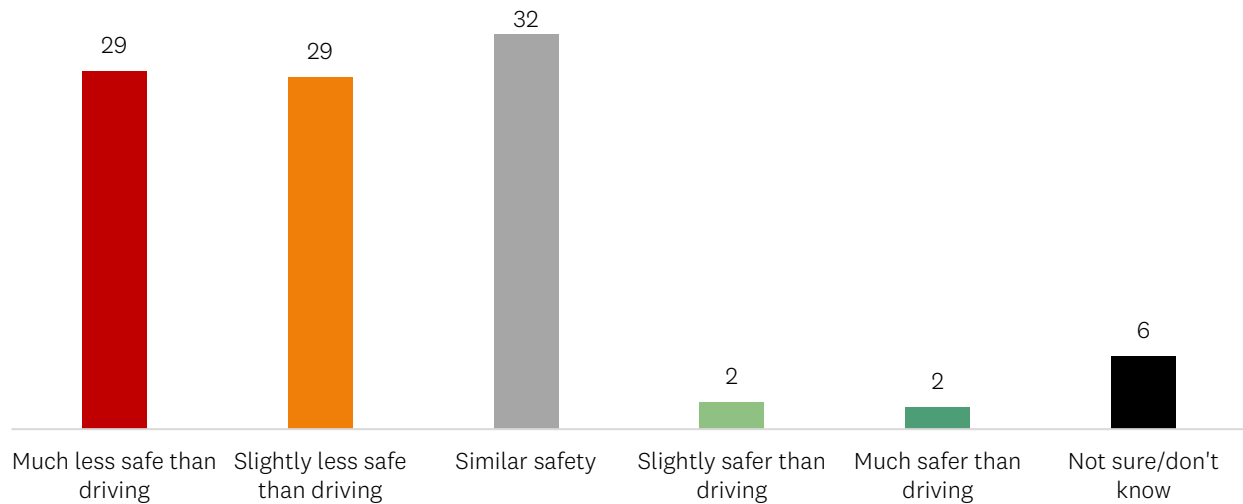
Participants in south Auckland were significantly more likely to report feeling 'much less safe than driving' (42%) compared with those in north (23%), west (32%) or central Auckland (26%). Meanwhile, those in north Auckland (39%) were more likely to report 'similar safety' compared with west (29%), east (28%) or south Auckland (23%). Participants who are Pacific (40%) or Asian (33%) were more likely to report feeling 'much less safe than driving' compared with European participants (26%).

Regarding safety from catching covid-19[17], half (51%) of participants reported a much lower feeling of safety compared with driving and 24 per cent a slightly lower feeling of safety. Fifteen per cent of participants reported a similar feeling of safety while 5 per cent reported a greater feeling of safety compared with driving.

No notable significant differences were found across demographic characteristics.

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[17] At the time of data collection, New Zealand was coming to the end of the omicron covid-19 variant outbreak and was in the orange traffic light setting which imposed some restrictions (e.g. face masks required indoors and on public transport).

Figure 18: How safe from catching covid-19 participants would have felt to do the trip by public transport compared with driving (n=2352) (%)

51	24	15	2	3	4
Much lower feeling of safety than driving	Slightly lower feeling of safety than driving	Similar feeling of safety	Slightly greater feeling of safety than driving	Much greater feeling of safety than driving	Not sure/don't know
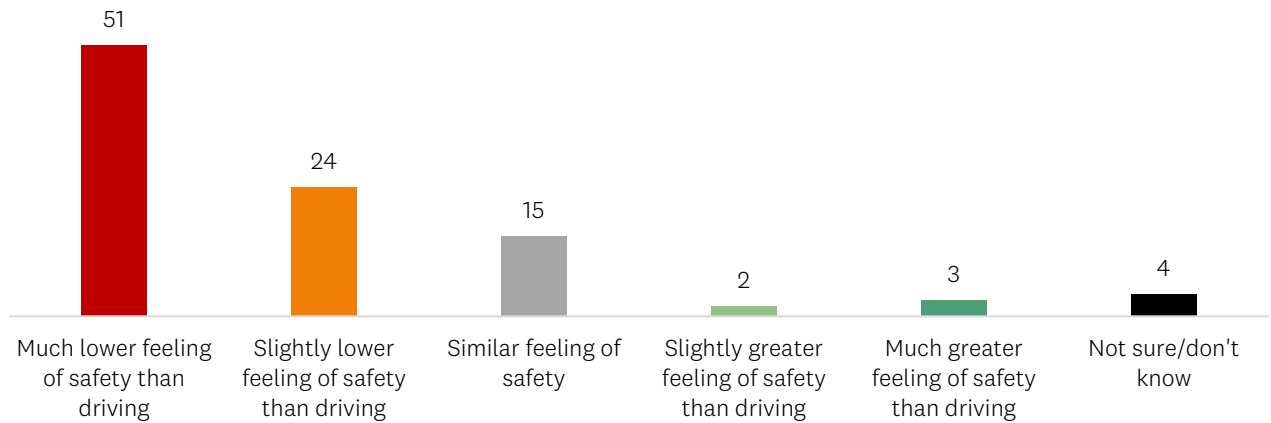
4.4 Perceptions of travel time using public transport

Participants were asked how long they thought the trip would take by public transport. The average (mean) expected duration of a trip was an hour and 10 minutes, and the median length one hour. This average is close to double the average perceived duration of the trip by driving (28 minutes).

Figure 19: Perceived duration of public transport trip in hours and minutes (n=1803) (%)

10 min and under	11-20 min	21-30 min	31-60 min	1-2 hours	Over 2 hours
2	11	15	31	34	7
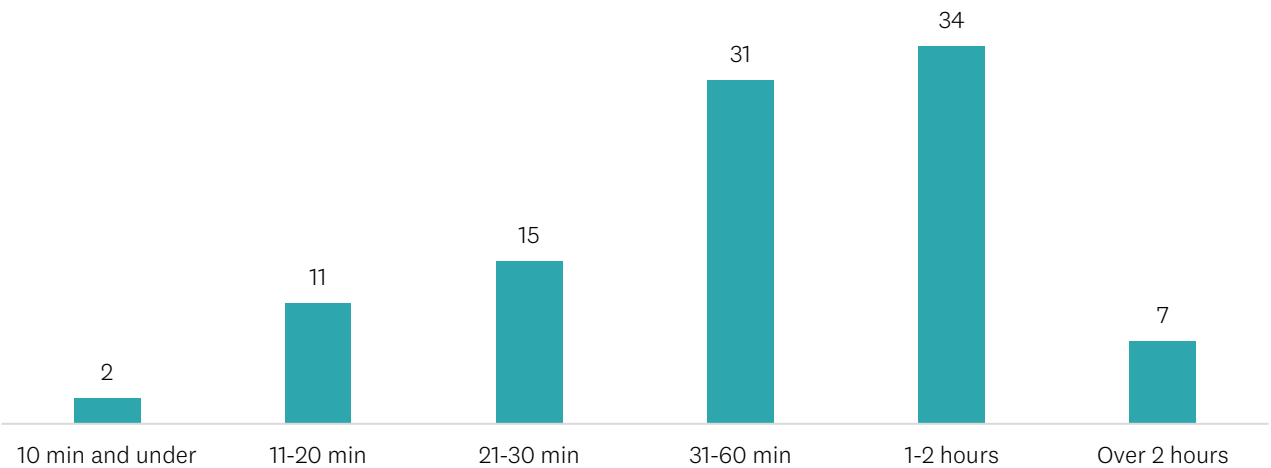
When participants perceptions of how long the trip would have taken by public transport are compared with the duration of the equivalent trip by public transport (as calculated by Google Maps) it appears that participants' perceptions were reasonably accurate. The equivalent trip by public transport is close to double the duration of driving. The average trip length calculated by Google Maps was an hour and one minute[18] which is not dissimilar to the perceived average at an hour and 10 minutes. The data generated through Google Maps contained some extreme values however which has limited simple comparisons with participant perceptions as was intended for this study.

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[18] Note: Excluding trips with a duration longer than 10 hours (n=30 values) gives the reported average value of an hour and one minute.

We found very few differences in the perceived duration of the equivalent trip by public transport by where participants lived. Participants who lived in central Auckland had a slightly lower perceived average duration of 55 minutes compared with other areas of Auckland (ranging from an hour and 3 minutes to an hour and 6 minutes) (Figure 18).

Figure 20:Perceived duration of equivalent driving trip by public transport in hours and minutes for each region (%)
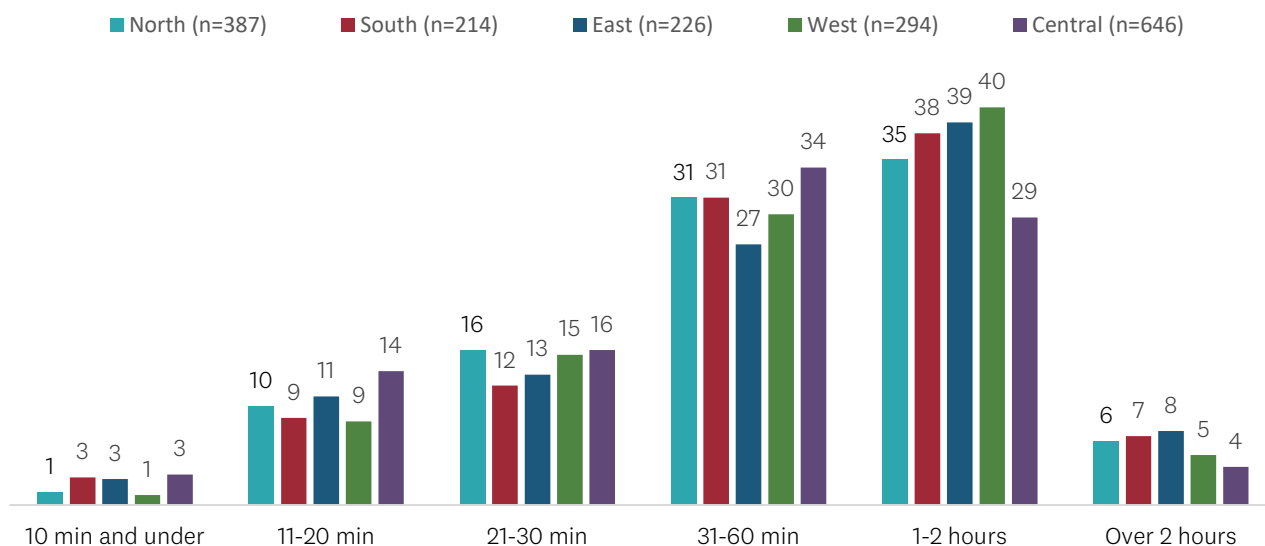
Note: Trips with a duration of 3 hours and under shown.

Across all areas in the Auckland region, participants perceive the equivalent trip by public transport to take at least twice as long as driving on average.

Table 2: Perceived average trip durations by driving and public transport

Area	Average driving trip duration (hours:minutes)	Average public transport duration (hours:minutes)	Public transport is X times as long on average
Central	0:23	0:55	2.4
West	0:32	1:05	2.0
North	0:28	1:03	2.3
East	0:31	1:06	2.1
South	0:33	1:05	2.0

Participants were asked, if public transport was fast, frequent, and reliable, would it be feasible for them to take it in the future. Participants generally responded positively with 40 per cent responding yes and 30 per cent maybe. This aligns with the reasons participants gave for perceiving public transport to be less convenient with 42 per cent reporting services being slow (i.e. not fast), 42 per cent stating being too infrequent and 35 per cent reporting being too unreliable.

Figure 21: Responses to the question if public transport was fast, frequent, and reliable for this trip (and covid-19 was no longer a problem), would it be feasible for you to take it in the future? (n=2352) (%)
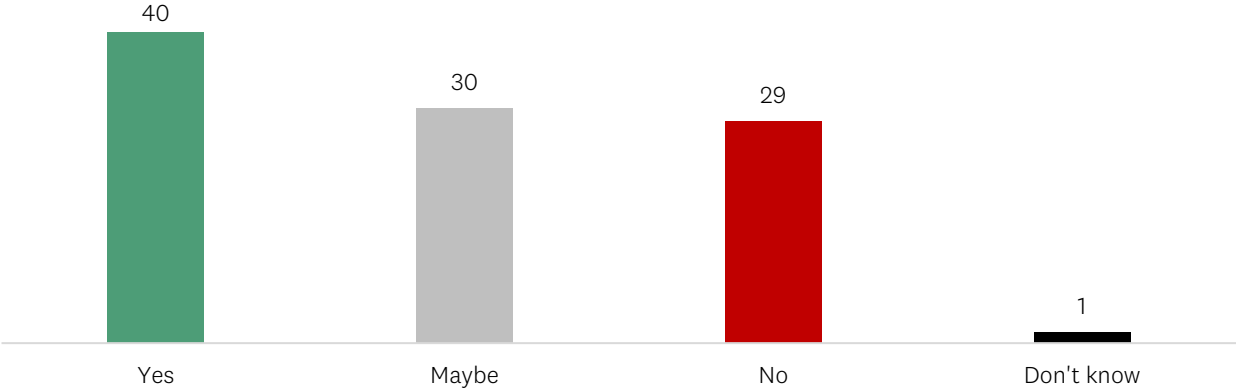
Asian participants were more likely to answer 'yes' (49%) compared with Pacific (34%), European (39%), Māori (36%) or another ethnic group (30%). Younger participants (15-39 years, 52%) were more likely to answer 'yes' compared with those aged 40-59 years (38%) or 60+ years (32%).

