

# **Public transport and the next generation**

## **June 2015**

G Rive, J Thomas, C Jones, B Frith and J Chang  
Opus Research, Lower Hutt

**NZ Transport Agency research report 569**  
Contracted research organisation – Opus International Consultants Limited

ISBN 978-0-478-44509-1 (electronic)

ISSN 1173-3764 (electronic)

NZ Transport Agency

Private Bag 6995, Wellington 6141, New Zealand

Telephone 64 4 894 5400; facsimile 64 4 894 6100

research@nzta.govt.nz

www.nzta.govt.nz

Rive, G, J Thomas, C Jones, B Frith and J Chang (2015) Public transport and the next generation. *NZ Transport Agency research report 569*. 197pp.

Opus International Consultants Limited was contracted by the NZ Transport Agency in 2014 to carry out this research.

This publication is copyright © NZ Transport Agency 2015. Material in it may be reproduced for personal or in-house use without formal permission or charge, provided suitable acknowledgement is made to this publication and the NZ Transport Agency as the source. Requests and enquiries about the reproduction of material in this publication for any other purpose should be made to the Research Programme Manager, Programmes, Funding and Assessment, National Office, NZ Transport Agency, Private Bag 6995, Wellington 6141.

**Keywords:** adolescent, attitudes, car, forecasts, future behaviour, Generation Y, millennial, mobility, mode, multimodal, New Zealand, patterns, predictions, projections, public transport, teenager, transport, travel, trends, vehicle, young adult, youth

## **An important note for the reader**

The NZ Transport Agency is a Crown entity established under the Land Transport Management Act 2003. The objective of the Agency is to undertake its functions in a way that contributes to an efficient, effective and safe land transport system in the public interest. Each year, the NZ Transport Agency funds innovative and relevant research that contributes to this objective.

The views expressed in research reports are the outcomes of the independent research, and should not be regarded as being the opinion or responsibility of the NZ Transport Agency. The material contained in the reports should not be construed in any way as policy adopted by the NZ Transport Agency or indeed any agency of the NZ Government. The reports may, however, be used by NZ Government agencies as a reference in the development of policy.

While research reports are believed to be correct at the time of their preparation, the NZ Transport Agency and agents involved in their preparation and publication do not accept any liability for use of the research. People using the research, whether directly or indirectly, should apply and rely on their own skill and judgement. They should not rely on the contents of the research reports in isolation from other sources of advice and information. If necessary, they should seek appropriate legal or other expert advice.

# Acknowledgements

The authors would like to acknowledge the input of the following people for their valuable contributions to this work:

- Steering Group chair Quintin Howard (NZ Transport Agency)
- Steering Group members Michelle McCormick (NZ Transport Agency), Tass Larsen (Greater Wellington Regional Council) and Ian Robertshaw (Auckland Transport)
- External peer reviewers Ahmed M. El-Geneidy (McGill University, Canada), Tobias Kuhnimhof (Institute of Transport Research, Berlin), and Mike Curran (Ministry of Transport)
- Those who provided data for the secondary analysis component of this work:
  - The Ministry of Transport for allowing use of the New Zealand Continuous Household Travel Survey data; particularly Paul Phipps for his assistance in the analysis of the survey
  - Auckland Transport for allowing use of their Public Transport Customer Satisfaction Survey data
  - The Transport Agency for allowing use of outputs from their Multi-modal traveller information needs dataset
- Those who assisted with recruitment, including Louise Baker from Opus International Consultants Ltd, the Automobile Association, Metlink, Auckland Transport and the Transport Blog

# Abbreviations and acronyms

AA	Automobile Association
GDLS	graduated driver licensing system
GPS	global positioning system
GWRC	Greater Wellington Regional Council
MBIE	Ministry of Business, Innovation and Employment
MoT	Ministry of Transport
NZHTS	New Zealand Household Travel Survey
Transport Agency	New Zealand Transport Agency
PT	public transport
RFID	radio-frequency identification
RTD	real-time data
TTM	transtheoretical model (of behavioural change)
UK	United Kingdom
US/USA	United States of America

# Contents

- Executive summary.....7**
- Abstract.....10**
- 1 Introduction.....11**
  - 1.1 Key research questions/project objectives ..... 11
  - 1.2 Key project stages ..... 11
  - 1.3 Report structure ..... 12
- 2 Literature review .....13**
  - 2.1 Introduction..... 13
  - 2.2 Defining Generation Y..... 13
  - 2.3 Observed travel patterns ..... 16
  - 2.4 Projected travel patterns..... 28
  - 2.5 Barriers and attractors to public and active transport use for Generation Y ..... 35
  - 2.6 Commentary on the quality of literature available for this project ..... 42
- 3 Study 1: Analysis of existing New Zealand datasets.....43**
  - 3.1 Method..... 43
  - 3.2 Findings ..... 46
  - 3.3 Conclusions ..... 65
  - 3.4 Limitations..... 66
- 4 Study 2: Focus groups with in-depth qualitative investigation.....67**
  - 4.1 Method..... 67
  - 4.2 Findings ..... 69
  - 4.3 Summary and conclusions ..... 91
- 5 Study 3: Online survey.....95**
  - 5.1 Method..... 95
  - 5.2 Findings ..... 104
  - 5.3 Summary and conclusions ..... 163
- 6 Overall conclusions and recommendations .....167**
  - 6.1 Conclusions ..... 167
  - 6.2 Recommendations..... 171
- 7 References .....174**
- Appendix A: Plots for reason for travel by age group for various travel periods..... 178**
- Appendix B: Focus group script..... 180**
- Appendix C: Survey weighting calculations ..... 185**
- Appendix D: List of possible service improvements from online survey..... 186**
- Appendix E: Service improvement priorities split by region ..... 187**
- Appendix F: Online survey results tables ..... 190**



# Executive summary

There is an increasing trend among Generation Y to use public transport at a higher rate compared with previous generations (and sustain this use for longer). However, there is limited information on the specific factors related to this trend and even less knowledge around whether this trend is temporary, sustained, or growing. Internationally, Generation Y travels differently compared with previous generations, most notably travelling less overall when compared with older generations. There is a wealth of evidence showing that those belonging to the Generation Y cohort generally have lower rates of driver licensing, vehicle registration and car ownership, in addition to their increased rates of public transport usage. These trends have been observed in many countries around the world, including the USA, Australia, Canada, Japan, the UK and many other European countries. However, there is little New Zealand-specific previous research and evidence available, a gap that was addressed during this project.

The purpose of this work was to define public transport travel demand for Generation Y in New Zealand and examine any priorities for its future requirements to ensure an evidence-based, customer-focused approach to transport policy decisions and investment strategies. The Generation Y cohort was defined as consisting of individuals between 15 and 35 years of age in 2014, or born between 1979 and 1999 (inclusive). To examine travel demand for Generation Y, a multi-method approach was undertaken. This involved 1) an analysis of key New Zealand datasets (particularly the New Zealand Household Travel Survey), 2) qualitative focus groups with high-density (Auckland region) and lower-density (Hawke's Bay region) members of Generation Y, and 3) a quantitative analysis of 1,191 travellers, comparing the Generation Y cohort and an older control cohort (those 36 years and older).

Overall, the findings consistently show that the basic public transport service factors are very similar, regardless of cohort, indicating fundamental improvements in well-known convenience factors still need to occur. The findings suggest there will be large, sustained growth in public transport use, but to realise this underlying demand and growth, lead investment will need to occur. Anticipated future travel patterns were established as part of the project, based on stepping participants through upcoming major life phases. The data was then cleaned to ensure robust, realistic projections would overcome known gaps between intention and actual behaviour. The following summarises key findings of the study:

- Members of Generation Y currently use and are projected to continue to use public transport at a higher rate than their older counterparts, indicating that the increased use is not temporary, and that overall investment in public transport should be maintained. This therefore suggests the change is a generational effect, as opposed to an age effect.
- There is a high latent demand for public (and active) transport both among members of Generation Y and older travellers in New Zealand over the next five years. In relation to public transport, one interpretation of this finding is that existing public transport investment strategies are being recognised by New Zealanders and that public transport is being seen as a more viable option. This suggests that further investment should be targeted to address this latent demand.
- For Generation Y's main trips, the proportion of public transport users is projected to increase from 35.3% at present to 48.7% in the next five years with no improvements introduced. This could increase to 53.7% with improvements introduced.
- Overall rates for other trips (such as recreational trips) are projected to more than double for Generation Y, with a baseline of 18.6% increasing to 42.6% without improvements, and 48.8% with improvements.

- Evidence suggests that latent demand for active transport modes (eg walking and cycling) was in fact higher, with more respondents indicating a desire to increase their travel by cycling, followed by walking and then public transport.
- Generation Y members are highly transitional in their travel behaviour, with about 90% anticipating that their travel patterns will change in the next five years (as opposed to 50% in the older group), indicating a greater opportunity to encourage positive changes to travel patterns for Generation Y.
- Specific life stages that could be targeted for positive travel interventions include moving location, where there is an opportunity for growth, and starting a family, where there may be an opportunity for greater retention of public transport use than typically observed.
- There is a lot of overlap in service improvement priorities between members of Generation Y and their older counterparts. Therefore, while Generation Y is an excellent population base to specifically target with regard to public transport use, any improvements aimed at this subgroup are likely to have flow-on positive effects for the rest of the New Zealand population.
- The findings unique to Generation Y suggest that pricing mechanisms around transfers and improved information (both real-time travel information and general information access through a Wifi service) would increase public transport use for this group (see the table below for a summary of improvement priorities, with unique priorities for both groups bolded for ease of interpretation).

**Table E.1 Top 10 priorities ranked by the proportion of people responding to this as one of their top priorities for Generation Y and the older control group**

Rank	Generation Y (N=342)	Total %	Older control group (N=291)	Total %
1	Increased frequency (peak)	29.8%	Improved coverage	32.6%
2	Improved coverage	24.6%	Increased frequency (peak)	28.2%
3	Bus priority lanes	22.2%	Increased frequency (evening and weekend off-peak)	22.3%
4	<b>Free service transfers</b>	20.5%	Integrated ticketing	21.0%
5	Increased frequency (evening and weekend off-peak)	22.8%	Shorter overall trip times	17.5%
6	Shorter overall trip times	19.3%	Bus priority lanes	13.4%
7	Integrated ticketing	16.4%	Increased frequency (daytime off-peak)	16.5%
8	Increased frequency (daytime off-peak)	13.7%	<b>Cycle facilities on-board</b>	14.8%
9	<b>Improved real-time info</b>	15.2%	<b>Short transfer wait times</b>	14.1%
10	<b>Wifi on services</b>	10.5%	<b>Bus signal priority at lights</b>	11.7%

The following recommendations are based on the findings of this work:

- Top improvements to New Zealand's public transport systems should target the top priorities that are consistent between both Generation Y and older travellers, as these are likely to have the largest impact on ridership rates. Cost-benefit analyses should be undertaken and used in these investment decisions, as the current priority list does not take the cost benefit of the intervention areas into account. The location within New Zealand for these interventions also needs to be considered when making prioritisation decisions.



- Generation Y desires smarter ticketing options which reward regular users and create the feeling of receiving a 'win'. This is particularly important in mitigating any inconvenience, for example, fares for services that run late being refunded or partially refunded. Similarly, smart interventions, such as free public transport use for secondary/tertiary students, free bonus trips to reward frequent users, or promotions to encourage recreational or social trips should also be reviewed for implementation.
- It is possible that improving the provision of real-time information and Wifi (two priorities for future improvement identified by Generation Y) could have benefits in addressing latent demand by improving knowledge among potential users of the services available, therefore these specific factors should also be prioritised where possible.
- Strategies and interventions targeting people as they go through certain life stages could also be implemented, for example:
  - Moving locations was found to relate to a strong desire among movers to maximise accessibility and review their transport options in their new location. Provision of high-quality information to movers regarding public and active transport options in new areas could assist in maximising public and active transport use as well as choosing a smarter location.
  - Attending a tertiary institution was shown to relate to increased public transport use. Interventions such as introducing free or reduced cost ticketing are likely to be particularly successful for students, who generally have lower incomes than other groups.
  - Starting a family was related to an anticipated increased use of private vehicles, due in particular to reported difficulties travelling with young children. There was evidence that the novelty of family public transport was an enjoyable experience. Introducing family concession tickets, particularly for weekend or recreational trips, could therefore be a successful strategy to retain public transport use among new parents and ensure familiarity and exposure for children.
- Further work using the rich existing data set should be reviewed and undertaken where useful, for example:
  - **Longitudinal study:** A follow-up longitudinal survey in two years' time using the same sample. This longitudinal work would be the first of its kind in New Zealand and would allow the transport sector to assess the accuracy of people's predictions for their future travel behaviour, and therefore could be used to improve the accuracy of future projections.
  - **Regional analysis:** Further analyses disaggregated by region (in particular for Auckland and Wellington, where a good sample base was collected) to provide information for regional councils when making transport planning decisions. This could include projected public transport use split by region based on the gathered data, as well as descriptive data (such as barriers and attractors to public transport) by region.
  - **Life stage analysis:** Factors that would inform targeted travel interventions around key life changes, such as moving locations or starting a family could be further explored.
- It would also be possible to use the gathered data for the current Generation Y as a control group to explore changes in future generations (when they reach a similar age to Generation Y), relating to issues ranging from travel patterns to attitudes.
- There is an opportunity to further explore and unlock the latent demand for cycling and walking.

## Abstract

There is an increased use of public transport among Generation Y compared with previous generations, but there is limited information on the specific factors related to this trend and whether demand is temporary, sustained, or growing. A multi-method approach was undertaken to better understand travel demand for Generation Y with 1) an analysis of New Zealand datasets to examine historical travel behaviour trends, 2) in-depth qualitative focus groups to better understand some of the drivers, barriers, and key life stages where travel changes are likely to occur, and 3) a national quantitative survey of 1,191 travellers to identify predicted future use of public transport and the prioritisation of targeted service improvements to better inform policy direction and investment strategies. Findings indicate there will be large, sustained growth in public (and active) transport use, particularly among Generation Y. Key service priorities for Generation Y and older travellers are very consistent, indicating improvements in well-known convenience factors like frequency and coverage are critical. Once these basics are delivered more specific improvements desirable for Generation Y include smarter pricing mechanisms (such as free transfers) and improved real-time information. Key life stage changes, like moving home or starting a family, are opportunities for positive travel interventions.

# 1 Introduction

The NZ Transport Agency (the Transport Agency) has identified the travel patterns of younger New Zealanders (here named Generation Y) as highly important to their transport planning decisions. There is international evidence that the travel patterns of this cohort are substantially different from those of previous generations; however, there is limited New Zealand-specific literature on the topic, and the likely travel trends over time among this cohort are currently largely unknown. The Transport Agency has therefore commissioned the current work in an effort to fill this knowledge gap and inform key strategic priorities (such as the 2014 National Land Transport Fund Review). This evidence base is required to ensure transport infrastructure decisions in New Zealand are suitable for meeting travel demands in the future.

## 1.1 Key research questions/project objectives

The main objectives of this research fitted around two main themes: defining travel demand for Generation Y and priorities for the future. Specifically, the key research questions for the current study were:

- 1 What is the most appropriate definition of Generation Y in the New Zealand context?
- 2 What are Generation Y's current travel patterns internationally and in New Zealand? How do these differ from those of previous generations?
- 3 What are the reasons for any differences in the travel patterns of this generation when compared with previous generations? Does this generation have different values leading to these changes?
- 4 What will Generation Y's travel patterns be in the future in New Zealand? Is it likely that Generation Y's current travel patterns will remain constant over time? Alternatively, is it likely that Generation Y's travel patterns will change to match those of older generations over time? How will the transition through major life stages affect travel patterns for this cohort?
- 5 What are the public transport requirements in the future for this group given these projected travel trends?
- 6 What are the barriers to public transport use for Generation Y? What are the attractive features of public transport for Generation Y? Do these differ from traditional attractors and barriers which apply to the total population?
- 7 What do the observed and likely future travel trends of this generation mean for the wider transport sector? What are the appropriate interventions that can be introduced to maximise and encourage public transport use among Generation Y members, now and in the future?

## 1.2 Key project stages

The project consisted of a literature review, three key studies, and a summary discussion, all aimed to answer the key research questions identified above. The project was sequential, with each part helping to inform the next:

- **Literature review. Undertake a detailed and critical literature review of the topic**, including defining Generation Y for the project context and reviewing current evidence regarding the travel trends of this cohort, both observed and future projections, among other evidence regarding the key research questions. Where available, New Zealand evidence was also reviewed.
- **Study 1. Conduct an analysis of New Zealand key data sources** (including New Zealand Household Travel Survey data and 2013 Census data) to explore local evidence currently available regarding Generation Y's current travel trends, and where possible, projected future travel trends.
- **Study 2. Conduct focus groups** to examine attitudes and exposure to different transport modes among this cohort and examine the applicability of the observed changes in travel in overseas literature to the New Zealand cohort, considering differences by location (eg provincial versus urban dwellers).
- **Study 3. Conduct online interactive survey** (based on the findings of the previous stages of the project) to gain a better prediction of future Generation Y travel demand than is available with statistical predictions alone, with a particular emphasis on the likely impact of transitioning through major life stages.
- **Final reporting.** A summary discussion with a particular emphasis on providing recommendations to the transport sector for future decision making regarding transport infrastructure and other related topics.

## 1.3 Report structure

**Chapter 2:** Literature review – existing international evidence behind the trends and factors influencing the use of public transport by Generation Y.

**Chapter 3:** Study 1. An analysis of New Zealand data sets – examines existing trends in travel in New Zealand for Generation Y.

**Chapter 4:** Study 2. Focus group findings – to investigate key motivators and barriers to different mode options in provincial and urban locations.

**Chapter 5:** Study 3. Online survey findings – to estimate latent demand for public transport for Generation Y, and identification of priority public transport improvements.

**Chapter 6:** Final conclusions and recommendations – to discuss key findings and identify a pathway for practical implementation where appropriate.

## 2 Literature review

### 2.1 Introduction

The travel patterns of Generation Y appear to be different from those of previous generations. Youths once desired private vehicles and independent travel, but there is evidence that today's young adults tend to rely less on private vehicle travel and instead opt for alternative transport modes. The concept of vehicle travel saturation is mentioned in several sources (eg Dutzik and Baxandall 2013; Litman 2013). This concept describes how in industrialised countries travel trends instigated by highway development to cater for an audience reliant on cars and increased vehicle commuters (due to greater labour force participation) has, for the most part, come to an end (Dutzik and Baxandall 2013). The period of time leading up to driving saturation (eg where private vehicle travel peaked) coincided with changes in society that facilitated lifestyles dependent on private automobiles.

Recent years have been marked by rising fuel prices, increasing urbanisation, improved travel options, increasing health and environmental concerns, and changing consumer behaviour. Such changes have been argued to increase demand for alternative transport modes, therefore being related to a move away from automobile dependence (Litman 2013). In addition, increased communication through virtual activities have been thought to be affecting young people's travel patterns. Therefore, demographic, social, technological and economic changes need to be considered to understand the way travel patterns will change in the future (van der Waard et al 2014). Given the complexity of the relationships involved, this represents a major challenge for policy makers and at present is a knowledge gap requiring further research, particularly in the New Zealand context.

This chapter reviews knowledge of the topic available in the literature to date, providing insight into current travel patterns of Generation Y and, where available, projections for the future travel patterns of this cohort. Following this, existing data of interest in New Zealand is analysed and presented, providing a better understanding of the travel patterns of Generation Y in New Zealand. The findings of focus groups and an online survey directly questioning this cohort about their current and likely future travel patterns are then presented, providing an evidence base for transport planning decisions in New Zealand in the future.

It is important to note there is no existing definition for Generation Y consistently employed in the literature. The following section therefore reviews the varying definitions employed previously, and giving consideration to existing datasets of interest, defines the generation for the purposes of this research.

### 2.2 Defining Generation Y

#### 2.2.1 Definition employed by Statistics NZ

Of most relevance to the current study is the definition of Generation Y employed by Statistics NZ. This states that both Generation X and Y are less obviously tied to an observable demographic phenomenon than the baby boomer generation, which is marked by high fertility rates and a high number of births (and generally defined as those born between 1946 and 1965). Because of this, Statistics NZ has no official or

standard definition of either Generation X or Y; however, it does offer the following based on a logical progression of the generations (Statistics NZ 2013b):

*If one subscribes to the 1946–1965 baby boom working definition, then generation X could become the 15-year period after the baby boom (1966–1980) and generation Y could be the 20-year period after generation X (1981–2000).*

This definition would therefore mean that those in Generation Y would be between 14 and 33 years of age in 2014.

As discussed in section 2.2.2, this lack of an observable demographic phenomenon to set parameters for the beginning and the end of Generation Y has led to considerable variation in definitions of the term. The years included in definitions of more well-defined generations can also differ by source and country (eg Statistics NZ (2013a) highlights that the definition of the baby boomer generation also varies by source), making a clear definition of Generation Y difficult to obtain. Due to this, the age brackets used in the analysis of existing New Zealand data sets have been reviewed. The information presented is then summarised, providing the definition of Generation Y which has been used in the current research project.

## 2.2.2 Definitions employed by others

There has been much variation in the age ranges included in previous definitions of Generation Y. For example, Brown et al (2009) highlight that previous literature has defined Generation Y beginning as early as 1977 and as late as 1981, and then finishing as early as 1994 and as late as 2002. These equate to between the ages of 12 and 20 and then 33 and 37 in 2014. However, later sources have defined the generation more narrowly to include only those between 18 and 25 years of age, or born between approximately 1985 and 1992 (Johnson Controls 2010).

This variation in definitions of Generation Y is mirrored in the research exploring the travel patterns of younger people, with varying age brackets being included across different studies, as displayed in table 2.1. There has not always been extensive detail provided by the authors on either the method for population selection and/or the exact birth years included in the population selections.

Where the authors do provide such detail, the variation in ages is said to be due to a number of reasons. For example, where secondary data sets are used, age ranges included in these dictate the definition which can be employed. Other factors, such as the age at which one can attain a driver licence in different countries, also results in some variation in the ages included.

**Table 2.1 Summary of ages included in a selection of previous literature exploring younger people's travel patterns**

Source	Ages included	Approximate ages in 2014 <sup>(a)</sup>	Approximate birth years included <sup>(a)</sup>	Countries included in research
Blumenberg et al (2012)	15-26	17-28	1986-1997	United States
Davis et al (2012)	16-34	18-36	1978-1996	United States
Delbosc and Currie (2013b)	18-30	23-35 <sup>(b)</sup>	1979-1991	Australia
Dutzik and Baxandall (2013)	13-30	14-31	1983-2000	United States
Kuhnimhof et al (2011)	20-29	23-32	1982-1991	Germany; Great Britain
Kuhnimhof et al (2012)	20-29	22-31	1983-1992	France; Germany; Great Britain; Japan; Norway; United States
Schoettle and Sivak (2013)	18-39	18-39	1975-1996	United States
Sivak and Schoettle (2011)	Varies by country, min of 18 and max of 29	21-32	1982-1993	Canada; Japan; Netherlands; Norway; South Korea; Sweden; Switzerland; United States; Finland; Germany; Great Britain; Israel; Latvia; Poland; Spain
Taylor et al (2007)	16-25	23-32	198--1991	Great Britain

<sup>(a)</sup> Ages are approximate because year of birth is generally not specified in the literature, meaning participants' actual ages could be greater than those listed (eg where the data was collected before the analysis was conducted, or where the paper was published a significant time after data collection and analysis).

<sup>(b)</sup> Ages listed are for those included in the 2009 sample. Data collected in 1994, 1999 and 2007 (from participants aged 18-30 years) were also utilised in the study.

Table 2.2 presents the age brackets collected and approximate ages of relevance in potential datasets for the New Zealand dataset component of the research. As can be seen, the largest age range of current relevance included in any dataset is between 15 and 35 years of age.

**Table 2.2 Age brackets collected and approximate ages of relevance in potential datasets for the New Zealand dataset analysis**

Dataset	Age brackets collected	Current approximate ages of relevance (in 2014)
New Zealand Household Travel survey	Actual age listed, ranging from 5 to 44	15-35
New Zealand Census	10-14, 15-19, 20-24, 25-29, 30-34, 35-39	16-35
Multi-modal travel information (NZ Transport Agency)	16-24, 25-34, 35-44	17-35
Auckland public transport satisfaction survey	15-17, 18-24, 25-34, 35-44	16-35

### 2.2.3 Summary and final definition

The lack of a clear definition of Generation Y means that definitions employed in research need to be based on the goals of the work being undertaken, ensuring that the ages included are in line with the rough guidelines provided in previous literature. Therefore, based on the requirements of the current work, we define Generation Y as those turning between 15 and 35 years in 2014, or born between 1979 and 1999 (inclusive). This definition has the benefit of being very close to Statistics NZ's logic, while also increasing the usability of the secondary datasets relevant to the study. It also excludes the more extreme ends of birth years included in prior definitions of Generation Y, and as such fits with the majority of prior definitions employed.

## 2.3 Observed travel patterns

As highlighted above, Generation Y has displayed travel patterns that differ from those observed in previous generations. Generations before Generation Y grew up in a society marked by factors that facilitated increased uptake of an automotive-oriented lifestyle. Young adults today, however, have shown an increased preference for alternative modes of transport, moving away from a lifestyle centred on private car travel. The following sections review observed travel trends and highlight factors related to these observed travel trends.

### 2.3.1 The driving boom

The driving boom describes the period (1946–2004) in which a rapid adoption of an automotive-oriented lifestyle occurred among baby boomers who had become eligible to possess a car licence (Dutzik and Baxandall 2013). This phenomenon was witnessed around the world and has been characterised by low fuel prices and an increased participation in the labour force with higher rates of women entering and remaining in paid employment. During the driving boom (up to 2004), Americans, on average, increased their number of miles driven by 85% each year from 1970 (Dutzik and Baxandall 2013). The Netherlands witnessed a steady growth in total kilometres travelled between 1985 and 2011, with the greatest rate of growth occurring between the 1980s and 1990s (van der Waard et al 2014). Note that the driving boom generally started earlier in the US than in Europe. Direct user benefits gained through improved vehicle technologies and road design gave satisfaction to adopters of an automobile-oriented lifestyle, creating a perception that driving was fun, exciting, convenient and that it enhanced one's quality of life (Litman 2013). High levels of driver licence possession coincided with the driving boom period, seeing 90% of the population available to drive attaining licences.

Despite continued economic and population growth, travel by car in the US has levelled off, and in addition Germany and Britain have not experienced growth in the total number of kilometres travelled since the mid-1990s (Kuhnimhof et al 2012a). Vehicle kilometres travelled in Japan began to stabilise by 1997, while vehicle kilometres travelled in Sweden and France began to stabilise by the early 2000s (van der Waard et al 2014). Research suggests that increasing numbers of young adults are travelling far less than previous generations. The total number of trips made by young adults in the Netherlands decreased by 21% between 1995 and 2009. Furthermore, the distances travelled daily by this group decreased by 7% during the same period.

In Europe, increasing car ownership is still observed among older segments of the population, where the pre-car generation (eg those who never owned a car or had a licence, particularly older women), is still being replaced. This dampens the peak car effect in Europe. In the US, this phenomenon is over, however,



meaning that the peak car effect appears to be stronger in the US (Kuhnimhof 2014, personal communication).

### 2.3.1.1 Driving saturation

Driving saturation describes the upper limit of traffic volume and the number of cars that can be handled by existing infrastructure and resources (eg driving saturation is reached once the infrastructure can no longer handle the volume of traffic) (Goodwin 2012). Naïve ideologies of driving saturation extend to the belief that everyone who desires and requires a car will acquire one.

The level of saturation is constrained by vehicle infrastructure capacity, as well as economic and social factors (Goodwin 2012). In practice this means that using traditional solutions (which generally focus on infrastructure improvements to increase capacity, eg increasing the number of lanes on highways to cope with peak traffic) have a limited ability to reduce issues with both traffic congestion and parking capacity. People are less inclined to continually change their life habits to avoid the difficulties associated with travel (for example, commuting earlier to avoid peak travel times) and will instead opt for solutions that avoid road traffic altogether (for example, may choose to take public transport such as trains to avoid road congestion or move closer to work so that active transport modes are a more viable option).

## 2.3.2 Generation Y's observed travel patterns to date

Generation Y driving trends have significantly decreased compared with those of young adults in earlier generations, evidence thereof is a decrease in the average and total vehicle miles travelled by youths today (Davis et al 2012). Those who appear to be the first to show decreased vehicle use are those born between 1980 and 1990 (Kuhnimhof et al 2012a; Litman 2013). This period of time coincides with the definition of Generation Y employed for the current study (eg born between 1979 and 1999 inclusive). From 2001 to 2009, a decrease of 2,400 annual vehicle miles travelled was witnessed in a household travel survey conducted in the US (Dutzik and Baxandall 2013). Young adults in Germany, Britain and Canada have displayed similar changes in transport trends. The level of travel by car in 2007 for those aged between 20 and 29 in Germany decreased to levels last seen in 1976 (Kuhnimhof et al 2012). A discussion on the travel patterns of young adults in the Netherlands concluded that 18 to 30 year olds became increasingly less automobile oriented between 1995 and 2009 (van der Waard et al 2014), a finding similar to that observed in Canada (Grimsrud and El-Geneidy 2014). Little literature reviewing such trends in a New Zealand context is available to the authors' knowledge; (chapter 3 of this report presents New Zealand data on the topic).

### 2.3.2.1 Mode choice

In recent years travel via car has decreased among car owners. This suggests that car drivers may have adopted multimodal behaviour (Kuhnimhof et al 2012a). Emphasis on a lifestyle centred on driving became less important for those born after 1980, marking a reduction in car dependence and increased reliance on alternative modes of transport (Litman 2013).

Decline in share of those who drive at least daily has decreased from 60% in the 1990s to 50% today in the US. At the same time, occasional public transport users (those who use public transport at least once a week) have increased by 15% over the same decade. Furthermore traffic congestion (measured by the number of hours drivers spend in traffic) fell by 421 million hours in 2011 compared with 2005 (Dutzik and Baxandall 2013), suggesting a reduced level of car use.

Travelling by bus, cycling, training and walking have gained greater social acceptability and aid in the promotion of healthier and more environmentally friendly lifestyles (Litman 2013). For the years

succeeding 1995, the US witnessed an increase in public transport ridership of 34%, with greater growth witnessed in communities where improved transit services were offered and incentives for public transit use were given (Litman 2013). Germany and Britain have both observed increases in the mode share of walking and cycling. Walking increased to 20% (from 16%) in Germany between 1997 and 2007 and from 16% to 18% in Britain between 1999 and 2005. Germany has witnessed a continuous growth in cycling since 1975. Additionally, the level of use of public transport in both Germany and Britain has nearly doubled (Kuhnimhof et al 2011).

Vehicle registrations among young adults in Germany have indicated a decrease in car availability (Kuhnimhof et al 2011). Car availability encompasses both the eligibility to drive, possessing a driver licence and having the opportunity to drive, for example, through having access to a car (Kuhnimhof et al 2011).

The number of students with car expenses decreased from 54% in 1991 to 34% in 2009 in Germany. While this may suggest lower car ownership among young adults, it is plausible to assume that in some cases parents may be assisting their children in automotive-related expenses (Kuhnimhof et al 2011). For reasons highlighted, car availability among young adults is difficult to measure accurately. However, travel surveys in Germany, Great Britain (Kuhnimhof et al 2011), Australia (Delbosc and Currie 2013b), and the US (Davis et al 2012; Blumenberg et al 2013) all suggest that young adults have less car availability.

### **2.3.2.2 Licensing**

As can be expected, less car availability (both eligibility and the opportunity to drive) results in decreased car use (Kuhnimhof et al 2012). While possession of a driver licence may not guarantee car use, it is indicative of an intention to move toward car use (Kuhnimhof et al 2012), hence the decline in licence uptake, particularly among Generation Y, needs to be understood to plan accurately for future transport demands (Delbosc and Currie 2013b). A decrease to 67% for licence possession in the US among 16 to 24 year olds was seen in 2011, returning to levels last seen in 1963. Furthermore, by 2011, licence possession among Americans of driving age decreased to 86% from a peak of 90% in 1992 (Dutzik and Baxandall 2013).

The percentage of licensed drivers for those aged 21 to 29 decreased by 11% between 1993 and 2008 in Britain, with men's licence share having a greater decrease (13%) than for women (6%). Germany has seen the driver licence possession among woman aged 18 to 24 idle at 69%, since 2006. For men of the same ages, possession decreased by 3% (Kuhnimhof et al 2012). Some argue this is evidence that the younger generation places less value on licence possession and car ownership than previous generations (Litman 2013), whereas other researchers have found that young adults still see having the ability to drive as a necessary and basic life skill, but choose to delay gaining a licence for a number of reasons (Delbosc and Currie 2012b). Personal circumstances will have some sway on travel modes, however, with young parents with children being more likely to possess a driver licence (Delbosc and Currie 2012b).

Therefore, the reasons for the decline in licensing among Generation Y are debatable and require further exploration, particularly in a New Zealand context where very little published research evidence is available. This project sought to fill this gap through both secondary and primary data analysis. The extent to which driving trends alter in the future will depend on the imminent travel patterns of Generation Y (Dutzik and Baxandall 2013). Key to projecting this behaviour is understanding whether the stagnating or declining trend in vehicle use observed in many countries across the world will continue as Generation Y enters what is known as the peak driving age (34 to 54 years) (Dutzik and Baxandall 2013). This research therefore sought to understand more fully the intentions of this generation in the New Zealand context to assist with future transport planning decisions.

## 2.3.3 Factors influencing travel patterns

### 2.3.3.1 Roading investment

Many developed countries witnessed a steady growth in transport infrastructure until 1980; however, little has changed since then (Litman 2013). Highway improvements allowed for automobile-oriented lifestyles, catering to those who desired to live or work in distant suburbs with no great sacrifice to leisure, work or family times, allowing for the driving boom phenomenon to occur.

Americans today drive no more total miles than they did in 2004 (at the end of the driving boom), and individual driving travel is no more than what it was in 1996. At the same time, an increase in alternative mode choice has been observed with American's public transit (comprising a 10% increase in use in 2011 when compared with rates in 2005). This increase in public transport use continued through 2012 in the US, despite changes in services and fare increases introduced in response to the recession. Young adults (16 to 34 years) in the US drove 23% fewer miles in 2009 than those of the same age did in 2001 (Dutzik and Baxandall 2013).

### 2.3.3.2 Vehicle ownership

Transport planning and infrastructure has catered to an automotive-dominant society which manifested during the driving boom, marked by increased vehicle ownership. Vehicle ownership and travel grew in the US at the beginning of the twentieth century and levelled thereafter, in spite of economic and population growth (Litman 2013). Vehicle ownership and use was even greater in Europe than in the US, with a similar trend being witnessed in Great Britain (Litman 2013), states of Australia (Delbosc and Currie 2012) and various other European countries (Litman 2013; Delbosc and Currie 2012b).

Vehicle costs are intrinsically difficult to measure as the description usually encompasses not only the cost of purchasing a car, but also the ongoing costs associated with car ownership, such as road costs, repairs, maintenance and insurance. Ongoing costs can restrict low income earners from vehicle ownership.

The cost of insurance for a car driven by a male teenager accounts for 50% of the motoring costs presenting a significant barrier to learning to drive in the UK (Delbosc and Currie 2012b). Costs such as these are high across the world and may be one contributing factor to lower rates of licensing among younger people.

### 2.3.3.3 Fuel prices

In recent decades, fuel prices in New Zealand have steadily increased (Statistics NZ 2014); however, higher fuel prices alone may not facilitate the change to alternative transport (Litman 2013). Improved infrastructure and quality of service may be necessary to convince users that alternative transport can adequately meet their basic transport requirements, such as safety, convenience and affordability. Despite evidence of reduced driving among Americans, there has been a noticeable increase in their use of alternative transport modes. Increased fuel prices have reduced the car travel frequency of those who are unemployed and underemployed, as this group has less disposable income to allocate towards travel. This group may also have less need to travel, resulting in lower rates of travel (Davis et al 2012).

Fuel prices are forecast to remain high, with demand being expected to grow (Litman 2013) and available resources diminishing. Short-term, higher gasoline prices will see persons avoiding making trips they would otherwise have taken, while longer-term increases will see people alternating their transport choices to avoid high fuel expenses (Dutzik and Baxandall 2013).

## 2.3.4 Structural changes in the population that influence travel patterns

Structural changes in the populations of Great Britain and Germany have resulted in an increasing proportion of young adults leading lives less automobile-oriented (Kuhnimhof et al 2011). Of these structural changes, the increasing level of education has increased the number of young adults living in urban centers. Furthermore, it has delayed the age at which young adults enter the workforce and begin families (Kuhnimhof et al 2012). These patterns are not specific to Great Britain and Germany, with similar trends observed in many countries worldwide, including in New Zealand (Statistics NZ 2009).

### 2.3.4.1 Economic factors

The economic environment is identified as being a significant contributing factor when considering the travel patterns of today's young adults; however, the effect is difficult to assess. Literature reviewed by the authors suggests that economic variables (such as fuel price and levels of youth unemployment) are not the only factors given consideration when young adults make decisions regarding their mode of transport, suggesting that the relationship between economic variables on travel decisions made by young adults is complex and not yet well understood.

Reduced incomes may limit travel budgets to the extent that public transport is the most affordable transport option for young adults who are under-employed or unemployed. It is reasonable to conclude that a decrease in job opportunities for today's young adults could result in less disposable income among this group (Dutzik and Baxandall 2013), further limiting their ability to afford a private vehicle. Furthermore, under-employed or unemployed people face greater difficulty in affording a car and possibly have less need to travel (eg because of a reduced need to commute) (Davis et al 2012). Generation Y was arguably the group most affected by the recession, with many still struggling to afford living costs, hence making car ownership impracticable (Davis et al 2012). More frequent driving can be expected from those with more readily available access to a vehicle compared with those who do not (Dutzik and Baxandall 2013), meaning that those without ready access to a private vehicle will travel less via this mode. The evidence highlighted above suggests a trend away from driving. This is expected to continue in the future, despite continued economic recovery. This enduring move away from private transport offers evidence of an apparent change in decision making regarding transport among Generation Y (Davis et al 2012). There is evidence that economic variables such as unemployment and the price of fuel are no longer considered alone, but taken into account with other cultural, societal and policy factors (Goodwin 2012).

While the economic recession is said to have greatly affected the number of young adults obtaining their full driver licence and having access to vehicles, it is unlikely that car ownership and use will return to original levels. Evidence for this is provided by Davis et al (2012) who found that young adults who can afford to own a car may prefer to use alternative transport (Davis et al 2012). Furthermore, research has indicated that young drivers who have jobs today not only drive less than those who held jobs prior to the recession, but have also increased public transport use compared with those who held jobs prior to the recession (Davis et al 2012).

Lower vehicle miles travelled were witnessed prior to the recession (Dutzik and Baxandall 2013). Alongside the presence of the graduated driver licensing system (GDLS), there is a declined level of driving for those who do and do not hold jobs, suggesting that the economic environment is not the only significant motivation for changes in travel patterns among young adults today.

### 2.3.4.2 Unemployment and underemployment

As stated above, among Generation Y members there has been a general increase in unemployment rates, which can lead to a delaying of adult life for some. This results in the younger generation living at home longer and may occur while attending university to further their education or from 'boomeranging' back home when unable to find employment (possibly after completing study). Australia saw a steady increase in part-time employment between 1985 and 2011 and a 17% decrease in full-time employment of young adults (Delbosc and Currie 2012b). In the US, an 18% decrease in the number of young adults in employment was observed between 1990 and 2010. For Germany, an increase in the unemployment rate of 8% to 15% for persons aged 15 to 24 was observed, while in Great Britain there was a decline in unemployment rates from 17% to 12% (Kuhnimhof et al 2011). Each of these countries has seen a trend away from an automobile-oriented lifestyle among young adults and instead witnessed an increased mode share of alternative transport.

Between 2005 and 2012 unemployment rates in New Zealand increased from 9.7% to 17.7%. The Household Labour Force Survey conducted by Statistics NZ identified that young adults, or those aged between 15 and 24 years (thus included in the employed definition of Generation Y) have an increased likelihood of moving between periods of employment and unemployment. Furthermore the investigation highlighted that 40% of young adults employed are only in part-time employment (Statistics NZ 2014).

For March 2013, the unemployment rate among young adults was 17.1%, returning to a peak last seen in 2012 (MBIE 2013). However, of those who were unemployed, almost half were involved in study or in the process of finding work (MBIE 2013). Table 2.3 provides a break down of these statistics.

**Table 2.3 Labour force statistics for young adults (source MBIE 2013)**

Age group	In education			Not in education		
	Employed	Unemployed	Not in labour force <sup>(a)</sup>	Employed	Unemployed	Not in labour force
15-19	25.26%	9.18%	65.56%	57.42%	20.16%	22.42%
20-24	49.74%	7.14%	43.12%	73.67%	9.16%	17.17%

(a) Those classed as 'not in the labour force' are anyone of working age unable to work for reasons including (but not limited to): attending education institutions, unable to work due to physical and mental disabilities, and actively not seeking work (Statistics NZ 2014).

It is plausible to assume that for those who are unemployed or not in the labour force the ability to possess private transport can be outside their financial means, meaning there is no other option but to rely on public transport for trips. In line with this, research which aimed to understand the travel needs and behaviour of young adults identified that public transport affected access to employment among young adults (Taylor et al 2007). The costs associated with getting to and from work were particularly affected. In addition, service schedules influenced the hours young people could work, whether or not they could do overtime and whether or not they could afford getting to and from work (Taylor et al 2007). This could therefore have a limiting effect on gaining employment.

### 2.3.4.3 Living at home longer

Research evidence suggests that younger people are choosing to remain living at home longer than traditionally observed. For example, Delbosc and Currie (2012b) found there was a 15% increase in the number of Canadians between the ages of 20 and 29 years living at home between 1981 and 2001. Data from the New Zealand Census from the period 1986–2006 identified that more than 50% of young adults lived

at home. Furthermore, young adults surveyed in the 2006 Census and identified to be living at home were older on average than in previous censuses. The data suggested that while young adults in 2006 were just as likely as those in 1986 to leave home, those who remained living at home did so for a longer period of time. Factors considered to influence this trend include lower rates of workforce participation and increased rates of higher education among young adults over the same period (Statistics NZ 2009).

Young adults who continue living at home longer than traditionally observed may have more regular access to a vehicle through reduced rent payments and expenses (resulting in more disposable income) and access to a family vehicle. However, financial dependence on parents could also signal the inability to afford a car and/or a licence (Delbosc and Currie 2012b), potentially resulting in the opposite. Such a trend could therefore result in either increased or decreased car use.

In Germany, those persons who have left home but are yet to begin their own families have been associated with the biggest decline in car availability between 1997 and 2007 (Kuhnimhof et al 2011), again revealing the important link between life circumstances and travel patterns. It is therefore imperative that life stage is considered when making any projections about future transport patterns, particularly the possible timing of different life stages when compared with previous generations (eg it is possible that Generation Y will continue trends already observed and delay certain milestones such as moving into the workforce or starting a family, as well as delaying moving out of their family home and these delays will, in turn, affect travel patterns).

#### **2.3.4.4 Staying in education longer**

There has been a worldwide increase in higher education participation among young adults. For example, Australia witnessed a 16% increase between 1991 and 2011 in the number of young adults aged 20–24 attending education, with both the US and the UK experiencing similar trends (Delbosc and Currie 2012b). The New Zealand-based Labour Force Survey highlighted an increase of 25,000 young adults in study (and subsequently not in the labour force) in the 2013 survey period compared with previous survey years (Statistics NZ 2014). In line with this, census data over the 1986–2006 period showed a 10% increase (from 4% to 14%) in the number of young adults over 15 years of age enrolled in tertiary education (Statistics NZ 2009).

The main consequence of choosing to remain in education is a reduced disposable income, limiting students' ability to afford a lifestyle they would otherwise have had if they had entered the work force earlier. There is a decrease in the number of kilometres travelled by young adults who are studying compared with those in employment (van der Waard et al 2014), suggesting that continued education may either a) limit the mobility of young adults (so they cannot afford as much travel, or b) reduce the need of this group to travel as much as their peers who are in employment.

One outcome of increased time spent in education is higher levels of multimodal travel, possibly resulting from the level of experience most graduates have in using public transport while commuting to study (Kuhnimhof et al 2011). Therefore, a shift toward increased higher education among the Generation Y cohort may result in increased multimodal travel for this group.

#### **2.3.4.5 Delaying families**

There has been an increase in the age at which women bear children, as well as an increase in the age of marriage among those belonging to Generation Y compared with previous generations. For example, in Australia, the median marriage age has increased and younger couples are less likely to live together than in the 1980s (Delbosc and Currie 2012b).

New Zealand data reveals a decrease in rates of marriage for young adults between 1986 and 2006 (Statistics NZ 2009). Furthermore, the age at which young adults today choose to marry is older than in previous generations. For example, the median age of first marriage for males increased from 23 to 30 between 1971 and 2006, while the median age for women increased from 21 to 28 within the same period. Furthermore, the proportion of young parents fell by 2% between 1986 and 2006, with 3% of the group identified as solo parents and 2% identified as parenting as a couple. This information suggests the younger people in New Zealand are delaying starting families (Statistics NZ 2009), again influencing travel patterns. Historically, travel increases as adults enter the work force and/or their children grow past being toddlers. Travel increase is associated with the need to get to and from work, but is also associated with ferrying children to and from school, extra-curricular activities, doctors' appointments and meeting other responsibilities associated with childrearing (Litman 2013). For these reasons, driving is associated with the stages of an individual's life cycle, as also emphasised above. Youths delaying adult life are therefore one influencing factor on travel patterns among the cohort.

#### **2.3.4.6 Influence of parents**

Younger people can be greatly influenced by the decisions of their parents. Those who are not legally eligible to begin working or are not yet able to sit their learner licence may have to rely on their parents for transport. Parents who are unwilling to pay for public transport or believe that public transport is unsafe may prevent their children from using this resource. Additionally, other factors, such as curfews enforced by parents or guardians can discourage the use of public transport in off-peak periods; in particular night travel can be associated with a fear that children could be harmed or go missing (Marzoughi 2011).

In one particular study, 80% of children were forbidden from travelling once dark, with a higher proportion of those forbidden being female. While some respondents of the study said their parents encouraged them to use public transport independently, those who were discouraged believed their parents felt public transport was unsafe, expensive or feared their child would go missing (Marzoughi 2011).

Additionally the travel behaviour and opinions of individuals deemed significant to someone (eg a parent to a child) could influence their travel behaviour. For example, the decision of a parent to introduce their child(ren) to alternative transport options could assist in creating less reliance on cars (Haustein et al 2008).

#### **2.3.4.7 Gender**

Traditionally, men have led lifestyles with greater automobile orientation (Kuhnimhof et al 2012). However, over the last 40 years, women have become increasingly prominent in the workforce (this is also related to the increase observed in family starting ages over the same period) resulting in diminishing gender differences in travel behaviour between men and women (Kuhnimhof et al 2012). There is additionally some evidence that women may now be making greater use of cars, with research conducted in the Netherlands finding that women were inclined to travel more kilometres than men (van der Waard et al 2014).