4.5 Response to Google Maps alternative trip

Participants were then shown the public transport equivalent trip to their driving trip as determined by Google Maps (to arrive at the same time) and were asked how likely they would be to take this trip. A very small proportion (9%) reported being very or somewhat likely to do so, while 83 per cent reported being very or somewhat unlikely to take this trip.

No notable significant differences in likelihood of taking the trip by public transport are seen across age groups, gender, ethnicity, day of the week, number of passengers (including children), reason for the trip, or items transported.

Figure 22: How likely participants would be to take the driving trip by public transport as shown on Google Maps (n=2352) (%)
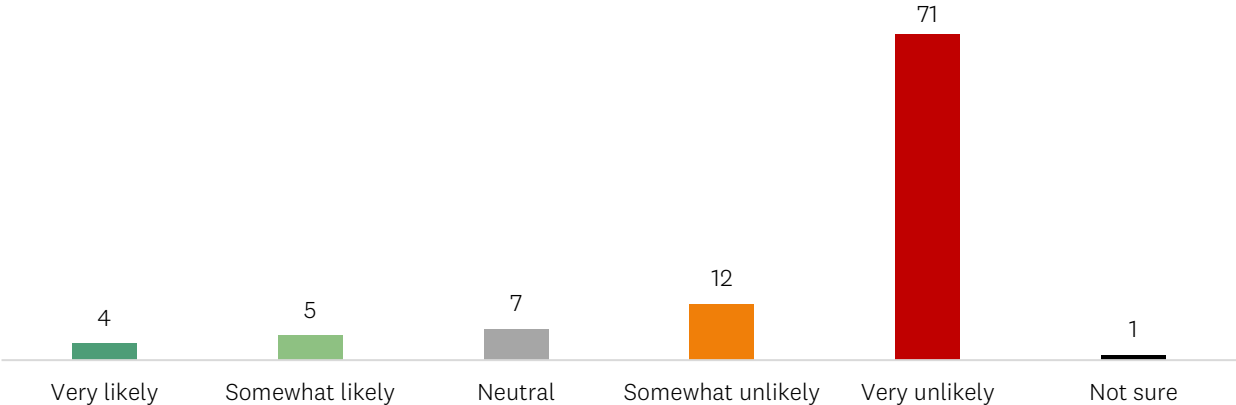
Participants were asked to explain why they were likely or unlikely to take the driving trip by public transport (Figure 21). The themes included in responses to this question are very similar to those covered in the question asking why public transport would be less convenient than driving such as taking too long, transferring services, being unreliable and safety concerns (Section 4.1 Perceptions of convenience).

Figure 23: Top 10 reasons why participants are likely/unlikely to take public transport (n=1332) (%)

Reason	%
Duration Compared to Driving	41
Time Concerns	41
Freedom/Flexibility	38
Multiple Transfers	31
Comfort	31
Station Concerns	28
Service Reliability	26
Dislike of Public Transport	15
Safety	14
Added Companions	14
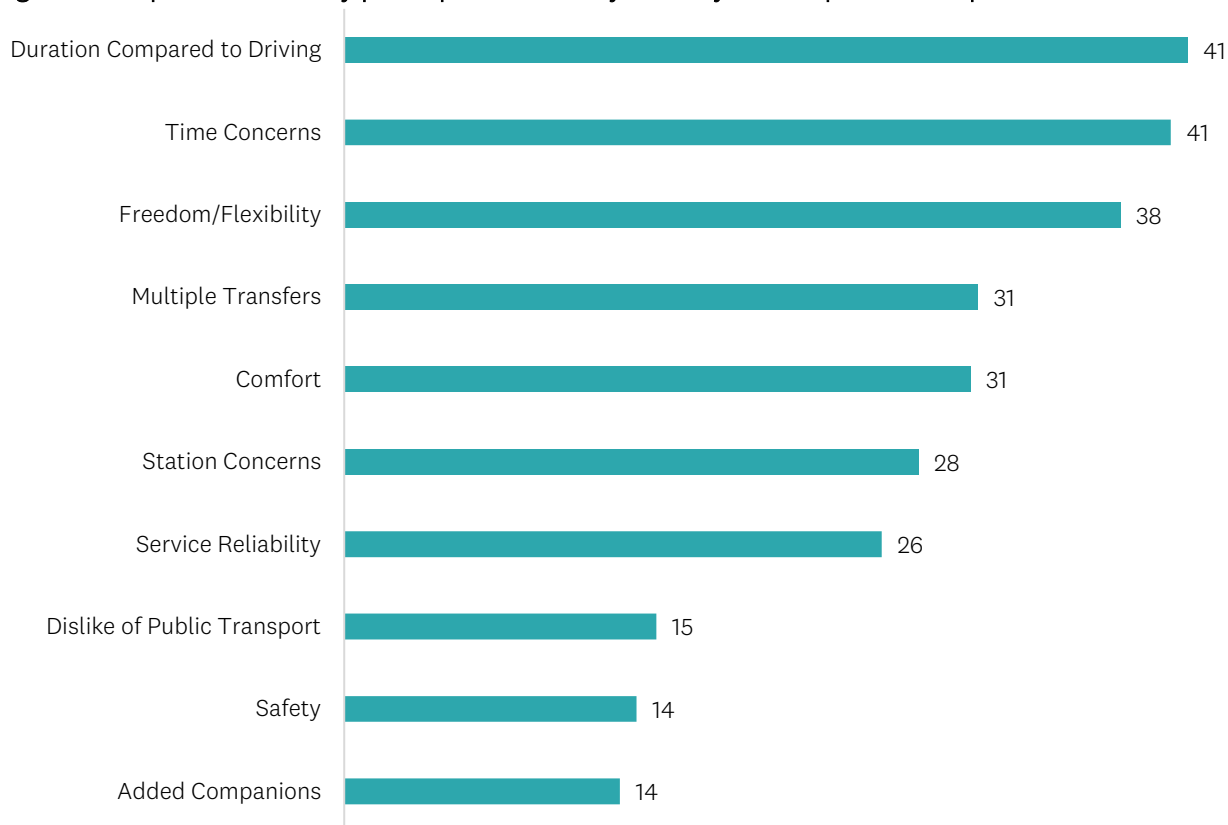
Forty-one per cent of participants commented that the trip by public transport would take more time than driving:

> *The trip duration is more than double that of a car* – Central Auckland, 7am Thursday

> *It would have taken 3.5 times longer to go by public transport which is terrible* – South Auckland, 9am Thursday

Related to this theme of taking longer than driving is the theme of other time concerns (41%). Comments in this theme represent how participants value their time and perceive taking public transport to be an inefficient mode of transport as it takes a long time.

> *Takes too long to reach destination* – Central Auckland, 12pm Saturday

> *Time is important, as I have other commitments that need to be met prior to going on this trip* – West Auckland, 9am Thursday

> *Would you waste 127 mins of your life!!* – Central Auckland, 4am Tuesday

Freedom/flexibility (38%) describes the need for transport to accommodate multi-stop trips, consider the return trip, and transporting items (e.g. groceries).

> *Having to take my daughter to swimming lessons involves a lot of gear and timing things right. She normally wouldn't be awake on time to leave extra early to catch public transport and she's super tired and cranky afterwards so having to wait for public transport with a tired crying baby isn't fun for anyone* – Central Auckland, 11am Tuesday

> *Need to go other places on way home not on that route* – East Auckland, 2pm Wednesday

Car is faster, more convenient, and allows immediate freedom to travel to other locations upon finishing the initial event – North Auckland, 12pm Sunday

Transferring between services was described by 31 per cent of participants. These comments can be about the time involved in transferring or simply express a dislike of changing services.

Takes triple the time to get there plus I have to change two buses to get to my destination- Central Auckland, 4pm Tuesday

I don't want to take multiple buses to get to a destination – North Auckland, Friday 3pm

The theme of comfort (31%) encompasses concerns around weather (i.e. wet, cold), fitting in with existing routines (e.g. waking up earlier in the morning), and perceptions surrounding convenience and personal capability to use public transport.

Much more hassle, have to get up much earlier – West Auckland, Friday 7am

Inconvenience, unsure how to navigate bus system, don't know how to pay for public transport – North Auckland, 4pm Thursday

So stressful to keep changing the buses and trains – South Auckland, 5am Monday

Station concerns (28%) describe barriers getting to and from stops/stations. This can include being too far or otherwise difficult to travel to (e.g. step hill, poor quality footpath) or conditions at the bus stop/train station (e.g. lack of protection from weather, safety).

COVID, distance to walk, waiting at crowded and cold bus stops, buses not turning up on time – North Auckland, 10am Monday

20-25 minutes vs more than 1 hour. Steep hills and slippery footpaths. Yeah nah – North Auckland, 5pm Tuesday

How can you carry a weekly shop for 13 mins – Central Auckland, 10am Wednesday

Service reliability (26%) describe services not running on time (e.g. being late, cancelled) or not being available at all.

Too long, services are too unreliable. Even if it were cheaper, I'd probably stick to the car for the convenience and not being tied to a timetable – Central Auckland, 11am Saturday

Neither the buses or trains have timetables scheduled to get me to work before 5am so have to use my car – South Auckland, 4am Friday

Fifteen per cent of participants expressed a general dislike of public transport.

NZ public transport is a hassle – Central Auckland, 9pm Wednesday

Public transport is disgusting – West Auckland, 9am Thursday

Safety concerns such as covid-19 and safety from crime or harassment were an issue for 14 per cent of participants.

It's also about personal safety - COVID and rising crime – East Auckland, 8pm Friday

Don't feel safe on public transport – West Auckland, 9am Friday

Added companions (14%) describes travelling with others including pets.

Because I still need to travel with my kids – East Auckland, 11am Wednesday

Lol I'm not going to carry my cat on public transport [19]– West Auckland, 12pm Thursday

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[19] Since the survey was conducted a change has been made by Auckland Transport to now allow pets on buses and trains: https://at.govt.nz/bus-train-ferry/luggage-bikes-animals/taking-animals-on-public-transport

5 Perceptions of cycling for transport

Participants who reported a driving trip of 15km or less, and did not report having limited mobility or a disability that made cycling impossible, were asked a series of questions about undertaking that same trip by bike. This group constituted just over half (54%) of the total sample referred to in this report (n=1509).

5.1 Access to a bike

Participants in this group were asked about their access to bikes for cycling in general. Close to 6 in 10 reported not having access to either a push bike or an e-bike. Thirty-seven per cent of participants had access to a push bike and 8% access to an e-bike (Figure 22).

Figure 24: Participants' access to bikes for cycling in general (n=1509) (%)
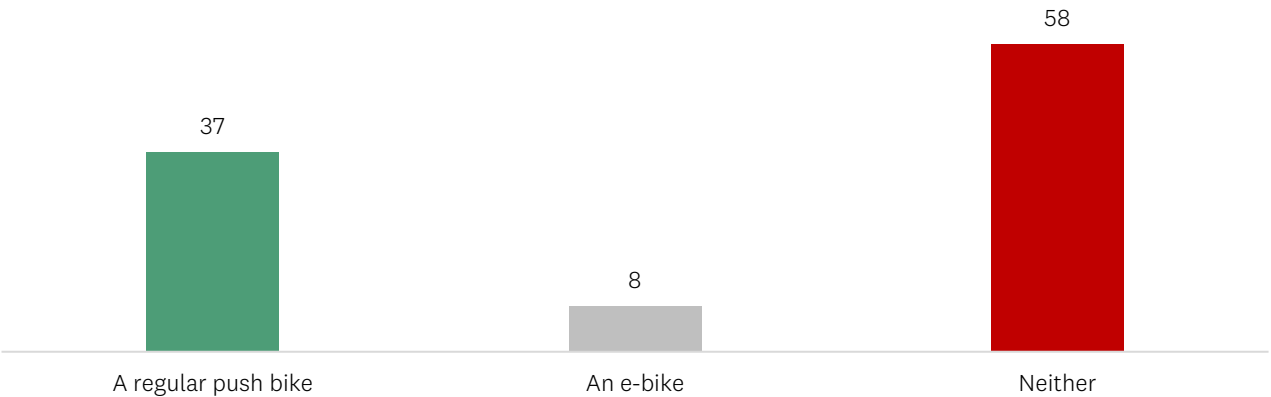
Middle-aged participants (40-59 years) were most likely to have access to a push bike (45%) compared with younger (15-39 years 35%) and older (60+ 24%) participants. Pacific (71%) and Asian (72%) participants were more likely to have access to neither kind of bike compared with European (54%). Male participants are more likely to have access to a regular push bike (42% male, 34% female) while female participants are more likely to have access to neither (62% female, 52% male). Participants with higher household income[20] were more likely to have access to a regular push bike, while those with a lower household income[21] were more likely to have access to neither an e-bike or regular push bike.

Participants who reported not having access to a bike were asked if they would consider using a bike for some trips. As Figure 23 shows, just over half (58%) reported that they would never consider riding a bike, 26 per cent said 'maybe' and 16 per cent said 'yes'. This suggests that access to a bike is a limiting factor for only a small proportion of participants (16%).

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[20] $200,000 or more 54% is significantly higher than $20,000-$60,000 17%, $60,000-$100,000 32%, and $100,000-$150,000 36%.
[21] $20,000-$60,000 79% is significantly higher than $100,000-$150,000 61%, $150,000-$200,000 50%, and $200,000 or more 40%.

Figure 25: Whether participants would consider using a bike (push bike or e-bike) for some trips (n=871) (%)
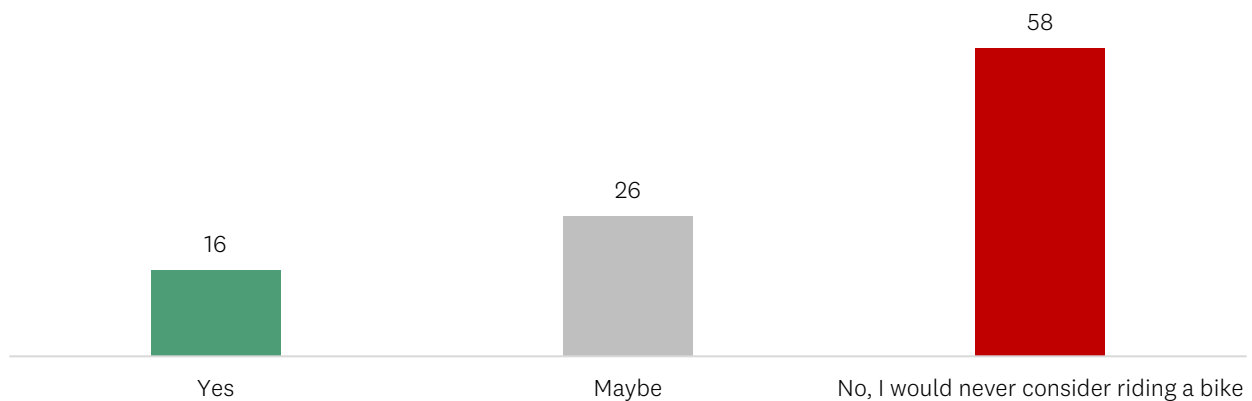
5.2 Likelihood of undertaking trip by bike

Forty per cent of participants who had access to a bike reported it would have been possible to do their driving trip on a bike (push bike or e-bike) and 11 per cent reported it would be possible only on an e-bike. Forty-two per cent reported that it would not have been possible on either type of bike.

Participants who live in Central Auckland (46%) were more likely to report their trip would have been possible on both a regular bike and e-bike compared to those in North Auckland (31%). Those in North Auckland (50%) were more likely to report the trip would not have been possible compared to Central Auckland participants (37%).

Participants who were travelling with children as passengers were more likely to report it would not have been possible (60%) compared with those who were not travelling with children (38%).

Figure 26: Whether participants perceive doing the equivalent driving trip by cycling would be possible (assuming they had a bike available) (n=1007) (%)
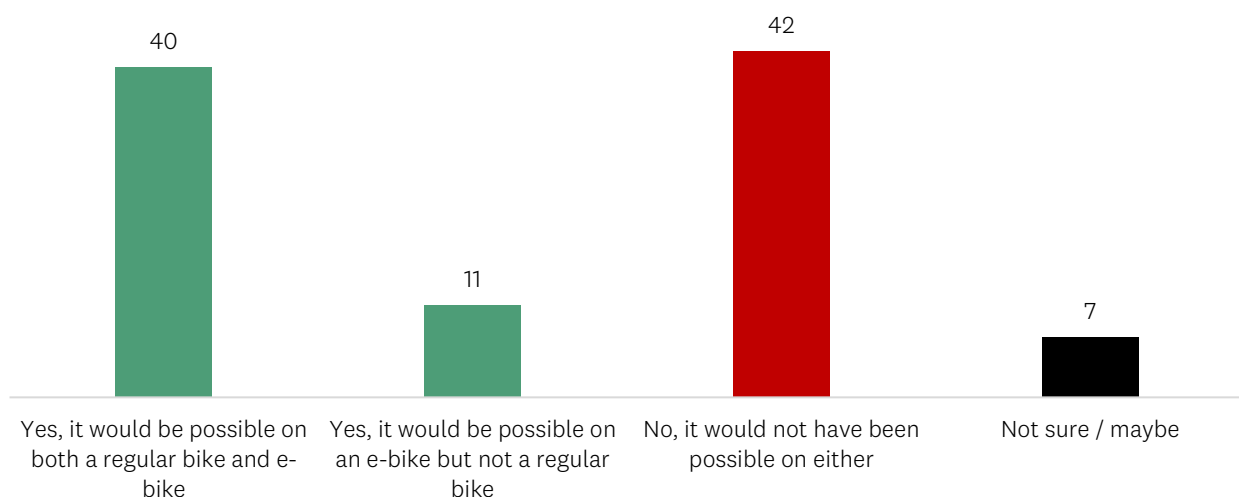
Participants who reported it would not have been possible to undertake the equivalent trip by bike were asked why. The most frequently reported reasons provided relate to safety concerns with 43 per cent of participants reporting the roads are too busy, 42 per cent saying the route is unsafe to cycle and 36 per cent reporting there are no cycle ways for the route. The route being too hilly was a barrier for 27 per cent of participants and a quarter reported lacking fitness of physical ability.

No notable differences in reasons why it would not be possible are seen across demographic characteristics, trip reasons or areas in Auckland where participants live.

Figure 27: Reasons why participants responded that it would not be possible to cycle the equivalent driving trip (n=603) (%)

Reason	%
The roads are too busy	43
Cycling this route is unsafe	42
No cycle ways for the route	36
Too hilly	27
Fitness lacking or physically unable	25
Transporting items	20
Lack confidence/experience cycling	20
No bike parking/storage at destination	12
Travelling with children or others	10
Bad weather	5
Takes too long/is too far	5
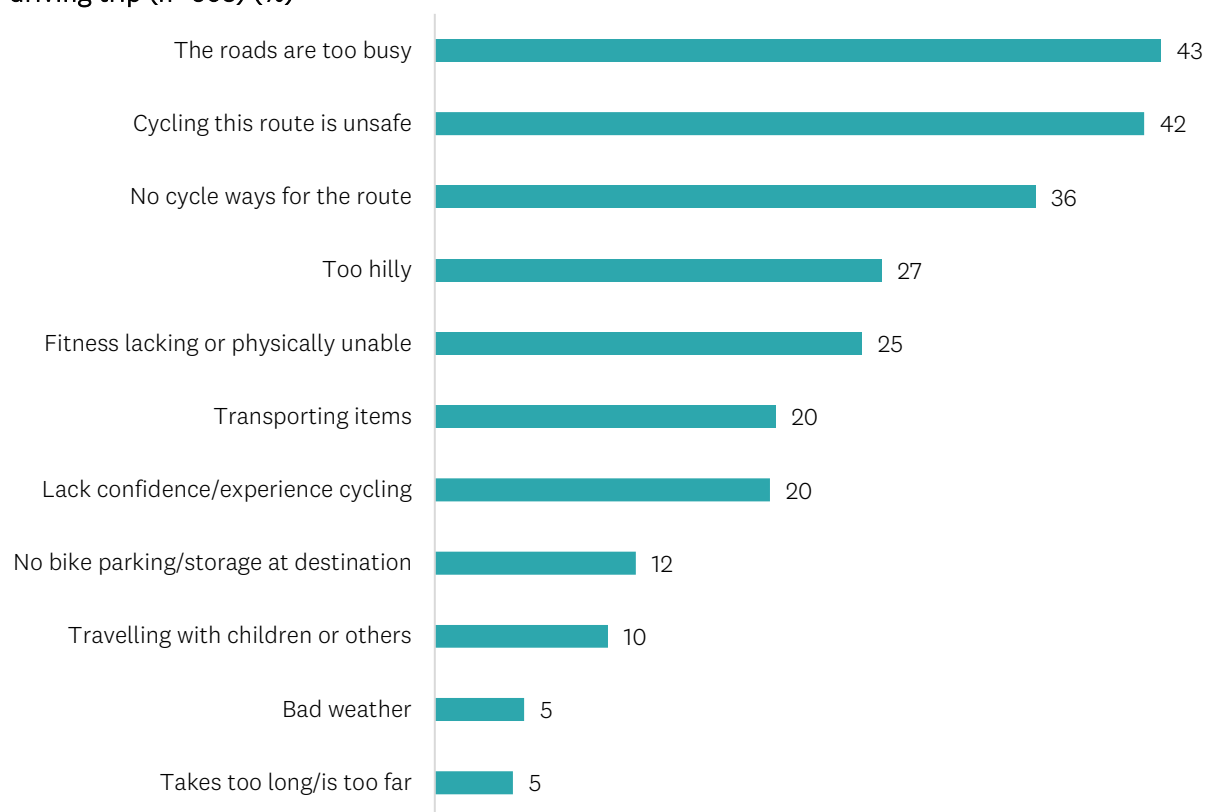
Almost half of participants (n=302) asked this question provided an 'other' reason as to why they think it is not possible to cycle the equivalent trip. As with other reasons for public transport being less convenient, the responses to this question provide further detail on barriers to cycling.

Several comments were back-coded into the response options roads are too busy, cycling this route is unsafe, and no cycle ways for this route. These comments were about the general themes of safety (from traffic, harassment, and assault) and infrastructure that accommodates cyclists (e.g. provision of cycle paths, barriers such as parked cars and motorways).

> *Journey was over the bridge and on the motorway* – Central Auckland, 12pm Tuesday

> *No way am I going to get on a bike and share the road with drivers here* – Central Auckland, 1pm Monday

> *Cycling is risky/dangerous in Auckland* – North Auckland, 2pm Friday

Transporting items included comments describing the volume and kinds of items participants were transporting (e.g. groceries, tools, school bags).

> *I had 3 bags of groceries with me so difficult to transport via cycle* – Central Auckland, 4pm Tuesday

> *I need to carry tools* – Central Auckland, 10am Tuesday

> *The bulky school bags make cycling dangerous* – Central Auckland, 7am Wednesday

Some participants were concerned about commuting to work which encompassed transporting items as well as facilities at the destination (e.g. bike storage, showers, gear storage), and reflect social norms around cycling (e.g. appropriate clothing for cycling).

> *Unsure how I'd carry work clothes, laptop etc. Unsure of facilities at end* – Central Auckland, 7am Wednesday

> *I have stuff I need to carry to work and who cycles in a suit?* – Central Auckland, 8am Wednesday

Travelling with children/others included comments describing passengers who were children, injured or otherwise unable to ride a bike, and transporting pets[22]:

> *Travelling with a new baby, pram etc* – North Auckland, 10am Wednesday

> *My passenger couldn't cycle due to injury* – East Auckland, 2pm Wednesday

Bad weather comments described rain, being cold or simply bad weather:

> *Because it was raining* – East Auckland, 9am Wednesday

> *The weather on the night was wet and cold* – North Auckland, 7am Friday

5.3 Perceptions of undertaking the trip by bike

Participants were asked questions about the perceived convenience, stress, and safety of undertaking the driving trip by cycling. Close to half of participants were asked these questions about cycling on a regular push bike, and the other half about cycling on an e-bike.