Today, the possession of driver licences among young men in both Germany and Britain has diminished to levels below that of young women, indicating a relinquishing of this traditional lifestyle (Kuhnimhof et al 2012). New Zealand 2013 Census data shows that, across all age groups from 25 years of age and onwards, there are more females than males. The report also identifies that young adult men are currently more inclined to remain living at home longer (Statistics NZ 2009). This make up of the Generation Y cohort in New Zealand could therefore also have an impact on travel patterns among the group.

### 2.3.5 Possible factors contributing to changes in attitudes of young adults towards a less automotive-oriented lifestyle

There are a number of factors that could have contributed to the changing transport trends observed among the younger generation today. Rising fuel prices is one potential contributor to this phenomenon. For example, both Germany and Britain have seen fuel price increases that exceed the cost of using public transport since the mid-1990s. A change in urban planning, where greater emphasis is now put on creating walkable, convenient communities deterring vehicle use through parking policies, parking price, traffic calming and pedestrianised downtowns has occurred at the same time. Public transport has improved services to cater for this change in urbanisation. For example, among other initiatives, public transport semester tickets are included in some university tuition fees in Germany, providing students with a six-monthly transport pass permitting free travel while the ticket is valid. Possession of such transport passes among German students aged between 20 and 29 years of age increased by 50% between 1996 and 2008 (Kuhnimhof et al 2011).

Furthermore, the use of telecommunications for activities such as shopping and banking may further influence travel patterns.

#### 2.3.5.1 Underlying factors relating to young adults not obtaining a licence

Schoettle and Sivak (2013) in a survey distributed to 18 to 39 year olds who did not possess a valid driver licence identified the following possible reasons for young adults choosing not to obtain a driver licence:

- a perception that the licensing process required too much time
- a perception that owning and/or maintaining a vehicle was too expensive
- the availability of transport from others
- a preference for biking or walking
- a preference for using public transport
- a concern the impact of driving on the environment
- an increasing ability to communicate or conduct business online
- factors limiting the ability to drive, such as a disability or medical issue or vision problems.

Research in the US by Delbosc and Currie (2012b) also explored this topic. The authors found that 30% of those aged 18 and older who had chosen not to obtain their driver licence attributed the primary reason for this as the costs involved with gaining a licence, supporting the notion that there is a perception among the population that licensing is expensive. Additional deterrents to gaining a driver licence included a lack of time, lack of car access and an ability to travel to destinations successfully without a need for a car.

#### 2.3.5.2 Urbanisation

Generation Y has shown an increasing interest in urbanised living, moving to densely populated areas in which walking, cycling and public transport are very viable transport options (Davis et al 2012; van der Waard et al 2014). This has resulted in a return to travel behaviour as witnessed earlier in the twentieth century (Litman 2013). Such neighbourhoods promote a pedestrianised lifestyle and are planned to offer greater convenience to those wanting to live in vibrant 'walkable' communities (Davis et al 2012).



Generation Y has been identified as twice as likely to show a preference for pedestrianised neighbourhoods, promoting conveniently planned stores, restaurants, schools, mixed single family houses and apartments, and access to public transport (Dutzik and Baxandall 2013).

Research conducted in the Netherlands suggested that those living in high-density urban areas were inclined to make a greater number of trips per day than others. Additionally, their preferred mode choice was more often public transport or cycling (van der Waard et al 2014). The preference for living in urbanised areas among Generation Y is therefore likely to reduce automobile travel demand while increasing demand for alternative modes (such as active and public transport) (Litman 2013).

### 2.3.5.3 Graduated driver licensing system

The GDLS is a policy by which a driver licence is obtained in stages (Blumenberg et al 2013). The aim of such a system is to reduce the amount of crashes young or new drivers are involved in by increasing the levels of supervision and imposing restrictions under which the novice can drive, over a set period of time (Karaca-Mandic and Ridgeway 2010).<sup>1</sup> Many countries have introduced some variation of a graduated licensing system, with the exception of the UK, which has instead increased the difficulty and cost of attaining a driver licence (Delbosc and Currie 2012).

The learner licence stage of graduated licensing systems place an emphasis on learning to drive, requiring that a minimum number of supervised driving hours be met (Karaca-Mandic and Ridgeway 2010). Typically a driver is required to be of a minimum age to be eligible to attain a learner licence, in New Zealand this age increased to 16 (from 15 years) in August 2011 (NZ Transport Agency 2014).

The restricted licence enforces constraints limiting the number and type of passengers that can be carried and the time at which a novice driver can operate a vehicle, thereby limiting exposure to high-risk situations until new drivers are adequately able to handle the additional pressures they involve. Graduation to a full licence removes these restrictions (Karaca-Mandic and Ridgeway 2010) offering freedom of travel.

The schemes which have been introduced worldwide vary by minimum age requirements, requirement of compulsory driving lessons, difficulty of both theory and practical tests, the minimum number of supervised driving hours required, passenger restrictions, engine size restrictions and curfews, among other characteristics (Delbosc and Currie 2012b).

Graduated licensing systems have been argued to act as a barrier to younger people obtaining a licence (Delbosc and Currie 2012b; Karaca-Mandic and Ridgeway 2010; Blumenberg et al 2012; Davis et al 2012); evidence for this being an increased number of young people failing to convert their learner permit to a conditional licence (Karaca-Mandic and Ridgeway 2010).

For some young adults, the hassle of gaining a licence, lack of availability of parents to facilitate supervision or lack of access to a car are all possible obstacles to gaining a licence (Delbosc and Currie 2013b). Davis et

---

<sup>1</sup> On 1 December 2014, New Zealand introduced a five-year time limit for car and motorcycle drivers holding a learner or restricted licence to graduate to a full licence. This time limit replaces the existing 10 year renewal policy and is designed to ensure learners and restricted drivers graduate through the licensing system, eventually obtaining their full licence. As time passes, it would be worth assessing the effectiveness of this change in policy by observing the number of learner and restricted licence holders that graduate through the licensing scheme against those who opted to re-sit for their existing licence class. This would introduce insight into the motivations for remaining on a learner or restricted licence and potentially alter how the intention to drive is measured.

al (2012) also argue that young people today may be less likely to invest the required time to gain a full licence, instead prioritising time for studying and extracurricular activities.

Crashes involving young adults are more frequent on weekends, with high vehicle occupancy commonly associated with such crashes (Rode 2003). Consequently, many passengers are injured (Rode 2003). Graduated driver licensing laws therefore aim to assist not only in reducing the number of car crashes young adults are involved in, but also the number of passenger injuries that are characteristic of these crashes (Karaca-Mandic and Ridgeway 2010).

New Zealand has a well implemented graduated licensing system which requires individuals to move through these three different phases. The conditions of eligibility, restrictions and costs involved are summarised in table 2.4.

**Table 2.4 Conditions of eligibility, restrictions and costs involved in New Zealand's graduated licensing system**

	<b>Learner licence</b>	<b>Restricted licence</b>	<b>Full licence</b>
Cost to obtain	\$96.10	\$137.00	\$111.70
Minimum age	16 years old	16.5 years old	17.5 years old
Minimum hold period	6 months	<ul style="list-style-type: none"> <li>• 18 months, or</li> <li>• 12 months and complete approved advanced driving course</li> </ul>	
Restrictions	<ul style="list-style-type: none"> <li>• Must have a fully licensed driver (holding their licence for at least two years) supervising driving at all times</li> <li>• Must display L plates</li> </ul>	<ul style="list-style-type: none"> <li>• Must not drive alone between 10pm and 5am, unless supervised</li> <li>• May not carry passengers other than spouse, partner, parent, dependents or guardian without supervision</li> </ul>	

Despite the declining rates of driver licences issued to young adults today, some research has suggested that having the ability to drive is still seen as a basic and necessary life skill among young adults (Delbosc and Currie 2012b). However, there is also evidence to suggest this may not be the case (eg Johnston 2014). It is therefore possible that eventually young adults will obtain their driver licence; however, this could be at lower rates than seen in previous generations (eg there will be those who obtain their licence at a later age than traditionally observed, and those who never obtain a licence). The question therefore remains as to whether or not travel patterns among this generation will mirror those of generations before. This is an issue requiring further research in a New Zealand context.

#### **2.3.5.4 Technology**

The introduction of new technologies has been said to both increase and decrease vehicle travel (Litman 2013). More fuel-efficient cars and the development of new fuel alternatives have the potential to limit the impact of high fuel prices on drivers of such vehicles. New technologies have also been argued to be a driver of behavioural changes relating to public transport. Readily available real-time travel information (such as information about delays, cancellations and arrival times) and greater ease of ticket purchase have been thought to influence the travel habits and mode choice behaviour (Kuhnimhof et al 2011). For example, applications and websites may promote public transport use among novice and first-time users.

Applications have been introduced which select and display best travel routes for a specified trip, outlining any trip connections or transfers required to reach destinations, and which also identify costs (Redman et al 2012). Together such information assists first-time or infrequent users of public transport. Technology also offers alternative payment methods for users of public transport, increasing trip quality by supporting multiple methods of payment and increasing bus, rail and tram fare gate efficiency. Many agencies have upgraded their public transport payment systems to cater to the use of 'PayWave' and other contactless payment technology (First Data 2010). 'Snapper', 'Metrolink' and 'AT HOP' are all examples of closed loop smart cards that allow for prepaid public transport within New Zealand (in Wellington, Christchurch and Auckland, respectively). Such cards require the user to top up through registered merchants. To top up via a computer requires the purchase of a USB device which adds further and seemingly unnecessary cost to the user as other merchants often facilitate users crediting their accounts without the need for such devices (eg topping up mobile phones). Despite this inconvenience, merchants offer concessions for use thereof or permit that travel passes be loaded onto the smart card, reducing user costs associated with public transport. Payment methods include the use of near field communication or radio frequency identification tags to make payment by means of contactless cards or via mobile phones (First Data 2010).

In New Zealand, there is an active example of these tags in practice. 'Touch2Pay' allows Wellington users with compatible phones to pay for buses and taxi services as they would with a regular Snapper card. This is a service provided by 2Degrees and Snapper and offers the convenience of being able to top up accounts, purchase travel passes and check balances from a smartphone<sup>2</sup>.

Technology advances have also facilitated the increase in online activities such as internet banking, online shopping and email. Such activities have replaced the need for trips to the bank, to malls or to post offices. Such advances have therefore reduced the need for the population (including young adults) to travel (Delbosc and Currie 2013a; Davis et al 2012). Increasing use of social networking sites (eg Facebook and Twitter), online shopping, teleconferencing and long-distance education all have the potential to substitute trips that would otherwise have been made (Dutzik and Baxandall 2013). There is evidence that the level of convenience associated with online activities is valued among members of Generation Y (Sweeney 2006).

#### **2.3.5.5 Environmental and health concerns**

Transport can play a pivotal role in promoting healthier lifestyles, enabling individuals to live active and social lives (Broome et al 2010). Environmental awareness has also become a factor in transport decision-making among young people (Delbosc and Currie 2012a). Again, these trends act to promote active and public transport usage among those in Generation Y.

#### **2.3.6 Summary**

Section 2.3 reviewed research evidence to date of the differing travel patterns of Generation Y compared with previous generations, with a particular emphasis on the demographic, economic, technological and social factors influencing these changes.

---

<sup>2</sup> Further information about these payment methods can be accessed via the following:  
[www.2degreesmobile.co.nz/touch2pay](http://www.2degreesmobile.co.nz/touch2pay) <https://www.snapper.co.nz/newsroom/2012/08/16/touch2pay-with-snapper-mobile-now-with-nzs-first-trusted-service-manager/>

A key trend observed among Generation Y members that has affected travel patterns is the 'delaying of adult life'<sup>3</sup>, including, in particular, a tendency to:

- remain in education longer
- delay entry into paid employment
- delay the starting of families
- live at home longer (compared with previous generations).

As stated above, it is imperative that this major trend of delaying key life stages is considered when making any projections regarding Generation Y's likely future travel patterns.

The section also addressed contributing factors to changes in attitudes toward travel, discussing possible reasons why members of Generation Y show reduced need and/or desire for an automotive-oriented lifestyle.

While there is some New Zealand specific information available (in the form of census data from Statistics NZ), there is a lack of research available that examines these factors in the context of travel and with the objective to discern the effect of these factors on the travel patterns of young adults, specifically Generation Y. This is a gap which the current work has further explored in a New Zealand context.

The following section considers projected travel trends among Generation Y members and how these will change if current differences in travel patterns continue. Following the literature review section, data currently available in New Zealand is explored in more depth (see chapter 3: Analysis of existing New Zealand datasets).

## 2.4 Projected travel patterns

Previous research in the US has predicted it is unlikely the driving behaviour that characterised the driving boom will return. This is because fuel prices are expected to continue increasing, there are reductions in the American labour force (and workers travel further than non-workers), and the number of licensed drivers (as a share of the driving-age population) has reduced (Dutzik and Baxandall 2013). Projections relating specifically to travel patterns need to take into account the age structure of future populations to avoid over-estimation, as highlighted by Frith et al (2012). Projection of the travel patterns of Generation Y is currently lacking in the literature, which is partly because the youngest members of the Generation are not yet eligible for a learner licence. The following section reviews relevant projected travel patterns that have already been undertaken in the previous literature.

### 2.4.1 Traffic volume

Figure 2.1 indicates high and low projected traffic growth for Great Britain and England as well as the actual traffic growth experienced. All projections overestimate traffic growth, despite evidence of slowing growth after 1990 and declining traffic growth in 2007 (Litman 2013). Similarly, in New Zealand

---

<sup>3</sup> It should be noted that this phenomenon is not unique to Generation Y, but has been an ongoing trend observed in previous generations. It is unclear exactly how this trend has led to the differing travel patterns for Generation Y; however, it is likely that the increasing delays coupled with improved service provision have resulted in the more marked changes to travel patterns observed now compared with previous generations (eg there has been a gradual change over time).

projections also overestimate vehicle kilometres travelled by motor vehicle when compared with actual growth, as shown in figure 2.2 (MoT 2015). Litman’s (2013) projections discuss a peak in automobile use and suggest that alternative modes to the private vehicle will begin to experience growth as automobile travel begins to decline, as displayed in figure 2.3. This projection assumes that automobile travel will remain the primary source of travel while highlighting a growth in alternative modes of transport. Litman (2013) argues that this justifies investment into public transport services and alternative mode infrastructure to adequately meet future demands in Canada.

Figure 2.1 British travel forecasts and actual traffic growth (from Litman 2013)

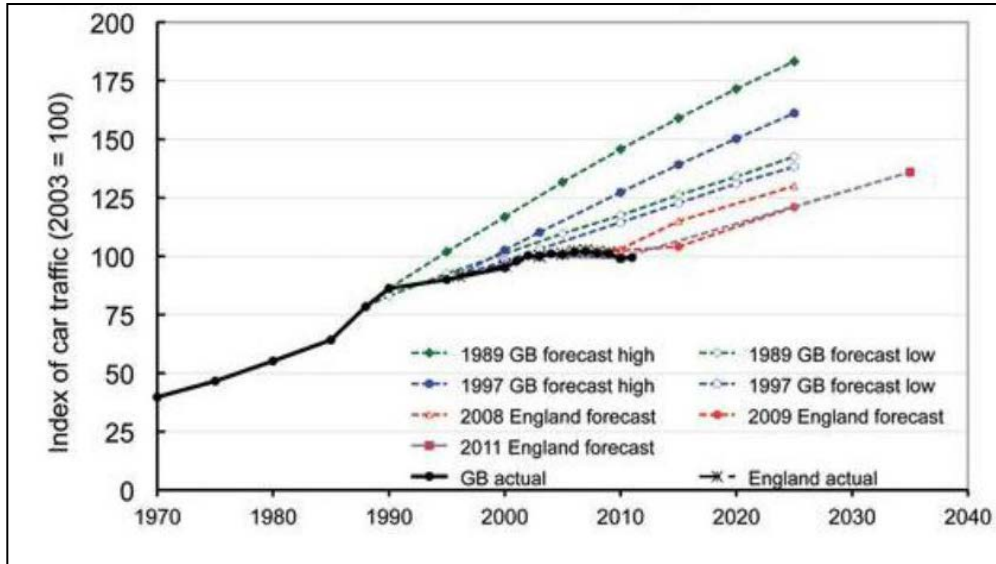


Figure 2.2 Historic New Zealand light vehicle traffic forecasts versus actual growth (from MoT 2015)

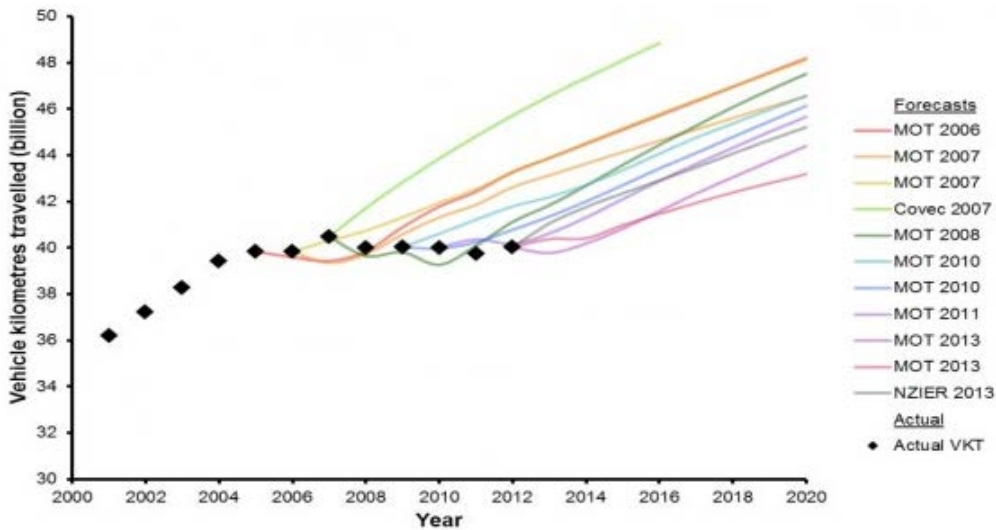


Figure 2.3 Travel growth trend projections (from Litman 2013)

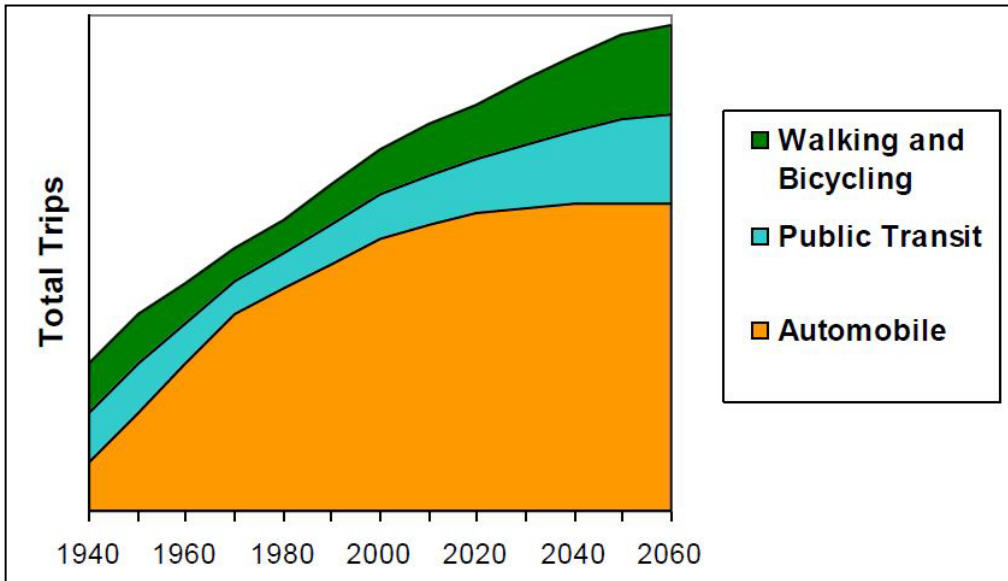
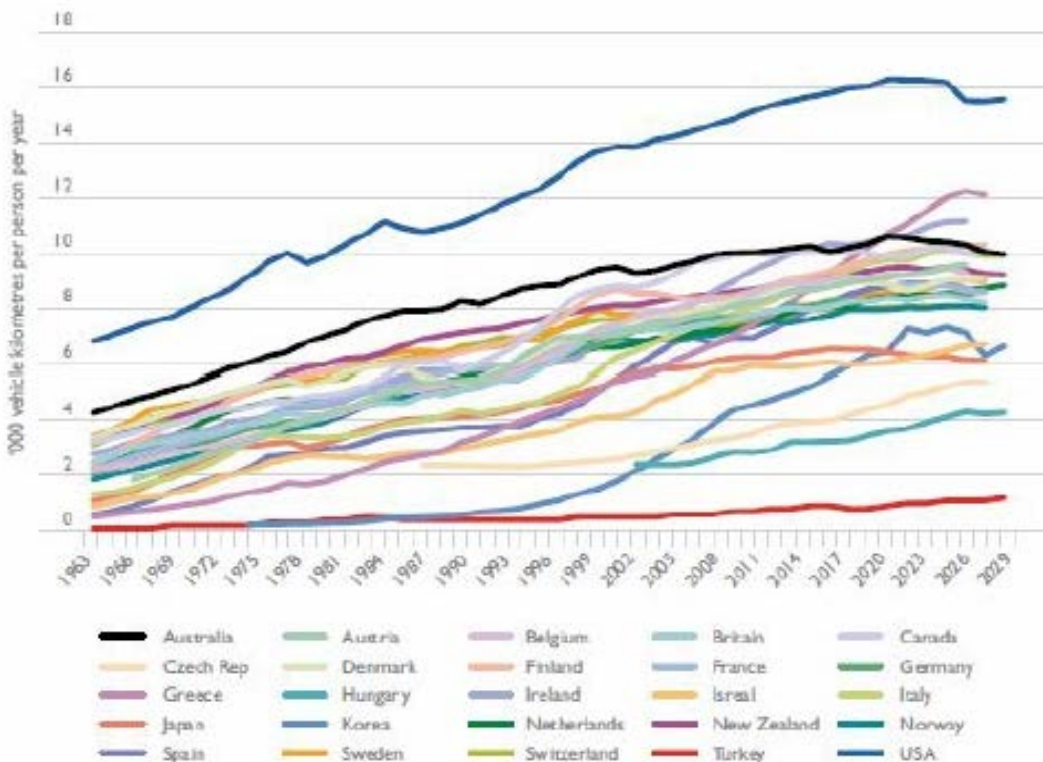


Figure 2.4 displays projected vehicle thousands of kilometres travelled per year by individuals in 25 countries, one of which is New Zealand. Projections made by the Bureau of Infrastructure, Transport and Regional Economics (BITRE) (2012) indicate that in all countries there is a levelling of vehicle kilometres travelled per individual. In New Zealand, kilometres travelled per person are expected to peak just before 2023 and decline thereafter. Projections for New Zealanders show vehicle kilometres travelled remain below 10,000 kilometres of individual travel up until 2029.

Figure 2.4 Vehicle kilometres travelled per person per year (000) (BITRE 2012)



## 2.4.2 Driver travel

One factor affecting driver travel is the cost of fuel. Should gasoline prices remain high, it is reasonable to assume drivers will continue to avoid driving unnecessarily.

Figure 2.5 indicates the actual and predicted petrol prices in New Zealand from 1965 to 2009 (BITRE 2012). While this image does not show future petrol price projections it suggests an upward trend in petrol prices, supporting earlier assertions that younger people today are unlikely to witness low petrol prices as experienced by older generations.

**Figure 2.5 Actual and predicted petrol prices in New Zealand (from BITRE 2012)**

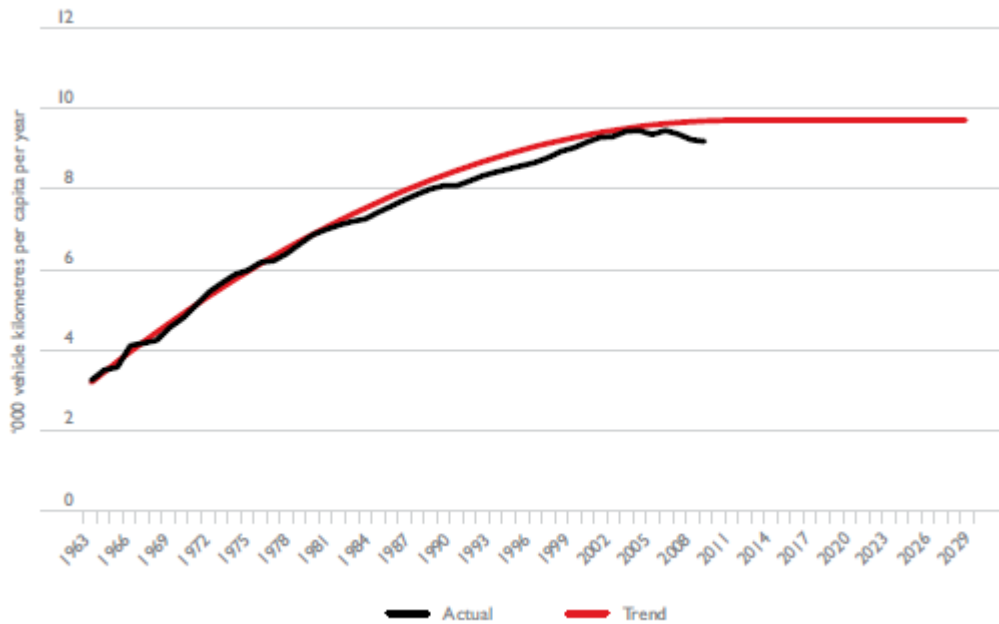


Figure 2.6 displays fuel projections for the US included in Davis et al (2012), who argue that increased fuel expenses are likely to reduce driving frequency, particularly among young adults who have less disposable income. This is therefore likely to motivate the use of alternative modes of transport among Generation Y. Based on projections, the cost of fuelling a vehicle is expected to have increased by 26% in the US between 2010 and 2020, and it is very unlikely there will be a return to the low prices seen prior to 2000.

Figure 2.6 Projection of gasoline prices (from Davis et al 2012)

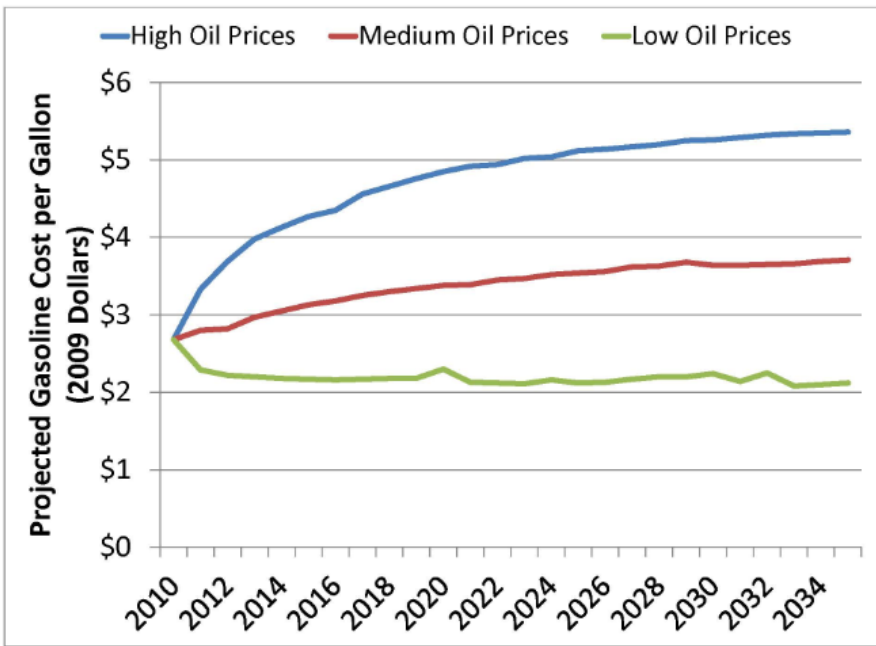


Figure 2.7 indicates projections predicted traffic levels per person in New Zealand over time (BITRE 2012). The projections show how traffic has increased per New Zealander since 1963. This figure highlights the driving saturation trend as it has occurred in New Zealand. From the figure, saturation peaks just below 10,000 vehicle kilometres per year from 2002.

Figure 2.7 Traffic per person in New Zealand (from BITRE 2012)

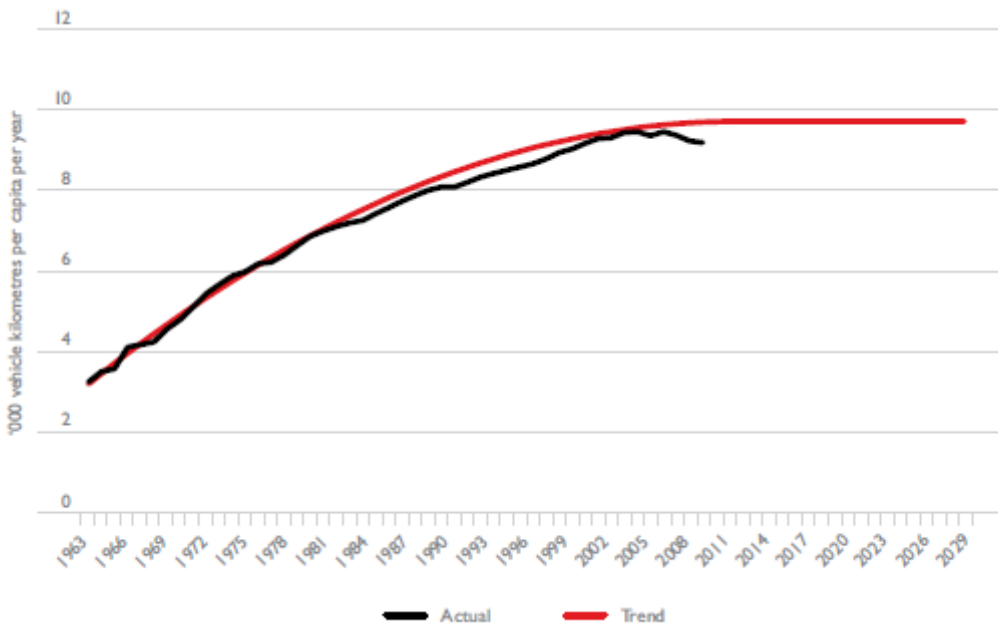


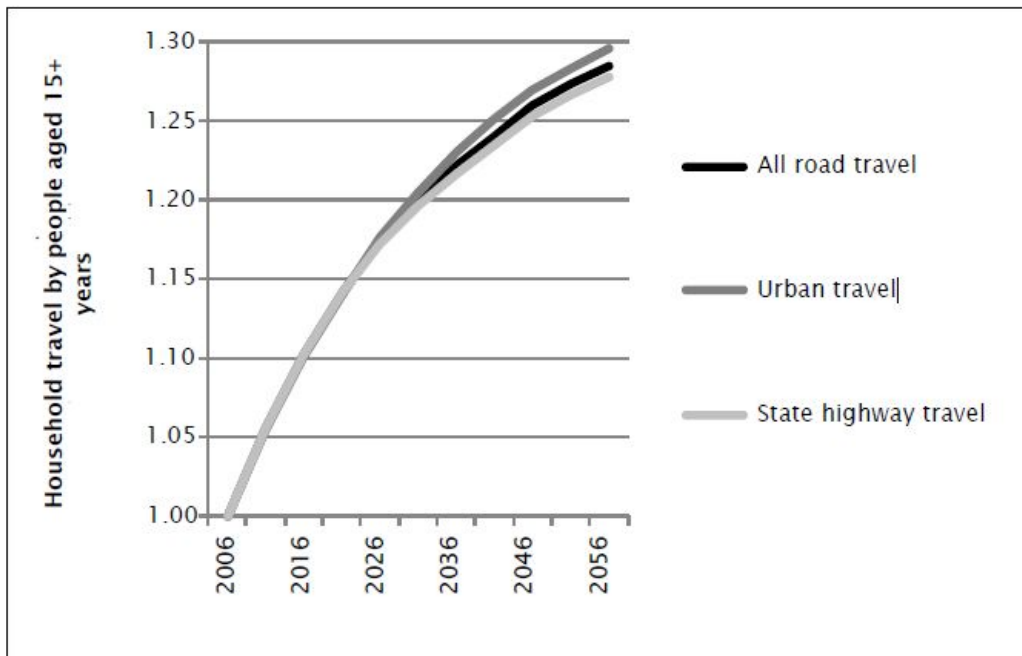
Figure 2.8 displays projected travel by all roads, and then split by urban roads and state highways for drivers in New Zealand. Underlying the projection is the assumption that growth in traffic is indicative of



population growth in those of driving age, hence these projections take into account the age structure of the population.

The graph suggests that the travel trends on urban roads and state highways by drivers are similar until 2026, when they begin to diverge from one another. While they diverge very little, the graph projects drivers will increase their urban travel disproportionately compared with travel on state highways. This is the opposite to the trends observed in Germany (eg see Frick and Grimm 2014).

**Figure 2.8** Projections for drivers (ages 15+ years) disaggregated by road network travel (from Frith et al 2012)

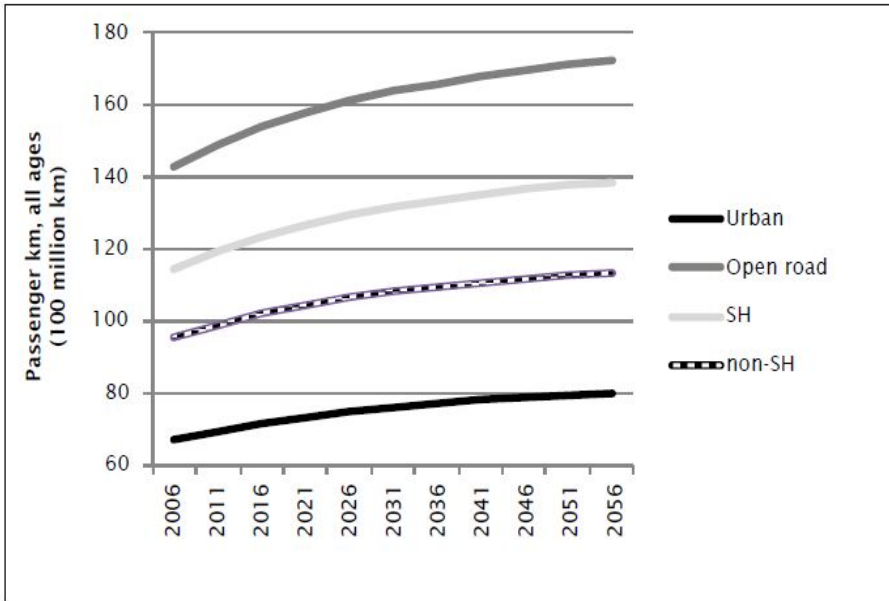


### 2.4.3 Passengers

Figure 2.9 displays projected passenger travel in New Zealand, measured in kilometres by road type. The trends appear relatively similar overall; however, the rate of growth is greater for open road travel compared with the other road types. Therefore, it is projected that people will travel together on the open road (eg during longer trips) more than around urban centres (eg during commuter trips). This closely matches the experience in Europe (Kuhnimhof 2011, personal communication).

The graph suggests there will be increased passenger travel growth of 20% for all ages. Note that no specific comment can be made about the passenger kilometres travelled by Generation Y on these road networks because the data is not disaggregated by age.

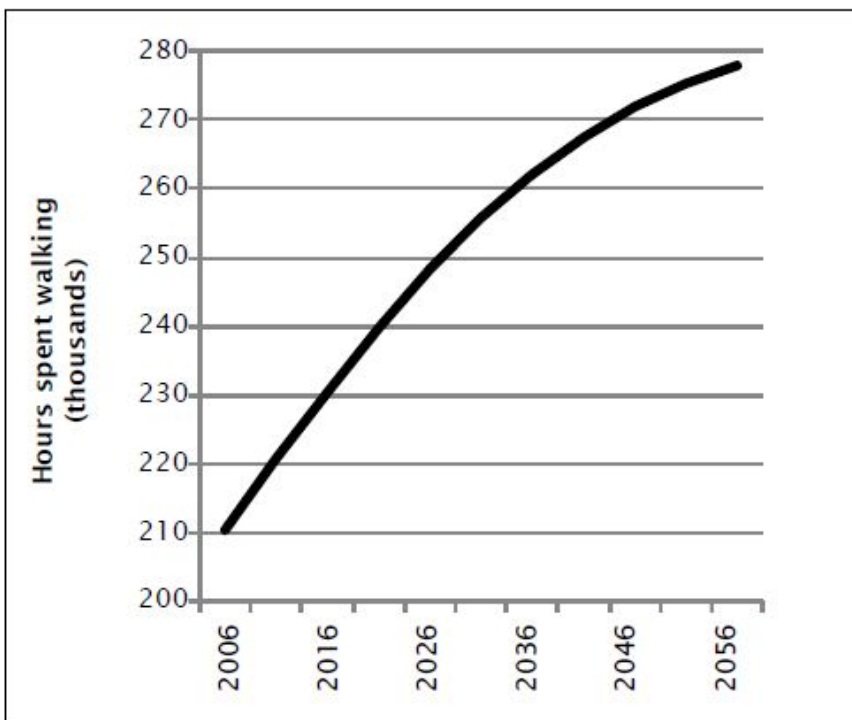
**Figure 2.9** Projected passenger travel measured in kilometres, for all ages, categorised by road network location (from Frith et al 2012)



#### 2.4.4 Pedestrians

Figure 2.10 indicates an overall increase of 32% in the number of hours spent walking by New Zealanders of all ages in the period 2006 to 2056. The graph suggests a decreased rate of growth in the number of hours spent walking around 2031, by which time 22% of the growth is already expected to have occurred.

**Figure 2.10** Projected time spent walking per year for all ages (from Frith et al 2012)



### 2.4.5 Summary

Section 2.4 introduced traffic volume projections that suggest there will be a reduction in the number of vehicle kilometres travelled per person in the future. Some of these projections suggest that, while private transport will remain the primary mode of choice, there will likely be a move away from private vehicle only lifestyles towards increased use of public transport and active transport modes. Projections based on New Zealand data display this continued increase in pedestrian and passenger travel, with an increasingly reduced level of car travel.

There is a limited number of relevant projections available that attempt to evaluate potential future travel and traffic trends in light of the changes observed in travel behaviour since the conclusion of the driving boom. In addition, for the most part, projections do not provide evidence specific for the travel patterns of Generation Y. This introduces challenges when attempting to evaluate how best to cater for increasing public transport demands, as policy makers do not have adequate information on which to base planning decisions. One of the objectives of this research project was to address the gap in current knowledge, particularly where it related to New Zealand experience

## 2.5 Barriers and attractors to public and active transport use for Generation Y

Young adults value a convenient public transport system. There is a tendency among the general public to perceive public transport as unable to compete with the convenience of private car travel at present (eg by restricting possible travel times and causing frequent delays in travel). This is particularly true for those living outside urban centres (eg in smaller cities or in rural areas), where service provision is lower or non-existent. Research suggests that within urban centres a convenient public transport system with frequent and reliable services at all times and travel routes that cover all areas should be given greater priority to further promote the benefits of public transport (Broome et al 2010). Attractors and barriers to public transport use, particularly for younger people, are outlined in the following sections.

It is important to note that, by and large, an attractor to public transport is a solution to a barrier. For example, improved accessibility to public transport in suburban areas would facilitate public transport use for Generation Y. Currently the inability to access public transport easily is a barrier to public transport usage for some members of this cohort.

The following section reviews barriers and attractors to public transport in an 'ideal' scenario (eg for those living in large urban centres where quality service provision is a possibility). The level of service provision is strongly related to what is appropriate and viable for the area type.

### 2.5.1 Infrastructure

#### 2.5.1.1 Public transport

The improvement of infrastructure for alternative modes of transport can remove barriers that exist currently for public transport use (Marzoughi 2011; Redman et al 2012). In particular, infrastructure that improves the reliability (Rode 2003) and safety of services (such as priority bus and cycle lanes) can attract new users (Marzoughi 2011; Redman et al 2012). Improved reliability and greater frequency of services, appropriate prices and well-chained services (together with education on safe and efficient cycle and walking routes) can assist in increasing ridership and attracting more users to alternative transport modes

(Marzoughi 2011; Broome et al 2010; Cairns and Okamura 2003). This is particularly important for younger people, as a quality public transport system can be particularly important in making employment viable for those who do not have the financial capacity to own a car (Taylor et al 2007).

In order to facilitate the continued deviation from the private vehicle use as the primary mode choice, improved public transit infrastructure is necessary (Redman et al 2012).

#### **2.5.1.2 Public transport accessibility**

To better facilitate the use of public bus services, researchers have cited the need for priority bus lanes (Marzoughi 2011; Redman et al 2012). These prevent services from running late as a result of traffic congestion during peak hours, thus improving the reliability of the service (Redman et al 2012).

Young adults who rely on private vehicles as their primary mode of transport are more likely to reside in suburban areas. The lack of accessibility to public transport services from the suburbs can pose a serious barrier to mobility among users. Poorly placed bus stops and shelters in the suburbs result in individuals having to walk long distances to stops, an issue identified among young adults as a barrier to public transport usage. Isolated or poorly maintained bus shelters, as well as stops in poorly lit areas may also leave users feeling unsafe (Marzoughi 2011).

#### **2.5.1.3 Public transport route design**

Another factor to consider in relation to accessibility barriers to public transport usage is the appropriateness of routes (Broome et al 2010). Poorly planned or inappropriately designed bus routes can hinder the accessibility of public transport, requiring users to walk long distances to reach a bus stop, or require multiple trip legs to reach their final destination (Broome et al 2010; Redman et al 2012). Consequently trips may seem unnecessarily long to travellers. Furthermore, inappropriately designed bus routes can make it difficult to chain trips together, eliminating the use of public transport as a mode of choice altogether for some would-be users. Rive and Thomas (2012) discuss a network planning approach that offers users greater convenience by attempting to mimic desirable features of private modes (eg being able to travel conveniently to any desired destination at any time) in public transport. Improved route design can achieve faster and easier trip chaining, direct and easy to understand routes, and increased service frequency.

Studies highlighted in a research review conducted by Redman (2012) identified an association between improved accessibility and increased ridership. Rive and Thomas (2012) emphasise that successful public transport systems worldwide are marked by providing frequent, reliable, convenient and safe travel options that compare well with private travel modes.

#### **2.5.1.4 Cycling**

Cycling infrastructure can also be improved to increase the uptake of active modes. Perhaps the most important improvement to cycle infrastructure is the addition of cycle lanes, which separate cyclists from cars. In doing so, cyclist safety is improved on the roads. Cyclists are at greater risk of harm as they can be missed by motorists and have a much lower level of protection than those travelling in either private or public transport vehicles. The Transport Agency identified a 'safety numbers effect', suggesting that the number of crashes involving cyclists may decrease as a result of increase in the number of cyclists on the road (Turner et al 2006).

Distributing information among schools, universities and cycle shops that identify safer cycle routes can therefore be an effective strategy to improve cyclist safety and uptake of this active mode (Marzoughi 2011). In New Zealand there are some examples of this in practice. During 2014 the 'bikeeverywhere'

initiative provided video resources for cyclists with examples of how to safely navigate busy routes within and between other centres outside of Wellington. Videos (now available from <https://vimeo.com/album/1820689>) were recorded from the perspective of a cyclist travelling the route and narrated, giving tips on what cyclists should watch out for, cycle friendly routes and advice on best cycling practice (eg how to negotiate difficult intersections). This initiative was started as a research project but has gained support from Greater Wellington Regional Council and the Transport Agency's 'Bikewise' initiative, which offered resources specifically for schools, families and workplaces.

#### 2.5.1.5 Walking

Quality pedestrian infrastructure is vital to enticing people to walk for their trips. Busy streets that are difficult to cross and negotiate can leave walkers feeling vulnerable. Introducing infrastructural interventions that soothe traffic (eg reducing speeds) may better facilitate a walking lifestyle. The provision of wider foot paths that can better facilitate pedestrian traffic also improves safety (Marzoughi 2011). This is of particular concern to those living in urban and suburban areas.

As with cycling, walking initiatives exist in New Zealand to promote the benefits of pedestrianised lifestyles and walkable communities. One such example is the 'Living Streets Aotearoa' organisation which advocates for walkable communities through the running of campaigns that voice the need for policy changes and footpath maintenance to ensure the safety and comfort of pedestrians. Resources for walkers in New Zealand are available at: [www.livingstreets.org.nz/walking\\_maps](http://www.livingstreets.org.nz/walking_maps), providing walking routes that are missing from street maps. These maps aim to encourage walking by highlighting multiple routes and identifying short cuts.

#### 2.5.2 Services

Scheduling (including the frequency of both peak and off-peak services) is a significant concern for public transport users (Broome et al 2010). Poorly scheduled public transport services can decrease the attractiveness of the service and hinder the users' ability to chain trips together (Marzoughi 2011; Redman et al 2012). Infrequent and unreliable services have been identified as barriers to public transport use among young adults today (Marzoughi 2011). This is because characteristically Generation Y puts great emphasis on punctual, reliable and convenient services (Sweeney 2006). Understandably, late running services act as a barrier to public transport usage, as they prevent individuals from arriving at their commitments (such as work, school, university or other appointments) on time. Infrequent services (eg those that run only once or twice an hour) prevent young adults from relying on public transport for spontaneous social gatherings (Marzoughi 2011). Reliability and frequency of a service can be affected by traffic congestion, rail maintenance and poor weather, and so on (Dingler et al 2010).

Infrequent services are of particular concern during off-peak travel periods such as night-time, public holidays and weekends (Marzoughi 2011; Rode 2003). Extended periods of reduced services (such as Easter and Christmas holidays) are also of concern as young adults are more inclined to travel during these periods (Marzoughi 2011). For this reason, young adults are more likely to be affected by reduced services (Marzoughi 2011). There is evidence that improved scheduling can increase ridership on services. For example, Redman et al (2012) found an increase of 38% in usage of buses that had increased the frequency of their services (Redman et al 2012). The introduction of a night-time bus programme can improve the safety of those travelling at night, particularly travellers who are consuming alcohol and going to nightclubs, bars and pubs (Rode 2003). This offers patrons an affordable and reliable means of getting home and could potentially reduce the number of drink-driving incidences among teenagers (Marzoughi 2011). It could be of particular value to young adults in New Zealand, as recent law changes saw not only

the introduction of lower legal alcohol limits for driving, but also a zero alcohol limit for those under the age of 20. These changes to the law (including consequences of a breach) are outlined in table 2.5.