Eighty-eight per cent of participants reported that cycling on a regular push bike would be much less or slightly less convenient than driving, 7 per cent reported similar convenience and 4 per cent said slightly more or much more convenient than driving. Eighty per cent of participants reported that cycling on an e-bike would be much less or slightly less convenient than driving, 9 per cent reported similar convenience and 7 per cent said slightly more or much more convenient than driving.

Participants who were asked this question about an e-bike have more positive responses than those asked about a regular push bike. Those asked about a regular push bike were more likely to report the trip would have been much less convenient (69%) compared with an e-bike (52%). Those asked about an e-bike were more likely to report the trip would have been slightly less convenient (28%, regular push bike 19%), and slightly more convenient (4%, regular push bike 2%).

Few significant differences are seen across demographic characteristics or aspects of the driving trip (reasons, items transport, number of passengers). Older participants were more likely to report cycling on a regular push bike to be much less convenient compared with younger participants (40+ years 75%, 15-39 years 58%).

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[22] Since the survey was conducted a change has been made by Auckland Transport to now allow pets on buses and trains: https://at.govt.nz/bus-train-ferry/luggage-bikes-animals/taking-animals-on-public-transport

Figure 28: How convenient the trip would have been to do via cycling rather than driving (%)

Legend:
- Much less convenient than driving
- Slightly less convenient than driving
- Similar convenience
- Slightly more convenient than driving
- Much more convenient than driving
- Not sure/don't know

Category	Much less	Slightly less	Similar	Slightly more	Much more	Not sure
Regular push bike (n=497)	69	19	7			
E-bike (n=510)	52	28	9	4	3	3
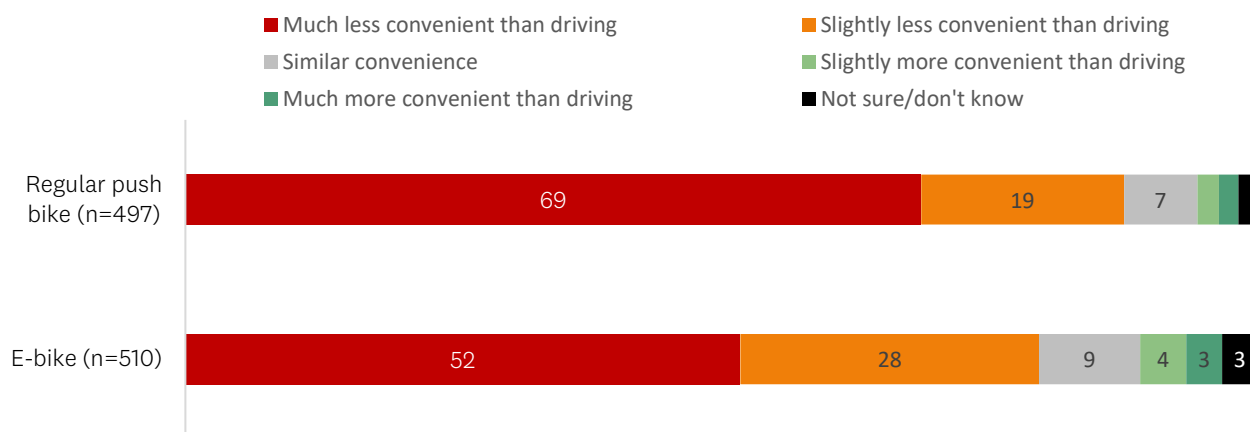
Eighty-two per cent of participants said the trip by regular push bike would be much more or slightly more stressful than driving and only 6 per cent reported the trip would be less stressful than driving. Seventy-eight per cent of participants said the trip by e-bike would be much more or slightly more stressful than driving and 8 per cent reported the trip would be less stressful than driving.

As with convenience, participants asked about using an e-bike have a slightly more positive response with 25 per cent saying slightly more stressful than driving (20% regular push bike) and 53 per cent saying much more stressful than driving (63% regular push bike), for a total of 78 per cent slightly or much more stressful than driving.

No notable differences are seen across demographic characteristics or aspects of the driving trip.

Figure 29: How stressful the trip would have been to be completed by cycling compared with driving (%)

Legend:
- Much more stressful than driving
- Slightly more stressful than driving
- Similar stress
- Slightly less stressful than driving
- Much less stressful than driving
- Not sure/don't know

Category	Much more	Slightly more	Similar	Slightly less	Much less	Not sure
Regular push bike (n=497)	63	20	10	4		
E-bike (n=510)	53	25	11	4	4	3
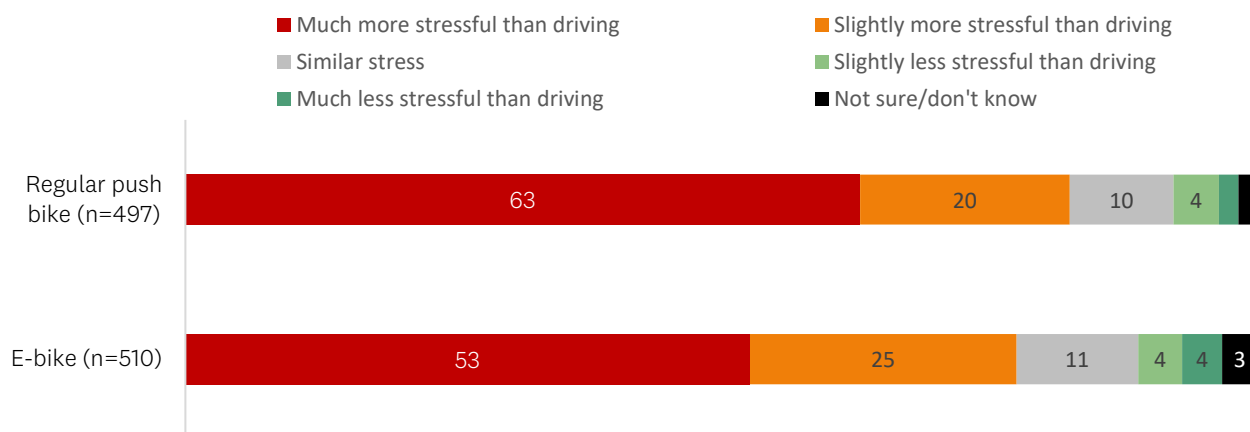
Close to two-thirds of participants asked about a regular push bike (61%) and e-bike (64%) reported a lower feeling of safety from crime and harassment when cycling compared with driving. Very small proportions of participants reported a greater feeling of safety from crime and harassment (3% regular push bike, 2% e-bike) while a third said they would have a similar feeling of safety from crime and harassment (33% regular push bike, 31% e-bike).

No notable differences are seen across demographic characteristics or aspects of the driving trip.

Figure 30: How safe from crime and harassment participants would have felt to do the trip by cycling compared with driving (%)

Legend:
- Much lower feeling of safety than driving
- Slightly lower feeling of safety than driving
- Similar feeling of safety
- Slightly greater feeling of safety than driving
- Much greater feeling of safety than driving
- Not sure/don't know

	Much lower	Slightly lower	Similar	Slightly greater	Much greater	Not sure
Regular push bike (n=497)	38	24	33	2		
E-bike (n=510)	36	27	29			5
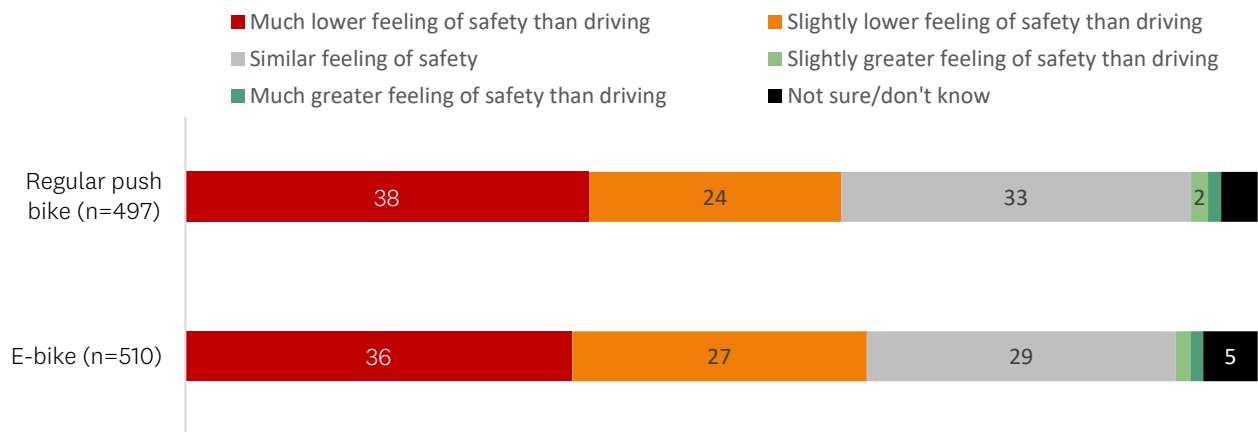
Over two-thirds (67% regular push bike, 68% e-bike) of participants reported much lower feeling of safety from injury when cycling compared with driving and a fifth (20% regular push bike, 19% e-bike) reported a slightly lower feeling of safety. Seven per cent of participants reported a similar feeling of safety on a regular push bike (7% e-bike) and 3 per cent a greater feeling of safety (2% e-bike).

No notable differences are seen across demographic characteristics or aspects of the driving trip.

Figure 31: How safe from injury participants would have felt to do the trip by cycling compared with driving (%)

Legend:
- Much lower feeling of safety than driving
- Slightly lower feeling of safety than driving
- Similar feeling of safety
- Slightly greater feeling of safety than driving
- Much greater feeling of safety than driving
- Not sure/don't know

	Much lower	Slightly lower	Similar	Slightly greater	Much greater	Not sure
Regular push bike (n=497)	67	21	8	2		
E-bike (n=510)	68	19	7			3
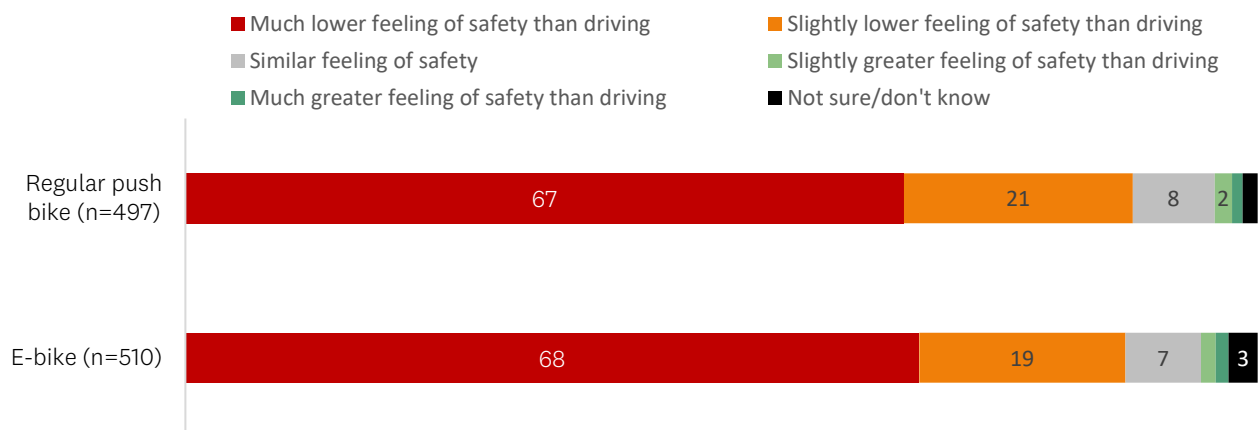
6 Perceptions of walking for transport

Participants who reported a driving trip with a distance of less than 5km were asked a series of questions about walking/wheeling[23] their equivalent driving trip. This group constituted approximately 16 per cent of the total sample discussed in this report (n=465).

Almost 8 in 10 among this group (78%) reported walking/wheeling would be much less convenient than driving and 13 per cent reported it would be slightly less convenient. Three per cent reported walking/wheeling would be more convenient and 5 per cent said a similar convenience. No significant difference in perceived convenience is seen across demographic characteristics, area participants live or reason for the trip.