**Table 2.5 New Zealand driver alcohol limit laws (sourced from the NZ Transport Agency)**

Age group	Legal alcohol limit	Consequence
18 and 19	<ul style="list-style-type: none"> <li>Zero alcohol limit</li> </ul>	<p>The driver could be fined and given 50 demerit points if found to have alcohol levels of:</p> <ul style="list-style-type: none"> <li>&lt;150 micrograms per litre of breath, or</li> <li>30 milligrams per 100 millilitres of blood.</li> </ul> <p>If found to have alcohol levels higher than those mentioned above the driver could be:</p> <ul style="list-style-type: none"> <li>given 50 demerit points</li> <li>disqualified from driving</li> <li>fined or imprisoned.</li> </ul> <p>Additionally the driver could be charged with drink-driving.</p>
20 and older	<ul style="list-style-type: none"> <li>400 micrograms per litre of breath, or</li> <li>80 milligrams per 100 millilitres of blood</li> </ul>	<p>Immediate licence suspension if found to have:</p> <ul style="list-style-type: none"> <li>more than 130* milligrams of alcohol per 100 millilitres of blood, or</li> <li>more than 650* micrograms of alcohol per litre of breath.</li> </ul>

While road congestion is one potential reason for bus services becoming infrequent and unreliable, rail and ferry services are exposed to different sources of delays, some of which are scheduled (and so warning can be given to travellers), while others are unexpected. These unexpected events contribute to the unreliability of the service (Dingler et al 2010; Marzoughi 2011; Redman et al 2012). Unexpected delays can include (but are not limited to) derailments, excessive poor weather conditions that cause obstructions on rail lines, mechanical failures and natural disasters (Dingler et al 2010). If track maintenance is conducted at night to minimise peak-time delays, travellers required to work late at night are still inconvenienced and are forced to make alternative arrangements (Dingler et al 2010). Ferries are prone to delays associated with poor weather (however little can be done to mitigate this issue). Receiving late notice (or no notice at all) of unexpected delays can be particularly disruptive to commuter travel.

It is reasonable to assume that improved public transport services, with emphasis given to increasing service frequencies on weekends and evenings would better facilitate the travel needs of young adults (eg allowing for travel outside peak times for social outings, and reducing the need to find fully licensed, sober drivers). Reliability (the closeness of actual time of arrival and scheduled time of arrival) is another key attribute of public transport that is vital to young adults today. Reliability of services becomes increasingly important as young adults enter the work force and are under the expectation to be at work by a time specified by their employer. Both scheduling and reliability need to be considered together to improve the attractiveness of public transport as a travel mode and increased ridership cannot be attributed to either alone (Redman et al 2012).

As a consequence of unreliable, infrequent and irregular services, systems can gain a poor reputation, leading to reduced or stagnating ridership. Services that run infrequently and become delayed increase frustration among users, specifically those who are required to wait long periods or make a specific effort to be at the bus stop on time. A research review, identified the introduction of priority bus lanes as crucial to improving the reliability of this mode. Buses are then more likely to run on time, increasing levels of ridership, as witnessed in the Quality Bus Partnership study (Redman et al 2012).

### 2.5.2.1 Trip chaining

Trip chaining (either combining services from one provider or services from multiple providers) can facilitate public transport use when systems are well integrated (Marzhougi 2011). Having the ability to, for example, catch the bus to the railway station and then catch a train without any great delay can offer public transport users a punctual and convenient service without the need for complex trip chaining. Additionally, services that are flexible and can offer solutions to delayed services from either their own or other transport providers can further promote public transport use.

Buses running both 15 minutes behind and ahead of train services can offer users the opportunity to catch the bus when train services are running late without causing any major delays within their own schedules.

However, inappropriately designed bus routes that do not stop at or near railway stations can force users into forming complex trip chains, as people are unable to reach their destination in a limited number of trips or within their travel time budget. These complicated trips can impact negatively on someone's decision to use public transport, as they can be time consuming, costly and are therefore unattractive to the traveller.

### 2.5.3 Perceptions

The perceptions an individual holds of public transport can affect their decision to use the service (Murray et al 2009). Cairns and Okamura (2007) highlight that attitudes toward modes of transport have considerable influence on the 'habitual methods of forming transport decisions'.

A public transport user's experience not only comprises the quality of service, but also the reliability and frequency of the service. Individuals who find themselves on delayed or overcrowded services at peak times may form the opinion that the ride was long and tiring and be left feeling displeased, which has a negative affect on their attitude toward public transport.

The symbolism people attach to public transport can affect their perceptions of services and is very much based on their belief of what is standard, influencing their usage decisions. People who perceive users of public transport negatively, for example as low-income earners, may disassociate themselves from public transport. This can therefore create a barrier to the uptake of public transport.

Perceived characteristics of public transport that influence usage include the ease of use of the service, comfort, quality, safety and value for money. Car enthusiasts are inclined to be more difficult to convince to use public transport, as their mode decisions are motivated by their preference for cars and the benefits private vehicles offer (such as higher levels of perceived privacy, comfort and efficiency) (Taylor et al 2007).

To convince car enthusiasts to use public transport Murray et al (2009) found, in their New Zealand-based research, that campaigns aimed at informing people of improvements made to public transport services might help motivate new users to try out public transport systems. However, emphasising transport improvements alone would not be sufficient to convince an individual to begin using public transport. Instead individuals need to feel that other people like themselves are already using the service (Murray et al 2009).

Mode of choice and decisions related to travel are influenced by an assortment of factors, ranging from habit to the potential user's perceptions, as discussed above (Cairns and Okamura 2003). Existing literature highlights the effect of travel socialisation and discusses the challenge of influencing transport habits. Travel socialisation describes the manner in which people learn to rationalise their mobility behaviour based on pre-existing habits, skills, values, understanding and social position from parents, friends and through school and media (Haustein et al 2009). Contributing further to mode choice are internalised guidelines and social pressure that influence individuals to partake in certain behaviours.

Hence, decisions regarding travel are complex, as they consider not only personal options and perceptions but also existing experience and knowledge and the opinions of others. Decisions regarding transport and mode of choice are not regularly re-investigated by individuals. Instead, the decision to travel by a particular mode is re-investigated at times of significant lifestyle changes.

Transport decisions are therefore habitual (Haustein et al 2009). Habit is a strong predictor of future behaviour and is difficult to alter (because of phenomena like status quo bias (Cairns and Okamura 2003; Haustein et al 2009)). Continued positive public transport experiences can potentially go a long way in setting habits and assisting in building the belief that future reliance on cars can be minimised. Such habits ideally need to be set prior to young adults developing car habits. As stated above, attitudes of car users towards public transport can act as a barrier to increasing uptake. Young adults who place greater significance on the importance of having the ability to drive a car are far more likely to use a car more regularly than other young adults who place less emphasis on this (Haustein et al 2009).

### **2.5.3.1 Perceived affordability**

Cairns and Okamura (2003) signalled the importance of educating young adults about the costs of alternative modes of transport to those of car ownership. Often costs of car ownership are mitigated by the support of parents, hence young adults may not be fully aware of these costs. Cairns and Okamura (2003) suggest that although some consideration may be given to the cost of purchase, not much thought is given to ongoing costs such as vehicle repairs, maintenance, insurance, parking costs, costs of gaining a driving licence, and registration and warrant of fitness checks.

They argue that young adults need an adequate understanding of the costs associated with car ownership, particularly at a level enabling adequate comparison with the costs of alternative modes of transport. This could influence mode choice decisions facilitating the use of public transport based on factors such as affordability. Influencing the manner in which young adults make decisions before they create travel habits involving car ownership and usage as a main mode could potentially instigate a cultural shift away from cars and a move towards a society less reliant on automobiles.

In addition to providing young adults with information that can assist in making more informed decisions about their travel behaviour, ensuring services are affordable for young adults today may entice this cohort to use public transport. The perception as to whether a service is well priced is subjective, as it is dependent on an individual's financial circumstances. For youth to feel that public transport is affordable, consideration needs to be given to their financial circumstances.

For example, there is evidence from the literature that young adults today have a tendency to delay life stages typically associated with adulthood (such as parenthood and entering the workforce) due to a tendency to enter higher education. Hence, the introduction of concession cards for students could potentially increase ridership among this group in light of the fact that individuals who remain in study have reduced time available to dedicate to work if they are to successfully complete their programme of study. However, it is important to note that price alone is not sufficient to increase ridership; instead it is necessary to increase ridership in combination with service convenience and accessibility (Redman et al 2012).

## **2.5.4 Technology**

Technology and the ability to use technology during travel are considered to be significant attractors to public transport use among Generation Y (Delbosc and Currie 2013b). Technology facilitates trip planning by providing real-time information about key factors such as arrival times, delays, costs and optimal trip chains to reach one's destination. Such technology can also be used by public transport users while travelling.



Previous New Zealand-based research for the Transport Agency has revealed that real-time travel information has the highest priority for New Zealand travellers in providing journey information (Chang et al 2013).

The combination of journey planners and real-time data can remove obstacles that often deter first-time public transport users (Chang et al 2013). Where multiple trips are required, real-time data and journey planners can help users identify which connecting trips need to be taken, the costs associated at each stage of the journey and identify at what times they can expect to begin the following leg of the journey, as well as estimate the total duration of the journey.

Technology has also offered alternative payment methods for users of public transport, increasing trip quality by supporting multiple methods of payment and increasing payment efficiency, as discussed in detail in section 2.3.5.

There have also been advances in technology that improve driving comfort, such as GPS and voice activated hands-free devices. These allow drivers to incorporate technology to improve driving comfort and can aid drivers with alerts (such as alerting of speeding, providing directions, and making and taking phone calls hands-free). These advances aim to make driving easier, safer and more comfortable, increasing satisfaction.

While the incorporation of technology in this manner aims to increase the comfort of driving and make driving safer and easier, such devices can also act as distractors for drivers. A driver's attention can be diverted from the road by any number of distractions that include (but are not limited to) answering phone calls and responding to messages, adjusting music, and looking at driver information screens and GPS devices. Between 2003 and 2008 telecommunication devices were identified as being a contributing factor in 25 crashes that had fatal consequences and 482 injury crashes (MoT 2007). In New Zealand, a survey conducted by the Automobile Association (AA) highlighted that technology was involved in the top five distractions identified by drivers, displayed in table 2.6 (Automobile Association 2013).

**Table 2.6 Top 10 New Zealand driver distractions as identified through an AA survey (source: Automobile Association 2013)**

No.	Top 10 New Zealand driver distractions
1	Texting on a mobile phone
2	Reading a newspaper or magazine
3	Personal grooming (eg applying make-up, shaving)
4	Talking on a mobile phone without a handsfree kit
5	Changing the radio/iPod/MP3 players
6	Using GPS or other navigation system
7	Eating while driving
8	Children in the car
9	Talking on a mobile phone with a handsfree kit (although it is legal in New Zealand to do this)
10	Billboards/outdoor advertising
11	People outside of the vehicle

Statistics also identify that young drivers (those under the age of 20) are more inclined to be distracted while driving (MoT 2014). Between 2010 and 2012, of those drivers involved in fatal or serious crashes where driver distraction was identified as being a contributing factor, 7% were identified as being learner drivers and 15% were identified as being distracted drivers. Between 2010 and 2012, 179 drivers involved in either fatal or serious injury crashes were identified as being distracted by a cell phone. Public transport

may therefore better facilitate the use of technology during transit. Individuals using public transport are able to read and send emails from their mobile devices without putting themselves at risk of a crash.

### 2.5.5 Summary

Section 2.5 and its sub-sections reviewed factors identified as attractors and, conversely, barriers to public transport use for Generation Y. The evidence suggests that, in general, traditional attractors and barriers important to other age groups are also relevant to those belonging to the Generation Y cohort; for example, placing a high value on reliability, safety, convenience and affordability. However, these factors may potentially be prioritised differently among this cohort compared with older age groups. In addition, factors of particular importance to Generation Y were also identified in the literature, including improved quality of off-peak services and an emphasis on increased use of technological advancements to enhance travel experiences.

Improved frequency of off-peak services foster easier travel for social and recreational trips, as well as introducing more flexibility for those doing part-time work, all of which may require regular travel at off-peak travel times. Where those in the younger generation have opted not to pursue a driver licence or do not have access to a private vehicle, public transport can become the only viable travel option, therefore making the frequency of services during off-peak times highly important for these trips.

Development of technological advancements to improve travel experiences is of particular interest to younger travellers. The provision of real-time data and the ability to access this information on most electronic devices can improve the ease of use of public transport. Public transport can also facilitate the continued and uninterrupted use of technology, which would otherwise be unusable (or distracting) for a driver.

Therefore, it is reasonable to conclude that service improvements to public transport systems (improving frequency, reliability and affordability) will improve the attractiveness of this mode for a wide range of the population. It is also possible to implement specific interventions to improve the attractiveness of the system for younger travellers in particular (such as targeting off-peak services and technological advancements).

## 2.6 Commentary on the quality of literature available for this project

Overall, there is a lack of consistency in the definition of Generation Y in the literature, resulting in an inherent difficulty comparing findings between studies (due to inconsistencies in definitions introducing discrepancies among research findings). In addition, there is a general lack of available literature with projections specific to the travel behaviours of Generation Y. This may be partly due to the fact that the youngest members of Generation Y are to yet gain legal eligibility to make independent travel decisions (eg becoming eligible to gain a driver licence).

There is very little research available that focuses on Generation Y's travel behaviour in a New Zealand-specific context. Where relevant data is available, this has been reviewed. Therefore, there is a gap in the research evidence available to date, particularly in a New Zealand context. This project aimed to fill these gaps by further investigating Generation Y's travel patterns in New Zealand, through analysis of New Zealand datasets and the collection of qualitative and quantitative data.

## 3 Study 1: Analysis of existing New Zealand datasets

### 3.1 Method

#### 3.1.1 Datasets included

Table 3.1 provides an overview of the New Zealand datasets used in the analysis. The key dataset was the Ministry of Transport's (MoT) New Zealand Household Travel Survey (NZHTS), which provides detailed data regarding current and past travel trends for Generation Y (and previous generations), beyond what is available in census data. Where useful, the NZHTS data was supplemented with data from other sources, such as the New Zealand Census and public transport satisfaction monitors. Basic demographic data for the cohort was derived from census data, including a commentary on the geographical distribution of the population across New Zealand. Basic descriptive data from Statistics NZ has also been included in chapter 2, where it was useful to highlight the New Zealand context in the discussion of the overseas literature.

**Table 3.1 Data sources used in the secondary analysis**

Data source	Description
<b>New Zealand Household Travel Survey</b> Ministry of Transport	This survey provides information on travel mode and travel patterns across age groups (eg distances and travel times for a range of trip types and modes). The survey collects data from over 2,000 representative households annually and was first carried out in 1989/90, 1997/98 and now continuously since 2003. With such a broad temporal spread it has the potential to provide insights into how the travel patterns of people in the age groups associated with Generation Y have changed over time. Further information regarding this dataset's analysis is available in section 3.1.2.
<b>Statistics NZ census data</b> Statistics NZ	Data from the 2013 Census (or where not available, the 2006 Census) on factors such as age, ethnicity, income, gender, education, employment and access to motor vehicles, and future projections were included as appropriate.
<b>Customers' requirements of multi-modal travel information systems (online survey and focus groups)</b> Opus International Consultants (for the Transport Agency)	The Transport Agency recently commissioned an online survey of 1,319 New Zealand travellers to explore their information needs pre- and in-journey. This dataset includes responses from 498 travellers aged between 16 and 34 and includes measures such as current access to different technology types and travel information types, and willingness to crowd-source traveller information. Additional analyses on this dataset were recently conducted disaggregating some key results by age group, and so relevant outputs from this are reported.
<b>Auckland Transport Public transport customer satisfaction surveys</b> Opus International Consultants (for Auckland Transport)	These surveys commissioned by Auckland Transport measure customer satisfaction with public transport (split by mode type), including what factors are important to satisfaction levels. Of particular usefulness in this survey are measures associated with private vehicle availability and reasons for using public transport options instead.

## 3.1.2 Analysis

### 3.1.2.1 New Zealand Household Travel Survey

The NZHTS is a nationwide survey conducted in 1989/90, 1997/98 and continuously since 2003. For the purposes of our analysis, data collected for those aged 15 and over was used, as 15 is the age at which individuals become eligible for a driver licence. Also this fits with the employed definition of Generation Y for the project. Ages were generally grouped in five-year brackets (eg 15–19; 20–24; 25–29) to allow for subgroup analysis within the Generation Y cohort and to fit with Statistics NZ age brackets. All variable outputs (duration, distance and so on) were apportioned by these five-year age brackets.

The following main analyses were undertaken:

- 1 Traveller population estimates:** The estimated population of New Zealand was calculated using the NZHTS person file. The values were weighted up using the person weight variable available in the dataset (calculated by MoT). Where necessary this weight was averaged over the number of years being investigated. Sub-populations (eg the population of cyclists) were calculated by identifying people using a specific mode of transport (eg bicycle) in the person dataset. It was possible to do this for drivers and cyclists as the survey consists of variables that allow for these sub-groups to be isolated. The population of public transport users could only be identified in the 2009 and later datasets.
- 2 Kilometres travelled by mode per person annually:** The mode choices of respondents aged 15 and over were isolated using the NZHTS trip dataset. The total distance travelled was calculated and split by age group to identify total distances travelled by each specified mode. Distances were weighted (to millions of trips made annually) and where required averaged over the number of years investigated, giving the total annual kilometres travelled by age group. The value produced was averaged over the population of people present in the age group to produce the kilometres travelled by mode per person annually.
- 3 Hours spent travelling per person per week:** Hours spent travelling were calculated using the NZHTS trip dataset. Unless specified, time spent travelling on all modes (excluding non-local public transport and non-household travel) were considered. The total duration (measured in hours) was calculated and split over the age brackets of interest to identify the total time spent travelling by persons in the specified age bracket. This value was weighted by millions of trips made annually to identify the total duration of all combined trips measured in millions of hours.

These values (grouped by the age brackets of interest) were multiplied by one million to give total hours spent travelling. The values were then averaged over the population of people present in each age group (via the calculations outlined in item 1 above) giving the total duration spent travelling per person annually. Finally, values were averaged over the number of weeks in a year to provide the total time spent weekly.

The graphs produced generally required at least one of these variable outputs and were used to investigate how different age groups had changed their travel behaviours, with regard to both travel time and total distances, over the duration of the travel survey.

- **Travel time budgets** were produced by multiplying hours spent travelling per person per week within an age bracket by the percentage share of each mode within the age bracket. This provided the percentage of time spent travelling by household by different travel modes within each age bracket.

- **Percentage of population licensed** by age was produced by identifying the number of individuals in the person file who held a learner, restricted or full New Zealand driver licence within each age bracket of interest. As before, this value was weighted up to the population using the person weight available in the dataset. This count was divided by the number of people in the population in each age group, giving the proportion of the population in each age bracket that held a New Zealand driver licence. These values were then multiplied by 100 to provide percentages. The percentage of cyclists in the population was calculated in a similar fashion, with the difference of identifying the cyclists in the person file, rather than those who possess a driver licence.
- **Time spent cycling** by cyclist identified the number of hours spent travelling by bicycle in the trip dataset, weighted up to millions of trips made annually (averaged over the appropriate number of years) which was then divided by the population of cyclists present in the corresponding person dataset (and over the appropriate timeframe).

### 3.1.2.2 New Zealand Census

Statistics NZ conducts the census every four years to identify demographic trends within the New Zealand population. The last survey undertaken was in 2013; however, limited data from this census is available at present. Therefore, where necessary, data from the 2006 Census is reported. Projections were developed from the census.

Projections made in this data analysis were based on fertility and population assumptions produced by Statistics NZ. Fertility assumptions were based on the estimated resident population and per 1,000 live births for the 50th percentile. The projections were reported in the same five-year age brackets used in the analysis of the NZHTS.

The population projections had a 2011 base at the 50th percentile of the probability distribution from which the estimates were drawn. To project the population composition of Generation Y based on region, sub-national population assumptions were obtained from Statistics NZ. Additionally, other figures were sought from Statistics NZ for labour force participation and weekly earnings.

### 3.1.2.3 Other datasets

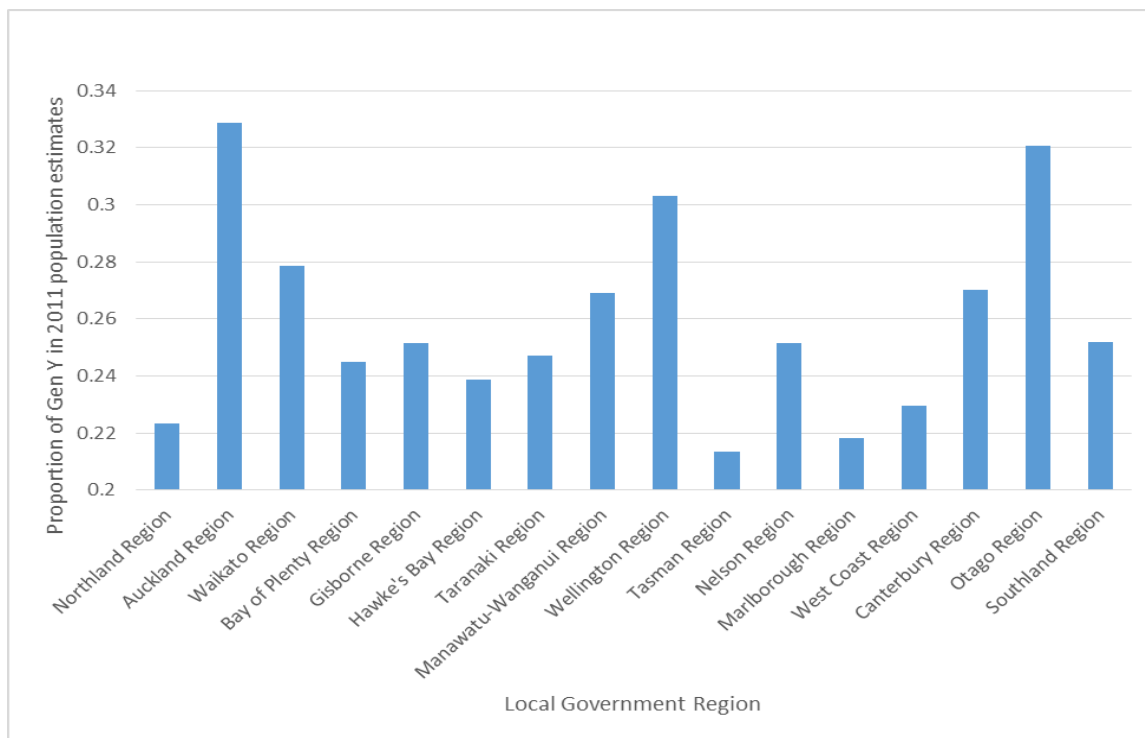
Where statistical tests were performed on the other datasets, the chi-square goodness of fit statistic was employed. This tests whether distributions of categorical variables differ from one another by examining whether the observed frequencies are the same as the expected or probable frequencies. The chi-square test of independence is used as the data is nominal (ie there is no relationship between the categories, so that the order of the categories is arbitrary) or ordinal. The adjusted standardised residual of 1.96 is used to indicate a statistically significant difference. Where the assumption of the test that expected cell counts greater than five was violated in the data, Fisher's exact test is instead reported throughout the findings section. This is the appropriate statistic in this instance, as it makes no assumptions regarding expected cell counts. For more information on chi-square tests see Agresti (1996).

## 3.2 Findings

### 3.2.1 Demographics of the New Zealand’s Generation Y cohort, including projections

At present, Generation Y represents around 28% of New Zealand’s population, with some variation between local government regions, as displayed in figure 3.1.

**Figure 3.1** Proportion of the population in Generation Y cohort, split by region (2011 Statistics NZ estimates)



The split between males and females among Generation Y members is depicted in figure 3.2, which shows some differences based on age group.

**Figure 3.2 Gender split for Generation Y age groups (2013 Census data)**

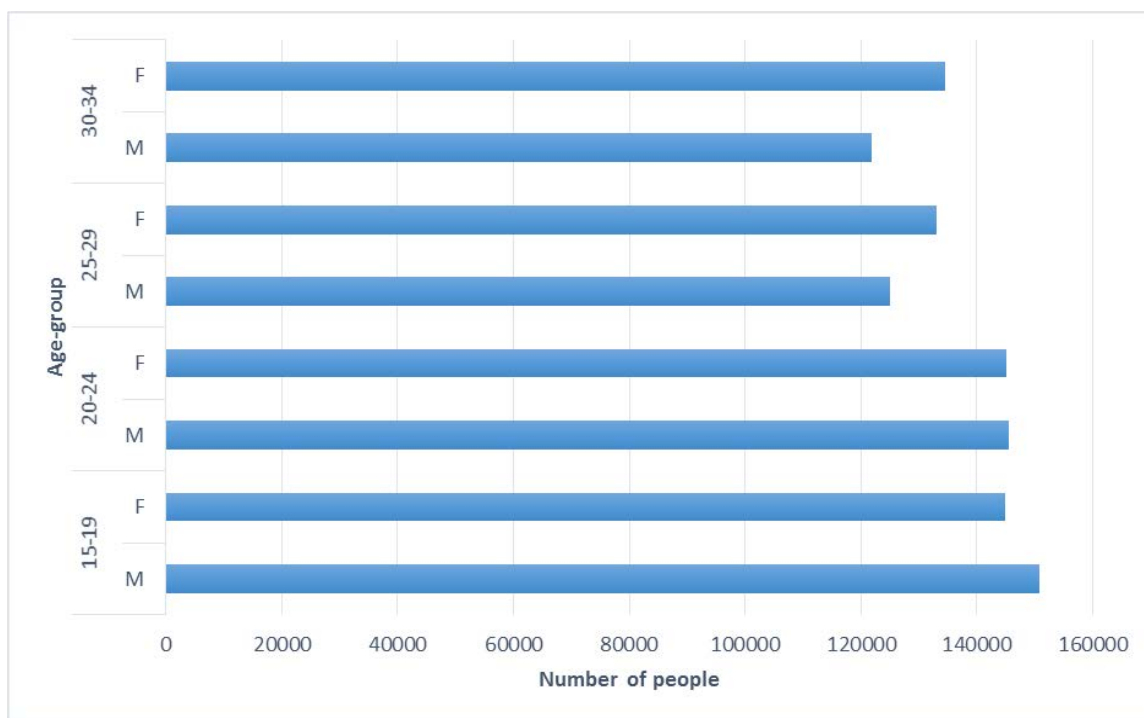


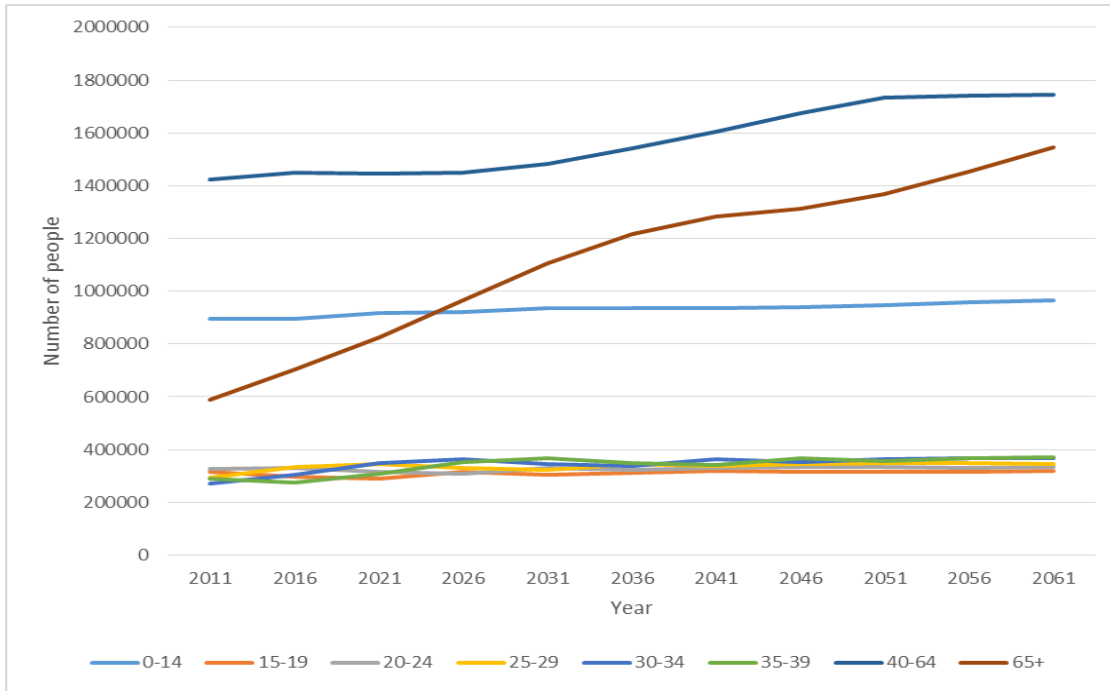
Table 3.2 below outlines the percentage gender split for Generation Y.

**Table 3.2 Percentages of gender split for Generation Y age groups (2013 Census data)**

Age group	Male	Female
15-19	50.8%	49.2%
20-24	49.9%	50.0%
25-29	48.6%	51.4%
30-34	47.8%	52.2%

Younger age groups are not a fast-growing segment of the New Zealand population. In fact, Statistics NZ medium population projections (base year 2009) (see figure 3.3) show that the bulk of growth is in the 65+ and 45-64 age groups, with younger age group growth being small.

**Figure 3.3 New Zealand population projections by age (base year 2009)**



When medium sub-national Statistics NZ (base year 2006) projections for the Generation Y age group were used to obtain projections by local government region, the trends displayed in figure 3.4 resulted.

This shows that while other regions are barely increasing or decreasing, the Auckland region is projected to increase by 20% from 2011 to 2031 (in line with a general growth in the population in this region). Thus, there is likely to be little growth in public transport usage by Generation Y people outside the Auckland region unless there is concerted modal shift among the population.

**Figure 3.4 Projections for Generation Y sub-population by region**

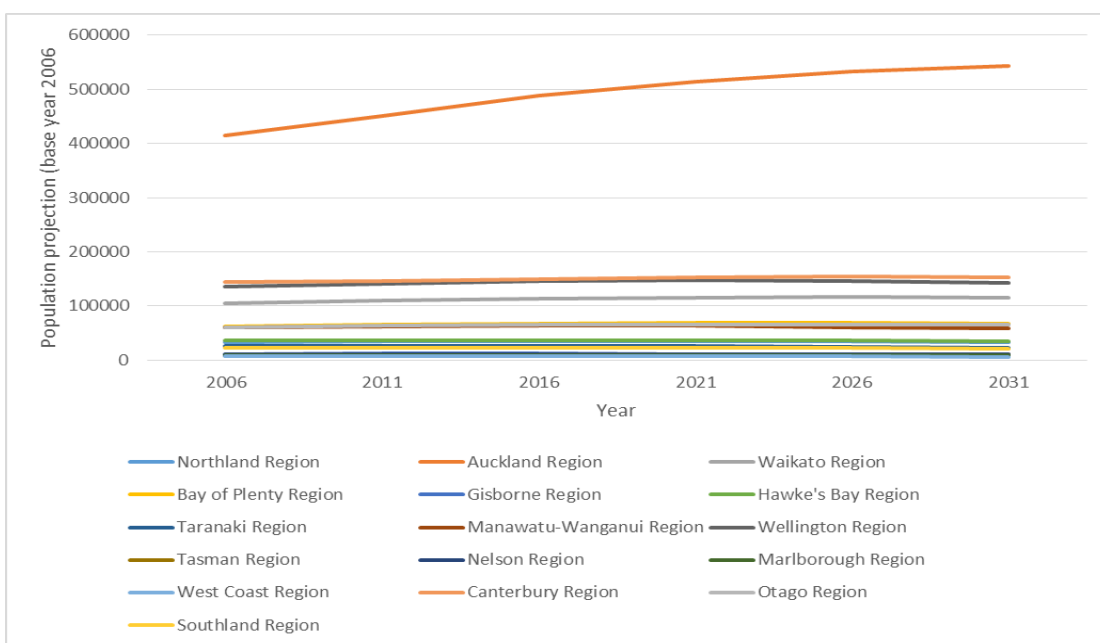




Figure 3.5 (sourced from Statistics NZ) depicts Generation Y's participation in the labour force since 1990. As can be seen, this has been increasing over time in the over 25 age group and decreasing for those aged under 25 years. It is possible that this is related to time spent studying, as there is evidence of a trend over time towards higher education in New Zealand. For example, census data has shown steady increases in proportions of those aged 15 and over with a post-school qualification, from 31% in 1996 to 40% in 2006. Rates of those with a qualification have also increased over time between 1996 and 2006 for the majority of age groups, with those aged 20–34 years in 2006 being most likely to have a qualification (from 75% in 1996 to 86% in 2006) (Statistics NZ 2006). Across the entire population 15 years and over in 2013, 79.1% had a formal qualification, up from 75% in 2006<sup>4</sup>. It is likely that these rates will not continue to increase at such a high rate in the future.

**Figure 3.5** Generation Y participation in the labour force since 1990

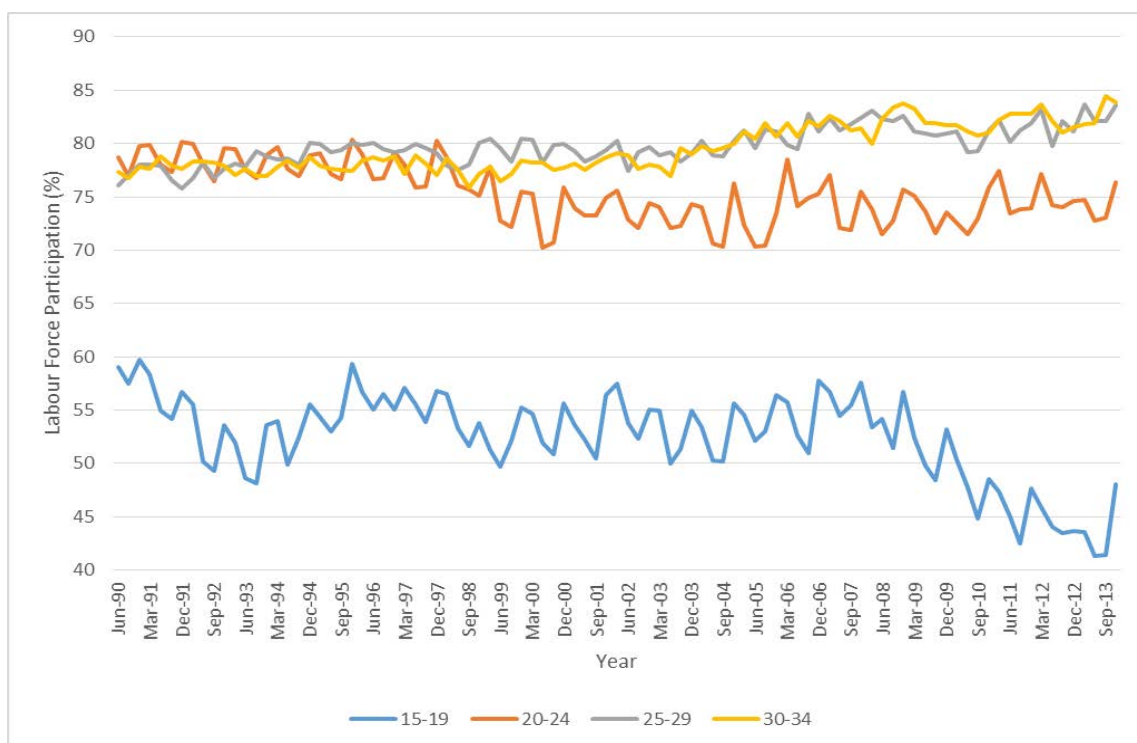


Figure 3.6 (sourced from Statistics NZ) depicts medium weekly income in Generation Y age groups since 1998.

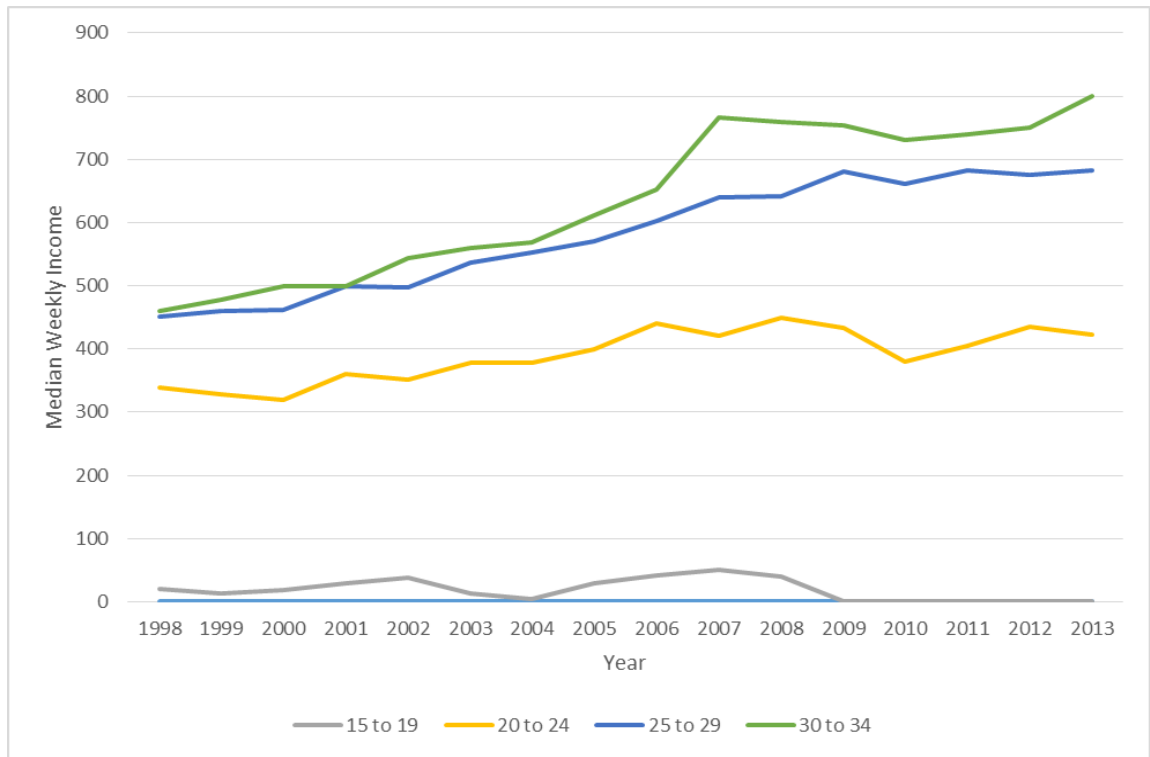
Consistent with the labour force figures, those aged over 25 years have fared better in income compared with their younger counterparts over time. When comparing members of Generation Y with those in the same age brackets over the last few decades, it is apparent that income levels are higher now than previously, with the exception of the youngest members of Generation Y.

Demographic analyses conducted on the Auckland public transport customer satisfaction survey data highlighted that those passengers on public transport with access to a private vehicle in the Generation Y age group were significantly less likely to earn higher incomes (eg over \$60,000) and more likely to earn lower incomes (eg less than \$20,000) compared with those aged 35 years and over,  $\chi^2(7, N = 2179) =$

<sup>4</sup> Sourced from Statistics NZ: [www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-national-highlights/education.aspx](http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-national-highlights/education.aspx)

572.44,  $p < .001$ . Those in Generation Y were also significantly less likely to be employed either part or full time, and were more likely to be students. Those aged 35 years and older showed the opposite trend,  $\chi^2(6, N = 2205) = 584.79, p < .001$ .

**Figure 3.6** Medium weekly income for Generation Y since 1998<sup>5</sup>



### 3.2.2 Car travel

Driver licensing, by its nature, relates to the potential to drive a car. Figure 3.7 looks at how the percentage of the population which is licensed has varied over time for various age groups.

Looking at the age groups in Generation Y (eg those aged between 15 and 35 years in the most recent time series), it can be seen that licensing has decreased over time for the 15–19 age group (when comparing licensing rates with those in the age bracket before Generation Y). For the older age groups, the opposite trend may be due to the fact that older people today are benefitting from better health. The diminishing licensing trend for the 15–19 age group will be at least partially related to more stringent youth driver licensing requirements, and an increase in 2011 in the licensing age from 15 to 16. In all other age groups (including those in Generation Y) there has been an increase in the proportion with a driver licence.

<sup>5</sup> The median weekly income data for the 15–19 year age groups provided by Statistics NZ descends into zeros and is assumed missing.

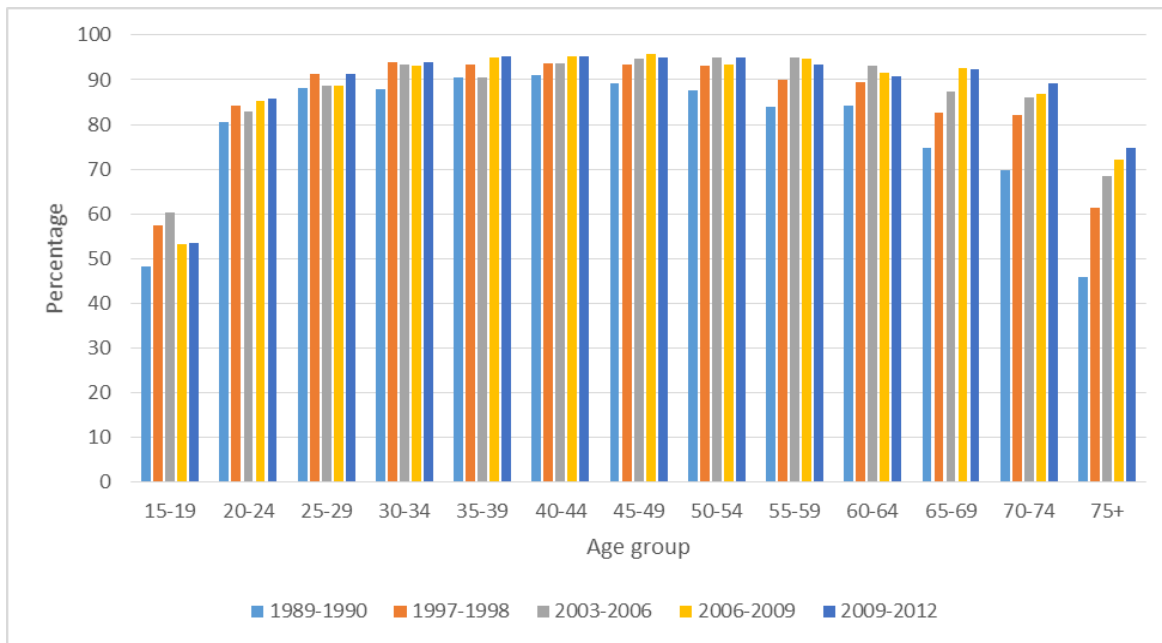
**Figure 3.7** Population proportion of licensed drivers by age

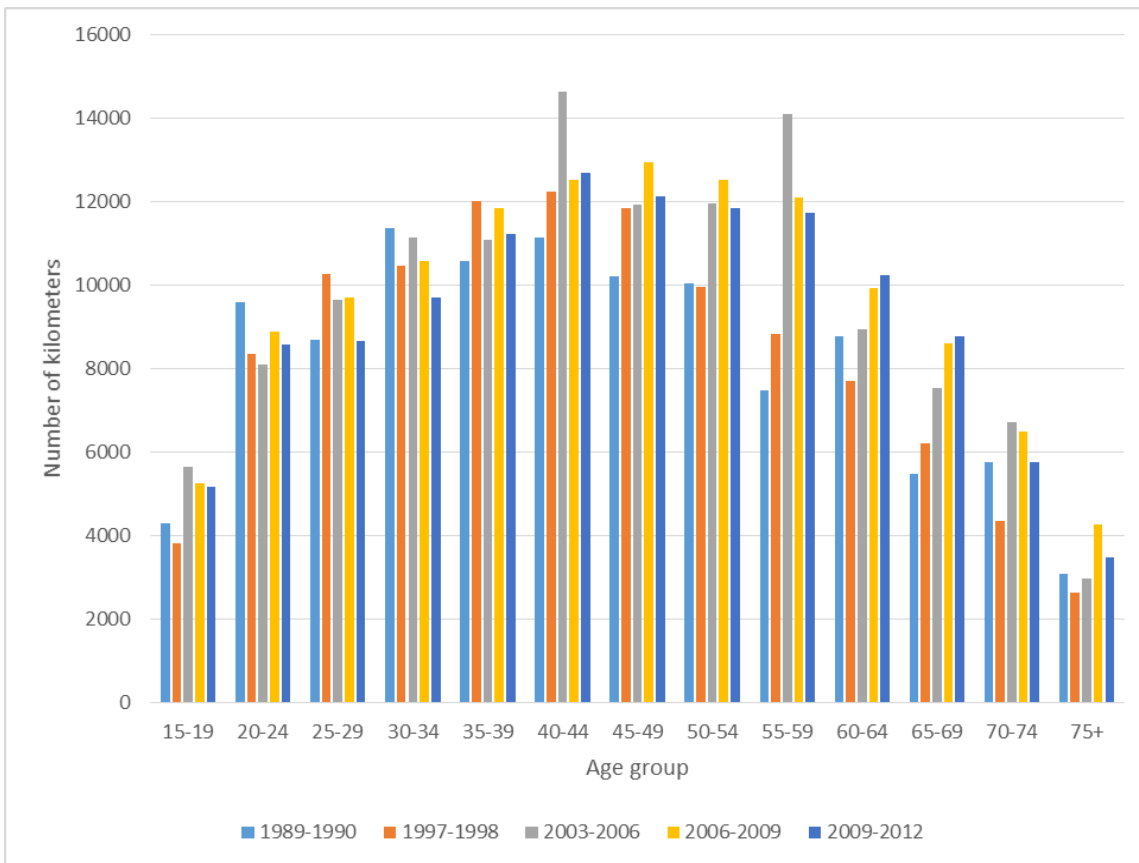
Figure 3.8, which depicts kilometres driven per head of population for various age groups, is a measure of the extent to which the intention to drive (as indicated by the rates of licensing) has been realised over the population.

This indicates that driving has generally become less popular over the years in the age groups included in Generation Y, with the trend being less marked in the youngest age groups. The trend also implies that this change may be carrying over into the 35–39 age group, but this is less certain as the changes in that group are small and could be related to sampling error rather than a real change.