Figure 32: How convenient the trip would have been to do by walking/wheeling rather than driving (n=465) (%)
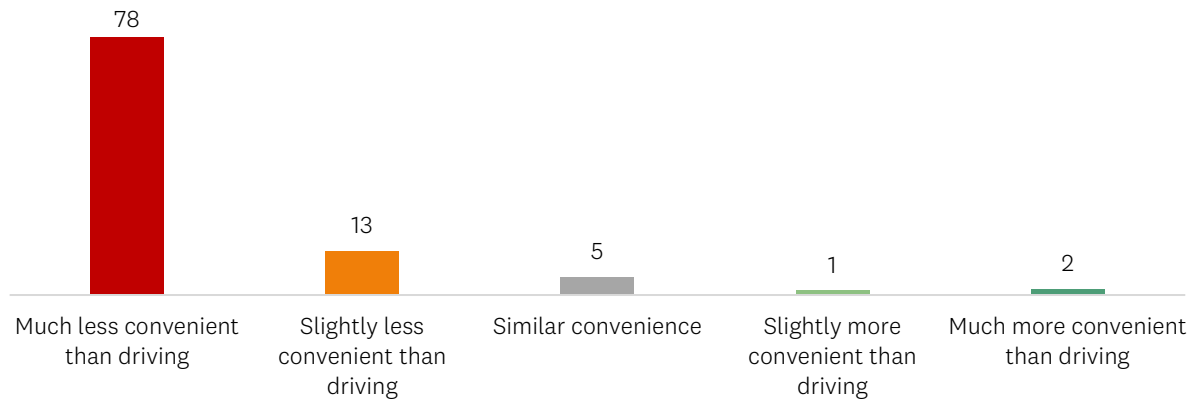
Participants in this group were also asked how stressful the trip would have been to walk/wheel compared with driving. Compared with public transport or cycling the response to this question is positive with a third (32%) of participants describing walking/wheeling as less stressful than driving (12% of participants reported PT would be less stressful, and 7 per cent reported cycling would be less stressful). Forty-six per cent of participants reported walking/wheeling would be more stressful than driving.

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[23] Where participants indicated they, or someone they were travelling with, has a wheelchair or mobility scooter that enables them to travel 'walking distances' the questions asked about 'wheeling' as opposed to 'walking'. 41 participants were asked about 'wheeling'.

Figure 33: How stressful the trip would have been to be completed by walking/wheeling compared with driving (n=465) (%)
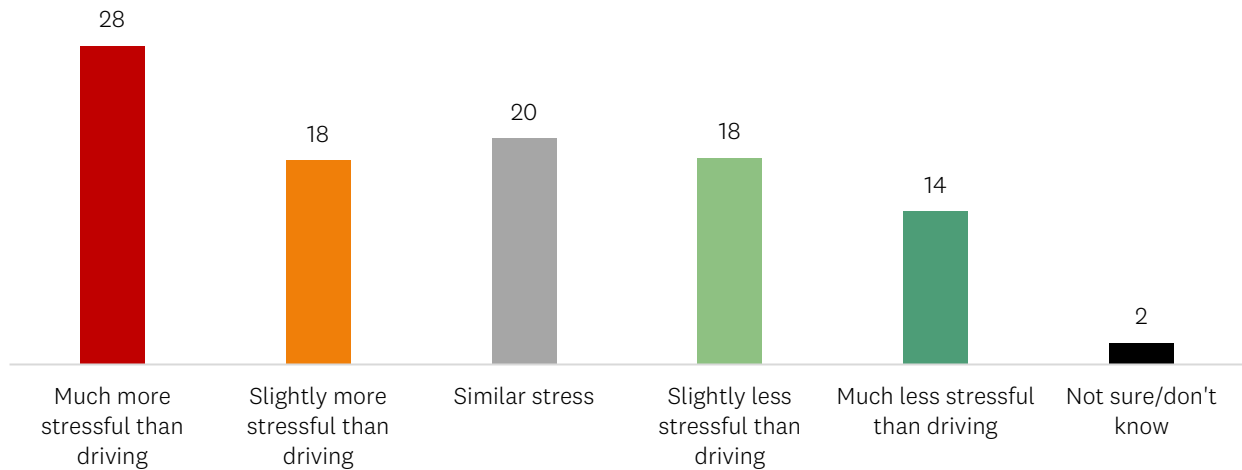
Participants were asked how safe from crime and harassment they would have felt. Forty-three per cent of participants reported a similar feeling of safety while 6 per cent report a greater feeling of safety and 49 per cent a lower feeling of safety.

Figure 34: How safe from crime and harassment participants would have felt to do the trip by walking/wheeling compared with driving (n=465) (%)
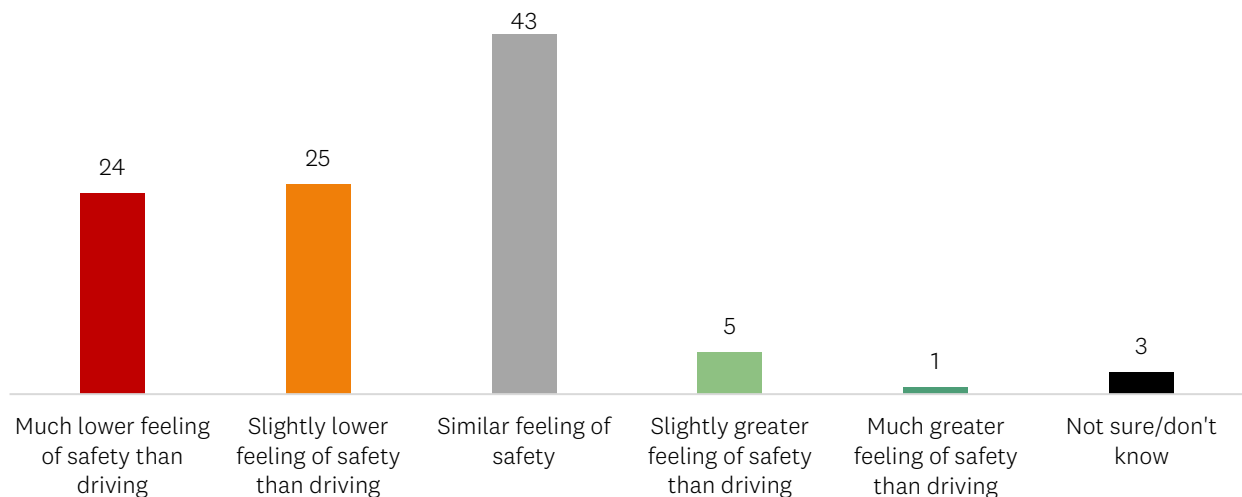
Participants were asked how safe they would have felt from injury when walking/wheeling compared with driving. Forty-four per cent of participants report a similar feeling of safety compared with driving. Four in ten (40%) report a lower feeling of safety while 14 per cent report a greater sense of safety from injury.

Figure 35: How safe from injury participants would have felt to do the trip by walking/wheeling compared with driving (n=465) (%)
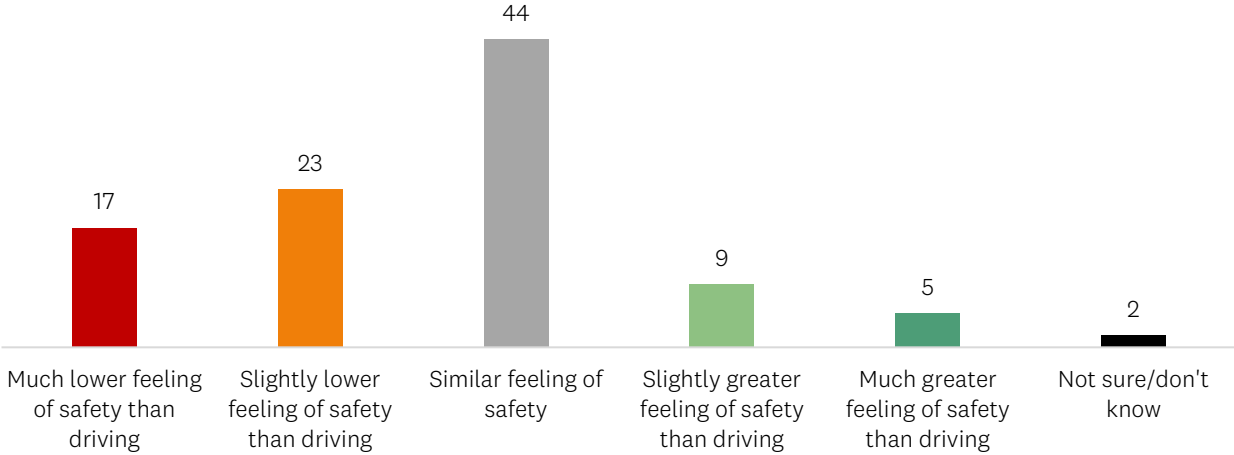
7 General attitudes towards driving

The final part of the survey asked participants to rate the extent to which they agreed or disagreed with five broad statements about driving. The questions were designed to explore social norms.

Overall results are shown in Figure 34 and discussed below.

Forty-two per cent of participants disagreed with the statement 'I love driving in Auckland' while a third (33%) were neutral and a quarter (24%) agreed. Younger participants (15-39 20%, 40-59 16%) were more likely to strongly disagree compared with older participants (60+ 11%).

Half (51%) agreed with the statement 'I find driving in Auckland stressful', a quarter (26%) answered neutral, and a quarter disagreed. Older participants were more likely to disagree (60+ 6% strongly disagree, 20% disagree) compared with younger participants (15-39 5% strongly disagree, 15% disagree).

Close to six in ten (58%) participants reported they disagree with the statement 'a vehicle provides status and prestige', a quarter (25%) were neutral and 14 per cent agreed.

Participants were asked to rate their agreement with the statements 'people close to me take public transport in Auckland' and 'people close to me cycle in Auckland'. It is acknowledged that these statements may have been interpreted by participants in different ways. For example, some participants may have been thinking about physical proximity, such as their neighbours, whereas others might be considering people with whom they have a close relationship, such as a partner or good friends.

Forty per cent of participants disagreed with the statement 'people close to me take public transport', 15 per cent answered neutral and 38 per cent agreed. Fifty-four per cent of participants disagreed with the statement 'people close to me cycle in Auckland', 14 per cent neutral and 25 per cent agreed.

Younger participants (15-39 PT 32%, cycle 22%) were more likely to agree with both statements compared with older participants (40-59 PT 27%, 16% cycle, 60+ PT 21%, cycle 16%).

Participants who live in central Auckland (12%) were more likely to strongly agree with the statement 'people close to me cycle in Auckland' compared with all other areas in Auckland (north 7%, west 6%, east 4%, south 4%). Those in central Auckland were also more likely to agree (31%) with the statement 'people close to me take public transport in Auckland' compared to those in west (22%), east (16%) and south Auckland (23%).

Figure 36: Attitudes towards driving (%)

Legend: ■ Strongly disagree ■ Disagree ■ Neutral ■ Agree ■ Strongly agree ■ Don't know / Not applicable

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Don't know / Not applicable
I love driving in Auckland (n=2799)	16	26	33	17	7	
I find driving in Auckland stressful (n=2799)	5	17	26	34	17	
A vehicle provides status and prestige (n=2799)	28	30	25	11	3	2
People close to me take public transport in Auckland (n=2799)	14	25	15	26	11	7
People close to me cycle in Auckland (n=2799)	27	27	14	18	8	7

8 Discussion

As mentioned earlier, not all the objectives of this study were able to be met. However, the findings add to the evidence base of Aucklanders' perceptions of non-car modes and of transport choice more generally.

The results support the TERP's assertion (p. 5) that *every lever available* [is] *to be pulled as hard as is credibly possible*. Participants tend to report more negative perspectives of public transport, cycling and walking compared with driving. All three transport modes are seen by participants to be comparatively less convenient, more stressful, and less safe from crime and harassment compared with driving. Ninety-two per cent of participants reported public transport would be less convenient than driving.

There are three primary reasons participants report to explain why public transport is less convenient than driving:

- The lack of ease (53% dislike transferring between services, 35% report it is hard to carry items)
- The amount of time (42% dislike infrequent services, 42% report it takes too long)
- The lack of reliable services at the right time (40% report no services at time of day they travel, 35% claim it is too unreliable).

For many people, public transport is less attractive than private vehicle travel because it is too slow, infrequent, indirect and/or unreliable. This is reflected by people's reasons for being unlikely to take public transport: the amount of time, lack of ease and comfort, and concerns around reliability of services.

It is worth noting that the participants are not typically reporting cost as a reason they are unlikely to take public transport. Consequently, initiatives to reduce the cost of public transport are unlikely to address the major barriers to uptake of public transport services. Modifications to public transport services to make them easier and more comfortable, take less time, and be more frequent and reliable, are anticipated to result in an increase in trips taken by public transport.

Safety concerns were a primary reason for cycling perceived to not be preferable. Forty-three per cent of participants report concern with busy roads, 42 per cent that the route is unsafe, and 36 per cent report no cycleways. This suggests that the greatest increase in cycling for transport will be achieved by providing facilities which ensure people feel safe and comfortable when completing trips. Limits on personal capability to cycle is an issue for close to a quarter of participants (27% report route is too hilly, 25% lack required fitness, and 20% lack confidence/experience cycling). These barriers could be addressed through the provision of e-bikes and support campaigns such as cycle skills training.