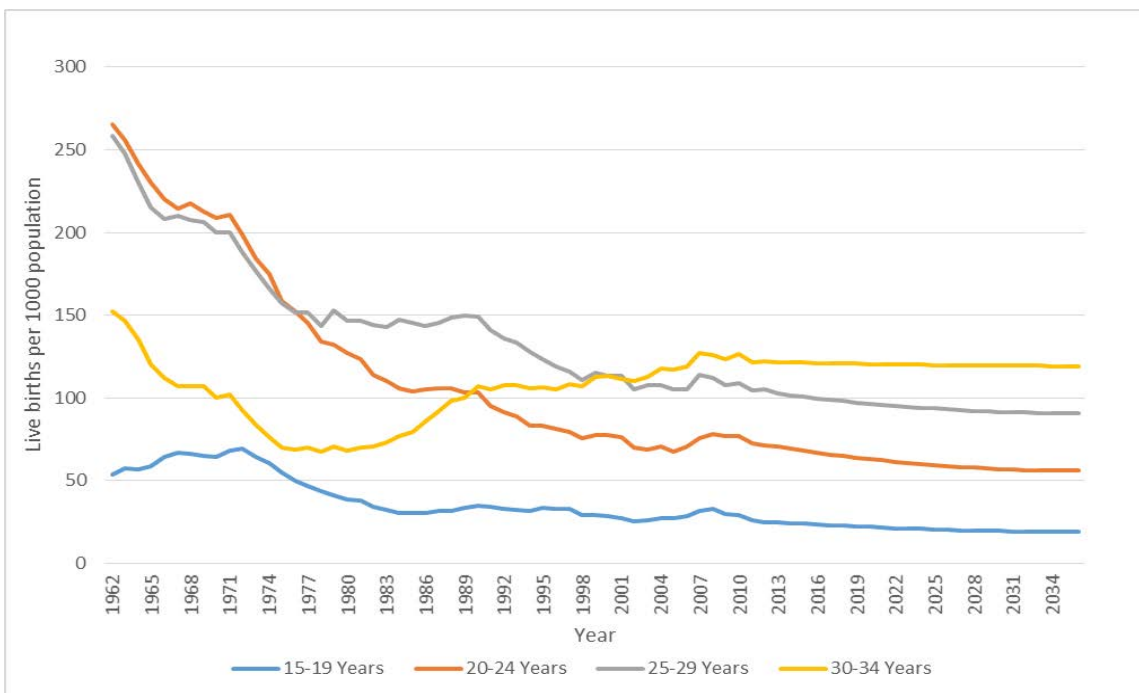
To summarise, present day Generation Y drivers are generally driving less than their earlier counterparts, while drivers in older generations are driving more. Changes in birth rates and the age at which people are becoming parents may be among the influencing factors. This is a trend likely to continue into the future, as illustrated in figure 3.9 (sourced from Statistics NZ), which shows live birth trends in the Generation Y age group over time (birth rates for Generation Y specifically are shown in the 2013 year, with the other years showing how birth rates of New Zealanders of this age have changed over time). People are arguably more likely to feel they need the convenience of a car after, rather than before they become parents. This trend is also corroborated by research from the US (Pew Research 2013) which found that of households headed by a person aged 25 or under, the percentage where the household possessed at least one owned or leased car had declined from 72% in 2001 to 66% in 2011. There was no change for those headed by 25–34 year olds, with the percentage staying constant at 88%. Pew Research (2013) also indicated that from 2008 the global depression would have had an impact on these figures and as a result Generation Y members would often be in the process of building up their income and resources.

Figures on vehicle-related expenditure of New Zealand households by age of householder are not routinely published by Statistics NZ and so cannot be included in this commentary.

**Figure 3.8 Kilometres driven per head of population per year by age**



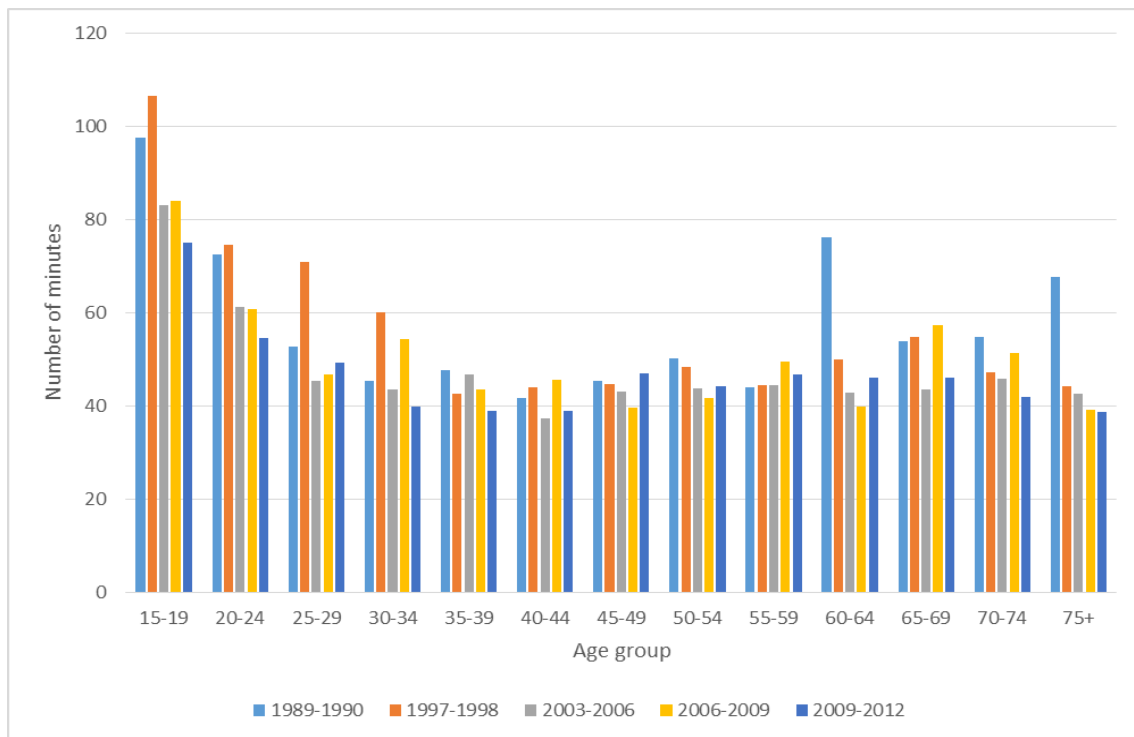
**Figure 3.9 Actual and projected live births by year for Generation Y age group**



### 3.2.3 Walking

As depicted in figure 3.10, walking has trended down over time in all age groups, but most steeply in the 15–24 age group; however, those in the youngest age band (15–19 years) still walk more than any other age group within Generation Y.

**Figure 3.10** Time spent walking per person per year by age group



### 3.2.4 Cycling

The amount of time spent cycling has increased in the Generation Y age group (see figure 3.11), with the majority of the increase in the older part of the age group. There has been a fairly constant level of growth apparent in the earlier years of the 21st century for the 15–24 age group. This increase is exacerbated by the increase in the proportion of cyclists indicated in the 30–34 age group (figure 3.12). Figure 3.12 also hints at a recent increase with respect to people in their 20s, but this can only be treated as speculative.

Figure 3.11 Average annual time spent cycling per cyclist by age

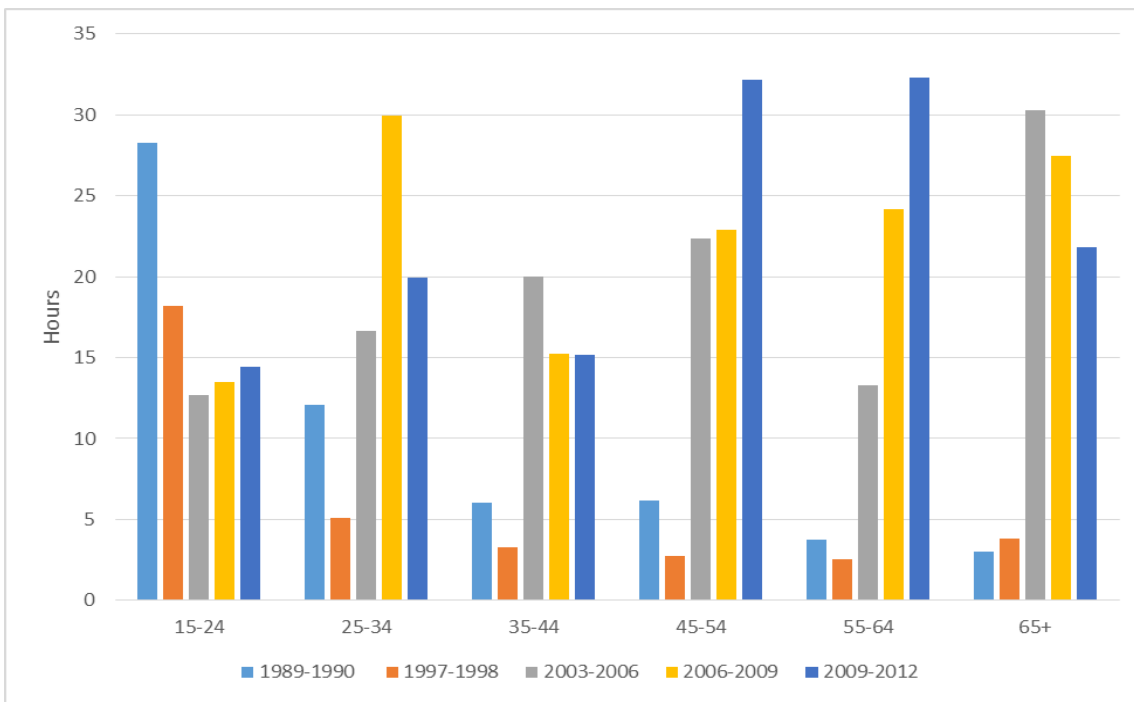
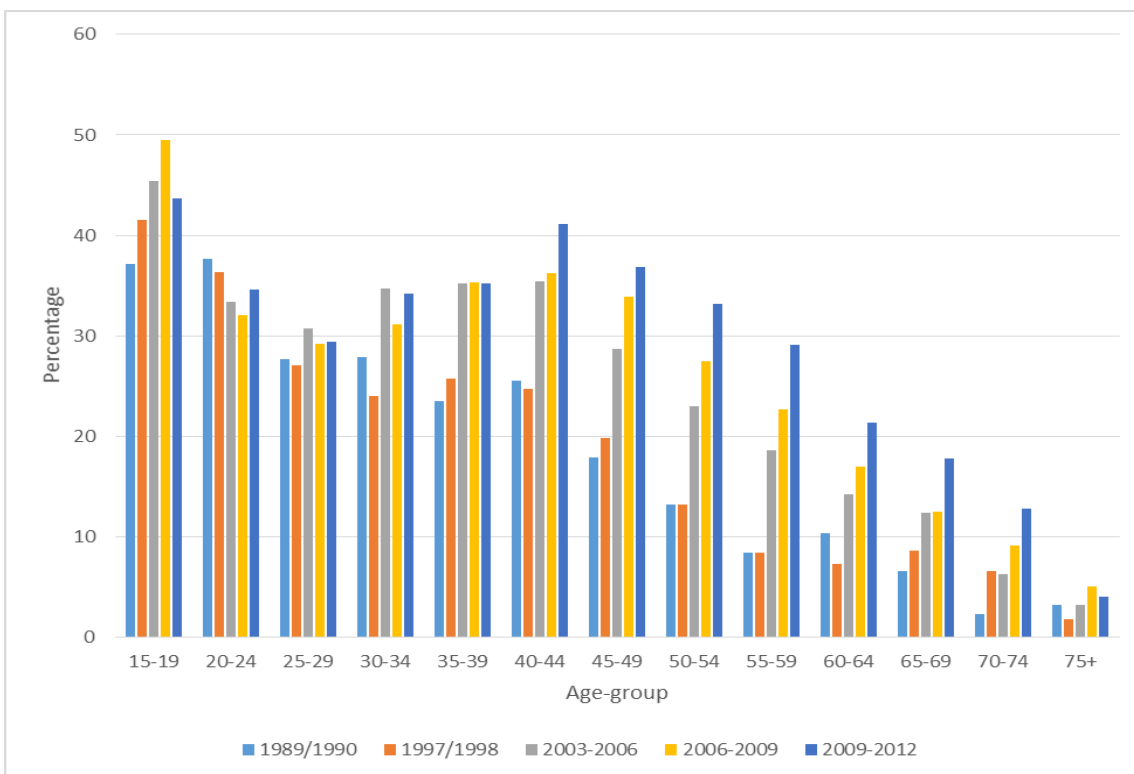


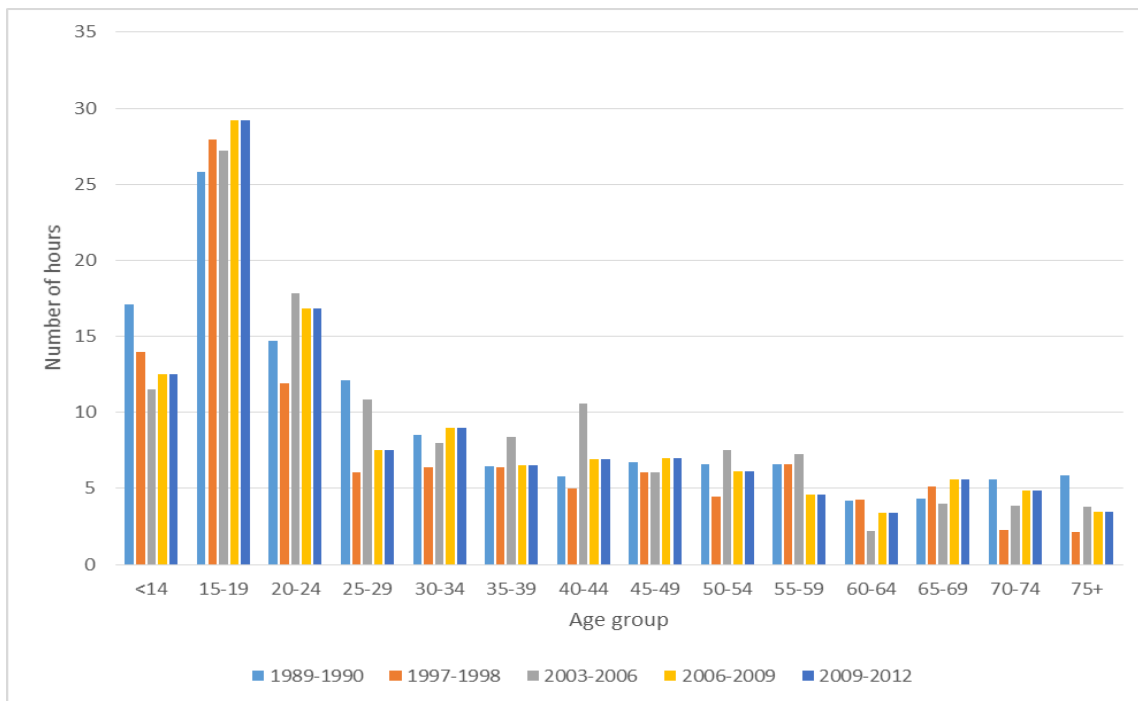
Figure 3.12 Percentage of cyclists in the population by age group



### 3.2.5 Public transport

It is possible to look at the use of public transport over time by the various age groups in the NZHTS data, as depicted in figure 3.13. This shows an increasing trend for public transport usage among Generation Y people since the turn of the 21st century, following previous decreases. These observed increases are not emulated in other age groups, except those aged over 65 who have the incentive of the SuperGold card. The increases are from a very small base. Those aged 15–19 years use public transport more frequently than other age bands within Generation Y.

**Figure 3.13 Annual time spent travelling on public transport per head of population by age group**



#### 3.2.5.1 Auckland public transport customer satisfaction survey data

Some light on public transport use by members of Generation Y is provided by analysis of the October 2013 data from Auckland Transport public transport customer satisfaction survey (Auckland Transport 2013). This combines train, bus and ferry data relating to passenger satisfaction.

Those public transport passengers who had a private vehicle available for their trip were asked what the main reason was for using public transport options rather than this mode (for the descriptive data, please see table 3.3). There were significant differences between age groups,  $\chi^2(7, N = 1457) = 75.26, p < .001$ , with those in Generation Y being more likely to have taken public transport in an effort to avoid parking and the high cost of fuel, and those who were older (eg over 35 years of age) being more likely to take public transport alternatives because they perceived them to be more convenient, faster and less stressful than private transport options.

**Table 3.3 Availability of private vehicle and main reason for choosing public transport split by age group**

	Generation Y	36 years +
<i>Availability of private vehicle</i>		
Yes, as a driver	422 (35.0%)	590 (63.0%)
Yes, as a passenger	184 (15.3%)	79 (8.4%)
None available	600 (49.8%)	267 (28.5%)
Total	1206 (100.0%)	936 (100.0%)
<i>Main reason for choosing public transport over private mode</i>		
Avoid parking - too hard to find/expensive	264 (35.9%)	160 (22.2%)
Cost of fuel too high	101 (13.7%)	60 (8.3%)
Quicker than private alternatives	62 (8.4%)	90 (12.5%)
Want to be socially responsible	23 (3.1%)	31 (4.3%)
More convenient/easier than private modes	97 (13.2%)	138 (19.1%)
To avoid congestion	49 (6.7%)	68 (9.4%)
Less stressful than private alternative	56 (7.6%)	113 (15.7%)
Other	84 (11.4%)	61 (8.5%)
Total	736 (100.0%)	721 (100.0%)

To give some context to these findings, additional analyses were undertaken of the sample comparing those in the Generation Y definition with older participants. Those in Generation Y were significantly less likely to have a private vehicle available to drive compared with those over 35 years of age,  $\chi^2(2, N = 2142) = 166.32, p < .001$ . They were also more likely to have a carpooling option as a passenger compared with older travellers. Thus their non-public transport options would tend to be as a passenger rather than a driver. Half of the Generation Y people had no private vehicle option available, meaning they were essentially captive. Fifteen percent had a passenger option while 35% could have driven.

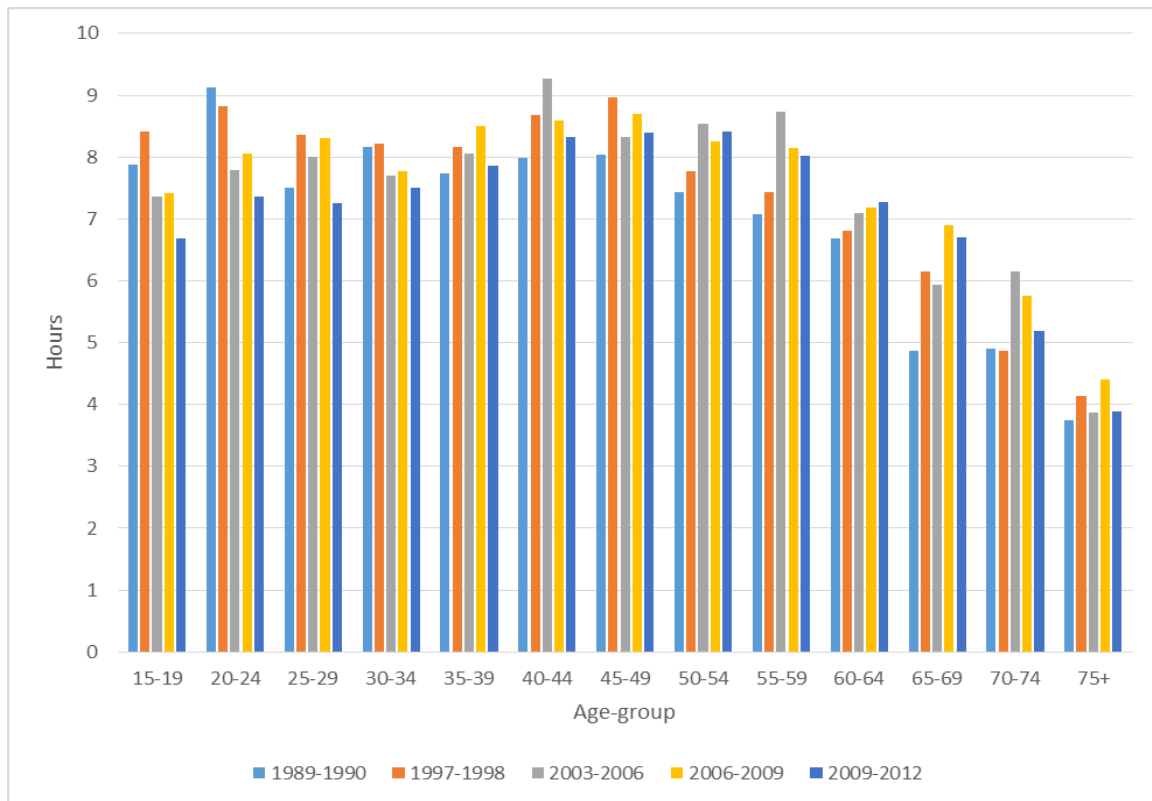
### 3.2.6 Total travel time budget

One way to explore why and how total travel for Generation Y has changed over time is to investigate weekly travel time budgets. These budgets are limited by the number of hours available in a day, with only a certain number of these being feasible or desirable to spend travelling, with these factors varying by perceptions and expectations. Travel budget also affects viable travel mode, for example, it is unfeasible that a two-hour commute by car can be completed by bicycle, due to time and other constraints.

Overall, people have historically had on average a travel budget of around an hour a day. This figure does not take age into account. Prendergast and Williams (1980) argue for the hypothesis of a stable travel time budget using British survey data. Metz (2004) makes the point that over the last 30 years, people have increased their mobility while keeping their travel time relatively constant by increasing their average speed. Figure 3.14 depicts the total weekly travel time budgets by age group over time.

This shows a definite decrease in travel time budgets for those in the Generation Y age groups, a trend not emulated in other age groups. Travel time budgets within the Generation Y cohort are smaller for those in the younger age groups, and slightly larger for the oldest within the cohort. This implies that as the generation ages, their travel time budgets increase slightly. This trend is continued within the rest of the population up to the age of 55 (see 2009–12 data only).

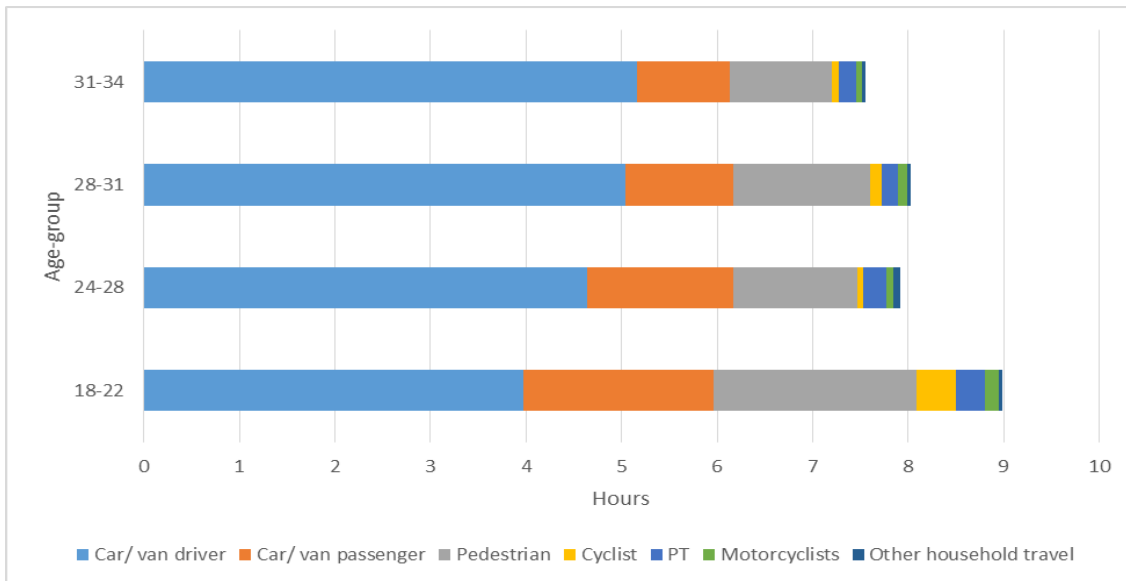


**Figure 3.14** Hours spent travelling per week by age group

Taking a different slant, figure 3.15 uses New Zealand travel survey data to follow the weekly time budget of a group, which was between 18 and 22 years old in 1997/98, to see how travel patterns changed as the group aged.

It can be seen in the figure that the time budget stayed relatively constant, but with changes in the modal split. Within the time used for travel, car/van travel increased and cycling and public transport use and walking decreased once people were out of their teens. The car travel increased gradually as individuals aged from their twenties to their thirties. These changes are related both to changing age and changing culture. For instance the changes in time spent cycling in figures 3.11 and 3.12 are related to both age and chronological time. Time spent on public transport does not appear to have changed much over the years. It is important to note that these findings are based on the travel behaviour of New Zealanders who are older than the Generation Y cohort. It is debatable whether or not Generation Y will follow this same trend.

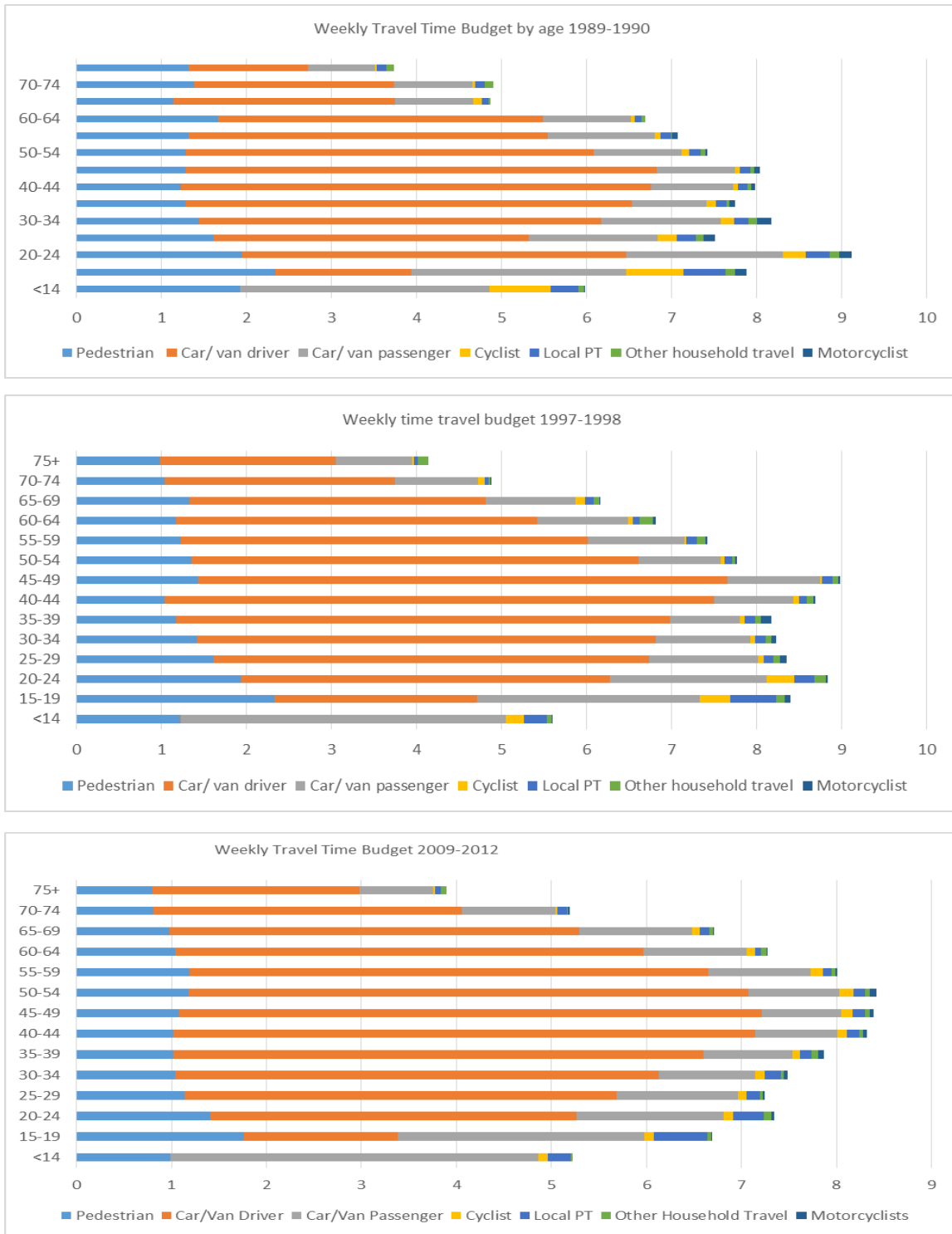
**Figure 3.15 Average weekly time budget at various ages of the group aged 18-22 in 1997/98**



### 3.2.7 Modal split changes over time

Figure 3.16 looks at the modes used by different age groups in the time periods 1989/90, 1997/98 and 2006-09. The patterns within the Generation Y cohort have not changed much, with the relatively small changes in alternative modes not making much difference to the overall allocation.

Figure 3.16 Weekly travel time budgets for 1989/90, 1997/98 and 2009-12



### 3.2.8 Changes in duration of weekly travel time

The reasons for travel have not changed very much in the relevant age groups, except for recreational purposes which have decreased markedly over the periods considered. The relevant plots of time spent travelling by purpose from which this can be discerned are given in appendix A. Figure 3.17<sup>6</sup> depicts changes in travel for social recreational purposes from 1989/90 to 2006-09. It is apparent that such travel has been dropping over time for all age groups under 50, but particularly for those in the Generation Y age groups.

**Figure 3.17 Time spent per week on recreational travel by age group**

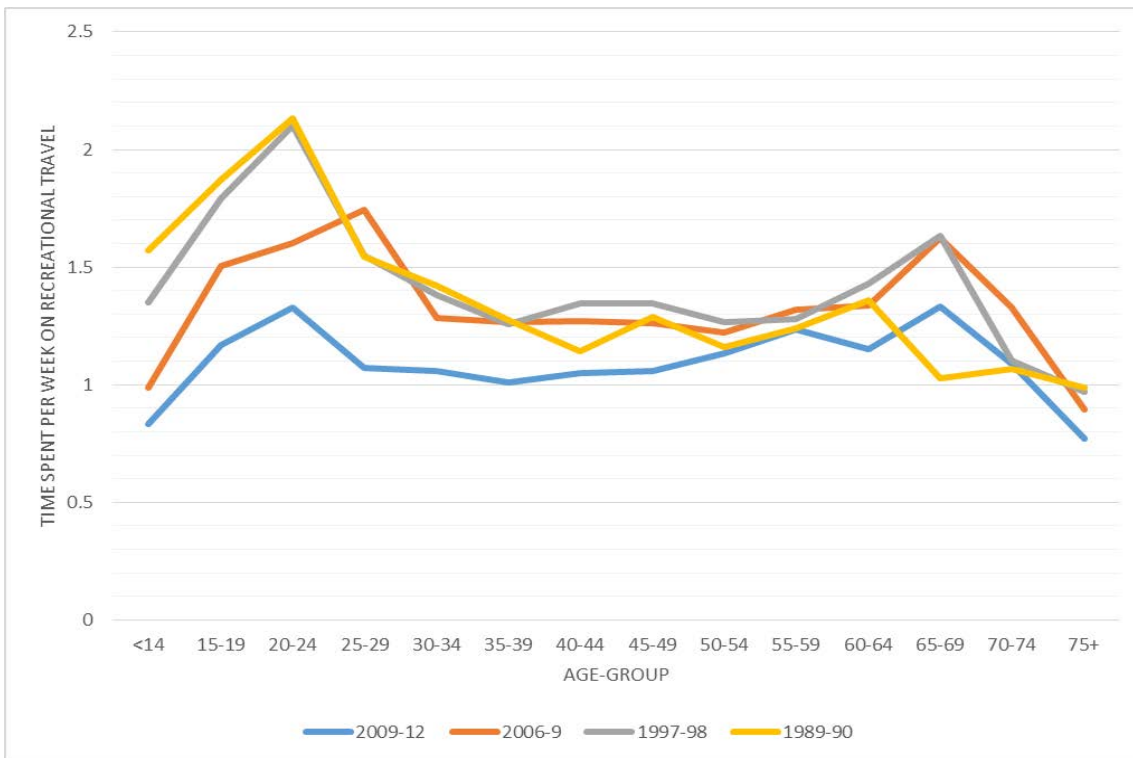
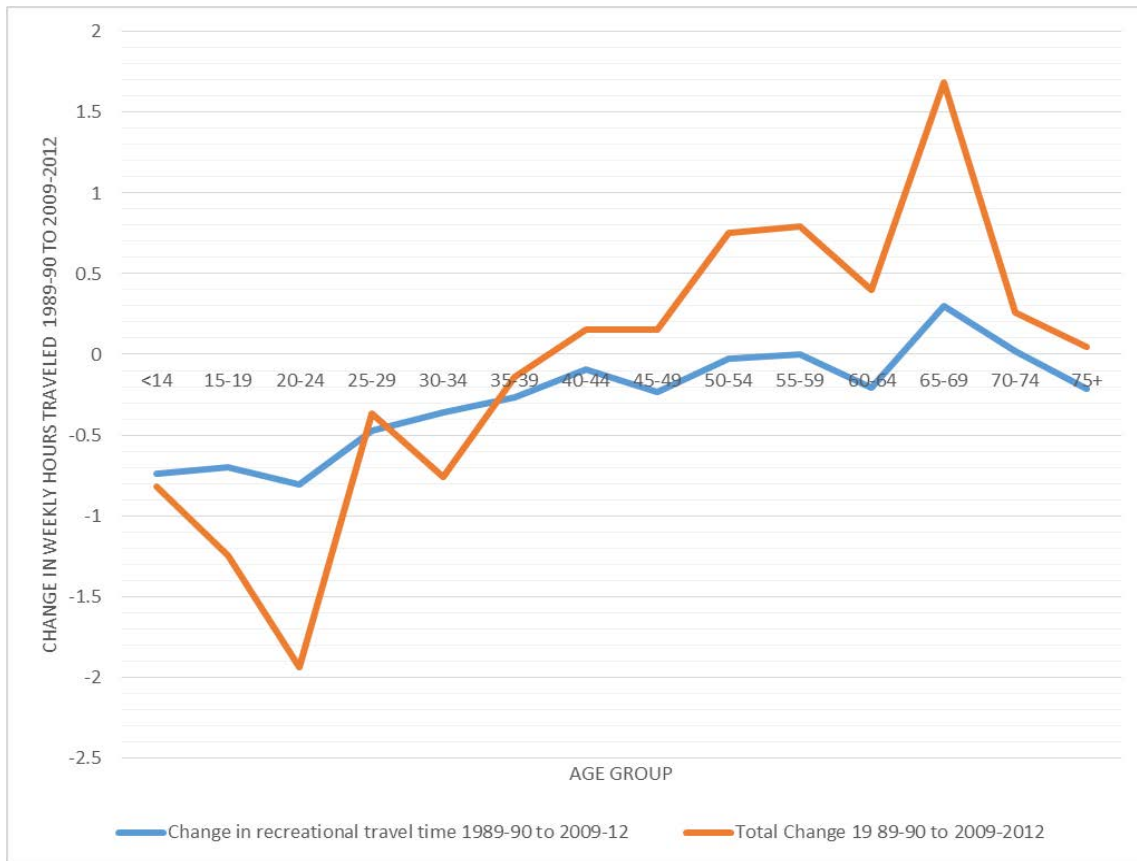


Figure 3.18 looks at the change in weekly recreational travel time compared with the change in overall weekly travel time since 1989/90.

It is apparent that both total travel time and recreational travel time have reduced for the Generation Y age groups and for the 35-39 age group, with a cross into positive territory thereafter. Therefore, as indicated in the above figure, it appears that younger New Zealanders have reduced their travel over time, particularly travel for recreational purposes. This is in line with a previous suggestion that increases in the use of social media have reduced the need for recreational trips for younger travellers. Alternatively, rising fuel prices could be influencing rates of travel, with younger travellers being more strongly affected due to their lower levels of disposable income. The reasons for a reduction in recreational trips will be more fully explored throughout the remainder of this work.

<sup>6</sup> This sort of travel had different coding between surveys. Figure 3.17 represents travel coded 'social recreational' in the 1989/90 and 1997/98 surveys and the sum of travel coded 'recreational or social visits/entertainment' for the later survey periods. It is not known if the change in coding procedure was accompanied by any systematic changes in reporting behaviour.

**Figure 3.18** Change in weekly recreational travel time compared with the change in overall weekly travel time since 1989/90



### 3.2.9 Access to technology

*NZ Transport Agency research report 540 'Customers' requirements of multimodal travel information systems'* (Chang et al 2013) provides data that sheds some light on the use of technology among different age groups in New Zealand, particularly in relation to the use of technology for travel information needs.

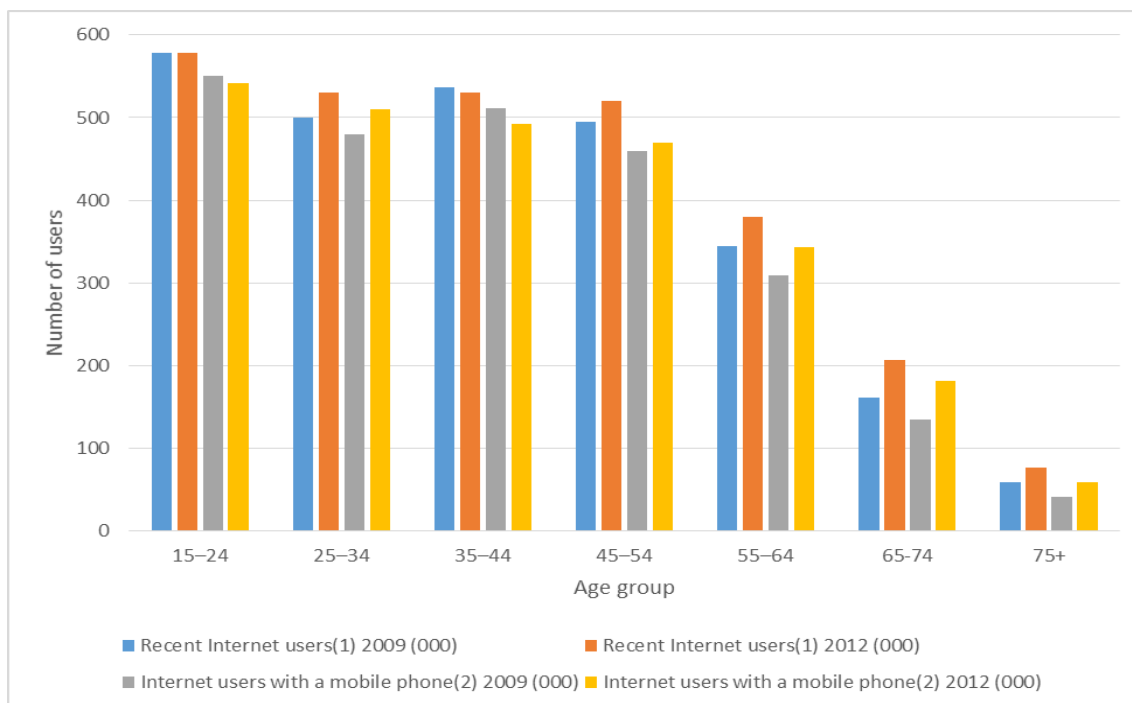
Table 3.4 presents rates of current access to different technologies split by age group, with the percentages indicating the proportion of the total sample that had access to each technology. Results of Fisher's exact test are indicated by green and red highlighting ( $p < .05$ ): green indicates the frequency was higher than by chance; red indicates the frequency was lower than by chance.

As shown in the table, those aged under 35 years of age were significantly more likely to have access to a laptop, whereas those in older age groups (45-54 and over 65 years) were significantly less likely. This same general trend (those in younger age groups being more likely than older participants to have access to technologies) is observed for most technologies, with the exception of access to a tablet or iPad, which is less likely for those under 24 years of age. This may be related to lower incomes among those in their teens and early twenties.

**Table 3.4** Current access to different technologies to access travel information, split by age group (total N=1252, percentages in brackets)

	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Laptop	211 (20.6)	219 (21.4)	211 (20.6)	197 (19.3)	133 (13.0)	47 (4.6)	4 (0.4)	1,022 (100.0)
Wifi connection	222 (21.1)	212 (20.2)	212 (20.2)	221 (21.0)	130 (12.4)	47 (4.5)	6 (0.6)	1050 (100.0)
Smartphone	156 (19.3)	199 (24.7)	166 (20.6)	159 (19.7)	93 (11.5)	32 (4.0)	2(0.2)	807 (100.0)
Tablet/iPad	66 (15.8)	86 (20.6)	106 (25.4)	91 (21.8)	50 (12.0)	15 (3.6)	4 (1.0)	418 (100.0)
3G data package	99 (18.1)	140 (25.6)	115 (21.1)	102 (18.7)	68 (12.5)	21 (3.8)	1 (0.2)	546 (100.0)
Other	8 (10.1)	9 (11.4)	13 (16.5)	16 (20.3)	15 (19.0)	14(17.7)	4(5.1)	79 (100.0)

Finally, figure 3.19 provides data from Statistics NZ regarding the use of the internet and mobile phones over time split by age groups. As can be seen, use of both is highest in younger age groups (eg those belonging to Generation Y), with rates decreasing through older age groups.

**Figure 3.19** Internet and mobile phone use 2009 and 2012 by age

### 3.2.10 Demand for different types of travel information

Table 3.5 displays rates of access to different types of travel information split by age group (data from Chang et al 2013). This data provides insights into the types of information travellers of different ages value and actively seek. As can be seen, those in the younger age groups are more likely to access information regarding walking and cycling routes, implying these age groups are more interested in information regarding active transport modes. This is in line with the increase in cycling rates seen in travel survey data (however, those over 40 years of age increased at a higher rate), but not the observed

decreases in walking seen, particularly for younger groups. This may imply that even though younger people are using walking as a mode less frequently now, they are more likely to want to access information regarding this compared with older age groups. This is in line with differences in rates of cycling between younger and older New Zealanders, showing that where younger New Zealanders use active modes, they may be more likely to access travel information compared with older New Zealanders (who may access this information at a lower rate, even though they may use the mode at a higher rate). This may be a result of a higher rate of flux in younger peoples' travel (eg the locations travelled to), meaning they simply require more travel information. However, this is just one possible interpretation.

Younger people's higher rates of access of information regarding the location of unlit roads also supports the finding in the literature review regarding this group valuing safety in their travel.

Note that the table below is ordered by information types found most helpful to least helpful in the total sample, as per Chang et al (2013).

**Table 3.5 Current access to provision of travel facilities, split by age (percentages in brackets)**

	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Route maps	229 (18.6)	239 (19.4)	234 (19.0)	240 (19.5)	161 (13.1)	58 (4.7)	10 (0.8)	1172 (95.1%)
Walking routes/facilities/ journey times	197 (16.3)	202 (16.7)	179 (14.8)	185 (15.3)	120 (9.9)	34 (2.8)	4 (0.3)	921 (76.0%)
Location of points of interest (eg petrol stations, restaurants, accommodation)	181 (14.8)	182 (14.9)	168 (13.7)	184 (15.1)	116 (9.5)	54 (4.4)	5 (0.4)	890 (72.8%)
Cycling routes/facilities/ journey times	145 (11.9)	143 (10.4)	127 (10.4)	131 (10.7)	67 (5.5)	19 (1.6)	2 (0.2)	634 (52.0%)
Location of public toilets and rest areas	171 (13.9)	166 (13.5)	154 (12.5)	168 (13.7)	113 (9.2)	49 (4.0)	8 (0.7)	830 (67.5%)
Location of parking	153 (12.5)	159 (13.0)	156 (12.7)	179 (14.6)	110 (9.0)	42 (3.4)	6 (0.5)	805 (65.7%)
Location of park-and-ride facilities	124 (10.1)	122 (10.0)	102 (8.3)	127 (10.4)	79 (6.5)	25 (2.0)	5 (0.4)	584 (47.7%)
Presence of steep hills/slopes	120 (10.1)	130 (10.9)	107 (9.0)	118 (9.9)	74 (6.2)	28 (2.4)	2 (0.2)	580 (48.7%)
Other	7 (0.6)	10 (0.8)	9 (0.8)	12 (1.0)	5 (0.4)	5 (0.4)	2 (0.2)	50 (4.2%)
Disability information	80 (6.6)	75 (6.2)	60 (4.9)	78 (6.4)	31 (2.6)	10 (0.8)	1 (0.1)	335 (27.6%)
Location of unlit roads	107 (8.9)	97 (8.1)	70 (5.8)	90 (7.5)	46 (3.8)	16 (1.3)	0 (0.0)	426 (35.4%)

Table 3.6 provides the same data for access to real-time information. The results of Fisher's exact test imply that those in younger age groups (eg Generation Y) are more likely to have accessed real-time public transport information than older groups. This finding fits with the increased public transport usage observed nationally in the travel survey data reported above among Generation Y compared with older New Zealanders; however, it could also be a result of a higher rate of flux in travel patterns as highlighted above. Younger age groups were also less likely to have accessed information regarding parking availability compared with older age groups, which may be because of their lower rates of private vehicle

usage (due to lower rates of licensing over time). Note that this table is also ordered by information types found most helpful to least helpful in the total sample, as per Chang et al (2013).

**Table 3.6 Current access to real-time travel information types, split by age (percentages in brackets)**

	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
In-vehicle navigation information (eg GPS system)	134 (10.8)	160 (12.9)	154 (12.4)	143 (11.6)	87 (7.0)	36 (2.9)	4 (0.3)	718 (58.0%)
Next bus information	230 (18.5)	232 (18.7)	213 (17.1)	212 (17.1)	125 (10.1)	46 (3.7)	9 (0.7)	1068 (85.9%)
Next train information	73 (5.9)	91 (7.3)	83 (6.7)	96 (7.7)	60 (4.8)	27 (2.2)	5 (0.4)	435 (35.0%)
Next ferry information	65 (5.2)	76 (6.1)	69 (5.6)	84 (6.8)	65 (5.2)	27 (2.2)	3 (0.2)	389 (31.4%)
Roading conditions (eg presence of ice/snow)	127 (10.4)	158 (12.9)	169 (13.8)	167 (13.6)	113 (9.2)	47 (3.8)	6 (0.5)	787 (64.2%)
Weather conditions	169 (13.8)	180 (14.7)	199 (16.2)	185 (15.1)	131 (10.7)	54 (4.4)	8 (0.7)	926 (75.5%)
On-board public transport (eg next stop information)	186 (15.2)	200 (16.3)	165 (13.5)	180 (14.7)	118 (9.6)	38 (3.1)	7 (0.6)	894 (72.9%)
Anticipated travel times based on real-time updates	176 (14.4)	174 (14.2)	142 (11.6)	167 (13.6)	104 (8.5)	47 (3.8)	3 (0.2)	814 (66.4%)
Location of road closures	180 (14.6)	197 (16.0)	188 (15.3)	185 (15.0)	122 (9.9)	52 (4.2)	8 (0.6)	933 (75.7%)
Parking availability information	107 (8.7)	130 (10.6)	122 (10.0)	152 (12.4)	92 (7.5)	37 (3.0)	5 (0.4)	645 (52.6%)
Location of road works	170 (13.8)	188 (15.3)	178 (14.5)	177 (14.4)	112 (9.1)	50 (4.1)	7 (0.6)	883 (71.7%)
Information gathered from other travellers (eg crowd-sourced information)	115 (9.5)	111 (9.1)	104 (8.6)	120 (9.9)	70 (5.8)	29 (2.4)	5 (0.4)	554 (45.5%)
Location of traffic incidents	137 (11.2)	155 (12.7)	146 (11.9)	147 (12.0)	95 (7.8)	47 (3.8)	5 (0.4)	732 (59.7%)
Congestion information	124 (10.1)	144 (11.5)	141 (11.5)	153 (12.4)	98 (8.0)	3 (2.8)	3 (0.2)	698 (56.7%)
Traffic cameras (in real-time)	88 (7.2)	114 (9.4)	110 (9.1)	113 (9.3)	73 (6.0)	33 (2.7)	4 (0.3)	535 (44.0%)

Finally, table 3.7 presents an age split for self-reported willingness-to-share travel information via crowd sourcing. This data implies that younger travellers are more likely to share information if they see it as beneficial to themselves, whereas those in older age groups were less likely to be willing to share information (with the exception of those aged 75 and over). This data (as well as the data regarding access to real-time information) provides some insights into the demand for technology to improve the quality of travel experiences among those in the Generation Y cohort.