Few differences are seen in perceptions for non-car modes across demographic characteristics, areas in Auckland or features of the driving trip (e.g. passengers, reason for trip, items transported). Consequently, participants demonstrate a consistent (negative) perspective on non-car modes and a segmented approach to overcome barriers is unlikely to be beneficial. The findings do not call out

one particular group over another. They illustrate general discontentment with the current level of service for non-car options.

The study does not indicate a significant positive feeling towards driving in Auckland; more than half of participants described driving as stressful. Results suggest that people don't drive because they love doing so; they drive because other options are poorly provided for. This finding is valuable, and it should inform the design of infrastructure and behaviour change initiatives. Aucklanders don't need to be "forced" out of their cars; many would gladly leave of their own accord if there were suitable non-car transport options available.

Providing a safe and effective transport system for the Auckland region requires a significant shift in travel behaviour, as described in the TERP (pg. 5): "the distance travelled in light vehicles must reduce by around 50% by 2030. This does not mean no one will drive anymore. It means sustainable (low-emissions) modes such as walking, cycling, micromobility and public transport must be as convenient, attractive, and affordable for as many people as possible."

To increase use of public transport, walking and cycling, people need to find these modes much more attractive. This confers responsibility on the road-controlling authority (Auckland Transport) to make decisions on this basis, supported by the Auckland Council budgeting processes.

Behaviour change campaigns (including communication and marketing) are unlikely to address the primary systemic barriers which participants report as reasons for preferring private vehicle use, and will not be sufficient to achieve a safe and effective transport system through a sufficient reduction in greenhouse gas pollution.

These perceptions are the reality for participants; they reflect the need for level of service improvements across all non-car modes. The information described in this report can be used by transport professionals to inform the development of behavioural interventions through the implementation of the TERP.

9 Recommendations

The results of this survey suggest that systemic barriers such as the frequency, reliability, perception of safety and time-competitiveness of active and public transport modes are primary barriers to greater uptake of these options.

Further understanding of the difference in service levels between active, public and private transport modes will be needed to create a transport system which adequately meets Auckland Council's environmental, access and safety responsibilities. This could include geospatial plotting of existing services and infrastructure, and modelling of population and journeys to assess differences and opportunities, specifically focusing on the difference in service provision between private vehicle use and public or active transport options.

Achieving a safe and effective transport system will require a rebalancing of Auckland's transport infrastructure to better provide for active and public transport journeys, as described in TERP action 3.1 (pg. 7): 'All projects must repair current network imbalance'.

Ensuring that this occurs will require a combined customer experience and emissions reduction review of all projects and expenditure which Auckland Transport (AT) undertakes. For transport investment to give effect to Council group policy, all projects must deliver a site-specific level of service for active and public transport users which is on-par or better than the experience provided for private vehicle users. This should be considered from early stages of project development; communicated with stakeholders, decision makers and the general public; and included in any design review phase.

This report makes two recommendations:

1. **Auckland Council and AT to develop and report on key metrics related to quantitative targets for all transport modes, particularly focusing on the differential between private vehicle access and access via shared and active modes**. These metrics should be part of reporting on work towards climate targets and could be used to provide context for customer experience insights to help build an understanding of the relationship between infrastructure and end-user perceptions. This work may be completed as part of TERP action 5.3.1 'Deliver a framework that measures sustainable urban access to daily needs and use it to inform investment decisions'.

   Example metrics could include:
   - From a sample of randomly selected residential addresses, the number of key destinations (e.g. supermarket, medical centre, primary school, bank or post office etc.) accessible via minimum-standard cycle facilities (as defined by AT's Transport Design Manual[24] and associated appendices).
   - Modelled or real-world comparison between public transport and private vehicle travel times along major public transport routes, with a view to seek opportunities for balancing travel times.

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[24] Source: https://at.govt.nz/about-us/manuals-guidelines/transport-design-manual/

- The proportion of Auckland's population living within defined catchments (e.g. 400m walkable catchment) of frequent public transport services and connected minimum-standard cycle facilities.

2. **AT to implement a required project outcome and design review phase for all transport investments which focuses on improving customer perceptions of active and shared modes.**

   This could include:

   - A required scope element for all projects (including renewals and maintenance) to evaluate the difference in existing user experience between private, shared and active transport modes; followed by an investigation into the project's capacity to balance perceived user experience as a result of the project's implementation. This aligns with TERP action 3.4.2. 'Ensure the evaluation phase for all projects considers scenarios that achieve the pathway's targets'.

   - A required design review to ensure that all projects work to rebalance the transport system by ensuring that all project delivery achieves minimum design standards for active and shared transport users in line with AT's *Transport Design Manual*. This design review must be completed with a user experience objective aligned with Auckland's climate objectives, ensuring that resulting investment creates sufficiently attractive walking, cycling and public transport facilities. This will contribute towards TERP action 3.1.2. 'Leverage off renewals, safety and other programmes to deliver improved outcomes for sustainable transport modes, and work with the council and government to address operational impediments.'

   Both the investigation of opportunity and design review should be made available to, and communicated with, decision makers and stakeholders, as well as general public, to assist with building support for climate-friendly transport investments.

The ultimate purpose of these recommendations is to help create a safe and effective transport system in Auckland. It is hoped that these recommendations are considered and adopted by relevant parties.

10 References

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11 Appendix 1: Questionnaire

Introduction

Th s survey asks about your travel within Auckland. As part of this you will be asked to tell us about a recent trip you took from your home to another location and the different things you thought about while doing so.

[Area]
Which of the following best describes the area within the Auckland region that you live in?

Answer	Value	Logic
North Auckland	1	Continue
West Auckland	2	Continue
Central Auckland	3	Continue
East Auckland	4	Continue
South Auckland	5	Continue
I am not living in Auckland region	6	DNQ

[Q1]
Have you driven yourself, or been by someone else in a private vehicle (e.g. car, ute, or van which you or someone you know owns) from your home to another location in Auckland any time in the last two weeks?

Answer	Value	Logic
Yes	1	Continue
No	2	DNQ
I don't know	3	DNQ

We are interested in knowing a little more about the most recent time you drove a private vehicle from your home to another location within Auckland.

[Q3]
What day of the week did you take this trip?

Answer	Value	Logic
Monday	1	Continue
Tuesday	2	Continue
Wednesday	3	Continue
Thursday	4	Continue
Friday	5	Continue
Saturday	6	Continue
Sunday	7	Continue

What time of day did you start the trip? (*Please estimate if you cannot remember exactly*)

Answer	Variable name	Logic
[Hours]	Q4x1c1	Continue
[Minutes]	Q4x2c2	DNQ

To make it easier for you to tell us about where you went the last time you drove a private vehicle from your home to another location within Auckland, we would like to know about your travel only in one direction: from your home to your destination.

Please type the locations where you started and ended your trip, and any stops you made along the way, into the address boxes.

Once you have typed a location you can drag and move the pin on the map.

Important notes
We will keep this information confidential. If you do not wish to provide specific locations, please feel free to move the pointer on the map slightly away from the actual address.
Stops refer to things that you did on the way to your destination like dropping kids off at school, or running other errands, while you were on the way to somewhere else. Please include these on the map below.
If your trip involved parking and transferring to a different mode (e.g. a bus), please only enter the driving portion of your trip.
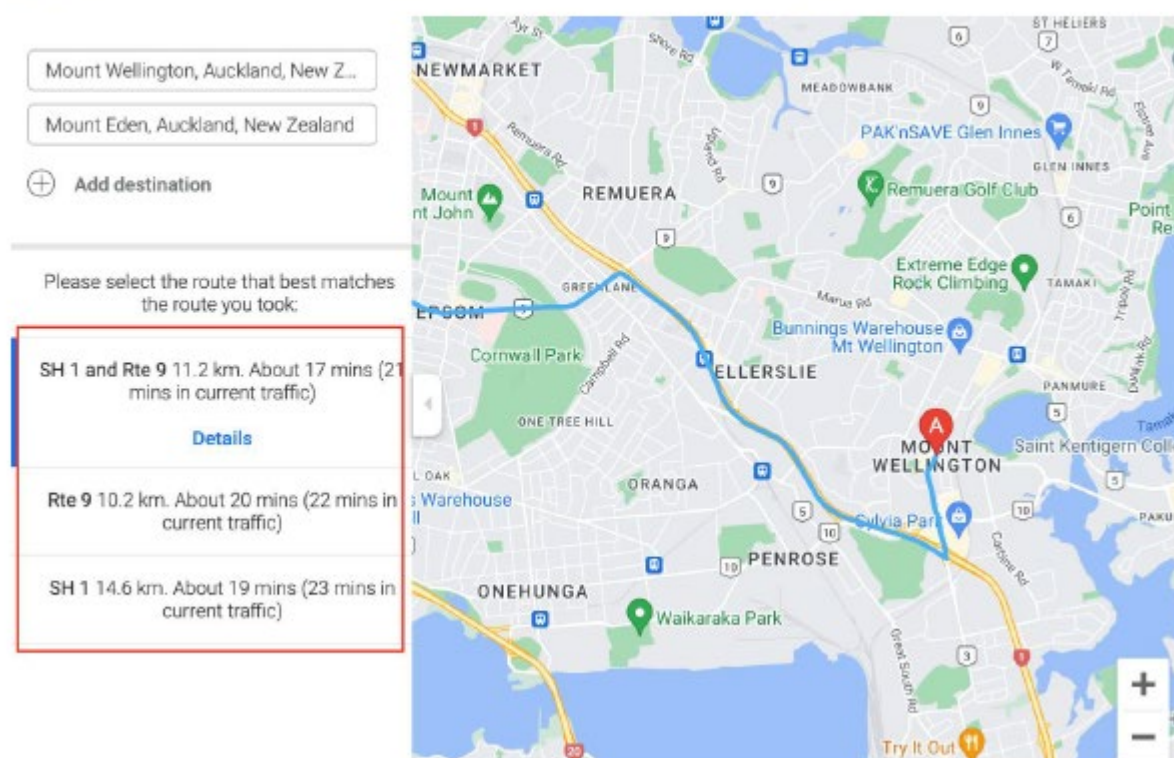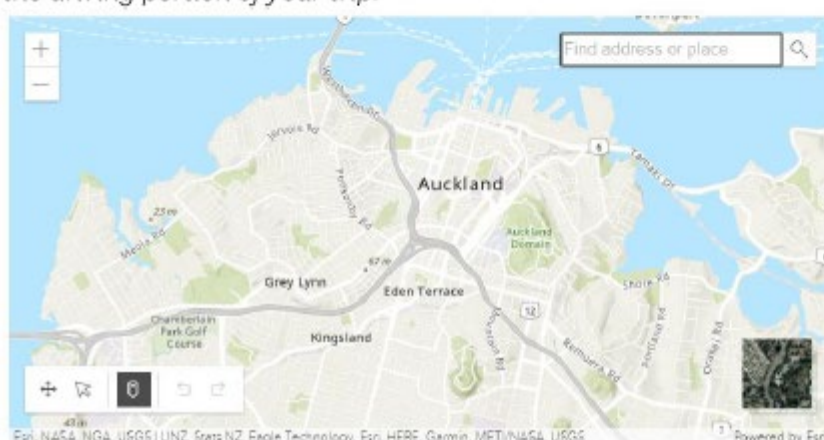
Variables extracted from pin placement and selecting route that best matches on map above. Date of driving trip and alternative modes is 42 days into the future, date stated in futureDater.

Variable name	Notes
Q2r1	Trip origin
Q2r2	
Q2r3	
Q2r4 … Q2r10	Highest number is trip destination
placeIDr1 … placeIDr2	
travelOutsideAkl	Binary
drivingDistance	11.2km from above example
drivingDuration	17min from above example. Used to generate arrival time for use in Q27
arrivalDater1 … arrivalDater2	Date/time used to fill arrival in Q27
futureDater2	Date 42 days, 6 weeks into the future for use in Q27
drivingGeospatialr1 … drivingGeospatialr9	
drivingShareURL	
cyclingDistance	DISPLAY Q29-37 **cycling** IF <=15km
cyclingDuration	
cyclingGeospatialr1 … cyclingGeospatialr9	
cyclingShareURL	
cyclingElevGain	
cyclingElevLoss	
walkingDistance	DISPLAY Q17-Q28 **PT** IF >1.5km (i.e. walking distance too long to just walk) DISPLAY Q29
walkingDuration	
walkingGeospatialr1 … walkingGeospatialr9	
walkingShareURL	
walkingElevGain	
walkingElevLoss	
transitDurationr1 … transitDurationr9	
transitDistancer1 … transitDistancer9	
transitNumPTr1 … transitNumPTr9	
transitTotalWalkTimer1 … transitTotalWalkTimer9	
transitOrigWalkTimer1 … transitOrigWalkTimer9	
transitOrigWalkDistancer1 … transitOrigWalkDistancer9	
transitServiceTransferr1 … transitServiceTransferr9	
transitDestWalkTimer1 … transitDestWalkTimer9	
transitDestWalkDistancer1 … transitDestWalkDistancer9	
transitGeospatialr1 … transitGeospatialr9	
transitShareURLr1 … transitShareURLr9	
transitValid	DISPLAY Q17-Q28 **PT**

transitTotalDuration	
transitTotalDistance	

Approximately how long did the trip take, from the start of your trip to the destination?