**Table 3.7 Self-reported willingness to share travel data via crowd sourcing, split by age (percentages in brackets)**

	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Happy to share information	100 (8.5)	77 (6.6)	98 (8.4)	96 (8.2)	69 (5.9)	24 (2.1)	6 (0.5)	471 (40.2%)
Would share information, as long as it helped own trip	43 (3.7)	60 (5.1)	44 (3.8)	36 (3.1)	23 (2.0)	11 (0.9)	0 (0.0)	217 (18.5%)
Would share information if rewarded in some way (eg fare or fuel discount)	53 (4.5)	59 (5.0)	39 (3.3)	40 (3.4)	15 (1.3)	6 (0.5)	1 (0.1)	213 (18.2%)
Would never share information	31 (2.6)	45 (3.8)	61 (5.2)	67 (5.2)	49 (4.2)	16 (1.4)	1 (0.1)	270 (23.1%)

### 3.3 Conclusions

The datasets studied in this chapter provide some insight into Generation Y's travel patterns in New Zealand. Travel for Generation Y differs from other New Zealanders in that:

- Generation Y's annual travel time budgets have tended to decrease over the years since travel was first measured in New Zealand in 1989/90. At the same time, travel time budgets of older age groups have increased.
- The largest component of this decrease has been in recreational travel. This aligns with the finding that younger people have higher access to and use of technology, so they may not need to travel to connect with their recreation and social contacts at the same rate as traditionally observed.
- Reduced travel time budgets are also consistent with a decrease in Generation Y fertility rates, as the need for transport may increase when a person becomes part of a family with children.
- The population projections suggest that Generation Y is not a rapidly growing segment of the population (eg through migration into New Zealand). Furthermore, based on the projections produced it is not expected that successive younger generations will increase rapidly in numbers either (eg due to low fertility rates among Generation Y).

There is evidence that Generation Y in New Zealand is portraying similar travel trends to those witnessed internationally:

- In both New Zealand and internationally, there has been a decline in the proportion of 15-19 year olds who possess a driver licence, which could relate to the stringent licensing conditions youth are exposed to under the GDLS.
- This is coupled with a decline in vehicle kilometres driven per head of population over time.
- Despite the overall decline in vehicle travel, the vast majority of Generation Y travel is by light vehicle, whether as a driver or passenger. Time spent as a light vehicle passenger overshadows the sum total of time spent on public transport or cycling.

The trends for public and active transport suggest that public transport and cycling are increasing for Generation Y:

- Non-light vehicle modes apart from walking (public transport, cycling) form a small proportion (generally less than 10%) of Generation Y travel time, although their use appears to be increasing from this small base.
- Within the younger age-groups (15–24) there has been an increase in the time spent using public transport in the order of 0.5% per year from 1989–2012, which equates to about three hours more spent using public transport per person annually.
- Walking provides a substantial proportion of total travel time for Generation Y people although its popularity declines with age within the Generation Y grouping.

Factors that could be used to help inform targeted public transport policy and infrastructure decisions to benefit Generation Y include location-based and information-based initiatives:

- Auckland, Wellington and Otago have higher base populations for Generation Y (each with over 30%). Auckland is the only region predicted to increase in younger age groups over time. Any location-based application of the findings of this study would be of most relevance to these regions.
- Half of Auckland public transport passengers were captive, with 15% having a vehicle passenger option while 35% could have driven. Most Generation Y public transport passengers who could have gone by car cited fuel prices and parking as their major concerns.
- The increased cycle use for Generation Y could indicate an opportunity to examine complementary cycling-based initiatives within public transport provision. For example, promoting improved public transport facilities as a 'back-up' to transient cycling conditions, such as poor weather. Alternatively, the provision of bicycle facilities could encourage cycling across sections of the network that are perceived to be less cycle friendly.
- Generation Y also has a high demand for real-time public transport travel information and a willingness to share their information (so lower privacy concerns) if it is also of direct benefit to them.

## 3.4 Limitations

Due to the young age of Generation Y, there is limited New Zealand data available on how their travel patterns will continue to change across different life stages. For example, the youngest members of Generation Y are yet to gain eligibility for their learner driver licence in New Zealand, hence the ability to predict their independent travel behaviour is currently limited. One solution to complement this data is to use self-reporting around predicted future travel. This was investigated in the following research phases with focus groups and quantitative surveys.

## 4 Study 2: Focus groups with in-depth qualitative investigation

### 4.1 Method

Following steering group consultation, Auckland and Napier were selected as the locations for two focus groups. Auckland was selected as it is New Zealand's largest urban centre with a high Generation Y population base. Auckland is also the only city in New Zealand with predicted growth in this cohort. Napier was seen as a good complementary location as it is provincial and has some quality public transport infrastructure that has seen recent improvements (eg the introduction of cycle facilities on buses) as part of the Transport Agency's model communities programme<sup>7</sup>. Participants were recruited through advertisements which were distributed through existing Opus networks at both locations, as well as posts on various relevant Facebook pages (eg university pages and local interest pages). A snowball technique was used with people being encouraged to pass the information on to their respective networks to maximise the potential participant base. Maximising this participant base was important to ensure a mix of participants could be selected to attend both sessions.

Those who registered interest in participating in the sessions were sent a screening questionnaire which included a range of measures of interest to the transport sector (see table 4.1). Participants were then selected to attend the sessions based on responses to this screening questionnaire, ensuring each group included a mix of students (high school and university) workers, those using different travel modes, ages (within the 15-35 age range), and those with children versus those without. Table 4.1 provides a summary of the final samples for both the Auckland and Napier sessions (N=7 and N=8 respectively). Each group was limited to between 6 and 10 participants, as it is best practice to stimulate and encourage open discussion (eg Powell and Single 1996).

---

<sup>7</sup> For further information, see: [www.nzta.govt.nz/planning/process/model-communities.html](http://www.nzta.govt.nz/planning/process/model-communities.html)

**Table 4.1 Focus group sample summary**

	<b>Auckland</b>	<b>Napier</b>
Gender	4 females 3 males	4 females 4 males
Age range	16–32 years	15–34 years
Income range	Under \$20,000 to \$100,000+	Under \$20,000 to \$100,000+
Main weekly activity	5 employed full-time 1 student 1 home responsibilities	3 employed full-time 2 employed part-time 3 students
Marital status	2 married/civil union 2 de facto 3 single	1 married/civil union 2 de facto 5 single
Dependents	2 participants	1 participant
Travel mode for main weekly activity	4 car 2 bus 1 bus/moped mix	2 car 1 moped 1 car/bus/walk mix 3 bus 1 cycle
Travel mode for recreation trips	4 car 2 bus 1 moped/bus mix	2 car 1 car/moped mix 3 bus 1 car/bus/walk mix 1 cycle/walk mix
Access to private vehicle	6 access to car as driver 1 access to car as passenger	5 access to car as driver 3 access to car as passenger
Licence status	6 with current licence 1 not yet obtained licence	6 with current licence 2 not yet obtained licence
Age range obtained licence	15–25 years	15–31 years

Parents of participants under 18 years of age were required to sign a parental consent form prior to the session. Those over 18 years of age signed a standard consent form prior to each session. As a token of appreciation for their time, each participant was given a supermarket voucher at the conclusion of each focus group. Participants were also invited to provide their email address at this time if they were interested in participating in the next phase of the project (the online survey).

The focus groups were held in the evening and lasted approximately two hours each. Both sessions followed a script that was developed and peer reviewed based on the findings of the literature review and topics of interest to the transport sector (see appendix B for the full script). All participants were encouraged to share their opinions and it was emphasised that consensus was not required, instead the researchers were interested in hearing a range of views from the people selected to attend. Questions were developed to be broad to stimulate conversation between participants. Participants were provided with refreshments at each session to minimise fatigue.

The following section outlines the findings of the focus group sessions. A data-driven thematic analysis was undertaken where the data was scrutinised for overarching themes. Where participants from different backgrounds (eg those living in urban versus provincial areas, or those with versus without children, or those working versus studying) differed in opinions, this is highlighted and discussed. Quotes from participants are also included throughout to illustrate key points and provide the participants' perspectives in their own words.

## 4.2 Findings

### 4.2.1 Current travel patterns

#### 4.2.1.1 Decision making around travel

Participants identified a number of factors that influenced their travel decisions, including their choice of travel mode and the frequency at which they made trips. In relation to travel mode, for the provincial group availability of different modes, weather conditions, the purpose of the trip and the time of day were identified as the most important influencers. In the urban focus group, the viability of different travel modes was again the strongest influencer, with factors such as public transport coverage and frequency of service, as well as congestion and parking availability/cost appearing to have the greatest impact on travel patterns, including both travel mode and time of travel. As a general rule, the travel mode most convenient for the traveller for a particular trip was the one used for both the urban and provincial groups.

*Urban participant: ...Driving [isn't] an option for me... 'cos it's like \$12 a day for car parking ... the bus system ... was taking me far too long, I live so central but it's still ten minutes to the bus and then ... at least 35 minutes on the bus... and then I'd have to catch [another] bus [to work], so it just seems ridiculous. And so I got a scooter and I get free car parking ... and it costs \$12 a week and a half in petrol. So it's just cheap and convenient and you beat traffic...*

*Urban participant: I think it's fortunately convenient for me to bus to work so I do, but it's kind of a bonus I suppose, but ... I'm realising that I'm in a lucky percentage that I live near a bus stop, I work near a bus stop that is frequented, so during rush hour buses are much much much better than driving...*

*Provincial participant with children: There's the odd day where my wife hasn't needed the car so I've taken the car in and dropped the kids at school, but because of how petrol is these days you actually do start to weigh up the difference in cost a little bit. I think it's still a bit cheaper to take the car, and it's a lot more convenient to leave work when you want to as well, but I think the best convenience for us at the moment is that I take the bus and they have the car for the day.*

Participants considered the weather when using active modes such as walking and cycling; in poor weather these were avoided if possible. There were safety concerns in relation to the time of day, such as feeling unsafe during night hours if on foot or cycling, or feeling unsafe during peak driving time when cycling due to the risk of an accident.

*Urban participant: I think the city centre is really safe, but as soon as you kind of go out into the suburbs there's not as many people around and if you're catching a late bus it gets pretty dodgy at night... at bus stops you kind of don't really know what you're going to get when you get to your stop.*

*Provincial participant: Time of day for me comes into more than just light/dark, 'cos if it's in the middle of rush hour I won't get on the bike just for a safety concern. I've had too many close shaves on it.*

Time of day for those in the urban sample was additionally related to avoiding congestion, which was emphasised not to be a factor for those living in the provincial area.

Urban participant with children: *I hate being in traffic... so I would leave... probably quarter to seven, so I'll get here 7.30am... [then I can] finish early and spend more time with my daughter.*

Provincial participant: *There's really no such thing in Napier as congestion, a traffic jam is four cars... It's not a factor.*

Having dependents also affected travel mode choice, with all participants with children stating that public transport was not really a viable mode for regular trips with children, unless trips were occasional and in low-stress conditions (eg with a partner present for assistance, or for trips that were not time-bound). For those with children, the cost of trips that required travel with children at times became less important than other considerations when selecting travel mode. For example, where a trip by car was much longer than an alternative (eg flying), the increased cost of the alternative travel mode could become less important than the reduction in travel time. Note that parents and possible future parents did communicate a desire to take children on public transport at least sporadically, which is discussed in further detail in section 4.2.3.

Provincial participant with children: *...You wouldn't want to take your kids on buses all day, every day... there's a bit of novelty in it for them but other than that you wouldn't want to use it as your staple transport.*

Urban participant with children: *...I wouldn't even dream of putting other passengers through that...*

Provincial participant with children: *There's no seatbelts on a bus so they've got free-reign on a bus, they're up-and-down the aisles and... I mean I'm surprised they don't have seatbelts on a bus, because the Express bus can get up to 80 or 90 k's, so why wouldn't you have a seatbelt?*

Cost of travel came into travel decisions to a small degree, with convenience and viability of different travel modes being more important overall.

Urban participant: *Public transport is definitely cheaper, but then the trade-off is your quality of life, you have to wake up at 5am just to get to work at 8am... it's not really worth it.*

Those still reliant on their parents for travel suggested cost would have more influence on their travel patterns once they had their own vehicles. These participants suggested that at present they did not consider cost when deciding they wanted to make a trip, whereas they believed once they were responsible for their own vehicles and petrol they would be more likely to consider this cost when deciding whether or not to make a trip.

Provincial high school student: *Yeah [I think I will use buses differently in the future because] it'll be cheaper than paying for petrol and stuff [when it's me that's paying].*

In terms of the frequency with which participants made trips, many participants stated that nothing affected whether or not they made a discretionary trip, including considerations such as cost. Several suggested that whenever they wanted to make a trip, they would. However, in the urban focus group there was some variation in this, with some participants organising their travel to minimise trips and others not making such considerations.

Provincial participant: *Me personally... if I forget something, I won't hesitate to go back out and get it... I'm not going to sit down and plan everything [to minimise trips].*

Urban participant: *... I tend to kind of bunch activities together into just... one... I try to minimise how much I drive.*

Urban participant: *... I don't ever really don't do a trip, if I need to do a trip I'll just do it, but I'm lucky I have a car so I [can]... I'm thinking more in terms of social trips or evening trips I'll just drive, 'cos I live really close to the bus station, so it's really accessible with buses [for my work trips] but timings can be limited [for social trips].*

Overall, it was evident participants made transport decisions that were optimal for their lives, including their main priorities. Where urban participants wanted to avoid heavy congestion, they arranged their work schedules around these heavy traffic periods. Where cost was important, participants chose the mode that provided the best value for money. Where public transport accessibility and parking options were poor, participants chose an alternative mode such as a moped to avoid these issues. It was clear that each participant had actively considered these alternatives and tailored their travel patterns to those they felt were most convenient, affordable and safe. These three factors were of the highest importance to all participants' travel patterns, with convenience being the most influential, and individual differences and circumstances affecting what travel patterns maximised these factors. This is in line with the literature evidence and reveals that younger travellers are not unique in this regard.

#### 4.2.1.2 Private vehicle usage

It is evident that private vehicles were an important transport mode for those members of Generation Y who participated in the focus groups, with at least half the participants in both sessions using a private vehicle (either as a driver or a passenger) as a main mode for both their work/study-related and recreational trips. This is in line with the trends observed in the analysis of New Zealand datasets in study 1 for the Generation Y cohort (see chapter 3).

Both obtaining a driver licence and owning a private vehicle were valued among the participants, including those who were at the younger and older ends of the cohort. Those who had not yet obtained their licence were eager to do so in the future in both the urban and provincial groups. Note that of these participants, none had viable alternative modes which allowed for independent travel, and so this may have been a contributing factor to this eagerness. However, having access to a private vehicle appeared to be valued as a source of independence allowing for flexibility in travel for the majority of participants, including older participants with viable alternative transport modes.

Provincial participant: *[Getting a licence was important] for me because I'm like these kids, I grew up in the country and so I really had to if I wanted to do anything.*

Urban participant: *If I had enough money saved up, I would buy a car, because that would give me so much freedom that public transport doesn't offer.*

It was recognised in the groups, however, that living situations and the alternative transport options available today might affect younger peoples' desire to have access to a private vehicle:

Provincial high school student: *It depends, like where I live, it's like 20 minutes from a town and stuff, so I'd probably have a car ... just to get into town. But if we lived ... close to town, 5 minutes from town, I'd just walk everywhere, and it would be ... easier.*

Provincial participant: *Because travelling is a bit ... easier these days, you probably wouldn't worry about it as much as you would like 50 years ago, 'cos it's a lot easier, quicker, you can just look online to see travel times or you can even just ask your parents to drive you somewhere or something. But yeah [owning a car] is important. I guess it just depends on how often you're going to use it...*

Some further comments relating to private vehicle usage and the status perceived to be attached to this are included in section 4.2.1.5.

#### **4.2.1.3 Attractors and barriers to public transport usage**

The main attractor to using public transport identified by both groups was the convenience of the mode for each trip; however, it should be noted that for those in the provincial area, the public transport service was not seen as particularly convenient on the whole, and therefore barriers to its use were discussed at length.

For the urban group, the benefit of not having to find or pay for parking was seen as a major attractor to using public transport, even for those who currently did not use it. Affordability was also mentioned, as well as the benefits of being more environmentally friendly. The benefit of not having to concentrate on public transport and therefore being free to do other things or clear your head were also mentioned as attractors.

Urban participant: *For me... because I live in the city and I work within the city, if I was to drive the same route it would probably take longer for me... and parking is a factor as well, so I use public transport because I'd probably have to park further than I live away from work because it's that hard to find a parking space.*

Urban participant: *Because you can do other stuff on a bus, you don't have to concentrate, so that convenience would be really good but I wish it was more accessible.*

Urban high school student: *Cost is a big factor for me, you know, I try to keep costs, everything, to a minimum and even though the buses are extremely infrequent they are, you know, \$1.10 to Westgate... which is pretty good.*

Urban participant with children: *Cost and the environmental aspect is a big one for me. And yeah, not having to pay for parking is really good, and not having to worry about traffic jams and things...*

However, those residing in the urban area found there were some gaps between the service provided and their needs, particularly when travel included locations outside of the CBD, where it was emphasised that public transport options had both low coverage and a low frequency of services, resulting in excessive travel times.

Urban high school student: *For me, where I live, sort of semi-rural, public transport's pretty, pretty inaccessible, the times that it goes is very infrequent and... the furthest I can go is Westgate or the city, which is every three and a half hours... so to get to most places I have to make multiple trips and it's just terrible times so public transport isn't really an option for me.*



Urban participant: *...I live in Swanson... and it's... a mission to catch public transport... if I was to catch a bus or a train to work I'd have to take a train and a bus into the Shore so it kind of makes it like a two hour trip rather than like a one hour trip if I drive.*

Urban participant: *For me a factor is the distance, obviously I don't own a car so if it's pretty central then it wouldn't really bother me, cost doesn't really come into it because the bus isn't really that expensive, but outside, if you're going further out public transport isn't really good so I would have to get a lift or I'd have to make a couple of trips on public transport and sometimes it's just not accessible...*

Urban participant: *A deterrent to catching the bus for me is if I want to go anywhere outside of the CBD... wait[ing] for the link, might be straight away or might be 15 minutes later and it's too unpredictable. So the connections I find are really unreliable.*

The urban off-peak service was also identified as not currently servicing many of the participants' needs (due to the same reasons identified above); however, there had been some improvements to certain lines which meant this was not the case for others who lived in better serviced areas. Some participants reported they planned their travel routes based on the level of service available in certain areas, and that where such location planning was not possible (eg for those who required the service for shift-work), this might currently be a gap.

Urban participant: *[The off-peak service] has helped me... Having the Express run for as long as it does, if you're stuck at work a little bit later, whereas before you'd have to wait an hour for the next bus, now you know you don't really need to time your work to your transport, for me anyway.*

Urban participant: *...I usually stick to the areas where [the off-peak services] actually go...and then I don't have to wait for a bus for more than 10 or 15 minutes, so that's pretty good.*

Urban participant: *If you worked in a bar or something like that, you'd probably be pretty stuck...*

As mentioned above, the inconvenience of using public transport in the provincial area was identified as the main barrier to its use. The main issue with convenience for these participants was infrequent travel times and long run times for buses, but issues such as a lack of available information about the service were also identified as limiting factors. In line with discussion at the urban session, infrequency of off-peak services was raised as a deterrent to using public transport in the provincial area.

Provincial participant: *From time-to-time [I use public transport]. For me, it's more about what turns me off from using public transport. The line where I live, I have to be out the door by 7am, and it takes between 40 minutes and an hour on the bus. As the bird flies, it's 6 kilometres, so if I hop in my car, I'm there in under 10 minutes. So an hour on the bus is extremely inconvenient.*

Provincial participant: *Also the timing of the runs is the other thing, particularly coming home, if you have to work late (and this is more a reflection of locally) but the last bus out of Napier is 5.15pm, so if you're held up at the office, you're getting a taxi home.*

Provincial participant: *[Public transport] is difficult for socialising too, 'cos if you want to say, Friday, have a beer after work you either have to catch a taxi home, or get down to the pub early and [drink] really fast [to catch the bus].*

Provincial participant: *I work in Havelock and it can be a little bit difficult because I usually take [the bus] on a Saturday and there's only one every couple of hours, so I can take the bus there, but I can't get back because there's not one until a later stage.*

Provincial participant: *The service in the weekend is virtually non-existent and a lot of your discretionary travel is in the weekend...*

Provincial participant: *I just don't think that the public transport is that accessible in Hawke's bay.*

Some participants found the bus services in the area were mostly convenient due to personal circumstances, and others discussed the convenience of using buses for recreational trips (although the services mentioned were likely to be put on for a specific purpose, rather than being part of the public transport system). The introduction of payment cards in the area was also discussed as a very positive addition.

Provincial participant with children: *Because I work in Hastings, it's a lot more convenient for me to take the bus. I used to take the Express bus which would get me there from Napier in about 18 minutes, but now, it wasn't busy enough apparently, so they've canned that, so now I've got to take a bus ... that takes about 30 or 40 minutes to get there now so it's a lot more inconvenient.*

Provincial participant: *I take a bus up on Saturdays for sport. It's just practical, everyone gets on the bus... it's easy.*

Provincial participant: *I kind of think like, groups going together, like if our rugby team's going away... all travelling together you know saves money... it kind of helps and makes it easier... you're not using as many cars, so that's good for the environment, but then you can save money as well.*

Provincial participant with children: *[The payment card] is quite good, that's probably the best part about [the bus in Napier].*

#### 4.2.1.4 Comparisons with older generations' travel patterns

When asked whether they felt their travel patterns differed from those of older generations, some common themes emerged in the conversations at both focus group sessions. First, the majority of participants felt that older people (eg those of retirement age and older) were more likely to use the public transport system, due in part to incentivisation through the SuperGold card system<sup>8</sup> but also due to factors such as having a limited ability to drive and fewer mandatory trips, such as those to work.

Provincial participant: *On the bus [older people] get a seniors discount, where as you don't on your petrol...*

Provincial participant: *My grandparents, a bus trip is like an outing for them... they'll jump on it 2-3 times a week just for something to do and go to Hastings or Napier.*

---

<sup>8</sup> The SuperGold Card is a discounts and concessions card for seniors and veterans, in recognition of their contribution to New Zealand society ([www.supergold.govt.nz/](http://www.supergold.govt.nz/))

Provincial participant with children: *I guess also, if you're older and you're getting quite old, you might not be able to drive, and chances are you probably won't be able to walk into town either. So you might take a bus.*

Urban high school student: *For my grandmother... she is extremely incentivised to use public transport because of the SuperGold making it free, and she can't afford to run a car. I'm sure if that's generalised or if she's just good with public transport but she's always on the buses, she's always using buses to get around...*

However, some urban participants felt that complex public transport systems, such as in Auckland, might be too overwhelming for this cohort if they were first-time users, for example:

Urban participant: *My grandma, I cannot even imagine attempting to teach my grandmother to catch the bus or to get on the train, she would just be utterly lost. It's just totally beyond her and I think as it is, it can be so confusing just ... trying to find the bus stop ... for someone who's never used public transport before and is feeling a bit apprehensive ... it would just be totally beyond them.*

Some respondents under the retirement age but over 35 years felt they travelled in a more organised manner than younger people, and having a higher level of disposable income also affected their travel patterns.

Provincial participant: *I think [older people] go out and get everything they need at the same time... it's more organised.*

Provincial participant: *It's kind of dependent on disposable income, my parents who are mortgage free won't hesitate to just get in the car and go out for a coffee or walk the dogs, they won't just walk them in the park where they are, they'll drive them out to go walking...*

In relation to public transport use in particular, the words of the following participant reflect a potential feeling of responsibility among younger people in New Zealand for its continued use, given a perceived low level of current usage among those in the over 35 age group:

Urban participant: *We are the ones who should be carrying on to an older age and using the public system ... to teach everyone to go on these apps and things like that, I think they can through children and grandchildren learn how to use them slowly but you can't expect them to pick it up as quick as [younger people].*

#### 4.2.1.5 Potential explanations for different travel patterns among younger people in New Zealand

Following discussion of current travel patterns, and in particular perceived differences between the travel patterns of younger people and older people in New Zealand, both groups were asked what they thought the reasons were for these observed differences. A number of possible influencing factors were identified by both groups, which varied slightly by region (due to differences between the regions, such as congestion being an issue in Auckland but not in Napier). The following sections summarise view points from both sessions on the influencing factors discussed. Note that some topics discussed at the provincial focus group were not discussed at the urban focus group. Where this was the case it is identified as such.

##### THE ECONOMIC ENVIRONMENT

In relation to the economic environment, two main influencing factors were identified as having a possible impact on travel patterns: increasing petrol prices and increasing house prices. The former were thought

to have decreased travel to an extent, whereas the latter were thought to have led people to residing further away from city centres in larger cities, creating both congestion and parking issues due to a lack of viable alternative mode options.

Provincial participant: *The cost of fuel, I think that's the main thing that people worry about.*

Provincial participant: *I've always been taught that petrol is an inelastic good; regardless of the price you're going to go out and buy a tank of petrol, but now that I've actually seen how high petrol can get, I don't know if that's completely true. I think that people do get tested a bit more... it does have more of an impact than I thought it was going to.*

Urban participant: *With the house prices and everything going up, people are just moving out out and out, further and further away... so people buy a house for 300k, drive to Albany bus station, the first one they can get to, and then... clogging up the parks.*

#### DELAYING OF TRADITIONAL LIFE MILESTONES

Both sessions acknowledged they felt this was relatively common among their age group, and that it could affect travel patterns. In particular, remaining in study longer or having children later were seen as factors that could relate to increased and prolonged use of public transport for this cohort. However, it was noted that this delaying of traditional life milestones might in fact be in an effort to build a financial situation where one could more comfortably raise a family and therefore afford things such as a private vehicle, which was repeatedly emphasised in both sessions to be the most convenient travel option for those with children. It was implied that this trend was related to the changing economic environment.

Provincial participant: *The longer you are studying, that might have you on the bus for longer.*

Urban participant: *...People are starting families later which means you can use public transport for longer I suppose.*

Urban participant: *I think a lot of [my friends] did delay starting a family so that they could work for a few good years first... and have that sort of fall-back money there so that they can use their cars all the time, and have a couple of cars...*

#### DRIVER LICENSING SYSTEM CHANGES

The provincial group stated they felt it was harder to get a licence today than previously in New Zealand, which may have affected the number of younger people who attained their licence, in particular going through to their full licence. Cost and lack of incentive to follow through to a full licence were also identified as contributing factors.

Provincial participant: *A lot of people are failing their licences now aren't they? I think they're a lot stricter, so you either take the risk and drive without a licence, or you don't have the car.*

Provincial participant: *Well ... I'm still on my restricted and I'm 29... It's expensive.*

Provincial participant: *I can't think when I was on my restricted, when I was studying, that it actually stopped me from doing anything that I particularly wanted to do at that time. It wasn't a barrier.*

## EVOLVING VALUES

Those in the provincial area acknowledged there might be slightly less of a need to value a car and have a licence today, due to improvements in the provision of alternative modes; however, overall they still valued having their own vehicle and obtaining a driver licence and felt there was a gap in the current level of public transport service available. In relation to public transport use being a new social norm, it was emphasised that this was not the case in Hawke's Bay; however, it was recognised this was probably due to it being a small centre with little public transport provision. Those in both areas overall felt the evolving values of the New Zealand public resulting in an increased demand for public transport were not necessarily being met by the level of service available.

Provincial participant: *Not in Hawke's Bay it's not [a norm to use public transport]! ... It all comes back to 'Is it the dog wagging the tail or the tail wagging the dog?' Is it that the culture is not to use public transport because the public transport is cr\*p or is there sod-all service because there's no demand for it?*

Urban participant: *I think there's a lot of people out there who want to be using public transport as well and are just sort of looking for ways to make that happen... and so someone needs to be stepping up to actually meet that need.*

Provincial participant: *[I think there's a trend towards becoming] less dependent on a car, more like trying to use public transport... I don't think it's like that in Hawke's Bay but if you go anywhere else, like friends in Wellington, they... are really strong with it.*

In the urban focus group, all participants agreed there was a growing social norm towards using public transport. Further evidence of this potential shift in values is summarised in the section below discussing environmental consciousness.

## CHANGING SYMBOLS OF STATUS

Overall, there were mixed findings around the status attached to car ownership for younger people today. Younger participants at the provincial group (eg those 25 and under) stated that an important status symbol for them was a car, or alternatively a job that paid well. Comments made at the urban focus group reflected similar viewpoints:

Urban participant: *Definitely when I was a student it was [a status symbol].*

Urban participant: *I'd say it's cooler to have a car... but I don't think it's that much of an issue I suppose.*

However, others saw car ownership as the opposite, or purely functional and not related to any perceptions of status.

Urban participant: *It's definitely not cooler to have a car...*

Urban participant: *In terms of status, that's not really a factor [for me]... and my peer group as well... [owning a car] is for pragmatic reasons, not for status reasons."*

Older members of the provincial group saw the greatest status symbol for them currently as having a house, although they acknowledged that such status symbols change over time as one ages:

Provincial participant: *It changes though, a lot through life.*

Provincial participant: *It becomes more practical I guess, the older you get.*

#### INCREASING ENVIRONMENTAL CONSCIOUSNESS

A recurring theme throughout the conversations at both focus groups related to a perception that environmental consciousness was increasing among younger people, and that this related to preferred travel choices (with public transport mostly seen as more environmentally friendly than using a private vehicle).

Provincial participant: *I think it's almost ... a bit embarrassing, if you're just driving a car... you feel ... embarrassed because you should be getting a bus or you should be biking because you're driving too much... like you should make the effort.*

However, it was evident that increased motivation towards being environmentally conscious did not necessarily translate into behavioural change, particularly where a perceived compromise or sacrifice would have to be made by the participant. Therefore, public transport could be seen as a preferable travel option from an environmental perspective, but it was unlikely a travel mode change would be made in its favour where it was not seen as convenient.

Urban participant: *I think ideally I'd like to be more environmentally friendly [by taking public transport] but it's just, it's not convenient... I'm kind of putting myself back just so I can save the environment.*

Urban participant: *I've got a friend who lives [far out of the city]... she'll catch the bus [to work] and she's got a bicycle, she cycles a lot... so she makes a real, environmental stance actually, for her in terms of using only public transport. So it is very doable even if you live [far out] but it does necessitate real effort.*

Participants in the provincial focus group also cited perceived increase of alternative active modes as evidence of increasing environmental consciousness among younger people in New Zealand.

Provincial participant: *There's a lot of people on skateboards and bikes that could potentially have a car instead too. There's been a huge surge of cyclists in the last couple of years.*

Provincial high school student: *There's a lot more people who bike to school now than there used to be... and there's probably 80% that take a bus, then the others either walk or most of them bike.*

When asked about the reasons for the increase in cycling, participants noted both the improvement of infrastructure in the area, and factors such as environmental and health consciousness.

Provincial participant: *...Since they put the rotary pathways in around here there's been a massive jump in cyclists.*

Provincial participant: *Health consciousness is definitely in there somewhere, because there's a lot of people out there running as well, and if running wasn't making you fitter I can't see why too many people would do it. If you do like a 10k run or something, and you just end up back at home, you're not going anywhere, you're just mainly doing it for fitness.*

## PUBLIC TRANSPORT IMPROVEMENTS

The provincial group noted that improvements in the public transport system in their area had not been sustained in general, the Express bus being the best example of this. The lack of accessibility of the public transport system was identified as a major contributing factor to perceived low patronage.

Provincial participant: *The Express bus was an improvement, but that's gone now though so now it's not an improvement. It just came and went, didn't make enough money I guess.*

These participants did note perceived improvements in other areas of New Zealand, however, and so recognised that the density of the population in their area was related to their perceived quality of the public transport system, which was related to increased patronage. For example:

Provincial participant: *Auckland seems to be getting there with the electrification of rail and things like that, and certainly they've improved in the reliability stakes, but Wellington is almost the pinnacle of public transport in New Zealand... Part of it is because of the way the city is laid out, where you have dense pockets of people and it's easy to organise trains and buses around that... layout. But somewhere like Auckland, where people are everywhere, it's more difficult.*

These participants were therefore aware of the benefits of densification for public transport provision. Participants also acknowledged that planning for transport around specific large-scale events in the region was generally good, which meant that these services were well used.

Provincial participant: *Usually locally there's fairly good organising, like for some events, things like the Mission concert, they'll have centralised parking away from the venue – you go there rather than crushing in cars at the venue. And then you get a bus in from there.*

However, there were other current gaps in service that participants felt were major, such as a lack of a bus service to the Napier airport.

Provincial participant: *There's no bus service at all to the airport. And even worse, less than 100 yards away from the airport is a rail line, in fact we've got a rail line running straight through the CBD of both cities and there's no passenger service.*

Provincial participant: *"The Art Deco bus, tourists have been getting on that in town, getting off at the last stop... and walking the last 2k to the airport... you've got to put [services] where people actually want them!*

Those in the urban focus group overall recognised there had been improvements over time to the service in Auckland, which they felt had and would continue to increase usage among the population. Improvements in service frequency and the quality of the vehicles (including modernising of the fleet and installing new features such as television) were specifically mentioned in this.

Urban participant: *When [my friends and I] were students the buses were terrible... and now... a lot of students really just catch the bus because it is so much more feasible. There's a bus that goes through uni I think every 10 minutes, as opposed to once an hour, which is what it used to be.*

Urban participant: *The quality of the buses, when I was a student they often leaked... and they often smelled... the chairs would be falling off the structures and the buses now... I feel they're all pretty much air conditioned, they all feel pretty new... it's more appealing.*

Urban participant: *I suppose always trying to improve it to encourage sort of the next generation to use public transport more, because obviously traffic was bad...*

It was also commented in the urban focus group that increasing congestion had impacted on public transport usage, encouraging the introduction of bus lanes and increased ridership to avoid such heavy traffic.

#### EVOLVING TECHNOLOGY

Participants from both groups reported that changing technology in recent times had affected travel patterns. For example, the introduction of the internet was seen to have reduced the need to make certain trips.

Provincial participant: *Back in the day, if you wanted to check your bank balance you'd go to the ATM, but now you just do it at home, just out of convenience. With online banking and stuff like that it's just a bit easier.*

It should be noted that while changes to technology might result in a reduction in trips, they could conceivably result in longer trips where housing decisions were made based on an ability to telework (eg work from home) or travel less overall. This could mean people might be satisfied with living further from city centres; however, this possibility was not specifically discussed in the focus groups.

New technology was also discussed in terms of how it had made improvements to participants' travel; GPS mapping for directions, real-time information provision regarding congestion and payment/signage systems for public transport in Auckland were specifically mentioned. It should be noted that as well as identifying these improvements, ways they could be enhanced were also discussed. For example, it was emphasised that topping the HOP card up should be made easier, through both additional means to top up (including online and ensuring all machines take eftpos and credit cards in addition to cash) and clearer communication around how this could be achieved.

Urban participant: *[GPS mapping] saves so much time, rather than pre-planning, printing... your routes...you just type it in, it's done, you listen to it, you go... It's interesting because you always thought that's the quickest way to get somewhere and you see different [routes] and that's actually quite cool... quite helpful...*

Urban high school student: *My mum works ... [where] often the traffic ... is really bad so sometimes she'll have a look on her phone and ... if the traffic is really bad, she'll choose to stay at work for longer, rather than being in traffic for that time.*

Urban participant: *The Hop card is handy... the only problem with it is you can't top up online, you have to go to a shop, and it has to be a specific shop that does it or they have machines somewhere but they're quite unavailable as well.*

Urban participant: *Until recently if you wanted to take a train and then a bus the cards weren't the same... they've put it together now which is handy...*

Urban participant: *I do think [those VMS bus signs] are really cool, and we should have more of them, everywhere, so we know where the... bus stops actually are... and linking them up to Wi-Fi so if you have your phone and it was linked to the bus and the bus estimates it'll be 4 minutes away and then it was linked to the sign, and then you could link the sign to an app on your phone, then it would be more real-time.*



Several participants also discussed the Maxx website, which was seen as helpful in some situations, but needing some improvements to make it more user friendly.

Urban participant: *The Maxx website... can be pretty handy, it's not very accurate though, they don't have all the bus services on there... they have certain bus companies on there... so a bus can come that isn't on the timetable... They also have a digital timetable but it's not in real-time... it'll say the bus is five minutes away, but that doesn't necessarily mean it's five minutes away, it could be stuck in traffic or it could be early... so it would be quite helpful if that was in real-time... you can get the app on your phone which will show you what the bus times are, but it's the same thing, it's not real-life...*

Urban high school student: *Another thing about the AT website is that everything is done by stop numbers and you're never going to know a stop number.*

Both focus groups were specifically asked about the impact of social media on their travel patterns. Overall, opinions and experiences of this were mixed, with some reporting that their use of social media reduced their need to travel for socialising, and others suggesting the opposite (with it being seen as a means to organise social outings). Some felt their level of face-to-face interactions with family and friends had stayed constant with the introduction of social media, with social media interactions allowing for interaction with a wider range of people than prior to its widespread use. Others felt they used social media as an alternative to face-to-face socialising. As a general rule-of-thumb, this was more common among younger participants who had fewer travel options and less freedom.

Provincial high school student participant: *A little bit, yeah I guess it is [replacing face-to-face socialising] in a sense [for me].*

Provincial tertiary student: *I can kind of relate to that actually with study because a lot of it is online, and a lot of group work you'd usually go and meet up somewhere and do something as a group, but now you can just do it all from home. You don't have to go anywhere to meet up.*

Provincial participant with children: *For us, if we are going to see someone, we will go and see them. I think what Facebook has probably done for me personally is that I'm probably contacting people more than I usually would, and that's probably over-and-above going and chatting to them, not instead of.*

Urban participant with children: *If anything [social media] has increased [my travel] because we have all these coffee groups that like to get together and... that's kind of through social media.*

Urban participant: *...Social media is more the means with which you organise the group... it maybe becomes more frequent because you're more accessible to more people more of the time.*

#### 4.2.2 Previous changes to travel patterns

In order to assist participants anticipate how they believed their travel would vary in the future as they moved through different life stages, both focus groups were asked to think about and discuss how their travel had changed in the past as their lives had changed. In general, there was a pattern in that people were more likely to use public transport as a student or while travelling overseas in cities with quality

public transport systems and then more likely to begin using a car to a greater degree, particularly after having children. It was also very evident that being let down by a public transport system had very lasting effects on mode choice for many people.

Provincial participant: *When I was at University, I don't think I got in a car once because we lived in Wellington so we just walked around. At University I didn't have a licence and I didn't really have a need to and then after uni and then starting work and meeting my wife, and she had a car and so I could just jump in the car. But then having the job out in Hastings now is quite a big change for us, so that's obviously brought the bus into our travel patterns.*

Urban participant with children: *For me growing up, I grew up in Wanganui... so there were very limited public transport options there anyway, and you can walk most places or just drive... then I moved to the UK for a few years and public transport there is easy ... so I just used that. And then I was a student so I used it then because I didn't have car because I was a poor student, and that's when I developed my hatred of Auckland bus services, which is perhaps irrational now but... yeah, too many hours wasted sitting, you know, waiting for buses... and ... I think having my job last year as a rep, learning Auckland better and getting to drive and things was important. And now I'm a mum, I'm using my car... so yeah now I definitely can't use public transport, 'cos yeah, too hard.*

Provincial participant: *I've lived in London and Melbourne and there I wouldn't even think of driving anywhere. But here I just wouldn't even know how, unless I put some time into looking up timetables and stuff, I wouldn't even know.*

Provincial participant: *Perceptions of reliability had a big impact for me, when I was studying I cycled a lot, right to the point where I was carrying so many books I was actually damaging the bike but then when I started working retail the first day I thought, 'nah I'll be good, I'll take the bus'. So I got to the bus stop, there in plenty of time, and the bus never showed, I was late for work on my first day. And that turned me off buses for several years.*

## 4.2.3 Anticipated future travel patterns

### 4.2.3.1 Anticipated travel patterns as move through next life stage(s)

Following discussion of how travel patterns had previously changed for participants, the groups were asked to anticipate what they thought would be the next major life stage they would go through and discuss how they thought their travel patterns would change based on this. Comments made throughout this discussion followed the same pattern as discussed above, with university correlating with increased public transport and alternative mode use, and milestones beyond this (such as starting a family) being related to an anticipated increase in the use of a private vehicle. When buying a house was the next major goal, there was evidence that participants would seek out locations with good accessibility; however, it was recognised that budgetary restraints would sometimes result in an increased need to travel via private modes due to a need to purchase properties in more affordable suburbs. One participant was also actively seeking to reduce their private vehicle use through moving to rent a property closer to their work. Some example comments are included below, organised by next main stage identified by participants.

#### STARTING UNIVERSITY

Provincial participant: *I'm going down to study in Wellington so I'll be using more public transport and walking around easier. And then later on get a car once I'm finished.*

Provincial high school student: *I want to go to a Wellington University so I suppose ... I'll be walking everywhere.*

Urban high school student: *I'm starting uni in a year and a half so... I'll probably just do what my dad does and catch the ferry... so unless there's a big change in the buses I'll probably be driving and using that ferry, which is actually pretty good.*

#### MOVING INTO FULL-TIME WORK

Provincial participant: *Have my own car so that I can drive myself to work.*

#### BUYING A HOUSE

Provincial participant: *For me ... if we bought a house, I don't think I'd be as close to work as I am now, so I think we'd definitely have to do the second car thing and my driving would increase.*

Urban participant: *I'll be buying a house which means I'll be further out of the city... so I'll probably get a car.*

Urban participant with children: *We're looking at buying a house at the moment... proximity to the train lines is part of what's sort of influencing the areas that we're looking at... it's got to be ... cost-effective for each of us to get around... so that means a car and using that as little as I can... and him being able to us public transport to get to work and back, so that we can just have the one car...*

There was evidence in the urban focus group that where housing choices could be made to maximise accessibility, there were greater perceived benefits of this.

Urban participant: *We bought a house just over a year ago... just across the park from a bus station and ... before we bought it on paper it was a great bonus because we thought well, resell, that'll be handy and living in it now for more than a year I've really noticed how much of an impact it has had on our lives... I really like that I don't have to turn my car on more than maybe once a week... it's a really big benefit for us living that close to a station.*

#### STARTING A FAMILY

Provincial participant: *... I can imagine us getting two cars if we have kids.*

Provincial participant: *I think for me personally, getting a job and then having kids, I'll be more dependent on a car. I can't imagine trying to get kids around on a bus and carrying all that stuff.*

Provincial participant with children: *We'll probably consider a second car a bit further down the track, when we're not paying squillions of dollars for our kids to be at day care every day, it's cheaper when they're at primary school. Potentially down the track, because we've got a house, you can refinance and stuff, and with job opportunities and stuff like that we'll have a bit more disposable income... I think with going to work... with being able to leave when you're ready, it's going to be easier. And I think driving is just a convenience. And at home it's good to have two cars for particular situations as well.*

Urban participant with children: *We've just kind of had our big life change [having a baby]... so for us it's going to be... using the car... my partner using public transport as much as he*

*can. And I guess as baby gets a bit older, I'll be sort of trying to use more public transport depending on how... reliable it is, convenient it is and so on.*

Urban participant with children: *For us, we're planning baby number two so... my wife won't come to work so she'll need a car because I'll have my car [at work], so we'll get another car, a second car...*

Urban participant: *If we start a family I'll just use my car more than I do now.*

Therefore, even though participants did not necessarily want to use a private vehicle or get a second one, they felt it was necessary with children to have a viable transport mode. The connection between having a home and family and increased private vehicle usage was all seen as causal, as highlighted in the words of a participant below:

Provincial participant: *...with the house prices, if you want to afford a house, there has to be two jobs, so therefore you have to make your transport flexible around the rest of your life in order to sustain that... yeah so to have the house, you've got to have two jobs, and then because you're both working, you need the other car.*

#### **4.2.3.2 Delaying of traditional life stages**

Participants were questioned around the trend observed among younger people today of delaying traditional milestones in life, the reasons they felt this was occurring and whether or not they thought it would continue in the future. This is clearly important as different life stages (eg attending university, buying a house, starting a family) are seen to relate to different travel patterns, therefore, whether or not these life stages will be delayed or avoided all together have important implications for transport planning.

All provincial participants agreed they believed this delay was occurring and offered a number of reasons for it, including:

- a tendency to travel overseas for longer periods from a younger age
- a tendency to remain in tertiary education for a longer time due in part to the previous introduction of the Student Loan Scheme
- a desire to provide for one's family, and therefore delay starting a family until in a more comfortable financial situation, which included waiting until one could obtain a higher paying job.

Provincial participant: *I think that's a big thing, housing and everything else, but particularly housing is a lot more expensive, so to get yourself into a position where you can financially sustain a family you have to get yourself into a position where you are earning a lot more which means a delay.*

These explanations for the trend suggest it is likely to continue into the future, with all three proposed explanations perceived to be unlikely to change any time soon. The urban participants were also in agreement with this, suggesting they believed the delay would continue into the future. Because of biology (eg a limited time in which people can procreate), they also commented that they did not feel it would be an increasing delay.

Urban participant: *It probably won't get any later 'cos it kind of can't get any later than it is because... you can't start a family much later than now.*

Urban participant: *I think the population will not expand as quickly as it has been... I think people are having less and less children. It's more traditional to have kids later or not have as many kids now.*

Urban participant: *It's socioeconomic as well, I live in an area that's quite wealthy and so a lot of my friends nearly all went to University so you have that expectation of you'll have a specialised job, so of course you're delayed [in having children]... In terms of things like marriage I feel like it's starting to get more and more arbitrary so it's not necessarily is marriage getting later, it's if you want to get married at all. It's much more of a choice and if you do want to get married, it doesn't really matter when that happens. I think in terms of buying a house, absolutely it's happening a lot later.*

#### 4.2.3.3 Continuation of current travel patterns among Generation Y

It was then assessed whether or not participants felt the differing travel patterns among younger people they had discussed would continue over time. This questioning was made with specific regard to whether or not they felt they would change to match the travel patterns of older people they knew as they aged (eg their parents), or whether they felt they would continue to have differing travel patterns despite going through the same life phases.

Overall, the participants tended to think they would have fairly similar travel patterns to their parents over time as they went through the same life stages. However, some felt there were cultural changes among their generation that differed from older generations, such as stronger environmental consciousness. It is important to keep in mind, however, that increased environmental consciousness within the cohort had not yet necessarily translated into behavioural change in relation to transport, except where it had been seen as convenient, therefore adding some complexity to this assertion.

Provincial participant: *Because of those lifestyle changes that [my parents] have obviously gone through [I think my travel patterns will probably match those as I age]. But I think we still probably think... more about the environment side of things more... my parents probably wouldn't think about that, well not as much anyway and wouldn't change what they do. Whereas I think younger people perhaps would, they'd think about it a lot more.*

In line with this, it was also noted in the provincial group that travel patterns were very dependent on the level of service available (and therefore how convenient and viable public transport modes were for individuals); hence the effect as Generation Y aged was expected to vary by region.