Answer	Variable name	Logic
[Hours]	Q5x1c1	Continue
[Minutes]	Q5x1c2	Continue
Not sure/I don't know	Q5exNewr99	Continue

[$Q6]
What were the reasons for your trip?

Answer	Variable name	Logic
Went to work	Q6r1	Continue
Shopping	Q6r2	Continue
Social visit/entertainment	Q6r3	Continue
Study/education	Q6r4	Continue
Personal appointments/services e.g. doctor, library, hairdressers, banks, government appointments	Q6r5	Continue
Dropped someone off/picked someone up	Q6r6	Continue
Picked up something/dropped off something	Q6r7	Continue
To go to sport or exercise activity	Q6r8	Continue
To go sightseeing	Q6r9	Continue
Volunteer work	Q6r10	Continue
Overnight trip e.g. second home, motel, bach	Q6r11	Continue
Changed modes (e.g. drove to a bus stop and took the bus)	Q6r12	Continue
Other, please specify	Q6r13 Q6r13oe	Continue

[Q7]
How many passengers, if any, did you travel with for all or part of your trip?

Answer	Value	Logic
I travelled by myself	1	SKIP to Q9
1 other person	2	Continue
2 other people	3	Continue
3 other people	4	Continue
4 other people	5	Continue
5 or more	6	Continue

[Q8]
How many of these passengers were children (aged 15 or under)?

Answer	Value	Logic
None	1	Continue
1	2	Continue
2	3	Continue
3	4	Continue

4	5	Continue
5 or more	6	Continue

[Q9]
Did you pay for parking at your final destination?

Answer	Value	Logic
Yes	1	Continue
No, I parked for free	2	SKIP to Q10
No, I did not park	3	SKIP to Q10

[Q10]
Where did you park?

Answer	Value	Logic
In an off-street car park (e.g. a Wilsons car park)	1	Continue
On the street – with a time limit	2	Continue
On the street – without a time limit	3	Continue
Park & Ride	4	Continue
Other, please specify	5 Q10r5oe	Continue

[$Q11]
What did you take with you or transport as part of this trip? (Select all that apply)

Answer	Variable name	Logic
Small item(s) (e.g. phone, book or handbag)	Q11r1	Continue
Medium-sized item(s) (e.g. requiring a shopping bag or two)	Q11r2	Continue
Large item(s) (e.g. requiring more than one person, or more than one trip to unload the items out of my vehicle)	Q11r3	Continue
Nothing	Q11r4	Continue

[Q12]
What type of vehicle did you drive for this trip?

Answer	Value	Logic
Petrol vehicle	1	Continue
Diesel vehicle	2	Continue
Hybrid	3	Continue
Plug-in hybrid electric vehicle (PHEV)	4	Continue
Battery electric vehicle (BEV)	5	Continue
Other	6	Continue
I don't know	7	Continue

[Q13]
Approximately how much do you think the trip cost?

Answer	Variable name	Logic

[value]	Q13r1 Q13Nr1	Continue
Not sure/don't know	noanswerQ13_r99	SKIP to Q15

[$Q14]

What were you thinking about when you came up with the cost above? (Select all that apply)

Answer	Value	Logic
Petrol/diesel	Q14r1	Continue
Parking	Q14r2	Continue
Wear and tear (e.g. tyres)	Q14r3	Continue
Regular maintenance costs	Q14r4	Continue
Vehicle insurance	Q14r5	Continue
Warrant of Fitness (WOF) and vehicle licensing (rego)	Q14r6	Continue
Depreciation of vehicle's value	Q14r7	Continue
Cost of finance for the car	Q14r8	Continue
Road User Charges (RUCs, for diesel vehicles)	Q14r9	Continue
Electricity for my electric vehicle	Q14r10	Continue
Other, please specify	Q14r11 Q14r11oe	Continue

[$Q15]

Do you [or any of the passengers who were with you on your last trip] have limited mobility or a disability that makes it very difficult or impossible for [any of] you to do any of the following? (Select all that apply)

Answer	Variable name	Logic
Using public transport	Q15r1	SKIP to Q17 (SKIP PT section)
Cycling	Q15r2	SKIP to Q17 (SKIP cycling section)
Walking moderate or long distances	Q15r3	Continue
No, I [we] have no problems doing any of the above	Q15r4	SKIP to Q17

[Q16]

Do you [or any of the passengers who were with you on your last trip] have a wheelchair or mobility scooter that enables you [or them] to travel 'walking distances'?

Answer	Value	Logic
Yes	1	Continue
No	2	Continue (SKIP waking section)
I don't know	3	Continue

[Qual1]
[dFlagQual1]
Please select "Strongly agree" from the list below. This is a quality check question.

Answer	Value	Logic
1.Strongly disagree	1	Continue
2.Somewhat disagree	2	Continue
3.Neither agree or disagree	3	Continue
4.Somewhat agree	4	Continue
5.Strongly agree	5	Continue

PT
See display and SKIP conditions

The following questions ask about your thoughts on using public transport rather than driving for the trip you described earlier.

The questions below ask you what you think your trip would have been like if you had taken public transport.

Approximately how long do you think the trip would have taken (thinking of your total travel time from leaving the house to getting to your destination)?

Answer	Variable name	Logic
[Hours]	Q17x1c1	Continue
[Minutes]	Q17x2c2	Continue
Not sure/don't know	Q17exNewr99	Continue

Approximately how much do you think the trip would have cost [per person] (noting that public transport currently has half price fares)?

Answer	Variable name	Logic
[value]	Q18Nr1	Continue
Not sure/don't know	Q18Nexr99	Continue

[Q19]
How convenient do you think the trip would have been?

Answer	Value	Logic
Much less convenient than driving	1	Continue
Slightly less convenient than driving	3	Continue
Similar convenience	4	SKIP to Q21
Slightly more convenient than driving	5	SKIP to Q21
Much more convenient than driving	7	SKIP to Q21
Not sure/don't know	8	SKIP to Q21

[$Q20]
You mentioned above that taking public transport would be less convenient than driving. What makes you say that? (Select all that apply)

Answer	Variable name	Logic
Few or no services run to my destination	Q20r1	Continue
It's too hard to plan the trip (e.g. to work out which services to take, when, and where from)	Q20r2	Continue

It's too hard to get to/from the stops	Q20r3	Continue
The services are too infrequent	Q20r4	Continue
The services are too unreliable	Q20r5	Continue
The services are too slow	Q20r6	Continue
I have to transfer between more than one bus/train/ferry	Q20r7	Continue
It is too hard to carry the things I need to take with me	Q20r8	Continue
It is harder to travel in a group by public transport	Q20r9	Continue
I'm concerned about COVID and I feel more exposed taking public transport	Q20r10	Continue
I dislike having to wear a mask on public transport	Q20r11	Continue
Other, please specify	Q20r12 Q20r12oe	Continue

NOTE scale to be inverted

[Q21]

How stressful do you think the trip would have been?

Answer	Value	Logic
Much more stressful than driving	7	Continue
Slightly more stressful than driving	5	Continue
Similar stress	4	Continue
Slightly less stressful than driving	3	Continue
Much less stressful than driving	1	Continue
Not sure/don't know	8	Continue

[Q22]

How safe from crime and harassment do you think you would have felt?

Answer	Value	Logic
Much less safe than driving	1	Continue
Slightly less safe than driving	3	Continue
Similar safety	4	Continue
Slightly safer than driving	5	Continue
Much safer than driving	7	Continue
Not sure/don't know	8	Continue

[Q23]

How safe from catching COVID-19 do you think you would have felt?

Answer	Value	Logic
Much lower feeling of safety than driving	1	Continue
Slightly lower feeling of safety than driving	3	Continue
Similar feeling of safety	4	Continue
Slightly greater feeling of safety than driving	5	Continue
Much greater feeling of safety than driving	7	Continue
Not sure/don't know	8	Continue

[Q24]
If public transport was fast, frequent and reliable for this trip (and COVID-19 was no longer a problem), would it be feasible for you to take it in the future?

Answer	Value	Logic
Yes	1	Continue
No	2	Continue
Maybe	3	Continue
Don't know	4	Continue

[Q25]
In the last 4 weeks, how often have you taken public transport?

Answer	Value	Logic
Not at all	1	Continue
Occasionally (one time or less per week)	2	Continue
Regularly (two or more times per week)	3	Continue
Don't know	4	Continue

[Q26]
Has COVID-19 influenced how much you use public transport?

Answer	Value	Logic
Yes, I use it more often	1	Continue
Yes, I use less often	2	Continue
No, I use it same amount	3	Continue
Don't know	4	Continue

The picture below shows the public transport option Google Maps suggests for your trip, in order to arrive at the same time as you did for your car trip.
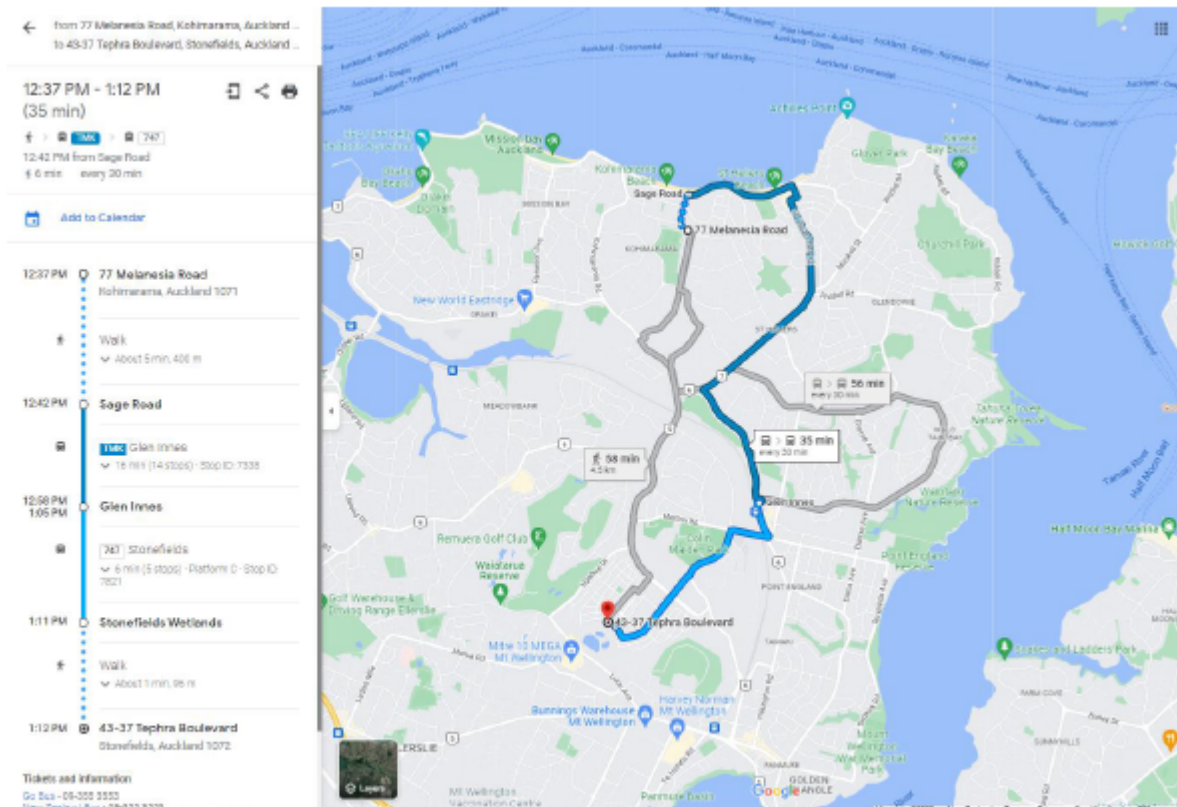
Map above generated using a duplicated version of variables extracted from pin-dropping map duplicate variable name set denoted with suffix V2. Arrival time (arrivalDaterz) generated from drivingDuration+futureDaterz. Map displays trip 42 days/6 weeks in future of Q3. Date of actual trip is calculated from the survey start date plus X days into the past e.g. if survey started on a Friday and the trip was on a Wednesday the date of the trip shown for PT alternatives is 6 weeks into the future from the Wednesday prior to starting the survey.