Provincial participant: *It's so dependent on the level of service which is actually available, that's the thing that drives it, so it will be very regionalised, depending on what the service offers in various regions.*

Other personal circumstances were also identified as important to travel patterns over time, such as employment opportunities and discounts available past the age of 65.

Urban participant: *I don't think [my travel patterns] will change according to age, I think it will change according to jobs.*

Urban participant: *I think they'll increase use in cars... unless... you get to 65 and then use your Gold card and retire that way.*

#### 4.2.3.4 Desired future living situations

Given the importance of living situations, particularly in relation to the density of the area lived in for transport patterns and mode choice, both focus groups were questioned as to whether they had any desire to move to a smaller or larger area (eg those in the provincial focus group were asked whether they had any desire to move to a urban area in the future, and vice versa). Additionally it was explored whether transport accessibility was related to any desire to move.

In general, those in the provincial focus group did not want to move to an urban centre, and those who did saw it more as a short-term move (eg for tertiary study). Where they would consider moving, they stated that transport options would not be an important factor in such a decision. An exception to this was the possibility of moving to Wellington, where it was suggested the level of service available there would affect possible living situations; living out of the CBD would save money and yet still be accessible via the public transport system. This was also true for those who were moving to Wellington for tertiary study, where the accessibility of transport was seen as beneficial with decreased travel costs. Again, those with children implied that public transport was less attractive for travel with children, and so it would not be a major attractor to moving to an urban centre.

Provincial participant: *I wouldn't move for transport purposes, I'd move for the lifestyle.*

Provincial participant: *[If I moved to Wellington] I'd more than likely, because of property prices... be living in the outer suburbs because you've got accessible and effectively functional public transport. But that's the only place in New Zealand that I can think of where I'd actually go and organise where I'm going around public transport because the rest of it, even Auckland although it's improving, doesn't really work.*

Provincial participant with children: *I don't think we'd move. I think we would realise that the public transport system would be very handy, but probably more handy if we didn't have kids...*

Participants in the urban group actively considered accessibility where they rented and purchased property (both for resell value and for their own travel to/from work), with multiple participants discussing such a trend in both their prior and future housing choices. They generally did not want to move to smaller areas (with the exception of one participant) and recognised they would need to use a private vehicle more often if they did, due to limited transport options in these areas.

Urban participant: *I wouldn't want to move [to a provincial area]... I'd guess the public transport wouldn't be that great... so I'd probably use a car.*

Urban participant: *I'd love to move somewhere out of Auckland, I'm not an Auckland person but it probably won't happen for quite a few years, but when it does I don't think that transport would really play into it all that much, we'd just have the car... but in most other cities... you can get places, you know it takes 5 or 10 minutes to get most places, so it's not really an issue.*

These findings together imply that those in Generation Y may shift little between provincial and urban areas overall, depending of course on job opportunities and individual preferences. Comments by participants implied that within these areas younger people would actively seek to maximise accessibility in housing choices (where budgets allowed for this).

#### 4.2.3.5 Those younger than Generation Y

The focus group sessions included a discussion of how participants thought those younger than Generation Y (eg currently aged under 15 years) would travel over time as this group aged. There was a suggestion throughout both sessions that children today and in the future were likely to have a potentially higher level of exposure to public transport than previous generations, due to a motivation among their parents (mainly members of Generation Y) to provide this experience. Note that, as discussed above, parents attending both sessions generally did not see this as a viable regular mode of transport for trips with children, therefore, children travelling with parents would be likely to have sporadic exposure to this mode.

Provincial participant: *I'd probably want to instil good habits into them... [so] if it was available and a good service and stuff, I'd want them to know about [public transport].*

Provincial participant: *Yeah I think I would take them on the bus occasionally, not like every day, but just so they would know what it's like and what's available.*

In line with a likely higher use of public transport among this younger generation due to anticipated parental influence in at least intermittently using public transport, the urban group felt those currently aged under 15 years would be more likely to use public transport to a greater degree than seen in previous generations. Additional reasons for this included a higher level of independence among teenagers and ongoing improvements to the public transport service. Accessibility and quality of the public service would be important, therefore, it was anticipated there would again be regional variation in travel patterns and transport modes across New Zealand for this younger cohort.

Urban high school student: *The independence of under 15s has gotten a lot greater over the past... generation such that, you know, 13-14 year olds are going out by themselves, with friends to malls, to a skate park, to whatever, so that they're detached from their parents and they need that transport, they need to be able to get where they want to go. So I think under 15s travel patterns will only increase the use of public transport as they want to go out more.*

Urban participant: *And when I was 15, public transport wasn't that great... and it's bound to get better... plus more will use it so hopefully, even if we don't do this massive push or whatever... I can definitely see it as an increase.*

There was a belief in both sessions that this younger generation would be interested in obtaining a licence and private vehicle. Some suggested that owning a vehicle might in fact be easier than it ever had been before, due to a higher perceived affordability of second-hand cars and an increased willingness among parents to assist with the purchase cost and ongoing maintenance.

Provincial participant: *I see a bit of a trend at the moment for a lot of the younger people to have a lot of cars. I've probably seen that over the last 5 or 10 years or so, that it's quite popular to have a car... When I was that age I don't believe everyone was driving around, you know, being so young and spending so much money on cars and stuff.*

Provincial participant: *I was just going to say that about accessibility, I think that my parents, like, they would have had to work for their car, whereas now days I think parents are a lot more likely to buy your first car. Because in my dad's parents only one parent worked, and now my parents both work, so it's a bit more affordable to the car and help with the registration and the insurance...*

Provincial participant: *Cars are effectively cheaper than they've ever been... we have a build-up of a very large fleet of vehicles in New Zealand [now]... so we have more and more cars getting cheaper and cheaper which makes it a lot more accessible... there's no barrier to getting one really other than the drivers' licence.*

The unknown impact of technology was also acknowledged in the provincial group as a potential influencing factor on travel patterns as those currently aged under 15 continued to age.

Provincial participant: *It depends what impact technology has, I mean I'm not saying that they'll be flying around like the Letsons or anything, but like at the moment we do find things a lot more convenient like checking the movies online and stuff instead of going into town, well, that's only going to escalate as time goes on.*

#### 4.2.3.6 Public transport usage in the future

Participants were lastly asked about their perceptions of the probable rate of public transport use in the future. Both groups of participants felt there was a definite opportunity for use to increase over time, with a recognition that for this to be achieved there would need to be service improvements. Petrol prices were also identified as a factor that would potentially necessitate an increase in public transport use in the future.

Urban participant: *I think [public transport use] will increase, because they are obviously trying to do something about it... it has got better and they're always trying to make it better.*

Provincial participant: *If you made changes to make it more accessible, easier, more available, and more effective and efficient then you could increase [patronage]... while service [here] has improved, it's not improved enough to make it a general option.*

Urban participant: *I think most people would prefer using public transport, I actually find driving quite stressful, traffic and you have to pay attention, stuff like that, so public transport is actually nicer. But it's having the balance of if it's still is better than having a car, just because it's more handy having a car.*

Urban participant with children: *I actually hate driving, I'd much rather use public transport more easily, if it was actually logical in Auckland, which I don't find it to be very logical. So if it was easier and more accessible and it went more than just into the city and out again I'd probably use it a lot more.*

The types of interventions felt to be needed included increasing the frequency, coverage and reliability of services, and also making the services more affordable.

Urban participant: *I'd say the routes would be where they should go.*

Provincial participant: *It's got a lot to do with the actual level of service and the level of accessibility of that service where ever you are. In Wellington a very large relative proportion of the population actually simply doesn't drive, because the public service is organised to run really, really well. Here it's relatively inaccessible, you don't know about it, it's hard to find, the service level has been at times ranging from poor to incompetent... so on the basis of that you say 'I need to get to this place' and if it's something like work, you need to get there, it's*



*not a matter of 'I can go a bit later', you need to get there, so you pick the service that's going to be the most reliable. And in general, you can't rely on it.*

*Urban participant: Something has to give, either first the transport companies say 'oh let's give it a go' or it could take 20 years before people change and by then Auckland will be 3 million people so again it will be the same problem.... So someone has to do something about it and proactively, whether that is a discount, trying to encourage people to use public transport. Because the moment they do, there will be more money to put more buses on the road and everything will just start working. But somehow, the ball has to start rolling.*

Both groups asserted that if there were service improvements, this would increase public transport usage for all participants, with the exception of those with individual circumstances that meant public transport was not a viable option (eg those who could walk to work, those whose job required a company car to be used or those with young children).

Both groups were then questioned regarding specific improvements they would value in their areas. Key factors for the provincial group included increased information and knowledge, as well as increased reliability, service frequency (which would assist with overall travel times), off-peak services and expanded services (eg out to the airport, at least for main flights). The ability to top-up the 'GoBay' card online would be an attractive improvement for those in Hawkes Bay, particularly as carrying cash was uncommon among the group. The provision of Wifi was also identified as attractive. The cost of public transport was less of an issue for this group, with it being seen as quite competitive with a private vehicle, particularly when parking was also taken into account.

*Provincial participant: It's mainly just the times [that would make the bus more attractive to me if they were changed].*

*Provincial participant: I'd use it if I knew about it.*

*Provincial participant: Give me an app and make it accessible... Make it quicker or give me something to entertain myself on.*

*Provincial participant: An updated timetable... [something you could get] on your phone.*

For the urban group, the main improvements identified as attractive were improving coverage and travel times (including through the provision of additional bus lanes), but also payment systems and other technological advances or provisions. All participants agreed that increasing coverage, frequency of services and reliability were the most attractive improvements that could be made, with other improvements seen as 'nice to haves'. Real-time information provision was also seen as particularly attractive. Participants additionally discussed whether an intervention aimed at lowering prices would motivate more people to use the system, and the importance of increasing park-and-ride facilities and improved feeder services as increasing house prices forced people to live further out from the city centre.

*Urban participant: I think more important is reliability, having regular buses, I'd probably start using it and I'm sure 90% of other people would use it more. I think that's the key factor... reliability, frequency and affordability I think is the way to go.*

*Urban participant: Yeah if they were reliable and on-time and frequent, 'cos I just got sick of, when I was a student, sitting at a bus stop waiting 45 minutes for a bus that was supposed to be every 10 minutes and then see 5 go past and not stopping... that was my nightmare for years and I hated them so yeah, until they pick up the game there...*

Urban participant: *There's not enough bus lanes, so buses just get stuck anyway just like cars, so if there were more bus lanes than buses would be a bit more streamlined and they'd be on schedule...*

Urban participant: *I think they would be surprised, if they lowered the price [of fares], just take a bit of a risk, you know, a six month risk, or a three month risk... do a big advertising campaign... \$2 whatever... I think they would be surprised, like 50% would [use it].*

Urban participant: *If there was free Wi-Fi on a bus it would be pretty handy... 'Cos when you're on the bus half the time you're just on your phone or keeping in touch with people to pass the time...*

Urban participant: *...The signs sometimes say delayed, but then you don't know how delayed it is, it could be a minute delayed or 10 minutes or half an hour... and then sometimes you're waiting and waiting and then it just disappears.*

The urban participants felt affordability could naturally become less of a barrier as patronage increased from service improvements, with increased patronage allowing service providers to reduce prices. Cycle facilities on the bus were not seen as particularly attractive for the urban group, as they were considered inconvenient for other passengers by slowing everything down while the bicycle was attached. The comment was made that such facilities are first-in first-served, meaning they cater to everyone and make planning of trips relying on such services difficult.

#### 4.2.4 Additional comments

At the completion of the sessions, participants were asked if anything had been missed that they felt was important to younger people's travel either currently or in the future. The provincial participants added the following comments:

Provincial participant: *...making walking more of an option.*

Provincial participant: *More bike lanes... and more driver education... drivers don't look for cyclists... more driver and cyclist education actually might be useful thing... and some enforcement of the helmet requirements for cycling would be another good one.*

Improvement of cycling infrastructure and increased education around cycling was agreed by all provincial participants to be a positive intervention which should be prioritised. This interest in active transport infrastructure among those living provincially may reflect a lower expectation of improvements to their public transport system being major enough for the service to be seen as convenient. This interest is also in line with the trend towards increased reliance on cycling for younger New Zealanders found in the analysis of the New Zealand datasets (see chapter 3).

Those in the urban group felt the session had been comprehensive and did not have additional comments to make; however, these participants were very interested in the probable timeline for improvements to their public transport system, being eager for these to be introduced as soon as possible. It was clear that the group was glad the work was being undertaken.

## 4.3 Summary and conclusions

It is important to keep in mind that the findings from the group sessions are preliminary, being based on a small sample of participants and therefore requiring further exploration prior to firm conclusions being drawn. This is achieved in the next component of the work, the online survey, which was developed based on the findings of the focus groups to further explore important areas of interest. Following is a summary of the key findings of the focus groups, including interpretation of their possible implications.

### 4.3.1 Overall perception of demand for public transport in the future

- Overall, there is support for public transport use among members of this generation continuing into the future. Key reasons for this include increased participation in tertiary education, delays in milestones such as home purchases and starting a family, increased viability of the mode due to service improvements and increased environmental concern.
- Importantly, the children of Generation Y are perceived to have greater exposure to public transport due to their role models and increased levels of independence, suggesting a possibility for even greater demand for public transport in the future. On the other hand, there is also a perception that this group may have an increasingly high rate of access to private vehicles as they age, owing to a high level of accessibility to these (due to the decreasing value of second-hand cars and increased disposable income among parents).
- There appears to be an increasing social norm among younger people in New Zealand about using public transport in urban centres, although this is less likely to be the case in lower density areas with lower-quality public transport services.
- There is an indication that as younger New Zealanders move through the same life stages as older generations their travel patterns are likely to match those of their older counterparts, with increased private vehicle use being associated in particular with starting a family. The desire to sustain public transport usage is present, however, and service improvements may act to mitigate the tendency towards private vehicle use as individuals move through life stages, as well as secure return ridership as children age.

### 4.3.2 Decision-making around travel mode

- The availability of different travel modes is the most important influencer of travel mode choice for younger people, with affordability and safety also coming into play. This is in line with the literature, and shows that Generation Y is similar to other travellers in this way. Overall, whichever is the most convenient mode (for personal situations) is likely to be the one chosen.
- In provincial locations there are fewer 'pull' factors for using public transport than in urban areas, with levels of service not being seen as adequate. For urban dwellers, 'pull' factors (such as high service frequency) are complemented with additional 'push' factors relating to parking costs and congestion that drive users towards using public transport. These factors again are not unique to this generation.
- What may be unique to younger people is an indication of high latent demand for public transport. Overall, there are positive attitudes towards using public transport among this group and a desire for it to be more convenient so this can be achieved. Therefore as long as improved public transport service is provided, there is an opportunity to increase ridership.

- Private vehicles are an important transport mode for younger people, being employed for at least 50% of the sample's main trips. This is in line with the New Zealand trend data for this cohort reviewed in the analysis of the New Zealand datasets (see chapter 3).
- Both attaining a licence and having access to a private car are valued among younger New Zealanders. The analysis of the New Zealand data showed that licensing rates for the Generation Y age group were currently lower overall compared with the peaks up to 2006, which may imply that licensing changes have had a larger influence over rates of licensing as opposed to a decreased desire to have a licence among this cohort. Having a private vehicle is also seen as a status symbol for some, which may differ from values overseas based on review of the international literature.

### 4.3.3 Attitudes and responsibility

- There is evidence to suggest that environmental concern is growing within this generation, so there is an increased latent demand for active and public transport. However, this may be masked by the level of increased effort (perceived or otherwise) required to shift to these modes, with an actual shift in transport behaviour towards using public transport unlikely unless it is seen as convenient. This is in line with Walton et al (2003) who found environmental attitudes did not influence travel where perceived effort was required.
- In urban areas where the level of public transport service is higher, using social marketing techniques to promote environmental responsibility may have a greater effect on behaviour (compared with more provincial locations).
- There may be increased interest among those in provincial areas for improved active mode infrastructure, which may be related to an inability (either perceived or real) for public transport to improve to a satisfactory level of service. The New Zealand datasets also suggest an increased reliance on cycling among Generation Y in New Zealand.

### 4.3.4 Home ownership costs

- There are suggestions that the cost of owning a home means home ownership is delayed for longer, which can lead to a delay in starting a family. This may be related to sustained public transport use prior to parenthood and suggests that the trend towards a delay in procreation compared with previous generations is likely to continue while housing market costs are prohibitive.
- However, this may be offset to some extent by the fact that increased house costs and urban sprawl push people to travel further away where land is more affordable, so that when a house is purchased car reliance is increased for this group, as well as the need for park-and-ride provisions in urban centres.
- Improved park-and-ride and feeder services were therefore suggested as interventions for urban sprawl. Reduced ticket costs were also suggested as attractive.

### 4.3.5 Dependents

- Overall, having dependents relates to higher car use, although some families can limit their car use to one vehicle. This provides some evidence to confirm that having children later and having fewer

children will mean public transport use may be sustained for longer. Public transport was not seen as a viable regular mode of transport for trips with younger children.

- Affordability has a major impact on people's lives. Some have to delay shifts like house purchases or having children until they can also afford the extra costs of travel associated with having higher car ownership and the cost of servicing a mortgage. Reduced ridership costs could therefore encourage single vehicle households with dependents to use public transport.
- There was an identified 'novelty' effect, where public transport travel was viewed as entertainment for children and used for irregular trips. Ticketing options focused on family travel could be a good incentive, not only to help with cost, but also to cater to this novelty effect and increase exposure for New Zealanders from a young age.
- Parents are concerned that when travelling with their children other adult passengers could be inconvenienced and also report difficulties due to factors such as there being no provision of safety belts. This could point to solutions like 'quiet' carriages which have been adopted in other countries for those that need a quiet space.

#### 4.3.6 Social and recreational trips

- There is evidence that Generation Y is very open to using public transport for social trips, including socialising while on board public transport (eg going to events or travelling to weekend sport as a group).
- However, even when public transport is highly accessible scheduled timing may often limit social trips. This supports the findings from the secondary analysis, showing that social and recreational trips have decreased for Generation Y in New Zealand.
- Social packages could work well for this group, such as integrated event ticketing, where ticket purchases to concerts or sporting events include a discounted public transport fare as part of the package (with an opt-out or opt-in option). Increased off-peak services would also foster increased social and recreational trips using public transport, and better-cater to younger people with irregular work schedules (such as shift workers).

#### 4.3.7 Symbols of confidence in public transport

- Overall, this generation recognises improvements that have been made in public transport over time, which provides some confidence in the mode. This is likely to be a motivator for increased future travel by public transport.
- Improvements that are visible to the public include the quality of the infrastructure, for example, buses that no longer leak and have better temperature control. However, service improvements in terms of frequency, reliability and coverage were seen as most important, with work still to be done in these in both urban and provincial areas.
- Experiences of a lack of reliability of services appear to be relatively common among younger people and have long-lasting consequences for confidence and therefore ridership. Consequently, improvements to reliability should be a key priority for providers who want sustained and high patronage.

- A loss of confidence is also observed when visible funding is taken away. The example here is the removal of the Express Bus in Hawke's Bay, where the ridership was deemed too low to be sustainable, and so this service was cancelled. When improvements are made to public transport there should be concern for the wider implications before reducing the level of service (people are inherently loss-averse and place greater weight on a loss than on a gain). Overall, this aligns well with the theory that visible national expenditure is an indicator of continued confidence or longevity of the public transport systems, which can be location specific. This is also observed when land values increase near improved rail services, due in part to the permanence of the route investment.

#### 4.3.8 Evolving technology

- Overall, there is a perception that technology is only going to get better, so some trips could naturally reduce and the quality of travel experiences could be improved.
- This is a 'real-time' generation, where there is a greater expectation of real-time, location-based information. For example, online information provision services all need to be linked to real-time GPS-based locations of public transport vehicles and this information provided to riders via updated timetabling. Meeting this demand is critical.

#### 4.3.9 Limitations

- While the focus groups were organised so the questions were very neutral to begin with, as the questions became more specific it was clear that public transport use was being examined. As such, there could be some level of social desirability bias in the responses that may over-represent public transport use.
- As previously mentioned, these findings should be treated as preliminary due to the small sample base. A targeted survey was developed in the next phase to obtain confirmation of key findings.

## 5 Study 3: Online survey

### 5.1 Method

#### 5.1.1 Procedure

An online survey was developed based on the findings of the previous phases of the research which aimed to gather quantitative data to further explore the key research questions. In particular the survey aimed to:

- measure baseline travel behaviour and preferences for those included in the Generation Y cohort as well as outside it, with a particular focus on public transportation
- examine preferences for future travel behaviour, with a particular emphasis on changes to travel behaviour through major life phases for these two groups
- explore previous changes to travel behaviour due to major life changes (to enable some assessment of the accuracy of anticipated future changes to travel through different major life phases)
- examine priorities for future public transportation improvements and interventions, as identified by New Zealand travellers themselves.

Note that transport modes other than public transport were examined to a lesser extent in the survey as these were outside the scope of the current project and would have significantly increased the survey length. The researchers also aimed to oversample those from the Generation Y cohort (born between 1979 and 1999 inclusive) to ensure a satisfactory sample base, while collecting an adequate control group of older New Zealand travellers at the same time.

The developed survey was reviewed by both the external project peer reviewers and the project steering group. In-house piloting was also undertaken to ensure ease of question comprehension and to reduce survey complexity. Survey Crafter 4.0 software was used to run the online survey.

Recruitment was undertaken through the use of a snowball technique, with all recipients of the survey link being encouraged to share the advertisement and survey link widely throughout their networks. A sample of AA members were sent the survey link via email, with this sample being complemented through use of Opus' existing extensive networks (eg via Twitter, Facebook and directly with key contacts). The link was sent to a number of university and student groups, as well as through public transport groups and forums (such as through Metlink and transportblog.co.nz). The link was also sent to focus group participants who signed up to participate in the survey component of the work, as well as to a number of people who had applied to participate in the focus groups but were not eventual participants (due to limited spaces). All respondents were able to enter a prize draw for \$1,000 worth of vouchers of the winner's choosing. This prize draw was included as a token of appreciation for participants' time and to encourage a high response rate.

In total, 1,191 people responded to the survey, 771 of whom belonged to the Generation Y cohort. It is not possible to calculate a response rate for the survey due to the use of the snowball technique (ie it is uncertain how many people received an invitation to participate in the research). Participants were asked if they were happy to participate in a future survey on the topic and 678 (57.1%) gave permission to be

contacted in the future about related research. The following sections provide a summary of the survey, the sample and the analyses undertaken.

### 5.1.2 Survey measures

Table 5.1 provides a summary of the measures employed in the survey.

**Table 5.1 Summary of survey measures**

Measure categories	Measures collected
Demographics	Birth year; gender; ethnicity; main weekly activity; highest qualification; household living situation; children in household; driver licence status; disposable income; time living in New Zealand; English first language; region; time living in region; area type.
Baseline travel behaviour	Main mode for main and other trips; frequency of different mode use for main and other trips; familiarity with local PT system; perceived quality of local PT system; previous experience with PT systems worldwide; perceived freedom in travel choices; access to private vehicle as driver and passenger; current PT use; mode shift predictors; main barrier to PT use; main attractor to PT use; use of technology to reduce number of trips.
Baseline travel preferences	Importance of convenience to mode choices; personal value of independence in travel; perceived attractiveness of PT; concern for the environment; travel choices based on concern for the environment; preference for travel that benefits health
Previous major changes	Previous life change affecting travel patterns; impact on travel patterns; reasons for changes to travel patterns; PT intervention that could have increased PT use at this time
Future travel preferences	Preference for future travel by PT, private vehicle, cycling and walking; preference for amount of future travel; planned travel by PT, private vehicle, cycling and walking in two years' time; planned overall amount of travel in two years' time
Possible future major changes	Likelihood of future major life changes; life change anticipated to have largest impact on travel patterns; anticipated impact on travel patterns; reasons for possible changes to travel patterns; anticipated PT use in indicated scenario
Public transport service improvements	Importance of possible PT service improvements to PT use in future scenario; ranking of top three most important service improvements to maximise PT usage at this time; anticipated PT use in improved PT scenario; willingness-to-pay for ranked service improvements

Note: PT = public transport

### 5.1.3 Sample

The final sample consisted of 1,191 respondents, 771 of which belonged to the Generation Y cohort (born between 1979 and 1999), leaving 420 in the older control group. For the Generation Y subsample, ages ranged from 15–35 years with a mean of 27.7 years (SD=4.9). For the control subsample, ages ranged from 36–79 years, with a mean age of 51.7 years (SD=11.2). Table 5.2 provides the gender and ethnicity split for the two subsamples.

Chi-square analysis revealed there were significantly more females and fewer males in the subsample belonging to Generation Y compared with the control group,  $\chi^2(1, N = 1189) = 15.9, p < .001$ . There was



also a difference between the two subgroups concerning the ethnicities they identified with, with the Generation Y group having a higher proportion of respondents identifying themselves as Asian or 'other' ethnicities compared with the control group where a higher number identified themselves as European,  $\chi^2(6, N = 1183) = 25.2, p < .001$ . This indicates that the Generation Y cohort sampled may be more ethnically diverse than the respondents in the control group.

**Table 5.2 Gender and ethnicity**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Gender</i>					
Male	398	51.7%	267	63.7%	***
Female	372	48.3%	152	36.3%	***
Missing	1	-	1	-	
Total	771	100.0%	420	100.0%	
<i>Ethnicity</i>					
NZ European	561	72.8%	335	80.0%	***
Asian	97	12.6%	27	6.4%	***
European (non-New Zealander)	31	4.0%	29	6.9%	***
Māori	28	3.6%	9	2.1%	
Pacific Islander	13	1.7%	5	1.2%	
Kiwi/New Zealander	8	1.0%	7	1.7%	
<i>Other</i> <sup>(a)</sup>	28	3.6%	5	1.2%	***
Not specified	5	0.0%	2	0.5%	
Missing	0	-	1	-	
Total	771	100.0%	420	100.0%	

\*\*\*  $p < .001$

<sup>(a)</sup> Other ethnicities specified for the Generation Y group included: African, Bhutanese, Chilean, Dutch, Indian, Latin, Middle Eastern, Pakistani, Persian, Russian, Sri Lankan and mixed heritage. Other ethnicities specified for the Control group included: Dutch, Indian, Middle Eastern, Pakistani and mixed heritage.

This increased diversity among the Generation Y cohort also appears to relate to increased diversity in the first language spoken in the two subsamples. As can be seen in table 5.3, members of Generation Y were significantly more likely to have a language other than English as their first language compared with the older control group,  $\chi^2(1, N = 1183) = 5.4, p < .05$ .

In relation to time living in New Zealand, the younger participants were significantly more likely to have always lived in New Zealand or to have lived in New Zealand from two to five years. In contrast, the control group was more likely to have resided in New Zealand for 10 years or more,  $\chi^2(4, N = 1183) = 33.5, p < .001$ <sup>9</sup>. Note that this measure does not provide clear evidence of country of origin as those who had been born in New Zealand and lived overseas for extended periods of time may not have endorsed that

<sup>9</sup> Note that the last three categories were combined in this analysis to ensure all cell frequencies were  $>5$ .

they had 'always' lived in New Zealand. This may explain why a lower proportion of the control group reported having always lived in New Zealand compared with those in the Generation Y cohort, as by a function of their age they had had increased opportunities to live overseas than those in Generation Y.

**Table 5.3 First language and time residing in New Zealand**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>First language</i>					
English first language	669	87.5%	384	91.9%	*
English not first language	96	12.5%	34	8.1%	*
Missing	6	-	2	-	
Total	771	100.0%	420	100.0%	
<i>Time living in New Zealand</i>					
Always lived in New Zealand	519	67.8%	243	58.1%	***
10 years or more	135	17.6%	132	31.6%	***
5-10 years	50	6.5%	26	6.2%	
2-5 years	44	5.8%	12	2.9%	***
1-2 years	12	1.6%	3	0.7%	
6 months to 1 year	5	0.7%	1	0.2%	
Less than 6 months	0	0.0%	1	0.2%	
Missing	6	-	2	-	
Total	771	100.0%	420	100.0%	

\*  $p < .05$ , \*\*\*  $p < .001$

Table 5.4 provides employment, education and income statistics for the two subsamples. As expected, there were differences between the two groups in each of these measures. The younger cohort was more likely to be studying compared with the control group. Note that no statistical tests were run on this data as the nature of the measure results in low cell counts violating the assumptions of the chi square test (eg there are no high school students in the older control group and so on resulting in cell frequencies less than 5).

In relation to education level, those in the Generation Y cohort were significantly more likely to hold a degree compared with the control group, who were significantly more likely to hold a tertiary diploma or have no recognised qualification,  $\chi^2(5, N = 1187) = 27.4, p < .001$ . This is in line with the increased rate of participation in tertiary education observed in New Zealand in recent decades. It is possible there is a sampling bias present whereby higher qualified members of Generation Y were somehow oversampled; however, as the survey was advertised through the same means for both groups, it seems unlikely this would have varied by age group. It should be noted, however, that the collected sample was more highly educated than the New Zealand population on average<sup>10</sup>.

<sup>10</sup> Based on 2013 Census data regarding highest qualification level ([www.stats.govt.nz/Census/2013-census/data-tables/tables-about-a-place.aspx?request\\_value=24388&tabname=Qualifications](http://www.stats.govt.nz/Census/2013-census/data-tables/tables-about-a-place.aspx?request_value=24388&tabname=Qualifications))

As can be expected, those in the Generation Y group were significantly more likely to have less disposable income (\$50 or less) compared with the older control group who were more likely to have a higher disposable income (\$500 or more),  $\chi^2(5, N = 1168) = 22.5, p < .001$ .

**Table 5.4** Main weekly activity, education and disposable income

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Main weekly activity</i>					
Full-time employment	521	67.6%	263	62.6%	N/A
Tertiary student	136	17.6%	8	1.9%	
Part-time employment	37	4.8%	33	7.9%	
Caregiver to family or household	21	2.7%	15	3.6%	
High school student	19	2.5%	-	-	
Full-time self employed	18	2.3%	30	7.1%	
Part-time self employed	11	1.4%	19	4.5%	
Unemployed	6	0.8%	3	0.7%	
Sickness or ACC beneficiary	1	0.1%	1	0.2%	
Volunteer work	1	0.1%	2	0.5%	
Retired	-	-	45	10.7%	
Other <sup>(a)</sup>	-	-	1	0.2%	
Total	771	100.0%	420	100.0%	
<i>Highest qualification</i>					
Postgraduate qualification	236	30.7%	142	33.9%	
Degree	287	37.4%	116	27.7%	***
Tertiary diploma	76	9.9%	74	17.7%	***
Trade qualification	5	0.7%	4	1.0%	
High school qualification	151	19.7%	68	16.2%	
No recognised qualification	13	1.7%	15	3.6%	***
Missing	3	-	1	-	
Total	771	100.0%	420	100.0%	
<i>Disposable income</i>					
Under \$50	115	15.1%	37	9.1%	***
\$51 - \$100	128	16.8%	71	17.4%	
\$101 - \$200	129	17.0%	65	16.0%	
\$201 - \$300	120	15.8%	49	12.0%	
\$301 - \$500	132	17.3%	71	17.4%	
\$501 or more	137	18.0%	114	28.0%	***
Missing	10	-	13	-	
Total	771	100.0%	420	100.0%	

<sup>(a)</sup> The 'other' main weekly activity was specified as self-sufficient farming.

Table 5.5 displays household statistics for the two subsamples. A chi-square analysis revealed the Generation Y cohort were significantly more likely to be single and living in a flatting situation compared with the older control group, who were more likely to live alone or have children<sup>11</sup>,  $\chi^2(4, N = 1166) = 97.6$ ,  $p < .001$ . There was no difference between the two groups in relation to being in a long-term relationship (eg married, in a civil union or in a de facto relationship).

Those who indicated there were children living in their household were further questioned about the ages of these children and whether or not these child(ren) were their own dependant(s). A breakdown of the number of children in these households of different age groups is provided in table 5.6, with the dependant breakdown included in table 5.5. As can be seen in table 5.6, on average there were one to two children/younger people in the Generation Y households, whereas this average ranged from one to three for the older control group. The only statistically significant difference on means between the two groups was in relation to the number of 'children', with those in the control group having a higher number of children in their households on average,  $t(37.2) = -2.1$ ,  $p < .05$ .

As can be expected, children within households were significantly more likely to be dependent on the older control group compared with the Generation Y cohort,  $\chi^2(1, N = 309) = 25.4$ ,  $p < .001$  (see table 5.5).

**Table 5.5 Household type and dependent measure**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Household type</i>					
Single adult living with other adults only	222	28.8%	29	6.9%	***
Married/civil union/de facto couple	217	28.1%	117	28.0%	
Family (including extended) with children	165	21.4%	141	33.7%	***
Family with adults only	112	14.5%	68	16.3%	
Person living alone	41	5.3%	54	12.9%	***
Couple living with other adults	7	0.9%	7	0.9%	
Single adult living with children	6	0.8%	8	1.9%	
Boarding situation	1	0.1%	1	0.2%	
Missing	-	-	2	-	
Total	771	100.0%	420	100.0%	
<i>Dependants</i>					
Children in house respondent's dependant	125	76.7%	141	96.6%	***
Children in house not respondent's dependant	38	23.3%	5	3.4%	***
Total	163	100.0%	146	100.0%	

\*\*\*  $p < .001$

<sup>11</sup> Note that this analysis was undertaken excluding household types with very low counts (eg single parents, couples flatting and boarders) as their inclusion resulted in low expected cell frequencies (eg cell counts < 5).

**Table 5.6** Number of children by age per household (for households with children only)

	N	Minimum	Maximum	Mean	Std deviation
<i>Generation Y subsample</i>					
Infant(s)	60	1	2	1.0	0.1
Toddler(s)	59	1	4	1.2	0.6
Child(ren)	62	1	10	1.9	1.7
Teenager(s)	33	1	9	1.9	1.5
<i>Control subsample</i>					
Infant(s)	17	1	3	1.2	0.5
Toddler(s)	29	1	5	1.6	1.0
Child(ren)	77	1	11	2.6	2.5
Teenager(s)	67	1	17	3.3	4.3

Finally, participants were asked where in New Zealand they currently resided (table 5.7). There were no significant differences between the two subsamples in relation to area of residence, indicating there was no bias in relation to region between the two groups ( $p > .05$ ). There were significant differences with regard to the length of time lived in these regions (as indicated in table 5.7,  $\chi^2(5, N = 1182) = 72.9$ ,  $p < .001$ ); however, these differences may be a result of the age variation between the two groups (with the older control group being more likely to have resided in a region longer than the younger group). Finally, area type was measured, which shows a range was collected. There was one difference between the two subsamples on this measure, with older respondents being more likely to reside in rural areas compared with members of Generation Y.

**Table 5.7** Region of residence and area type

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Region of residence</i>					
Auckland	350	45.8%	187	44.7%	<i>ns</i>
Wellington	350	32.7%	136	32.5%	
Christchurch	109	14.2%	71	17.0%	
Other	56	7.3%	24	5.7%	
Missing	6	-	2	-	
Total	771	100.0%	420	100.0%	
<i>Time lived in region</i>					
10 years or more	400	52.4%	315	75.4%	***
5-10 years	117	15.3%	54	12.9%	
2-5 years	135	17.7%	34	8.1%	***
1-2 years	59	7.7%	9	2.2%	***
6 months to 1 year	31	4.1%	4	1.0%	***
Less than 6 months	22	2.9%	2	0.5%	***
Missing	7	-	2	-	
Total	771	100.0%	420	100.0%	

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Area type</i>					
Urban	217	28.4%	117	28.0%	
Suburban	515	67.3%	268	64.1%	
Rural	33	4.3%	33	7.9%	*
Missing	6	-	2	-	
Total	771	100.0%	420	100.0%	

\*  $p < .001$ , \*\*\*  $p < .001$

### 5.1.3.1 Comparability to New Zealand Household Travel Survey population base

As can be seen in the table below (table 5.8), the final sample differed slightly on key demographics from the most recent NZHTS sample. Because of this (and the gender difference between the two subsamples in the gathered dataset), the decision was made to weight the sample on gender and age to minimise any inherent bias in the data due to this sampling variation. The sample was not weighted in relation to area type because this is a subjective measure which was deemed not be comparable between the two datasets. Weighting based on main travel mode was also not possible due to main travel mode being linked to trip type, meaning there was also no comparable measure between the two surveys.

**Table 5.8 Comparison of unweighted sample with unweighted NZHTS sample**

	Online survey sample		NZHTS sample (2012/2013 year - unweighted)	
	N	%	N	%
<i>Gender</i>				
Male	665	55.9%	2,975	47.9%
Female	524	44.1%	3,230	52.1%
Missing	2	-	-	-
Total	1,191	100.0%	6,205	100.0%
<i>Age group</i>				
15-24	212	17.8%	943	15.2%
25-34	507	42.6%	922	14.9%
35-44	188	15.8%	1,144	18.4%
45-54	123	10.3%	1,211	19.5%
55-64	94	7.9%	1,032	16.6%
65+	67	5.6%	953	15.4%
Total	1,191	100.0%	6,205	100.0%
<i>Area type</i>				
Urban	334	28.2%	4,408	71.0%
Suburban	783	66.2%	381	6.1%
Rural	66	5.6%	1,416	22.8%
Missing	8	-	-	-
Total	1,191	100.0%	6,205	

A post-stratified weighting variable for gender and age was calculated taking into account proportions of males and females within different age groups in the weighted NZHTS sample (the most representative sample of New Zealand travellers available) to match the current sample to these. Therefore, in order to develop this weighting, the following calculations were undertaken:

- 1 The NZHTS sample for the 2012/13 year was weighted up to a representative sample of New Zealand using the weighting included in the NZHTS dataset. The proportion of males and females in the representative sample was calculated, as was the proportion of males and females in the sample collected through the online survey.
- 2 The proportion of males observed in the weighted NZHTS sample was divided by the proportion of males identified in the unweighted online survey sample to calculate a weighting by which the online sample could be weighted up to a representative sample of New Zealand. The same method was followed to calculate a weighting for females.
- 3 To calculate an age-specific weighting, ages were grouped into five-year age bands and the proportion of the sample allocated to each specific age band calculated. This was done for both the weighted NZHTS sample and the online survey sample. For each age band, the proportion of the age band in the weighted NZHTS sample was divided by the proportion observed in the online survey to provide a weighting specific to each age band. This weighting variable was then applied to the online survey dataset.

Table 5.9 provides a summary of the weighted online survey sample data split by gender and age and compared with the weighted NZHTS data. Note that gender or age was missing in the dataset for two participants, and as such these cases were not included in the final dataset for analysis. Post weighting, the final sample size for the Generation Y cohort was 476 cases, compared with 713 for the older control group. All of the following findings have this weighting variable applied to minimise bias as much as possible.

Further information regarding the weighting variable computed and applied to the data is available in appendix C.

**Table 5.9 Weighted comparison of samples**

	Online survey sample		NZHTS sample (2012/2013 year - weighted)	
	N	%	N	%
<i>Gender</i>				
Male	583	49.0%	1,655,564	49.0%
Female	606	51.0%	1,721,873	51.0%
Total	1,189	100.0%	3,377,437	100.0%
<i>Age group</i>				
15-24	225	18.9%	639,960	18.9%
25-34	208	17.5%	590,106	17.5%
35-44	207	17.4%	587,297	17.4%
45-54	218	18.4%	619,767	18.4%
55-64	178	14.9%	504,744	14.9%
65-74	123	10.4%	349,841	10.4%
75+	30	2.5%	85,722	2.5%
Total	1,189	100.0%	3,377,437	100.0%

## 5.1.4 Analysis

All analyses were undertaken using IBM SPSS Statistics 19.0. As stated above, the developed weighting variable was used to reduce bias in the final dataset and ensure the findings were as representative of the New Zealand travelling population as possible (based on the weighted NZHTS sample for the 2012/13 year).

The following statistical tests were undertaken on the data as appropriate:

- The chi-square goodness of fit statistic was used to test whether distributions of categorical variables differed from one another by examining whether the observed frequencies were the same as the expected or probable frequencies. A chi-square test of independence was used when the data was nominal (ie there is no relationship between the categories, so the order of the categories is arbitrary). The adjusted standardised residual of 1.96 was used to indicate a statistically significant difference.
- Independent samples *t* tests were used to compare mean scores on continuous variables between two independent subsamples (eg when comparing mean scores on an item between members of Generation Y and members of the older control group). Levene's test for equality of variances was undertaken, and where significant, appropriate statistics were reported.
- Paired samples *t* tests were used to compare mean scores for the same subjects over time on the same continuous measures (eg comparing mean weekly public transport use over time within Generation Y).
- Where more than two groups' means were being compared at once (eg when comparing differences between regions), analysis of variance (ANOVA) was undertaken.

Note that detail about specific analyses and manipulations are provided throughout the results section in footnotes as appropriate.

An important consideration in relation to the study analyses and findings is the difference between generational and age effects. A generational effect relates to differences apparent within the Generation Y cohort that are unlikely to change to match older generations as the cohort ages (eg an actual change within the younger generation compared with their older counterparts). In contrast, an age effect is a difference between the two groups that is solely a function of the age discrepancy between the two groups. Therefore, an age effect is likely to change over time with Generation Y as it ages, matching the older control group more closely. In some cases it is possible to decipher whether or not a difference between the two groups is a generational or age effect, whereas in other instances it is not possible to definitively conclude what type of effect is present (eg because data would be required from the control group when they were the same age as Generation Y for comparison). For brevity, this is not reiterated at each point in the report where it is present; however, it is commented on in the discussion.

## 5.2 Findings

### 5.2.1 Baseline travel patterns

Baseline mode usage was measured in relation to 'main' and 'other' trips. 'Main' trips were those weekly trips made for the main weekly activity, whereas 'other' trips included all other weekly trips made. Table 5.10 provides a breakdown of travel mode by these trip types for the two subsamples, indicating that for



main trips, members of Generation Y were significantly less likely to travel as a car driver and more likely to travel as passenger in a car or on a bus or walk compared with the older control group,  $\chi^2(6, N = 1180) = 58.1, p < .001$ .

There were no significant differences on main travel mode for respondents' 'other' trips ( $p > .05$ ). For context, table 5.11 provides the weighted data on self-reported main weekly activity split by subsample, showing that as expected there was variation between the two groups. This variation in main activity may account for some of the variation in travel mode highlighted in table 5.10; however, it is also possible that travel mode preferences vary between the two groups. It is possible to explore this hypothesis further with the preference measures presented below. Overall, these trends in transport mode are in line with the findings of the previous phases of this work, with members of Generation Y having a lower rate of driving and a higher rate of public transport and active transport usage compared with their older counterparts.

**Table 5.10 Main mode of transport for main and other trips split by subsample**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Main trips</i>					
Car as driver	201	42.1%	437	61.3%	***
Car as passenger	40	8.3%	35	5.0%	***
Bus	88	18.4%	66	9.2%	***
Train	43	9.0%	43	6.0%	
Ferry	4	0.8%	5	0.7%	
Cycle	39	8.3%	55	7.7%	
Walk	56	11.8%	50	7.0%	***
Other <sup>(a)</sup>	6	1.3%	21	3.0%	
Total	476	100.0%	713	100.0%	
<i>Other trips</i>					
Car as driver	242	51.0%	372	53.6%	<i>ns</i>
Car as passenger	110	23.1%	124	17.9%	
Bus	51	10.7%	51	7.4%	
Train	7	1.6%	32	4.5%	
Ferry	0	0.0%	3	0.4%	
Cycle	14	3.0%	41	5.9%	
Walk	45	9.6%	65	9.4%	
Other	5	1.0%	6	0.9%	
Total	476	100.0%	713	100.0%	

\*\*\*  $p < .001$

<sup>(a)</sup> Other' transport modes were not specified in the survey; however, it is likely given the categories supplied to respondents that this category consisted of motorbikes, skateboards and others of a similar nature.

**Table 5.11 Comparison of main weekly activity**

	Generation Y subsample		Control group	
	N	%	N	%
Full-time employment	255	53.6%	395	55.5%
Tertiary student	116	24.4%	12	1.7%
High school student	45	9.5%	-	-
Part-time employment	28	5.9%	69	9.7%
Caregiver to family or household	11	2.3%	32	4.4%
Full-time self employed	9	1.8%	52	7.4%
Part-time self employed	6	1.2%	31	4.4%
Unemployed	3	0.7%	4	0.5%
Volunteer work	2	0.5%	4	0.5%
Sickness or ACC beneficiary	0	0.0%	2	0.3%
Retired	-	-	110	15.5%
Other	-	-	1	0.2%
Total	476	100.0%	713	100.0%

Driver licence status and access to private vehicles were also measured in the survey to provide further context to travel mode usage. Table 5.12 provides this data. Those in Generation Y were significantly less likely to have a licence, but were significantly more likely to intend to obtain one compared with the older control group,  $\chi^2(2, N = 1189) = 83.5, p < .001$ . This is somewhat logical as a function of being older is having had more time to obtain one's licence, hence the higher licensing rate. It stands to reason therefore that younger respondents would have a higher rate of intention to obtain a driver licence, with some not yet having had the opportunity to sit their licence.

Further context regarding this finding is provided by a chi-square analysis selecting only members of Generation Y, revealing that those 25 years of age and older within the cohort were significantly more likely to have their licence compared with those under 25 years of age, who were significantly more likely to intend to get their licence,  $\chi^2(2, N = 477) = 53.9, p < .001$ . This provides evidence that members of Generation Y in New Zealand do want a driver licence, in line with the findings of the focus groups conducted in the previous stage of this research (but contrasting with some hypotheses put forward in the previous literature). This is also evidenced by the lack of variation in licensing rates when comparing those in Generation Y who either have their licence or intend to obtain it (97.1% in total) with the corresponding proportion of the older cohort (97.9%), indicating that once this cohort ages the variation in licensing rates between the younger and older generations is likely to be minimal.

Rates of access to private vehicles also varied between the two subsamples, with members of Generation Y being significantly less likely to always have access to a vehicle as a driver (which is common sense considering their lower rate of licensing,  $\chi^2(1, N = 1190) = 110.0, p < .001$ ), but more likely to have access sometimes as driver (implying they are more likely to borrow others' cars than the older control group,  $\chi^2(1, N = 1188) = 40.8, p < .001$ ) and/or a passenger ( $\chi^2(1, N = 1190) = 31.0, p < .001$ ). The younger subsample was also significantly more likely to not have access to a private vehicle in any capacity compared with their older counterparts,  $\chi^2(1, N = 1190) = 9.6, p < .01$ .

**Table 5.12 Driver licence status and access to private vehicles**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Driver licence status</i>					
Valid restricted or full driver licence	396	83.2%	690	96.9%	***
No licence, but intend to obtain	66	13.9%	7	1.0%	***
No licence and do not intend to obtain	14	2.9%	16	2.2%	
Total	476	100.0%	713	100.0%	
<i>Access to private vehicle(s) <sup>(a)</sup></i>					
All the time as a driver	298	62.5%	629	88.3%	***
Sometimes as a driver	121	25.5%	80	11.2%	***
All the time as a passenger	43	9.0%	64	9.0%	
Sometimes as a passenger	144	30.1%	118	16.5%	***
No access to a vehicle for personal use	26	5.4%	15	2.1%	**
Total	476	-	713	-	

\*\*  $p < .01$ , \*\*\*  $p < .001$

(a) Note that respondents could endorse 'all that applied' for this measure, meaning percentages do not add to 100%.

The number of days all different travel modes were used by trip type was also collected. This data is presented in table 5.13 (main trips) and table 5.14 (other trips), split by subsample.

As can be seen, there were no significant differences in the number of days the two subsamples used different modes for their main trips, with the exception of the train, where Generation Y used this mode more often on average compared with their older counterparts,  $t(125) = 2.0$ ,  $p < .05$ . It should be noted that main mode was defined as the mode the most time was spent travelling in over the course of the week, rather than the frequency of trips by each mode. Therefore, this data indicates that both groups use a mix of different modes for their main trips. Note that there were no significant differences on the mean number of days any mode was used between the two subsamples for their 'other' trips.

**Table 5.13 Days used different travel modes over last seven days for main trips (including users only for each mode)**

	N	Minimum	Maximum	Mean	Std deviation	Significance
<i>Generation Y subsample</i>						
Car as driver	237	1	7	5.1	1.9	
Car as passenger	83	1	7	3.3	1.9	
Bus	128	1	7	4.2	1.7	
Train	56	1	7	4.0	1.6	*
Ferry	4	2	7	4.7	1.7	
Cycle	48	1	7	4.8	1.5	
Walk	98	1	7	4.7	1.9	
Other	9	1	6	4.0	1.7	

	N	Minimum	Maximum	Mean	Std deviation	Significance
<i>Control subsample</i>						
Car as driver	479	1	7	4.9	1.8	
Car as passenger	77	1	7	2.8	1.9	
Bus	94	1	7	4.0	1.8	
Train	70	1	7	3.4	1.8	*
Ferry	8	4	5	4.6	0.5	
Cycle	65	1	7	4.3	1.8	
Walk	107	1	7	4.4	2.0	
Other	16	2	7	4.7	1.9	

\*  $p < .05$ **Table 5.14** Days used different travel modes over last seven days for other trips (including users only for each mode)

	N	Minimum	Maximum	Mean	Std deviation	Significance
<i>Generation Y subsample</i>						
Car as driver	258	1	7	3.5	2.2	<i>ns</i>
Car as passenger	168	1	7	2.4	1.3	
Bus	74	1	7	2.3	1.4	
Train	23	1	7	2.1	1.5	
Ferry	3	1	2	1.2	0.5	
Cycle	27	1	7	2.7	1.9	
Walk	111	1	7	3.4	2.1	
Other	8	1	7	3.4	1.9	
<i>Control subsample</i>						
Car as driver	369	1	7	3.4	2.2	
Car as passenger	172	1	7	2.3	1.3	
Bus	74	1	7	2.0	1.4	
Train	40	1	7	1.8	1.3	
Ferry	3	1	1	1.0	0.0	
Cycle	54	1	6	2.5	1.6	
Walk	110	1	7	3.5	2.1	
Other	14	1	3	2.0	0.8	

This mode usage data was combined to further explore baseline public transport use and obtain an overall baseline public transport use rate per week<sup>12</sup>. Table 5.15 shows overall rates of usage based on this measure. As can be seen, 35.3% of those belonging to Generation Y had used at least one form of public transport for their main trips over the past week, compared with 21.5% of the older control group (a statistically significant difference,  $\chi^2(1, N = 1189) = 27.7, p < .001$ ). There was no difference in the proportions of public transport users between the two subsamples for other trips.

**Table 5.15 Public transport usage rates based on reported usage over the previous week**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Main trips</i>					
Public transport users	168	35.3%	153	21.5%	***
Non-users	308	64.7%	560	78.5%	***
Total	476	100.0%	713	100.0%	
<i>Other trips</i>					
Public transport users	87	18.6%	109	15.3%	
Non-users	389	81.4%	604	84.7%	
Total	476	100.0%	713	100.0%	

\*\*\*  $p < .001$

Table 5.16 presents mean weekly usage rates for main and other trips, both including and excluding non-users<sup>13</sup> of public transport. As can be seen, Generation Y used public transport at a significantly higher rate per week both when including ( $t(843.9) = 5.7, p < .001$ ) and excluding ( $t(308.6) = 2.7, p < .01$ ) non-users. When considering the entire population, Generation Y used public transport almost two days per week on average for their main trips, compared with less than one day by the control group. When only considering users of public transport, this increases to around four and a half days per week for Generation Y's main trips and around four for the control group. Therefore, Generation Y used public transport at a higher rate compared with their older counterparts, in line with previous findings.

<sup>12</sup> Days per week travelling by public transport was obtained by computing a new variable based on the following rules for the roughly 3% of multi-public transport users (eg those who used trains and buses regularly. For all others, the number of days any public transport mode was reported to be used was input into the variable): 1) where each public transport mode had an equal number of days used per week, this number was recorded (assuming that the respondent used two different modes per day in this case) and 2) where reported days of use across different public transport modes were not equal, the summed number of days were used, except where this exceeded the number of days per week, where the first assumption was made and the highest number of days reported across any mode was recorded.

<sup>13</sup> A non-user is anyone who did not report weekly use of public transport (but may use it less often than weekly in some cases).

**Table 5.16 Mean weekly public transport for main and other trips**

	Generation Y subsample			Control group			Significance
	N	Mean (days)	Std deviation	N	Mean (days)	Std deviation	
<i>Including non-users (range 0-7)</i>							
Main trips	476	1.6	2.3	713	0.8	1.8	***
Other trips	476	0.4	1.1	713	0.3	1.0	
<i>Excluding non-users (range 1-7)</i>							
Main trips	168	4.4	1.6	153	3.9	1.7	**
Other trips	87	2.4	1.5	109	2.2	1.7	

\*\* p<.01, \*\*\* p<.001

To provide further context to current mode usage, participants were asked to rate their level of agreement with several statements relating to their use of public transport and the availability of different travel modes other than what they currently used. These ratings were on a scale of 1 = strongly disagree to 5 = strongly agree, with a score of 3 being neutral. Table 31 displays mean scores for these items split by the two subsamples.

As can be seen in the table, there were no differences between the two subsamples on ratings of familiarity with, and quality of, local public transport systems. On average, participants agreed they were familiar with their local public transport system, and rated the quality of this system closest to 'neutral' on average on the agreement scale.

Further analysis of these two measures reveals that, while there is no variation in these measures by age, there was by region ( $F(3, 1160) = 27.8, p <.001$  and  $F(3, 1112) = 54.1, p <.001$  respectively). Mean scores by region on these items are displayed in table 5.18. When exploring the specific comparisons between regions on these measures it is evident that:

- Those from Wellington region rated their familiarity with their local public transport system significantly higher than respondents from any other region ( $p <.001$ ), indicating they were likely to use it more frequently on average.
- Those from 'other' regions rated their familiarity with their local public transport system significantly lower than both Wellington ( $p <.001$ ) and Auckland ( $p <.01$ ) (there was no significant difference in ratings of familiarity between those from other regions and those from Christchurch).
- Those from Wellington region rated the quality of their local public transport system significantly higher than respondents from any other region ( $p <.001$ ).
- Those from Christchurch rated the quality of their local public transport system significantly higher than those from both Auckland ( $p <.01$ ) and 'other' regions ( $p <.001$ ).
- Those from Auckland rated the quality of their local public transport system significantly higher than those from 'other' regions ( $p <.001$ ), who rated the quality of their system lowest overall (sitting between disagree and neutral on the scale of agreement that their system was good).

Moving back to differences between the two age-based subsamples, table 5.17 reveals there are differences in ratings of the other two reported measures. Those in Generation Y were slightly less likely

to have used public transport systems elsewhere previously ( $t(940.9) = -2.4, p < .05$ ), and were closer to the negative end of the scale for transport options beyond what was currently used ( $t(1100.3) = -2.9, p < .01$ ), indicating they felt they had less freedom in their travel mode choices compared with the older control group. Their lower rate of access to vehicles for private use may account for some of this variation.

**Table 5.17 Ratings of agreement with baseline mode choice statements**

	N	Mean <sup>(a)</sup>	Std deviation	Significance
<i>Generation Y subsample</i>				
I am familiar with the public transport system in my area	476	4.1	1.1	
The quality of the public transport system in my area is good	459	3.3	1.1	
I have previously used public transport regularly in other cities and/or countries	469	3.8	1.3	*
I have no other transport options beyond what I currently use	473	2.6	1.2	**
<i>Control subsample</i>				
I am familiar with the public transport system in my area	698	4.0	1.1	
The quality of the public transport system in my area is good	667	3.4	1.2	
I have previously used public transport regularly in other cities and/or countries	709	3.9	1.2	*
I have no other transport options beyond what I currently use	709	2.8	1.3	**

\*  $p < .05$ , \*\*  $p < .01$ .

<sup>(a)</sup> Range = 1-5 for all items.

**Table 5.18 Ratings of familiarity with and quality of local public transport system by region<sup>(a)</sup>**

	Familiarity with system			Perceived quality of system		
	N	Mean	Std deviation	N	Mean	Std deviation
Auckland	517	3.9	1.1	501	3.0	1.1
Wellington	374	4.4	0.8	366	3.9	0.9
Christchurch	185	3.8	1.0	170	3.3	1.1
Other	88	3.5	1.3	79	2.6	1.3

<sup>(a)</sup> Range = 1-5 for all

To further explore public transport use, participants were asked to identify what public transport usage scenario best fitted their situation out of the shortlist of scenarios shown in table 5.19<sup>14</sup>. As can be seen, the largest proportion of Generation Y (over one-quarter of the total subsample) reported they used public transport even though they had other options. In total, two-thirds of the sample reported using public transport across the scenarios, compared with less than half (45.1%) of the older control group. The largest proportion of the control group (28.9%) categorised themselves as non-users with a latent demand for public transport, a statistically significant difference from the proportion endorsing this option in the Generation Y grouping,  $\chi^2(5, N = 1189) = 48.3, p < .001$ .

<sup>14</sup> It is important to note that this measure differs from the weekly public transport measure reported above, because it measures all public transport use (eg some users are less frequent than weekly).

There were significantly more 'reliant' users among the Generation Y subsample, which again may relate to their lower overall levels of driver licensing and private vehicle access. The control group was also significantly more likely to want to use public transport more compared with Generation Y, providing further evidence for a latent demand for public transport usage among the older generations in addition to among Generation Y. Around one-fifth of Generation Y members reported not using public transport and not wanting to, with this proportion being at around a quarter for their older counterparts (not a statistically significant difference). In total, 26.7% of Generation Y indicated they would prefer not to use public transport overall, compared with 27.3% of the older control group.

When selecting only those whose main mode for their main trips was private vehicle (as either a driver or a passenger), it was found that among this non-user group there were no significant differences between the two subsamples (Generation Y versus control group) in their wish to use public transport ( $p > .05$ ). Therefore, when controlling for the differences between baseline mode usage for these two subsamples, there was no difference in latent demand between the two groups.

**Table 5.19 Current public transport usage scenarios**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
I use public transport even though I have other transport options	137	28.8%	180	25.3%	
I do not use public transport but I would like to	108	22.6%	206	28.9%	***
I do not use public transport and I do not want to	103	21.6%	185	26.0%	
I am reliant on public transport (eg I don't have other ways to travel for at least some of my trips) and I am happy using it	58	12.2%	31	4.4%	***
I use public transport and would like to use it more	47	9.8%	100	14.0%	***
I am reliant on public transport and I would prefer not to use it	24	5.1%	10	1.3%	***
Total	476	100.0%	713	100.0%	

\*\*\*  $p < .001$

Mode shift behaviour was explored among those who reported currently using public transport in this previous measure, with a particular emphasis on situations that resulted in mode shift away from public transport. This measure is reported in table 5.20, showing that overall, the Generation Y cohort appear to be more likely to shift away from using public transport for trips when adverse circumstances arise (or alternatively that situations such as being offered a ride occur more frequently for Generation Y).

Generation Y were significantly more likely not to use public transport where they had intended to if they were offered a ride ( $\chi^2(1, N = 587) = 34.8, p < .001$ ), if their service was delayed ( $\chi^2(1, N = 588) = 18.8, p < .001$ ), if they did not have enough money to pay for the fare ( $\chi^2(1, N = 587) = 19.8, p < .001$ ) or if it was cold ( $\chi^2(1, N = 587) = 7.0, p < .01$ ). The control group identified 'other' scenarios in which they would not use public transport where previously intended at a significantly higher rate,  $\chi^2(1, N = 587) = 4.2, p < .05$ , which may mean the scenarios listed in the survey fit better for the younger group. Examples of the scenarios identified by both groups are given in note (a) to table 5.20.



**Table 5.20 Situations resulting in mode shift away from public transport**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
No factors that result in mode shift	42	15.8%	79	24.5%	**
If offered a ride	138	51.9%	90	28.1%	***
If service delayed	107	40.4%	76	23.5%	***
If have to carry too much	104	39.2%	126	39.2%	
If raining	71	26.7%	81	25.2%	
If service replaced	60	22.6%	54	16.9%	
If don't have money to pay for the fare	53	19.7%	24	7.5%	***
Other <sup>(a)</sup>	52	19.5%	86	26.7%	*
If cold	40	15.2%	26	8.0%	**
Total	266	-	321	-	

\* p<.05, \*\* p<.01, \*\*\* p<.001

(a) Other' scenarios identified include: if the service does not show up, if the service is running early and arrives prior to the rider, when travelling with young children, when deciding to drive instead, if rider is running late, if deciding to cycle or walk (eg the weather is nice), if needing to travel outside coverage areas or outside operating times, if it is important that the rider is on time, if the service is full, if travelling with pets, and when having to work late.

Finally, all respondents were asked to report their main barrier and main attractor to using public transport (displayed in tables 5.21 and 5.22 respectively). As can be seen in table 5.21, less than 20% of both subsamples reported there were no current barriers to them using public transport, leaving over 80% of both groups reporting barriers to their use of local systems.

There were some significant differences in the barriers experienced between the two groups. For example, those in Generation Y were significantly more likely to find the cost of public transport to be an issue compared with those in the older control group,  $\chi^2(9, N = 1179) = 34.7, p < .001$ . This is to be expected given Generation Y's significantly lower disposable income compared with their older counterparts ( $\chi^2(5, N = 1163) = 52.9, p < .001$ ). In contrast, those in the older control group were significantly more likely to identify a lack of service coverage and difficulties with trip chaining being barriers to their use, as well as the use of public transport not being viable for them due to their travel requirements (eg needing to travel with young children). For Generation Y, the time taken to travel via public transport was the barrier identified most often, followed by infrequent services and a lack of coverage. On the whole, these fit with the barriers identified by the general population, indicating that improvements made to public transport systems would likely have benefits for the entire population, rather than needing to target improvements to specific demographics within the population.

Examples of other barriers identified by the groups are provided in note (b) at the bottom of table 5.21, showing that for some, the barriers to use were positive. For example, some people did not use public transport because they lived close enough to their main travel locations to walk or preferred to cycle. Many respondents reported living in areas where there was no or very little service available, with other common barriers including a lack of sufficient or safe park and ride facilities, inconvenience of payment methods and the experience being unpleasant.

**Table 5.21 Main barrier to public transport use**

	Generation Y subsample		Control group		Significance <sup>(a)</sup>
	N	%	N	%	
No barriers to public transport use currently	83	17.3%	142	19.9%	
Takes too long	68	14.2%	76	10.7%	
Services in area too infrequent	61	12.8%	74	10.3%	
Services in area do not travel to where want to go	58	12.2%	118	16.5%	***
Services in area too expensive	45	9.5%	30	4.2%	***
Do not need to use public transport, so choose not to	44	9.2%	62	8.7%	
Other <sup>(b)</sup>	43	9.1%	76	10.7%	
Services in area too unreliable	34	7.1%	33	4.7%	
Trips require trip chaining and this causes issues	20	4.2%	54	7.5%	***
Not a viable mode (eg travel with young children or have a disability)	16	3.3%	42	5.8%	***
Do not feel safe using	3	0.7%	4	0.6%	
Do not know where to find information about public transport system	1	0.3%	2	0.2%	
Total	476	100.0%	713	100.0%	

\*\*\* p<.001

(a) Note that both the 'Do not feel safe using' and 'Do not know when to find information about public transport system' categories were excluded from the chi-square analysis due to low expected cell frequencies.

(b) 'Other' main barriers identified included: previous bad experiences resulting in a loss of confidence, active modes are more convenient or preferred, living in areas with no or very sporadic services, inconvenience of payment methods (eg requiring cash or ticketing not being integrated), travelling with small children or cargo, insufficient or unsafe parking facilities at stations and stops, dislike of staff such as drivers, needing one's car for transport during the day or having a company car, experience seen as unpleasant, no provision for bicycles, working flexible hours not supported by services available and multiple barriers.

On the more positive side, over 80% of Generation Y members identified attractors to using public transport. This shows that while the cohort has struggles with using public transport, the benefits of this travel mode are also widely acknowledged. The older control group suggested they saw no attractors to using public transport at a significantly higher rate,  $\chi^2(13, N = 1183) = 71.1, p < .001$ .

As can be seen in table 5.22, the most commonly reported attractor to using public transport for both subsamples was the ability to avoid finding and paying for parking, followed by this travel mode being more environmentally friendly. For Generation Y, this was followed by the ability to do other things while travelling (eg use laptop or phone), whereas for the older cohort the third most common attractor was the ability to avoid congestion. There were significant differences in the ratings given by the two subsamples to a number of attractors, with those in Generation Y being more likely to report that public transport was their only travel option (fitting with other findings regarding their perceived freedom in their travel choices and their lower rate of access to private vehicles and reduced rates of licensing), that services travelled to

where they wanted to go (in line with the barrier finding reported above), that travel times were fast, and that using public transport allowed them to make trips they could not otherwise do (again in line with their overall lower level of freedom in travel mode choices). Those in the older control group were more likely to report their main attractor was the availability of quality information.

Other attractors identified by respondents (summarised in note (b) at the bottom of table 5.22) were the ability to avoid bad weather, not having to own a car and being able to consume alcohol without having to worry about drink-driving.

**Table 5.22 Main attractor to using public transport**

	Generation Y subsample		Control group		Significance <sup>(a)</sup>
	N	%	N	%	
No attractors to public transport use currently	84	17.6%	222	31.2%	***
Can avoid finding/paying for parking	93	19.5%	117	16.4%	
More environmentally-friendly	61	12.8%	83	11.7%	
Can do other things during travel (eg use laptop or phone)	34	7.2%	45	6.3%	
Services in area frequent	31	6.5%	34	4.8%	
Only travel option for at least some trips	31	6.4%	16	2.3%	***
Services in area travel to where want to go	28	5.8%	21	2.9%	***
Fast travel times	28	5.9%	14	1.9%	***
Can avoid congestion	25	5.3%	52	7.2%	
Other <sup>(b)</sup>	23	4.7%	46	6.5%	
Services in area affordable	17	3.6%	18	2.6%	
Can make trips could not otherwise	14	3.0%	9	1.2%	***
Services in area reliable	5	1.1%	16	2.3%	
Can easily trip chain	2	0.3%	5	0.7%	
Quality information available making it easy to use	2	0.4%	14	1.9%	***
Total	476	100.0%	713	100.0%	

\*\*\* p<.001

<sup>(a)</sup> Note that the trip chaining category was removed from the chi-square analysis due to low expected cell frequencies

<sup>(b)</sup> 'Other' attractors identified included: avoiding walking in bad weather, being able to consume alcohol and travel afterwards, fun experience for younger children, do not have means to own a car, more relaxing, free service with GoldCard, allows to be socially responsible and multiple attractors.

## 5.2.2 Baseline travel attitudes

A number of statements relating to current travel attitudes and preferences were presented to respondents to the survey, who rated their level of agreement with each on the same agreement scale previously explained (1 = strongly disagree to 5 = strongly agree, 3 = neutral). Table 5.23 presents mean ratings on these statements split by subsample. As can be seen, the Generation Y cohort disagreed on

average that people such as themselves did not use public transport, and had a significantly lower mean on this scale compared with the older control sample,  $t(1033.1) = -3.0, p < .01$ . The item with the highest level of agreement for the cohort related to mode choice being dictated most strongly by convenience, with the mean score sitting between agree and strongly agree. The control group had the same mean score for this item. This fits with findings from the focus groups showing that convenience is a prime concern in mode choice decisions.

Items exploring other influencers of mode choice decisions, and environmental and health concern, also received positive ratings from both subsamples, with members of Generation Y suggesting they would be more inclined to travel in an environmentally friendly way if this was made more convenient, compared with their older counterparts,  $t(978.6) = 3.4, p < .001$ . While both subsamples asserted they were concerned about their impact on the environment, main ratings on the item asking whether their current travel patterns were environmentally friendly were close to neutral for both. This implies that, as suggested in the focus groups, concerns about the environment may be present but not influential enough to have an impact on travel patterns for the majority of the cohort and wider population when considered inconvenient. This also fits with the high level of agreement that convenience is the most important influencer on travel mode decisions.

Another finding of interest is the lack of variation in mean ratings between the two subsamples of the value of independence received from driving. A commonly asserted hypothesis in the international literature exploring travel patterns among Generation Y is that this cohort somehow values having a licence and access to a private vehicle less than previous generations; however, this data (as well as other findings from the survey, such as anticipated licensing rates) implies that this change is unlikely to have occurred among younger New Zealanders. Lower observed licensing rates in New Zealand may therefore be due to a lack of opportunity (eg the opportunity to learn to drive or financial constraints on getting a licence or concern over sitting a licence test due to the new and more difficult GDLS etc) or another constraint rather than a lack of desire. This finding should be taken with the current identified barriers to public transport use in mind, however, as a more efficient system could impact on perceived freedom in travel choices from other modes. It should also be noted that for survey brevity, value of freedom from other transport modes (eg public transport and active transport) was not measured and so cannot be compared.

A final hypothesis tested by these survey items was the assertion in the literature that improved technology has resulted in a reduction in travel. As the analysis of the New Zealand datasets showed lower travel time budgets among those in Generation Y compared with their older counterparts and the focus groups provided some preliminary evidence that changes to technology might be affecting travel patterns, this potential influencer was included in the survey measures. As can be seen in table 5.23, both subsamples' mean ratings on this item were positive, with Generation Y's mean score being significantly higher,  $t(1171) = 1.9, p < .05$ . This provides some evidence that the reduction in overall travel among the younger generation may in part be attributable to improved technology; however, the finding suggested that a similar trend would also be observed in older generations.

**Table 5.23 Baseline travel attitudes**

	N	Mean <sup>(a)</sup>	Std deviation	Significance
<i>Generation Y subsample</i>				
People like me do not use public transport	465	2.2	1.2	**
I choose the transport mode most convenient for me	475	4.4	0.8	
I am concerned about my impact on the environment	474	3.8	0.9	
My current travel behaviour is environmentally-friendly	466	3.2	1.1	
I would travel in a more environmentally-friendly way if it was more convenient	461	4.1	0.8	***
I like to travel in a way that benefits my health	470	4.0	0.8	
I value the independence that being able to drive brings	461	3.9	1.2	
I at least sometimes use technology so I don't have to make a trip (eg shop online)	466	3.7	1.1	*
<i>Control subsample</i>				
People like me do not use public transport	693	2.4	1.2	**
I choose the transport mode most convenient for me	706	4.4	0.9	
I am concerned about my impact on the environment	707	3.9	0.9	
My current travel behaviour is environmentally friendly	703	3.2	1.1	
I would travel in a more environmentally friendly way if it was more convenient	709	4.0	0.8	***
I like to travel in a way that benefits my health	703	4.0	0.7	
I value the independence that being able to drive brings	710	3.9	1.1	
I at least sometimes use technology so I don't have to make a trip (eg shop online)	707	3.6	1.1	*

\* p<.05, \*\* p<.01, \*\*\* p<.001

<sup>(a)</sup> Range = 1-5 for all items.

### 5.2.3 Future travel preferences

As the main focus of this study was possible future travel patterns for Generation Y in New Zealand, the survey included items on preferred travel by different modes in the future (table 5.24), as well as planned rate of travel by different modes in two years' time (table 5.25). It is important to measure both preference and actual intention as these may differ (eg due to perceived constraints not allowing for preferred travel). Each of the items displayed in the tables were rated on a scale where 1 = considerable decrease, 3 = stay about the same and 5 = considerable increase.

As can be seen in table 5.24, the mode that members of Generation Y would most like to increase their travel by in the future is walking, followed by cycling and then public transport. They had a preference for decreasing their weekly travel by car, and also decreasing their overall weekly travel. These trends were fairly similar overall to the older control groups. It is important to note that all means indicating an increase in travel via different modes were under 'slight increase', therefore showing preferred changes were relatively minor.

There were some significant differences in mean scores between the two groups, with Generation Y having a lower mean score for several items. Closer inspection of the data reveals that those in Generation Y wanted to reduce their travel by car slightly less ( $t(877.3) = 3.2, p < .001$ ), and to increase their travel by public transport slightly less ( $t(1123) = -2.3, p < .05$ ). In contrast, they wanted to increase their travel by cycling slightly more ( $t(994) = 2.3, p < .05$ ). It is likely that baseline travel patterns account for at least some of these minor differences (eg Generation Y members are currently spending more time travelling by bus and less by private vehicle compared with the control group).

Overall, these findings show a very positive attitude among both Generation Y and the control group towards active and public transport.

**Table 5.24 Future travel preferences**

	N	Mean <sup>(a)</sup>	Std deviation	Significance
<i>Generation Y subsample</i>				
In the future, I would like my weekly travel by public transport to...	454	3.5	1.0	*
In the future, I would like my weekly travel by car to...	468	2.5	1.0	***
In the future, I would like my weekly travel by cycling to...	402	3.6	1.0	*
In the future, I would like my weekly travel by walking to...	457	3.7	0.9	
In the future, I would like the total amount I travel each week to...	465	2.7	0.8	
<i>Control subsample</i>				
In the future, I would like my weekly travel by public transport to...	671	3.7	0.9	*
In the future, I would like my weekly travel by car to...	698	2.3	0.9	***
In the future, I would like my weekly travel by cycling to...	594	3.4	1.1	*
In the future, I would like my weekly travel by walking to...	671	3.7	0.8	
In the future, I would like the total amount I travel each week to...	706	2.7	0.8	

\*  $p < .05$ , \*\*\*  $p < .001$

<sup>(a)</sup> Range = 1-5 for all items.

Turning to intended future travel patterns, the data in table 5.25 reveals that the Generation Y cohort planned to increase their travel by walking by the largest amount, followed by cycling and then public transport (in line with their desired travel changes). There was a slight planned decrease in travel by car, with total weekly travel sitting just above overall travel which remained static. As with preferred changes, intended changes are slight at best, and in general sit closer to remaining constant for this set of data.

The older control sample again showed a very similar trend in intended future travel to their younger counterparts. There were some statistically significant differences in mean ratings between the two subsamples as indicated in table 5.25; however, these differences were again very minor in terms of actual changes to travel patterns.

The similarity in trends between the two subsamples provides evidence that Generation Y's travel behaviour may be increasingly similar to that of older generations over time, with discrepancies between the two in the rates of private car and public transport use likely to be sustained. This again shows a very positive attitude among the two samples towards active and public transport, with mean scores on the items appearing to be realistic in terms of likely actual changes to travel behaviour.

**Table 5.25 Future travel plans**

	N	Mean <sup>(a)</sup>	Std deviation	Significance
<i>Generation Y subsample</i>				
I plan for my weekly travel by public transport in the next 2 years to...	458	3.3	0.9	
I plan for my weekly travel by car in the next 2 years to... <sup>(b)</sup>	457	2.9	1.0	***
I plan for my weekly travel by cycling in the next 2 years to...	410	3.4	0.8	
I plan for my weekly travel by walking in the next 2 years to...	461	3.5	0.8	
I plan for my total weekly travel in the next 2 years to... <sup>(c)</sup>	456	3.2	0.9	***
<i>Control subsample</i>				
I plan for my weekly travel by public transport in the next 2 years to...	660	3.3	0.8	
I plan for my weekly travel by car in the next 2 years to...	702	2.7	0.8	***
I plan for my weekly travel by cycling in the next 2 years to...	586	3.3	0.9	
I plan for my weekly travel by walking in the next 2 years to...	671	3.5	0.8	
I plan for my total weekly travel in the next 2 years to...	693	3.0	0.7	***

\*\*\* p<.001

<sup>(a)</sup> Range = 1-5 for all items.

<sup>(b)</sup>  $t(764.1) = 3.6$ ,  $p < .001$

<sup>(c)</sup>  $t(833.5) = 3.2$ ,  $p < .001$

## 5.2.4 Previous major changes to travel patterns

Baseline data on previous major changes to travel patterns triggered by life events was gathered to provide an accuracy check for future predictions for changes to travel behaviour. Table 5.26 provides proportions of respondents reporting various life events as the trigger for the significant previous changes to their travel patterns. Note that 11.0% of Generation Y respondents (N=52) and 24.3% of the control group (N=173) reported not having experienced any life event resulting in major changes to their travel patterns (and so did not complete the remainder of this section in the survey).

The five major life changes identified by the largest proportion of Generation Y as resulting in the most significant change to their previous travel patterns are examined in detail below, with a specific focus on the actual changes to travel patterns triggered and the reasons for these changes (the number of life events covered is limited for brevity of the report and to ensure only those with larger, more reliable sample sizes are discussed).

**Table 5.26 Life event resulting in the most significant previous change to travel patterns**

	Generation Y subsample		Control group	
	N	%	N	%
Moved locations (eg cities or suburbs)	89	21.0%	125	23.2%
Participated in tertiary study	79	18.8%	10	1.9%
Changed jobs or job locations	64	15.1%	130	24.1%
Gained access to a car or drivers' licence	49	11.6%	29	5.4%
Started first job	33	7.7%	11	2.1%
Moved out of family home	29	6.9%	2	0.4%
Moved overseas (eg for short-term travel)	18	4.3%	37	6.9%
Started a family (eg had a child)	16	3.8%	35	6.6%
Purchased a new home	13	3.0%	24	4.5%
Lost access to a car or driver licence	6	1.4%	11	2.0%
Earthquake (Canterbury)	5	1.1%	16	3.0%
Got married/entered into civil union/moved in with a partner	4	1.0%	15	2.7%
Had another child	4	1.0%	5	0.9%
Moved schools	3	0.7%	-	-
Had an injury or accident or a major change to health	2	0.4%	16	2.9%
Gained access to a free car park	2	0.4%	-	-
Unspecified	2	0.4%	4	0.8%
Became unemployed	1	0.3%	15	2.8%
Gained access to a bicycle	1	0.3%	1	0.2%
Started a new relationship	1	0.3%	2	0.3%
Made the decision to change travel patterns	1	0.3%	10	1.9%
Children grew up	-	-	3	0.6%
Became a part or full-time carer	-	-	14	2.5%
Retired	-	-	22	4.1%
Total	421	100.0%	540	100.0%

#### 5.2.4.1 Moving locations

Preliminary evidence in the focus groups suggested many Generation Y members actively consider accessibility when moving locations and seek to live in areas that maximise their travel options, particularly increasing opportunities for the use of both public transport and active transport. The data provided in table 5.27 supports this assertion, with around half the sample reporting increased use of both public and active transport modes (each) after moving locations (defined as moving cities or suburbs). This is compared with around a third of people who reported increasing their use of a private vehicle. These increases may be linked to an increased rate of overall travel for some respondents, with 41.6% reporting an overall increase in travel at this time. Less than a quarter of the sample reduced their use of public transport after changing locations.



**Table 5.27 Effects of moving locations on travel patterns (N=89)<sup>(a)</sup>**

	N	%		N	%
Increased use of public transport	46	51.7%	Decreased use of public transport	21	23.8%
Increased use of private vehicle	31	34.8%	Decreased use of private vehicle	25	27.9%
Increased use of active modes	41	46.0%	Decreased use of active modes	14	16.3%
Increased overall amount of travel	37	41.6%	Decreased overall amount of travel	21	23.6%

<sup>(a)</sup> Note that this item was 'all that applied' and so percentages do not add to 100.

Self-reported reasons for changes to travel patterns are presented in table 5.28, ordered from most commonly reported to least. As can be seen, a change in convenience was the most frequently reported reason for the shift in travel patterns (at half of the sample), followed by a change in the locations frequently travelled to and from, and having new transport options available.

**Table 5.28 Reasons for changes to travel patterns<sup>(a)</sup>**

	N	%
Different transport options became more convenient	45	50.7%
Places needed to travel to changed	40	45.4%
Had new transport options available	28	31.5%
Had increased need to travel	25	27.9%
Had more freedom in travel choices	22	24.5%
Times needed to travel changed	20	22.0%
Became only viable transport option	17	18.9%
Had fewer transport options available	15	17.4%
Amount of time for travel changed	15	17.3%
Had less freedom in travel choices	14	15.4%
Had less need to travel	10	11.6%
Amount of money for travel changed	9	10.2%
Other <sup>(b)</sup>	6	7.3%
Total	89	-

<sup>(a)</sup> Note that this item was 'all that applied' and so percentages do not add to 100.

<sup>(b)</sup> Other reasons specified included: desire to avoid congestion, becoming more motivated to cycle or moving to a more (or less) cycle-friendly area, having no direct public transport service available and moving within walking distance of work and vice versa.

As the main goal of the current project relates to maximised public transport usage among the Generation Y cohort, respondents were asked whether there was anything that could have increased their use of public transport (further) at this time (presented in table 5.29). Just over a third of respondents reported that something could have improved their use of public transport when moving locations, with increased frequency of services (including off-peak, such as early morning and later at night) being reported by a third of these participants. Cost was also commonly reported as a barrier to public transport use for this subgroup.

**Table 5.29 Potential to increase public transport use at this time**

	N		%	
Nothing could have increased public transport use (further) at this time	56		63.5%	
Yes, something could have (specified below):	33		36.5%	
• Increased frequency of services (incl. off-peak)		11		33.3%
• Reduced cost		8		24.2%
• Improved quality of system		6		18.2%
• Faster services		5		15.2%
• Improved connections between services		2		6.1%
• Increased coverage of services		1		3.0%
Total	89		100.0%	

Overall, these findings suggest that members of Generation Y actively consider accessibility when making relocation decisions and there is demand for improved public transport systems among those who may not be able to move to a currently well-covered area (eg due to the cost of housing or some other reason).

#### 5.2.4.2 Participating in tertiary study

Table 5.30 displays reported effects on travel patterns resulting from participating in tertiary study. These findings are also in line with the focus group findings, with participation in tertiary study being associated with increased use of public and active transport for the largest proportions of these respondents. Participating in tertiary study also increased overall travel for the majority of new students.

**Table 5.30 Effects of participating in tertiary study on travel patterns (N=79)<sup>(a)</sup>**

	N	%		N	%
Increased use of public transport	52	65.8%	Decreased use of public transport	11	13.6%
Increased use of private vehicle	29	36.4%	Decreased use of private vehicle	15	19.2%
Increased use of active modes	33	41.1%	Decreased use of active modes	13	16.3%
Increased overall amount of travel	59	74.4%	Decreased overall amount of travel	4	4.8%

<sup>(a)</sup> Note that this item was 'all that applied' and so percentages do not add to 100.

As can be seen in table 5.31, nearly two-thirds of this subgroup reported one of the reasons for their changes to travel patterns being that their travel locations had changed, followed by having an increased need to travel, a change to travel times and then a change to travel time budgets. A change to financial travel budgets was also reported by a quarter of the group, with a change to convenience being a motivator for just under a third of these respondents.

**Table 5.31 Reasons for changes to travel patterns<sup>(a)</sup>**

	N	%
Places need to travel to changed	52	65.6%
Had increased need to travel	45	56.1%
Times needed to travel changed	28	35.2%
Amount of time for travel changed	24	30.3%
Different transport options became more convenient	22	27.5%
Amount of money for travel changed	20	25.0%
Became only viable transport option	19	23.5%
Had new transport options available	15	18.3%
Had less freedom in travel choices	14	18.2%
Had fewer transport options available	12	15.2%
Had more freedom in travel choices	10	12.1%
Had less need to travel	7	9.3%
Total	79	-

<sup>(a)</sup> Note that this item was 'all that applied' and so percentages do not add to 100.

Just over a third of this subgroup reported improvements to their public transport systems that could have increased their use when they became a student (see table 5.32). For over half of these respondents, this was a reduction in the cost of the service. Improvements to service frequency, coverage, travel times and parking facilities were also identified as motivators for public transport use for this subgroup.

**Table 5.32 Potential to increase public transport use at this time**

	N		%	
Nothing could have increased public transport use (further) at this time	50		63.9%	
Yes, something could have (specified below):	29		36.1%	
• Reduced cost		15		51.7%
• Increased frequency of services (inc. off-peak)		5		17.2%
• Increased coverage of services		5		17.2%
• Faster services		3		10.3%
• Increased parking facilities		1		3.4%
Total	79		100.0%	

#### 5.2.4.3 Changing jobs or job locations

Changing jobs or job locations had a more mixed effect on travel patterns compared with the previous life events examined, with increased private vehicle use in around 45% of cases, and increased public and active transport to a lesser extent (see table 5.33). In general, changing jobs or job locations increased the amount of travel undertaken by respondents.

**Table 5.33 Effects of changing jobs or job locations on travel patterns (N=64)**

	N	%		N	%
Increased use of public transport	22	34.8%	Decreased use of public transport	17	26.3%
Increased use of private vehicle	29	45.9%	Decreased use of private vehicle	10	16.0%
Increased use of active modes	14	21.2%	Decreased use of active modes	10	15.0%
Increased overall amount of travel	30	47.2%	Decreased overall amount of travel	10	16.4%

The reasons for these differing travel patterns after a job change are presented in table 5.34. As can be seen, the most commonly reported reason for changes to travel patterns at this time was a change to the locations of regular travel. It appears that flexibility in travel options commonly decreased for these respondents, with almost 40% reporting this factor. Over a quarter of the subgroup also reported times of travel changing and an increased need to travel as leading to changes in their travel patterns.

**Table 5.34 Reasons for changes to travel patterns**

	N	%
Places needed to travel changed	36	56.3%
Became only viable transport option	25	39.1%
Times needed to travel changed	18	28.1%
Had increased need to travel	18	28.1%
Different transport options became more convenient	17	26.6%
Amount of time for travel changed	15	23.4%
Had fewer transport options available	14	21.9%
Had new transport options available	11	17.2%
Had less freedom in travel choices	10	15.6%
Amount of money for travel changed	7	10.9%
Had more freedom in travel choices	7	10.9%
Had less need to travel	5	7.8%
Other	4	6.3%
Total	64	-

Table 5.35 reveals that approximately a third of this subgroup felt their public transport use could have been better promoted during this change. Again, a reduced cost of services was identified by many as a barrier to their use, with infrequent and slow services also being identified. Note that reduced cost included suggestions such as concession tickets for unlimited travel over specified timeframes and for families.

**Table 5.35 Potential to increase public transport use at this time**

	N		%	
Nothing could have increased public transport use (further) at this time	43		66.9%	
Yes, something could have (specified below)	21		33.1%	
• Reduced cost		7		33.3%
• Increased frequency of services (inc. off-peak)		6		28.6%
• Faster services		4		19.0%
• Improved reliability		2		9.5%
• Improved coverage of services		2		9.5%
Total	64		100.0%	

#### 5.2.4.4 Gaining access to a car or driver licence

As expected, gaining access to a driver licence or a private vehicle was strongly associated with an increased use of private vehicles (see table 5.36). In addition, this change in circumstances was associated with a reduction in public transport use and an increase in overall amount of travel for just over half the sample each.

**Table 5.36 Effects of gaining access to a car or driver licence on travel patterns (N=49)**

	N	%		N	%
Increased use of public transport	0	0.0%	Decreased use of public transport	26	53.7%
Increased use of private vehicle	40	82.5%	Decreased use of private vehicle	0	0.0%
Increased use of active modes	2	3.1%	Decreased use of active modes	9	19.0%
Increased overall amount of travel	25	51.5%	Decreased overall amount of travel	5	10.0%

Most commonly, an increase in transport modes and freedom of travel choices was identified as the reasons behind these changes, with convenience also being identified by many (see table 5.37). Convenience has been consistently identified as an important motivator of transport decisions throughout the course of this project.

**Table 5.37 Reasons for changes to travel patterns**

	N	%
Had new transport options available	31	62.6%
Had more freedom in travel choices	31	62.6%
Different transport options became more convenient	21	42.5%
Had increased need to travel	14	28.2%
Amount of time for travel changed	9	19.2%
Places needed to travel to changed	9	18.5%
Times needed to travel changed	7	13.6%
Had less need to travel	3	5.8%
Became only viable transport option	2	4.1%
Amount of money for travel changed	2	4.1%
Had less freedom in travel choices	1	2.5%
Other <sup>15</sup>	1	2.5%
Had fewer transport options available	0	0.0%
Total	49	-

The majority of this subgroup did not believe public transport improvements could have increased their use of the service at this time; however, eight participants did suggest that increased frequency, reduced cost, and increased speed and coverage of services could have motivated them to shift modes (see table 5.38).

**Table 5.38 Potential to increase public transport use at this time**

	N		%	
Nothing could have increased public transport use (further) at this time	41		84.1%	
Yes, something could have (specified below):	8		15.9%	
• Increased frequency of services (inc. off-peak)		4		50.0%
• Reduced cost		2		25.0%
• Faster services		1		12.5%
• Improved coverage of services		1		12.5%
Total	49		100.0%	

#### 5.2.4.5 Starting first job

As can be seen in table 5.39, starting one's first job was also related to an increase in private vehicle use; however, increases in public transport use were also common. Overall travel also increased at this time for the majority of respondents.

<sup>15</sup> The 'other' reason specified was that the respondent was able to make trips they could not prior to having access to a private car, and therefore this access changed their transport patterns.

**Table 5.39 Effects of starting first job on travel patterns (N=33)**

	N	%		N	%
Increased use of public transport	14	41.6%	Decreased use of public transport	7	20.4%
Increased use of private vehicle	21	63.2%	Decreased use of private vehicle	1	2.3%
Increased use of active modes	6	16.9%	Decreased use of active modes	4	12.1%
Increased overall amount of travel	21	64.8%	Decreased overall amount of travel	0	0.0%

When examining this data further, it is evident that starting one's first job was related to an increased need to travel for many Generation Y members, with a change to the locations of travel also impacting on travel patterns for many (see table 5.40). For just under a third of respondents a change in the times at which they needed to travel also affected travel mode choice at this time.

**Table 5.40 Reasons for changes to travel patterns**

	N	%
Had increased need to travel	18	53.9%
Places needed to travel to changed	14	41.9%
Times needed to travel changed	10	31.4%
Different transport options became more convenient	7	22.1%
Became only viable transport option	7	22.1%
Amount of money for travel changed	6	18.4%
Had fewer transport options available	5	16.1%
Amount of time for travel changed	5	16.1%
Had new transport options available	3	10.7%
Had less need to travel	3	10.7%
Had more freedom in travel choices	3	10.7%
Had less freedom in travel choices	3	10.7%
Other	0	0.0%
Total	33	-

Only around a fifth of this subgroup felt improvements could have increased their public transport usage at this time, with the majority of these respondents again identifying a reduction in cost as most important (see table 5.41).

**Table 5.41 Potential to increase public transport use at this time**

	N		%	
Nothing could have increased public transport use (further) at this time	25		78.0%	
Yes, something could have (specified below):	7		22.0%	
• Reduced cost		4		57.1%
• Increased frequency of services (inc. off-peak)		2		28.6%
• Improved coverage of services		1		14.3%
Total	33		100.0%	

### 5.2.5 Possible future major changes to travel patterns

Respondents were asked to rank the likelihood of a number of key life events occurring in their lives in the next five years on a scale of 1 = very unlikely to 5 = very likely (3 = neutral). Where a respondent had already been through a life change, they were able to specify this and so did not provide this ranking. This ranking exercise was included to provide additional context to anticipated future travel behaviour.

Data from this measure is provided in table 5.42, which shows there were significant differences on mean scores on the scale between Generation Y and the older control group on all but one item (likelihood of purchasing a new home). In general, those in Generation Y's ratings showed a higher probability of events occurring, which is as expected (due to the variation in age between the two subsamples).

The events that the Generation Y cohort rated as likely to occur in their lives (eg received a mean score higher than 3.0) in the next five years in descending order were: move out of family home, start first job, change jobs or job locations, move locations, participate in tertiary study and gain access to a private vehicle or driver licence. All other life events were rated as unlikely on average. Note that all of the life events listed were rated as unlikely on average for the older control group.

**Table 5.42 Ratings of likelihood of different life changes in next five years**

	Already done (N)	Already done (%)	N	Mean likelihood rating <sup>(a)</sup>	Std deviation	Significance
<i>Generation Y subsample (N=476)</i>						
Move out of family home	274	58.1%	193	4.1	1.1	***
Participate in tertiary study	290	61.5%	177	3.5	1.4	***
Start first job	334	70.8%	135	4.1	1.2	***
Change jobs or job locations	48	10.2%	405	3.8	1.2	***
Move locations (eg cities or suburbs)	35	7.3%	420	3.6	1.4	***
Purchase new home	47	10.0%	414	2.7	1.4	
Get married/enter civil union or move in with a partner	116	24.6%	338	2.9	1.3	***
Start a family (eg have a child)	59	12.4%	401	2.6	1.4	***
Have another child	19	3.9%	409	2.0	1.2	***
Lose access to a car or driver licence	6	1.2%	451	1.4	0.8	**
Gain access to a car or driver licence	251	53.0%	211	3.4	1.4	***
Move overseas (short-term travel)	38	8.1%	401	2.9	1.4	***
<i>Control subsample (N=713)</i>						
Move out of family home	322	45.7%	353	2.1	1.2	***
Participate in tertiary study	334	43.4%	383	1.8	1.0	***
Start first job	487	70.1%	201	1.6	1.0	***
Change jobs or job locations	65	9.3%	607	2.9	1.5	***
Move locations (eg cities or suburbs)	48	6.8%	631	2.6	1.4	***
Purchase new home	83	11.9%	587	2.6	1.4	
Get married/enter civil union or move in with a partner	348	50.1%	333	1.9	1.2	***



	Already done (N)	Already done (%)	N	Mean likelihood rating <sup>(a)</sup>	Std deviation	Significance
Start a family (eg have a child)	324	46.6%	362	1.5	1.0	***
Have another child	187	26.9%	496	1.4	1.0	***
Lose access to a car or driver licence	10	1.4%	669	1.6	0.9	**
Gain access to a car or driver licence	469	67.6%	218	1.9	1.1	***
Move overseas (short-term travel)	84	12.1%	590	1.8	1.1	***

\*\* p<.01, \*\*\* p<.001

<sup>(a)</sup> Range = 1-5 for all items.