NOTE scale to be inverted

[Q27]

Looking at the info above, how likely are you to take this trip using public transport?

Answer	Value	Logic
Very likely	1	Continue
Somewhat likely	2	Continue
Neutral	3	Continue
Somewhat unlikely	4	Continue
Very unlikely	5	Continue
Not sure	6	Continue

Why do you say that?

Answer	Variable name	Logic
[Open]	Q28	Continue

Cycling

The following questions ask about your thoughts on cycling.

[$Q29]

Do you have access to either of the following that you are able to use for cycling in general?

Answer	Variable name	Logic
A regular push bike	Q29r1	SKIP to Q31
An e-bike	Q29r2	SKIP to Q31 (DISPLAY Q38)
Neither	Q29r3	Continue

[Q30]

Would you consider using a bike (either regular bike or e-bike) for at least some trips if you had access to one?

Answer	Value	Logic
Yes	1	Continue
Maybe	2	Continue
No, I would never consider riding a bike	3	SKIP to Q38

[Q31]

Would it have been possible to take the trip you described earlier by regular push bike or e-bike (assuming you [and everyone you were travelling with (Q7=2-6)] had one available and ready to use)?

Answer	Value	Logic
Yes, it would be possible on both a regular bike and e-bike	1	SKIP to Q33
Yes, it would be possible on an e-bike but not a regular bike	2	Continue
No, it would not have been possible on either	3	Continue
Not sure / maybe	4	Continue

[$Q32]

Why do you say that?

Answer	Variable name	Logic
Cycling this route is unsafe	Q32r1	Continue
The roads are too busy	Q32r2	Continue
There are no cycle ways for this route	Q32r3	Continue
My fitness level is not good enough	Q32r4	Continue
I am not confident or experienced with cycling	Q32r5	Continue
It is too hilly	Q32r6	Continue
No bike parking/storage at destination	Q32r8	Continue
Other, please specify	Q32r7 Q32r7oe	Continue

If you [and everyone you were travelling with] had cycled for your most recent trip (imagining you had access to a bike [bikes]), rather than driving, how do you think it would have compared on the following dimensions?

Please answer the following thinking about riding [a regular push bike/an e-bike]. If you are unsure of the answer for any of these question please answer 'don't know'.

NOTE: 50/50 sample shown 'regular push bike' or 'e-bike'. Split analysis required for all following cycling questions. Add dSample to reduced dataset.

Variable name	Note
hAvailSampler1	Shown 'regular push bike'
hAvailSampler2	Shown 'e-bike'
dSample	Two values, one for 'regular push bike' and one for 'e-bike'

Approximately how long do you think the trip would have taken (thinking of your total travel time from leaving the house to getting to your destination)?

Answer	Variable name	Logic
[Hours]	Q33x1c1 ~~Q33r1~~	Continue
[Minutes]	Q33x2c2 ~~Q33r2~~	Continue
Not sure/don't know	Q33exr99	Continue

[Q34]
How convenient do you think the trip would have been?

Answer	Value	Logic
Much less convenient than driving	1	Continue
Slightly less convenient than driving	3	Continue
Similar convenience	4	SKIP to Q21
Slightly more convenient than driving	5	SKIP to Q21
Much more convenient than driving	7	SKIP to Q21
Not sure/don't know	8	SKIP to Q21

[Q35]
How stressful do you think the trip would have been?

Answer	Value	Logic
Much more stressful than driving	7	Continue
Slightly more stressful than driving	5	Continue
Similar stress	4	Continue
Slightly less stressful than driving	3	Continue
Much less stressful than driving	1	Continue
Not sure/don't know	8	Continue

[Q36]
How safe from crime and harassment do you think you would have felt?

Answer	Value	Logic
Much less safe than driving	1	Continue
Slightly less safe than driving	3	Continue
Similar safety	4	Continue
Slightly safer than driving	5	Continue
Much safer than driving	7	Continue
Not sure/don't know	8	Continue

[Q37]

How safe from injury do you think you would have felt?

Answer	Value	Logic
Much lower feeling of safety than driving	1	Continue
Slightly lower feeling of safety than driving	3	Continue
Similar feeling of safety	4	Continue
Slightly greater feeling of safety than driving	5	Continue
Much greater feeling of safety than driving	7	Continue
Not sure/don't know	8	Continue

DISPLAY IF Q29r2=0 (doesn't have an e-bike)
[Q38]
If you had access to an e-bike, would it be feasible for you to cycle this trip in the future?

Answer	Value	Logic
Yes	1	Continue
No	2	Continue
Maybe	3	Continue
Don't know	4	Continue

Walking

The following questions ask about your thoughts on walking [wheeling (e.g. by wheelchair or mobility scooter)] rather than driving for the trip you described earlier.

If you had walked [wheeled] for your most recent trip, rather than driving, how do you think it would have compared on the following dimensions?

Approximately how long do you think the trip would have taken (thinking of your total travel time from leaving the house to getting to your destination)?

Answer	Variable name	Logic
[Hours]	Q39x1c1	Continue
[Minutes]	Q39x2c2	Continue
Not sure/don't know	Q39exNew1r100	SKIP to #Q44
Trip impossible via walking [wheeling]	Q39exNewr99	SKIP to #Q44

[Q40]
How convenient do you think the trip would have been?

Answer	Value	Logic
Much less convenient than driving	1	Continue
Slightly less convenient than driving	3	Continue
Similar convenience	4	Continue
Slightly more convenient than driving	5	Continue
Much more convenient than driving	7	Continue
Not sure/don't know	8	Continue

[Q41]
How stressful do you think the trip would have been?

Answer	Value	Logic
Much more stressful than driving	7	Continue
Slightly more stressful than driving	5	Continue
Similar stress	4	Continue
Slightly less stressful than driving	3	Continue
Much less stressful than driving	1	Continue
Not sure/don't know	8	Continue

[Q42]
How safe from crime and harassment do you think you would have felt?

Answer	Value	Logic
Much less safe than driving	1	Continue
Slightly less safe than driving	3	Continue
Similar safety	4	Continue
Slightly safer than driving	5	Continue
Much safer than driving	7	Continue
Not sure/don't know	8	Continue

[Q43]
How safe from injury do you think you would have felt?

Answer	Value	Logic
Much lower feeling of safety than driving	1	Continue
Slightly lower feeling of safety than driving	3	Continue
Similar feeling of safety	4	Continue
Slightly greater feeling of safety than driving	5	Continue
Much greater feeling of safety than driving	7	Continue
Not sure/don't know	8	Continue

Attitudes

The following questions ask about your general attitudes toward driving.
[#Q44]
Please rate how much you agree or disagree with the statements below.

Statement	Variable name
I love driving in Auckland	Q44r1
I find driving in Auckland stressful	Q44r2
A vehicle provides status and prestige	Q44r3
People close to me take public transport in Auckland	Q44r4
People close to me cycle in Auckland	Q44r5

Answer	Value	Logic
Strongly disagree	1	Continue
Disagree	2	Continue
Neutral	3	Continue
Agree	4	Continue
Strongly agree	5	Continue

Don't know / Not applicable	99	Continue

Thinking about people who commuted into Auckland's city centre for work prior to COVID-19, what percentage of these commuters do you think drove (as opposed to taking public transport, cycling or walking)?

Answer	Variable name	Logic
Percentage value	Q45	Continue

[Qual2]
[dFlagQual2]
Please select "Slightly familiar" from the list below. This is a quality check question.

Answer	Value	Logic
1.Not at all familiar	1	Continue
2.Slightly familiar	2	Continue
3.Moderately familiar	3	Continue
4.Very familiar	4	Continue
5.Extremely familiar	5	Continue

Demographics
The final questions ask a bit more about you and your household.

How many vehicles does your household have available to use?

Answer	Variable name	Logic
Drop down 0-10	Q46	Continue IF =0 SKIP to Q48

How many of these are electric vehicles (EVs) or hybrids?

Answer	Variable name	Logic
Drop down 1-10	Q47	Continue
Don't know	noanswerQ47_r99	

[Q48]
What is your gender?

Answer	Value	Logic
Male	1	Continue
Female	2	Continue
Another gender	3	Continue
Prefer not to say	4	Continue

[Q49]
Are you...

Answer	Value	Logic
15-19 years	1	Continue
20-24 years	2	Continue

25-29 years	3	Continue
30-34 years	4	Continue
35-39 years	5	Continue
40-44 years	6	Continue
45-49 years	7	Continue
50-54 years	8	Continue
55-59 years	9	Continue
60-64 years	10	Continue
65-69 years	11	Continue
70-74 years	12	Continue
75+ years	13	Continue
Prefer not to say	14	Continue

[DummyAge]

Answer	Value
15-39	1
40-59	2
60+	3

Which ethnic group, or groups, do you belong to? (Select all that apply)

Answer	Variable name	Logic
New Zealand European / Pākehā	Q50r1	Continue
Māori	Q50r2	Continue
Samoan	Q50r3	Continue
Cook Islands Māori	Q50r4	Continue
Tongan	Q50r5	Continue
Niuean	Q50r6	Continue
Chinese	Q50r7	Continue
Indian	Q50r8	Continue
Prefer not to say	Q50r9	Exclusive Continue
Other, please specify	Q50r10 Q50r10oe	Continue
Don't know	Q50r11	Exclusive Continue

How many people live in your household, including yourself?

Answer	Variable name	Logic
Drop down 1-30	Q51	Continue

How many fully licensed drivers live in your household, including yourself?

Answer	Variable name	Logic
Drop down 0-30	Q52	Continue

[Q53]
Which best describes your household's annual income (from all sources) before tax?

Answer	Value	Logic
$20,000 or less	1	Continue
$20,001 - $60,000	2	Continue
$60,001 - $100,000	3	Continue
$100,001 - $150,000	4	Continue
$150,001 - $200,000	5	Continue
$200,001 or more	6	Continue
Prefer not to say	7	Continue
Don't know	8	Continue

Thank you for completing this survey. If you have any other comments, please write them here:

Answer	Variable name	Logic
Open	Q54	Continue

End

Thank you for completing this survey. The results will be used by Auckland Council and Auckland Transport in the development of Auckland's Transport Emissions Reduction Plan. The plan is designed to meet the emissions reduction goals in Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, and seeks to create a city where everyone can get around sustainably.

OR

Thank you for your feedback!

You have been automatically entered into the prize draw, if you are a prize winner we will let you know. Good luck!

How we will use the results

Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan commits Auckland to halving emissions by 2030 and reaching net zero emissions by 2050.

The feedback from this survey will help us understand what percentage of trips could be taken by public transport, cycling or walking. The results will be used by Auckland Council and Auckland Transport to target public transport, walking and cycling improvements where they are needed most.

Ngā mihi,
Allanah
The People's Panel team

12 Appendix 2: Participant sample

Table 3: Ethnic group crosstabulation.

	Māori (%)	Pacific (%)	Asian (%)	European (%)	Other (%)
Count	251	127	505	1883	114
Area where participants live*					
North Auckland	18	10	15	24	24
West Auckland	18	20	15	16	25
Central Auckland	31	27	39	37	29
East Auckland	8	6	17	11	8
South Auckland	25	37	13	11	15
Gender					
Male	39	31	52	47	57
Female	59	67	47	51	34
Another gender	1	1	0	0	2
Prefer not to say	1	2	1	1	7
Age					
15-39	27	34	40	23	17
40-59	50	48	46	44	51
60+	23	18	13	33	31

*Note: Participants selected the area in which they live from the options displayed in the table as opposed to a suburb or statistical area with a defined geography. Participants may have varied interpretations as to the boundaries of East Auckland, for example, and may have inconsistently recorded their location.

Table 4: Area where participants live cross tabulation.

	North (%)	West (%)	Central (%)	East (%)	South (%)
Count	594	466	1011	351	377
Gender					
Male	50	49	47	56	38
Female	47	48	50	42	58
Another gender	0	0	1	0	1
Prefer not to say	3	3	3	2	3
Age					
15-39	21	30	29	23	28
40-59	47	43	46	44	46
60+	32	27	26	33	26

Find out more: rimu@aucklandcouncil.govt.nz
or visit knowledgeauckland.org.nz and
aucklandcouncil.govt.nz