Following this ranking exercise, respondents were asked to identify which possible life changes in the next five years would result in the greatest impact on their travel patterns. Table 5.43 reveals that just over 10% of Generation Y and just under half of the older control group felt there would be no major changes to their travel patterns in the next five years. This implies that Generation Y's travel patterns may have more changes over the next few years (with around 90% anticipating changes), compared with the older control group (who would appear to be more likely to have more stable travel patterns over this time). These trends are explored in greater detail in sections 5.2.7 and 5.2.8.

Examining the data further reveals there are five life events anticipated to have major impacts on future travel patterns by at least 10% of the Generation Y cohort. In descending order these are: moving locations, changing jobs or job locations, starting a family, moving overseas for a short-term travel experience and moving out of a family home. There were significant differences between this cohort and the control group on the rate at which these life events were specified,  $\chi^2(12, N = 1191) = 318.6, p<.001$ . In all cases, Generation Y had a higher proportion of members who suggested the life event was likely to occur in their lives in the next five years and would lead to the greatest impact on their travel behaviour.

**Table 5.43 Factor likely to cause greatest impact on travel patterns in next five years**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Don't believe any major changes to travel likely in next 5 years <sup>(a)</sup>	54	11.3%	347	48.5%	***
Move out of family home	49	10.3%	4	0.6%	***
Participate in tertiary study	24	5.0%	1	0.1%	***
Start first job	22	4.6%	4	0.6%	***
Change jobs or job locations	78	16.4%	131	18.3%	
Move locations (eg cities or suburbs)	85	17.9%	117	16.4%	
Purchase new home	25	5.3%	37	5.2%	
Get married/enter civil union or move in with a partner	8	1.7%	6	0.8%	
Start a family (eg have a child)	51	10.7%	10	1.4%	***
Have another child	10	2.1%	2	0.3%	***
Lose access to a car or driver licence	7	1.5%	19	2.7%	
Gain access to a car or driver licence	13	2.7%	4	0.6%	***

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Move overseas (short-term travel)	50	10.5%	33	4.6%	***
Total	476	100.0%	713	100.0%	

\*\*\* p<.001

(a) Note that these participants skipped the future questioning (having no major changes anticipated, meaning their travel behaviour can be assumed to remain stable), meaning they are not included in analyses looking at changes to future travel.

Before breaking down anticipated future changes to travel based on the five most frequently selected life events (as with the previous section), the combined data is presented below to show overall anticipated changes to travel trends in the next five years for Generation Y compared with the older control group. It is important to note that this data excludes those who expected their travel behaviour to remain stable over the next five years and so only considers expected changes to travel. Those who did not expect changes to their travel are incorporated into later sections (see section 5.2.7) of this report. It should also be noted that the anticipated data presented does not take into account the known relationship between intention and later behaviour and as such does not constitute final projections for future travel. For the final public transport use projections, please see section 5.2.8.

Table 5.44 reveals that the largest proportion of both subsamples anticipating changes to their travel expected they would increase their use of public transport (46.9% and 45.1% respectively), with at least 40% of the Generation Y subsample expecting to increase their overall amount of travel and their use of active modes as well. A high proportion of the control group also expected to increase their use of active modes (44.7%). Expectations about overall amounts of travel differed significantly between the two subsamples, with Generation Y being significantly more likely to expect to increase their overall travel in the next five years ( $\chi^2(1, N = 788) = 12.1, p < .001$ ) and in turn less likely to expect to decrease their overall amount of travel ( $\chi^2(1, N = 788) = 4.7, p < .05$ ).

Overall, this expectation data highlights a positive shift away from private modes of travel towards public and active transport modes for those expecting their travel patterns to change in the future, in line with the previous data presented regarding preferred and planned changes to travel over time. Generation Y's expected increase in travel is likely to relate to their current reduced amount of travel compared with the control group and the age discrepancy between the two groups (as, for example, many in the Generation Y subsample had not yet started their first job, a life stage shown to relate to increased travel in the previous travel changes data).

**Table 5.44 Anticipated changes to travel patterns in next five years split by subsample**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Increase use of public transport	198	46.9%	165	45.1%	
Increase use of private vehicle	157	37.1%	120	32.9%	
Increase use of active modes	181	42.8%	164	44.7%	
Increase overall amount of travel	192	45.4%	122	33.4%	***
Decrease use of public transport	88	20.8%	64	17.4%	
Decrease use of private vehicle	118	28.0%	107	29.3%	
Decrease use of active modes	48	11.3%	33	9.0%	
Decrease overall amount of travel	96	22.8%	108	29.4%	*
Total	422	-	366	-	

\* p&lt;.05, \*\*\* p&lt;.001

When exploring anticipated future public transport use, it is evident that those reporting weekly use of public transport increased substantially between the baseline measure and the anticipated future travel measure, with those reporting weekly public transport use doubling within Generation Y and tripling within the control group (see table 5.45). While at the baseline there was a significant difference between the two subsamples when comparing proportions of weekly public transport users and non-users for main trips (as reported above), there was no difference between the two at this future measure, with around 70% of both subsamples anticipating at least weekly use of public transport within five years' time.

**Table 5.45 Self-reported weekly users of public transport comparing baseline and future data**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Baseline main trips</i>					
Baseline user group	168	35.3%	153	21.5%	***
Baseline non-user group	308	64.7%	560	78.5%	***
Total	476	100.0%	713	100.0%	
<i>Future main trips</i>					
Future user group	296	70.4%	258	71.5%	
Future non-user group	124	29.6%	103	28.5%	
Total	421	100.0%	361	100.0%	
<i>Baseline other trips</i>					
Baseline user group	87	18.6%	109	15.3%	
Baseline non-user group	389	81.4%	604	84.7%	
Total	476	100.0%	713	100.0%	
<i>Future other trips</i>					
Future user group	264	63.0%	227	63.4%	
Future non-user group	155	37.0%	131	36.6%	
Total	419	100.0%	359	100.0%	

\*\*\* p&lt;.001

Table 5.46 presents baseline and anticipated future mean number of days per week of public transport use for main and other trips. As can be seen, differences between the two subsamples on public transport usage for main trips at the baseline were still present in the anticipated future data, with mean days for Generation Y being significantly higher both when including ( $t(776.5) = 2.6, p < .01$ ) and excluding ( $t(532.5) = 4.9, p < .001$ ) non-users. Paired samples t tests revealed that when considering the entire population base (eg not excluding non-users):

- Mean weekly usage significantly increased between the baseline and anticipated future use for both main trips ( $t(420) = -11.3, p < .001$ ) and other trips ( $t(418) = -13.9, p < .001$ ) for Generation Y.
- Mean weekly usage showed the same pattern for the control group ( $t(360) = -11.8, p < .001$  and  $t(358) = -12.8, p < .001$  respectively).

When excluding non-weekly users:

- The only significant increase in weekly usage was for other trips for both Generation Y ( $t(60) = -2.2, p < .05$ ) and the control group ( $t(42) = -2.9, p < .01$ ).

The non-significant finding for main trips when considering only users is logical, particularly for Generation Y, as mean weekly usage is between four and five days a week, as would be the expected necessary days of travel for most main weekly activities. Overall this data again shows a positive trend towards an anticipated increase in public transport use in the next five years for both subsamples expecting their travel patterns to change in the future.

**Table 5.46 Baseline and anticipated future mean days per week of public transport use in next five years**

	Generation Y subsample			Control group			Significance
	N	Mean (days)	Std deviation	N	Mean (days)	Std deviation	
<i>Including non-users (range 0-7)</i>							
Baseline main trips	476	1.6	2.3	713	0.8	1.8	***
Future main trips	421	3.2	2.5	361	2.8	2.2	**
Baseline other trips	476	0.4	1.1	713	0.3	1.0	
Future other trips	419	1.9	2.2	359	1.8	2.1	
<i>Excluding non-users (range 1-7)</i>							
Baseline main trips	168	4.4	1.6	153	3.9	1.7	**
Future main trips	296	4.6	1.6	258	3.9	1.6	***
Baseline other trips	88	2.4	1.5	109	2.2	1.7	
Future other trips	264	3.1	2.0	227	2.8	2.0	

\*\*  $p < .01$ , \*\*\*  $p < .001$

Table 5.47 reveals self-reported reasons for anticipated changes to travel patterns. As can be seen, the most commonly reported reason for anticipated changes to travel patterns for both subsamples was a change in regular travel locations, with over half of both samples endorsing this. For Generation Y, this was followed by a change in the convenience of transport options (43.4%), availability of new transport options (36.6%), and a change in the times of travel (33.5%). Those in Generation Y were significantly more likely to think that the amount of money they would have available for travel would change ( $\chi^2(1, N = 788) = 14.4, p < .001$ ) and that certain transport modes would become their only viable transport mode ( $\chi^2(1, N = 788) = 4.5, p < .05$ ). These differences may be related to the differences in anticipated changes between the two subgroups. For example, as reported above, those in Generation Y were significantly more likely to anticipate starting their first job and starting a family compared with the control group. Both of these

life changes are likely to be related to changes to travel budgets and mode viability (eg starting a first job is likely to increase travel budgets and starting a family has been shown to reduce the viability of modes such as public transport).

**Table 5.47 Reasons for anticipated changes to travel patterns**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Places need to travel to will change	242	57.4%	201	55.0%	
Different transport options will become more convenient	183	43.4%	161	43.9%	
Will have new transport options available	155	36.6%	128	35.1%	
Times need to travel will change	141	33.5%	111	30.3%	
Amount of money for travel will change	121	28.6%	63	17.3%	***
Will have increased need to travel	112	26.6%	78	21.3%	
Amount of time for travel will change	111	26.2%	87	23.9%	
Will become only viable transport option	106	25.1%	69	18.7%	*
Will have more freedom in travel choices	78	18.6%	79	21.5%	
Will have fewer transport options available	61	14.5%	57	15.7%	
Will have less freedom in travel choices	61	14.4%	40	11.0%	
Will have less need to travel	46	10.9%	52	14.2%	
Other <sup>(a)</sup>	22	5.2%	17	4.6%	
Total	422	-	366	-	

\*  $p < .05$ , \*\*\*  $p < .001$

(a) 'Other' reasons identified included: difficulties or feelings of unsafety using public transport with young children (eg no child restraints available), aiming to live closer to work so more transport modes available, anticipating having to live further away from work, anticipating moving to a smaller area with little or no public transport service, anticipating increases in the cost of parking and fuel, new transport infrastructure being completed, and requiring less travel (eg when going on parental leave and so no longer travelling to work).

These anticipated changes to travel are now broken down by the five most commonly reported anticipated future life changes in the next five years for Generation Y (moving locations, changing jobs or job locations, starting a family, moving overseas for a short-term travel experience and moving out of a family home) to further examine patterns in changes expected by these life changes. Anticipated changes to travel patterns during these life phases are compared with previous changes reported and control group changes where possible (eg where sample sizes are adequate).

### 5.2.5.1 Moving locations

As displayed in table 5.48, anticipated changes to travel patterns from moving locations were fairly consistent regardless of age. Generation Y did anticipate their overall travel would increase at a higher rate than the older control group ( $\chi^2(1, N = 202) = 7.1, p < .01$ ); however, this finding needs to be considered in the context of this younger cohort currently travelling less than their older counterparts and thus expecting an overall increase in their amount of travel. It is also possible that younger people anticipate

having to relocate further out from city centres than older generations due to their lower level of wealth and reduced time with which to accumulate assets.

In terms of the most commonly expected changes to travel patterns from moving locations, it is evident that both subsamples expect to increase their use of public and active transport modes at the highest rate. This therefore provides further support for the focus group finding that members of Generation Y (and this data would additionally suggest older populations) actively consider accessibility when moving locations, with an aim to maximise flexibility in transport options at this time. This finding is also consistent with reported previous changes to travel patterns after moving locations, providing some assurance that what is anticipated when looking to move locations is likely to have a level of accuracy.

**Table 5.48 Anticipated changes to travel patterns from moving locations**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Increase use of public transport	37	43.1%	50	42.6%	
Increase use of private vehicle	24	28.4%	31	26.7%	
Increase use of active modes	40	47.2%	52	55.4%	
Increase overall amount of travel	37	43.8%	30	25.4%	**
Decrease use of public transport	17	19.9%	20	17.0%	
Decrease use of private vehicle	23	27.1%	37	31.6%	
Decrease use of active modes	10	11.6%	13	10.9%	
Decrease overall amount of travel	23	27.5%	40	34.3%	
Total	85	-	117	-	

\*\* p<.01

Table 5.49 presents anticipated weekly public transport usage after moving locations split by subsample. When considering only users of public transport, those in Generation Y anticipate using public transport four days a week on average for their main trips, with the control group anticipating their usage to be closer to three and a half days. This difference was statistically significant,  $t(139) = 2.3$ ,  $p < .05$ . When looking at usage rates including non-users, this difference remains with Generation Y anticipating significantly higher use for their main trips compared with the older control group,  $t(195) = 2.3$ ,  $p < .05$ .

Both groups anticipate using public transport for their other trips around two days per week, or three days when considering only public transport users, after moving locations.

**Table 5.49 Mean anticipated days per week of public transport use post moving location**

	Generation Y subsample			Control group			Significance
	N	Mean (days)	Std deviation	N	Mean (days)	Std deviation	
<i>Including non-users (range 0-7)</i>							
Main trips	84	3.2	2.3	113	2.5	2.2	*
Other trips	84	2.1	2.2	111	1.8	1.9	
<i>Excluding non-users (range 1-7)</i>							
Main trips	64	4.3	1.6	77	3.6	1.6	*
Other trips	57	3.2	2.0	74	2.7	1.8	

\* p<.05

Reported reasons for anticipated changes to travel patterns after moving locations reveal that a change in mode convenience and availability and a change in regular travel locations were the most influential change factors for Generation Y (see table 5.50). Those in Generation Y anticipated having more travel options available ( $\chi^2(1, N = 202) = 4.3, p < .05$ ) and having an increased need to travel ( $\chi^2(1, N = 202) = 3.9, p < .05$ ) at a significantly higher rate than the control group. This anticipated increased need to travel helps explain Generation Y's significantly higher anticipation for increased travel reported above, and may be related to an anticipation of having to relocate further away from key travel locations compared with the older control group (due to having fewer assets, for example).

Comments suggested other reasons for changes to anticipated travel patterns again supported the previous finding that New Zealanders seek to maximise their accessibility when moving locations, with many suggesting they would aim to live within walking distance of key amenities (however, as the above data highlights, this may not be possible for all due to financial constraints etc).

**Table 5.50** Reasons for anticipated changes to travel patterns post moving location

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Different transport options will become more convenient	45	52.7%	60	50.9%	
Places need to travel to will change	43	51.1%	67	57.3%	
Will have new transport options available	39	46.1%	37	31.8%	*
Amount of time for travel will change	23	26.7%	28	24.2%	
Times need to travel will change	21	24.5%	27	22.9%	
Will have increased need to travel	20	23.0%	15	13.2%	*
Will become only viable transport option	18	20.8%	17	14.7%	
Amount of money for travel will change	18	20.8%	24	20.1%	
Will have fewer transport options available	16	19.1%	19	16.3%	
Will have more freedom in travel choices	15	17.7%	28	23.9%	
Will have less need to travel	11	13.4%	15	13.0%	
Other <sup>(a)</sup>	10	11.4%	6	5.0%	
Will have less freedom in travel choices	9	10.3%	10	8.7%	
Total	85	-	117	-	

\*  $p < .05$

(a) 'Other' reasons identified included: a desire to move closer to key locations such as work which would reduce travel needs and increase viability of active modes, new transport infrastructure being completed and potentially having to live further away from key locations.

### 5.2.5.2 Changing jobs or job locations

As can be seen in tables 5.51, 5.52 and 5.53, there were no differences between the two subsamples on any anticipated changes to travel patterns from changing jobs or job locations. Half of Generation Y expected to increase their use of public transport after changing jobs, with an anticipated increase in the use of private vehicles, active modes and overall travel also being common (see table 5.51).

**Table 5.51 Anticipated changes to travel patterns from changing jobs or job locations**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Increase use of public transport	39	50.7%	51	39.2%	<i>ns</i>
Increase use of private vehicle	33	43.1%	42	32.4%	
Increase use of active modes	28	36.3%	50	38.4%	
Increase overall amount of travel	34	43.5%	55	42.5%	
Decrease use of public transport	10	12.8%	20	15.6%	
Decrease use of private vehicle	18	23.0%	40	30.7%	
Decrease use of active modes	9	12.0%	15	11.3%	
Decrease overall amount of travel	17	21.6%	27	20.7%	
Total	78	-	131	-	

Mean anticipated weekly use of public transport was fairly consistent with previously reported rates, as displayed in table 5.52.

**Table 5.52 Mean anticipated days per week of public transport use after changing jobs or job locations**

	Generation Y subsample			Control group			Significance
	N	Mean (days)	Std deviation	N	Mean (days)	Std deviation	
<i>Including non-users (range 0-7)</i>							
Main trips	78	3.1	2.3	129	3.1	2.3	<i>ns</i>
Other trips	77	1.4	1.8	129	1.6	2.0	
<i>Excluding non-users (range 1-7)</i>							
Main trips	54	4.4	1.4	94	4.2	1.5	<i>ns</i>
Other trips	43	2.5	1.8	75	2.7	2.0	

In terms of the reasons for anticipated changes to travel patterns after changing jobs or job locations, the same four reasons most commonly identified for changes to travel post moving locations were again endorsed, as seen in table 5.53.

**Table 5.53 Reasons for anticipated changes to travel patterns after changing jobs or job locations**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Places need to travel to will change	53	67.7%	71	54.4%	<i>ns</i>
Different transport options will become more convenient	33	41.8%	57	44.0%	
Will have new transport options available	24	30.9%	43	33.0%	
Will have increased need to travel	24	30.9%	27	20.4%	
Times need to travel will change	23	29.8%	48	36.5%	



	Generation Y subsample		Control group		Significance
	N	%	N	%	
Amount of time for travel will change	20	25.9%	31	23.9%	
Will become only viable transport option	18	22.8%	23	17.3%	
Amount of money for travel will change	16	21.1%	22	16.7%	
Will have more freedom in travel choices	10	12.9%	22	16.7%	
Will have fewer transport options available	9	12.0%	14	10.9%	
Will have less freedom in travel choices	7	8.6%	10	7.8%	
Will have less need to travel	6	8.0%	22	16.7%	
Other <sup>(a)</sup>	1	1.5%	7	5.4%	
Total	78	-	131	-	

<sup>(a)</sup> 'Other' reasons for anticipated changes to travel patterns included: a desire to work closer to home so can use active transport or a desire to change work locations to allow for active transport (eg no longer having to travel over the harbour bridge in Auckland).

In terms of how these anticipated changes relate to actual changes experienced by the generation previously, anticipated increases in public transport use after changing jobs contrast with reported changes from people who had previously changed jobs. This may reflect that, while New Zealanders desire to maximise their accessibility when changing jobs or job locations, there is a discrepancy in terms of when this can actually be achieved. Hence, while ideally people may prefer to increase their public transport use at this time, it is likely that this does not translate into reality in every instance.

### 5.2.5.3 Starting a family

Starting a family was identified by 51 (10.7%) of Generation Y members as the life change most likely to have a substantial impact on their travel patterns in the next five years. The sample size for the control group (N=10) was too small to draw any comparisons between the two subsamples on anticipated changes resulting from this life phase. Due to this, the control groups previous reported changes for this life change are instead compared (N=35). The sample size for Generation Y's previous changes related to this life phase was also too small to draw any meaningful comparisons (N=16).

The majority of Generation Y (58.1%) anticipated their use of private modes would increase when they started a family, compared with 80.7% of the control group having reported this change when it happened to them (see table 5.54). This anticipated change was mirrored by a commonly anticipated reduction in public transport use for Generation Y (36.7%), and an actual previous reduction in use for the older control group (46.6%). Overall, the same general trend in travel pattern changes was evident in both the younger cohort's anticipated data and the older control group's previously reported data. This again implies that Generation Y is likely to be quite realistic when planning future travel. It is uncertain whether the discrepancy in overall proportions reporting different changes between the two subsamples is due to 1) actual differences between the two age groups or 2) an optimism effect among Generation Y, as with changing jobs or job locations.

**Table 5.54 Anticipated changes to travel patterns from starting a family**

	Generation Y subsample		Control group (actual previous)	
	N	%	N	%
Increase use of public transport	8	15.9%	1	1.5%
Increase use of private vehicle	30	58.1%	29	80.7%
Increase use of active modes	18	35.4%	12	32.8%
Increase overall amount of travel	23	44.0%	11	31.6%
Decrease use of public transport	19	36.7%	17	46.6%
Decrease use of private vehicle	10	18.9%	1	1.5%
Decrease use of active modes	8	15.7%	9	26.6%
Decrease overall amount of travel	16	30.7%	6	16.2%
Total	51	-	35	-

Table 5.55 presents mean weekly public transport usage estimations for Generation Y. Note that the equivalent data is not available for the control group reporting actual previous changes at this was not measured to reduce survey length and complexity. Note that anticipated usage is lower for this life stage compared with others where public transport usage was expected to increase. However, for public transport users, it is still relatively high for main trips, at 3.7 days per week.

**Table 5.55 Mean anticipated days per week of public transport use after starting a family**

	Generation Y subsample		
	N	Mean (days)	Std deviation
<i>Including non-users (range 0-7)</i>			
Main trips	51	1.6	2.1
Other trips	50	1.5	2.0
<i>Excluding non-users (range 1-7)</i>			
Main trips	22	3.7	1.6
Other trips	26	2.8	2.1

As presented in table 5.56, the most commonly reported reason for a change to travel patterns for both subsamples was a change to regular travel locations (71.4% each). Members of Generation Y also commonly anticipated that their travel times and the amount of time free for travel would be likely to change. Around 40% of both subsamples also believed they would have (or did have) less freedom in their travel choices, which probably related to comments made about appropriate transport modes with young children.

**Table 5.56** Reasons for anticipated changes to travel patterns after starting a family

	Generation Y subsample		Control group (actual previous)	
	N	%	N	%
Places need to travel to will change	37	71.4%	25	71.4%
Times need to travel will change	29	56.8%	8	21.7%
Amount of time for travel will change	21	40.3%	11	31.3%
Will have less freedom in travel choices	20	38.7%	14	40.7%
Different transport options will become more convenient	19	37.6%	10	26.8%
Amount of money for travel will change	18	34.4%	2	5.3%
Will have increased need to travel	16	30.7%	8	21.7%
Will become only viable transport option	14	26.7%	3	7.2%
Will have less need to travel	12	23.0%	6	16.2%
Will have fewer transport options available	8	15.9%	7	19.9%
Will have more freedom in travel choices	3	5.1%	1	1.5%
Other <sup>(a)</sup>	3	6.0%	3	7.7%
Will have new transport options available	1	1.6%	0	0.0%
Total	51	-	35	-

<sup>(a)</sup> 'Other' reasons for anticipated changes to travel patterns included: having more things to carry including child restraints, anticipated increased use of active modes to increase exercise, having a reduced need to travel due to no longer working and seeing public transport use with young children as too difficult or unsafe.

#### 5.2.5.4 Travelling overseas

As with the previous life phase explored in further detail (starting a family), Generation Y's anticipated future travel behaviour in this section is compared with previous actual changes reported for members of the control group who had travelled overseas. Table 5.57 reveals anticipated (and actual previous) changes to travel patterns when travelling overseas. As can be seen, the vast majority of both subsamples reported increasing their public transport use at this time. This is mirrored by a decrease in private vehicle use for large proportions of both subsamples. Active transport modes and overall travel were also expected to increase for over half of Generation Y.

**Table 5.57 Anticipated changes to travel patterns from overseas travel**

	Generation Y subsample		Control group (actual previous)	
	N	%	N	%
Increase use of public transport	39	77.7%	31	84.2%
Increase use of private vehicle	4	7.5%	4	11.2%
Increase use of active modes	25	51.0%	25	66.7%
Increase overall amount of travel	29	57.3%	17	46.3%
Decrease use of public transport	3	5.1%	2	4.2%
Decrease use of private vehicle	22	44.0%	18	49.9%
Decrease use of active modes	2	4.2%	1	1.5%
Decrease overall amount of travel	4	7.1%	5	14.1%
Total	50	-	37	-

Expected weekly public transport usage is reported in table 5.58 for Generation Y (again, this measure is not available for the control group reporting actual previous changes). These high anticipated mean weekly use rates suggest that usage overseas is likely to be higher than in New Zealand for travellers. This may be related to the extensiveness of transport systems in many key locations overseas (eg in Europe) and indicates that if improvements could be introduced in New Zealand, usage rates may also increase. The anticipated effect of improvements to New Zealand's public transport system is further explored in the following sections of this report.

**Table 5.58 Mean anticipated days per week of public transport use after overseas travel**

	Generation Y subsample		
	N	Mean (days)	Std deviation
<i>Including non-users (range 0-7)</i>			
Main trips	50	4.9	2.2
Other trips	49	3.5	2.5
<i>Excluding non-users (range 1-7)</i>			
Main trips	44	5.5	1.4
Other trips	44	3.9	2.4

Table 5.59 provides some further context regarding this anticipated high use of public transport, with both the introduction of new transport options and a change in mode convenience being identified by more than half of the Generation Y subsample and the majority of the control group.

**Table 5.59 Reasons for anticipated changes to travel patterns after overseas travel**

	Generation Y subsample		Control group	
	N	%	N	%
Places need to travel to will change	31	61.6%	9	24.8%
Will have new transport options available	29	57.9%	23	63.2%
Different transport options will become more convenient	27	53.5%	30	81.0%
Will become only viable transport option	20	40.3%	5	14.5%
Will have increased need to travel	19	37.3%	10	27.3%
Amount of money for travel will change	15	30.4%	3	7.0%
Times need to travel will change	15	30.4%	5	14.2%
Will have more freedom in travel choices	15	29.5%	17	46.0%
Amount of time for travel will change	9	17.3%	6	16.5%
Will have less freedom in travel choices	7	14.3%	2	6.5%
Will have fewer transport options available	4	8.8%	4	11.2%
Will have less need to travel	1	2.9%	1	3.4%
Other	0	0.0%	0	0.0%
Total	50	-	37	-

### 5.2.5.5 Moving out of a family home

Anticipated changes to travel patterns after moving out of a family home are compared with previous actual reported changes for Generation Y in this section because sample sizes were too small for comparison with the control group. Overall, the data in table 5.60 shows that Generation Y again appears to be realistic when predicting future behaviour, with anticipated changes to travel patterns showing a very similar trend to actual previous changes reported by those who had already gone through this life change. Overall, this life change was associated with increased use of public and active transport, and a reduction in private vehicle use.

**Table 5.60 Anticipated changes to travel patterns from moving out of a family home**

	Generation Y (anticipated)		Generation Y (actual previous)	
	N	%	N	%
Increase use of public transport	27	54.4%	17	58.6%
Increase use of private vehicle	15	31.4%	9	30.0%
Increase use of active modes	30	61.5%	22	77.0%
Increase overall amount of travel	13	25.8%	11	36.5%
Decrease use of public transport	10	19.7%	6	20.5%
Decrease use of private vehicle	21	43.4%	14	47.1%
Decrease use of active modes	1	1.3%	2	7.5%
Decrease overall amount of travel	19	38.4%	10	34.0%
Total	49	-	29	-

Table 5.61 reveals anticipated weekly public transport usage for Generation Y after moving out of a family home. These means show that, in line with projections in table 5.60, anticipated public transport use at this time is relatively high.

**Table 5.61 Mean anticipated days per week of public transport use after moving out of a family home**

	Generation Y (anticipated)		
	N	Mean (days)	Std deviation
<i>Including non-users (range 0-7)</i>			
Main trips	49	3.7	2.5
Other trips	49	2.2	2.1
<i>Excluding non-users (range 1-7)</i>			
Main trips	36	5.0	1.4
Other trips	34	3.2	1.9

In table 5.62, both the anticipated and actual previous reasons for changes to travel patterns again show a very similar trend to each other. Generation Y's anticipated behaviour again appears to be fairly accurate when benchmarking against actual behaviour change data.

**Table 5.62 Reasons for anticipated changes to travel patterns after moving out of a family home**

	Generation Y (anticipated)		Generation Y (actual previous)	
	N	%	N	%
Places need to travel to will change	23	46.6%	18	60.6%
Will have new transport options available	21	43.8%	11	38.8%
Amount of money for travel will change	19	38.6%	11	38.8%
Different transport options will become more convenient	18	35.9%	11	38.8%
Times need to travel will change	13	27.5%	9	30.0%
Will have less need to travel	12	24.1%	8	26.6%
Will have more freedom in travel choices	12	24.1%	11	38.8%
Will have fewer transport options available	11	21.5%	6	19.1%
Will become only viable transport option	10	20.6%	9	30.0%
Amount of time for travel will change	9	18.3%	7	25.4%
Will have increased need to travel	4	7.8%	8	26.6%
Will have less freedom in travel choices	2	3.7%	1	2.7%
Other <sup>(a)</sup>	0	0.0%	1	2.7%
Total	49	-	29	-

<sup>(a)</sup> 'Other' reasons for previous change reported was a culture change. When at home, parents drove everywhere. When out of home, friends cycled and used public transport, leading to an increase in travel by this mode.

### 5.2.6 Public transport service improvement priorities

Table 5.63 presents proportions of Generation Y and the control group reporting anticipated impacts on their public transport use from a list of possible service improvements provided. The list is ordered by largest proportion of Generation Y reporting a 'major' impact (see appendix D for the unabbreviated list of possible improvements presented in the survey). As can be seen, there were no significant differences between the two subsamples in the top six rated service improvements, indicating that these possible improvements are important to both younger and older New Zealanders. Note that following this, participants were asked to rank their top three most important service improvements to maximise their use of public transport in the next five years, with this exercise resulting in the final list of prioritised service improvements for both groups. These priority lists are presented in table 5.64.

Table 5.63 Rated influence of possible service improvements (ordered by greatest impact for Generation Y)

	Generation Y subsample (N=422)						Control group (N=363)						Sig.
	No impact		Minor impact		Major impact		No impact		Minor impact		Major impact		
	N	%	N	%	N	%	N	%	N	%	N	%	
Integrated ticketing	109	25.9%	112	26.5%	201	47.6%	78	21.3%	122	33.5%	166	45.3%	
Increased frequency (peak)	85	20.1%	138	32.8%	199	47.1%	80	22.1%	120	32.0%	163	45.0%	
Shorter overall trip times	88	20.1%	137	32.4%	197	46.7%	77	21.3%	125	34.4%	161	44.3%	
Free service transfers	109	26.0%	117	27.0%	196	46.4%	92	25.2%	115	31.7%	156	43.1%	
Improved real-time info	90	21.4%	151	35.8%	181	42.8%	91	24.9%	147	40.4%	126	34.6%	
Increased frequency (evening and weekend off-peak)	121	28.6%	122	29.0%	179	42.4%	100	27.6%	130	35.8%	133	36.6%	
Short transfer wait times	114	27.1%	138	32.8%	169	40.1%	76	21.0%	102	28.1%	185	50.9%	**
Improved coverage	88	21.0%	168	39.7%	166	39.3%	77	21.2%	101	27.9%	185	50.9%	***
Increased frequency (daytime off-peak)	137	32.4%	142	33.6%	143	33.8%	99	27.3%	138	38.0%	126	34.7%	
Internet payment	118	28.0%	168	39.8%	136	32.2%	126	34.8%	141	38.7%	96	26.5%	
Bus priority lanes	129	30.7%	159	37.6%	134	31.7%	120	33.2%	146	40.2%	97	26.6%	
Improved station/stop facilities	147	34.8%	155	36.7%	120	28.5%	106	29.1%	169	46.4%	89	24.5%	*
Cell phone payment	157	37.1%	155	36.7%	111	26.2%	156	43.0%	140	38.7%	67	18.3%	*
Wifi on services	181	42.8%	136	32.2%	106	25.0%	164	45.1%	140	38.4%	60	16.5%	**
Bus signal priority at lights	158	37.5%	161	38.1%	103	24.4%	128	35.1%	156	43.0%	79	21.9%	
Improved vehicle quality	157	37.2%	164	39.0%	100	23.8%	126	34.7%	174	47.9%	63	17.4%	*
Wifi at stations/stops	183	43.7%	137	32.6%	99	23.7%	168	46.3%	134	36.9%	61	16.8%	
Friendlier/more helpful staff	166	39.4%	156	37.1%	99	23.5%	136	37.4%	165	45.3%	63	17.3%	*
Improved cycle routes to stations/stops	247	58.4%	81	19.1%	95	22.5%	177	48.5%	92	25.3%	96	26.3%	*



	Generation Y subsample (N=422)						Control group (N=363)						Sig.
	No impact		Minor impact		Major impact		No impact		Minor impact		Major impact		
	N	%	N	%	N	%	N	%	N	%	N	%	
Improved station/stop lighting	172	40.9%	157	37.2%	93	22.0%	130	35.9%	161	44.3%	72	19.8%	
Cycle facilities on-board	241	57.0%	90	21.4%	91	21.5%	185	50.8%	93	25.6%	86	23.5%	
Cycle facilities at stations/stops	237	56.1%	96	22.7%	89	21.2%	179	49.0%	94	25.9%	91	25.1%	
Improved footpaths to stations/stops	209	49.5%	131	31.0%	82	19.5%	141	38.9%	149	41.1%	73	20.0%	**
Improved driver training	195	46.2%	147	34.7%	80	19.0%	147	40.5%	158	43.4%	58	16.0%	*
Introduction of CCTV	204	48.4%	140	33.3%	77	18.3%	159	43.9%	145	39.9%	59	16.2%	
Increased parking facilities	250	59.2%	99	23.4%	73	17.3%	160	44.0%	116	31.9%	88	24.1%	***
Additional seating on-board	193	45.6%	160	37.9%	69	16.5%	167	45.9%	142	39.2%	54	14.8%	
Family concession tickets	270	63.9%	88	20.7%	65	15.4%	175	48.5%	97	26.9%	89	24.6%	***
Additional bus stops	246	58.4%	121	28.8%	54	12.8%	180	49.7%	139	38.3%	44	12.0%	*

\* p<.05, \*\* p<.01, \*\*\* p<.001

As can be seen in table 5.63, after the top six ranked service improvements, there were a number of significant differences between the two subsamples. Specifically, members of Generation Y (when compared with the older control group) were significantly more likely to report:

- Shorter wait times would not impact on their use of public transport at all, and would be less likely to have a major impact,  $\chi^2(2, N = 784) = 9.5, p < .01$ .
- Improved coverage would have a minor impact on their public transport use, and less likely to have a major impact,  $\chi^2(2, N = 785) = 14.1, p < .001$ .
- Improved quality of stop and station facilities would have fewer minor effects on their public transport use,  $\chi^2(2, N = 786) = 7.6, p < .05$ .
- The introduction of cellphone payment options would have a major impact on their use of the mode,  $\chi^2(2, N = 786) = 7.1, p < .05$ .
- The introduction of Wifi on-board services would have a major impact on their use of public transport,  $\chi^2(2, N = 787) = 9.3, p < .01$ .
- Improved vehicle quality would have a major impact on their public transport use, and less likely to have a minor impact,  $\chi^2(2, N = 784) = 7.8, p < .05$ .
- Having friendlier and more helpful staff would have more major impacts on their use of public transport, and less likely to have a minor impact,  $\chi^2(2, N = 785) = 7.1, p < .05$ .
- Improvements in cycles routes to and from stops and stations would not impact on their use of public transport, and less likely to have minor impacts,  $\chi^2(2, N = 788) = 8.0, p < .05$ .
- Improvement in footpaths to stops and stations would not impact on their use of the mode, and less likely to have minor impacts,  $\chi^2(2, N = 785) = 10.5, p < .01$ .
- Improved driver training would have minor impacts on their public transport use,  $\chi^2(2, N = 785) = 6.2, p < .05$ .
- Provision of additional park and ride facilities would not impact on their use of public transport, and less likely to have a major impact,  $\chi^2(2, N = 786) = 18.3, p < .001$ .
- The introduction of family concession tickets would not impact on their public transport use, and less likely to have either a minor or major impact,  $\chi^2(2, N = 786) = 19.4, p < .001$ .
- The introduction of additional bus stops would not impact on their use, and less likely to have minor impacts,  $\chi^2(2, N = 784) = 8.3, p < .05$ .

As mentioned above, of the possible improvements selected as likely to have a major impact on public transport use in the future, participants were asked to rank their top three most important (to maximise their use of public transport the most). This data was used to calculate a final priority score for each possible service improvement listed<sup>16</sup>.

---

<sup>16</sup> To calculate the final priority score for each possible improvement the number of respondents ranking each improvement as their most important (eg first) were multiplied by 3, with respondents ranking improvements as their second most important being multiplied by 2 and then those ranking improvements as third being multiplied by 1. These scores were then summed to calculate the final priority score for each possible service improvement. Note that

Table 5.64 presents the top 10 service improvement priorities for both Generation Y and the control group, with unique priorities for both groups being bolded for ease of interpretation. The lowest five priorities for both subsamples are also presented for further context. There is a lot of overlap between the two groups in the final highest priorities, with the top two for both subsamples being an increased frequency of services during peak periods and improved coverage in terms of routes. Unique priorities to Generation Y include: the introduction of free transfers (during trip chaining), improved real-time information provision and the provision of Wifi on services. The older control group by contrast were more interested in the introduction of cycle facilities on board services, shorter wait times during transfers and the introduction of bus signal priority at lights to improve service punctuality. Note that the top six service improvements from the previous table (table 5.63) are carried over into these final top priorities for Generation Y, showing there was agreement between these two measures. Main barriers to use identified earlier in this report are also carried forward into these priorities (eg with difficulties with trip chaining being seen as a barrier to public transport use).

Appendix E sets out service improvement priorities for Auckland, Wellington, Christchurch and 'other' New Zealand regions separately. This data shows there is variation between New Zealand regions on identified service improvement priorities, reflecting the variation in existing services provided by these regions. Therefore, as expected, as service quality changes it would appear that this is coupled with a change to service improvement priorities for users.

---

N=80 in the Generation Y subsample and N=75 in the control group rated no service improvements as likely to have a major impact on their travel patterns, and as such these participants did not complete this second ranking exercise and are not included in this analysis.

Table 5.64 Top 10 service improvement priorities by subsample (ordered by highest priority for Generation Y)

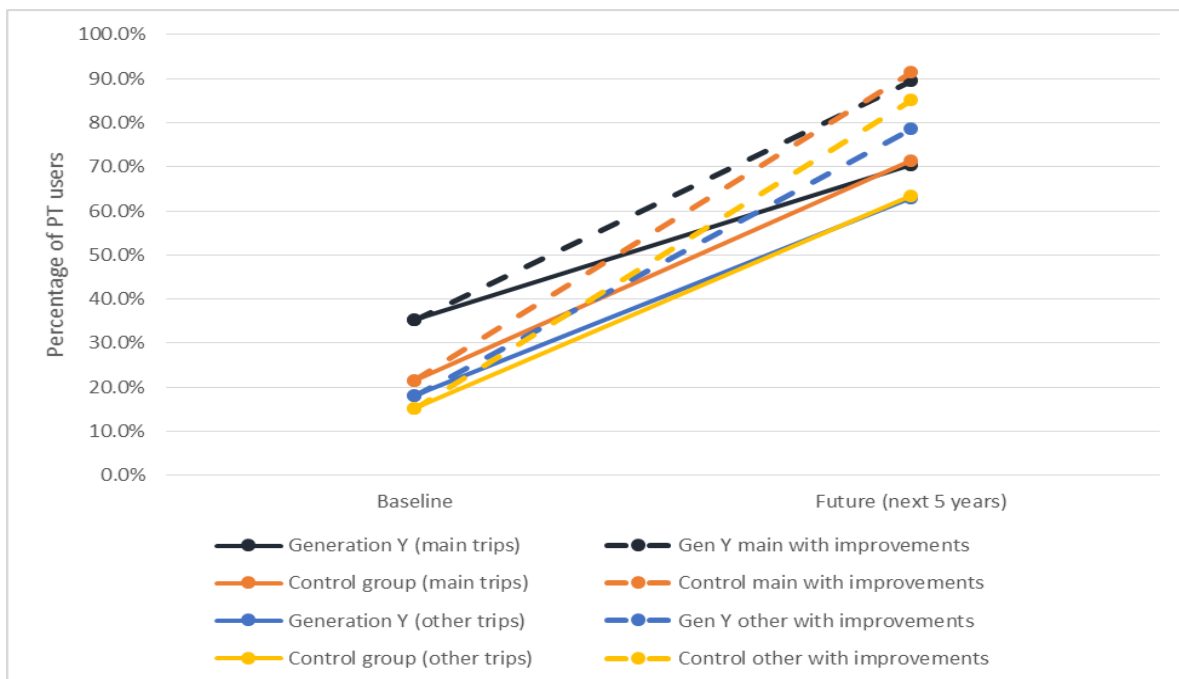
	Generation Y subsample (N=342)				Control group (N=291)		
		Total N	Total %			Total N	Total %
1	Increased frequency (peak)	102	29.8%	1	Improved coverage	95	32.6%
2	Improved coverage	84	24.6%	2	Increased frequency (peak)	82	28.2%
3	Bus priority lanes	76	22.2%	3	Increased frequency (evening and weekend off-peak)	65	22.3%
4	<b>Free service transfers</b>	70	20.5%	4	Integrated ticketing	61	21.0%
5	Increased frequency (evening and weekend off-peak)	78	22.8%	5	Shorter overall trip times	51	17.5%
6	Shorter overall trip times	66	19.3%	6	Bus priority lanes	39	13.4%
7	Integrated ticketing	56	16.4%	7	Increased frequency (daytime off-peak)	48	16.5%
8	Increased frequency (daytime off-peak)	47	13.7%	8	<b>Cycle facilities on-board</b>	43	14.8%
9	<b>Improved real-time info</b>	52	15.2%	9	<b>Short transfer wait times</b>	41	14.1%
10	<b>Wifi on services</b>	36	10.5%	10	<b>Bus signal priority at lights</b>	34	11.7%
<b>Lowest ranked service improvements</b>							
1	Additional seating on-board	9	2.6%	1	Internet payment	8	2.7%
2	Wifi at stations/stops	6	1.8%	2	Additional bus stops	5	1.7%
3	Additional bus stops	5	1.5%	3	Wifi at stations/stops	3	1.0%
4	Improved station/stop lighting	4	1.2%	4	Improved driver training	3	1.0%
5	Improved footpaths to stations/stops	6	1.8%	5	Improved station/stop lighting	4	1.4%

### 5.2.6.1 Anticipated public transport usage in an improved public transport scenario

Figure 5.1 presents the proportions of both subsamples reporting weekly public transport use at the baseline, and in the next five years with service improvements (dashed lines) split by subsample for the two trip types (main and other trips; the corresponding table is available in appendix E, table E.1). Note that the improved service scenario is specific to each respondent and is a scenario where each respondent's top three ranked service improvements were introduced. It is important to keep in mind that this data is only for those who anticipated changes to their travel behaviour in the future. Data for those who anticipated their travel would remain stable over the next five years is presented in section 5.2.7. This data does not take into account the known relationship between anticipated and later actual behaviour (where there is a known discrepancy) and so only reveals stated preferences and is not actual projections for future public transport use for these sub-populations within the two main samples. For conservative projections based on this data, see section 5.2.8.

As can be seen, the proportion of public transport users in both subsamples increases substantially between the two time points. While at the baseline Generation Y used public transport for their main trips at a significantly higher rate compared with the control group (see finding above), this difference is no longer present at either of the future time point scenarios. The only difference with regard to 'other' trips is that in the improved service scenario the control group anticipated using public transport at a significantly higher rate than Generation Y (85.2% compared with 78.6%;  $\chi^2(1, N = 632) = 4.4, p < .05$ ).

**Figure 5.1** Percentage of weekly users of public transport over time (including only those expecting changes to their travel)



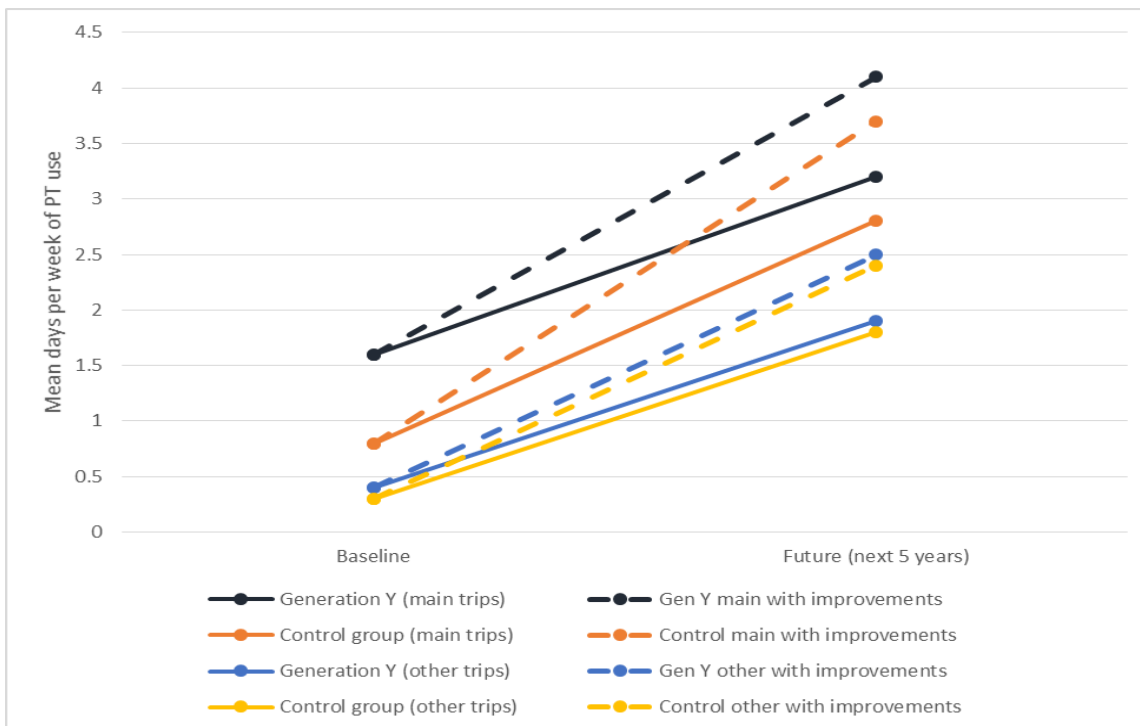
Mean days per week of public transport use split by subsample for the two trip types are displayed in figure 5.2 (including non-users) and figure 5.3 (excluding non-users) (for the corresponding table see table F.2 in appendix F). Note that this data again includes only those expecting changes to their travel, and so gives a clearer view of the possible effects of service improvements for these travellers. Focusing first on the overall data including non-users (figure 5.2), it is clear that the large increases seen in the proportions of self-reported weekly public transport users over time translates into higher mean days per

week of use over time. Mean weekly usage with improvements compared with usage without improvements for both subsamples was significantly higher for both main and other trips (see appendix F for statistical results). Mean weekly usage in the improved service scenario was significantly higher for Generation Y compared with the older control group, ( $t(631) = 2.2, p < .05$ ). This difference therefore carries through from the baseline into both of the future scenarios.

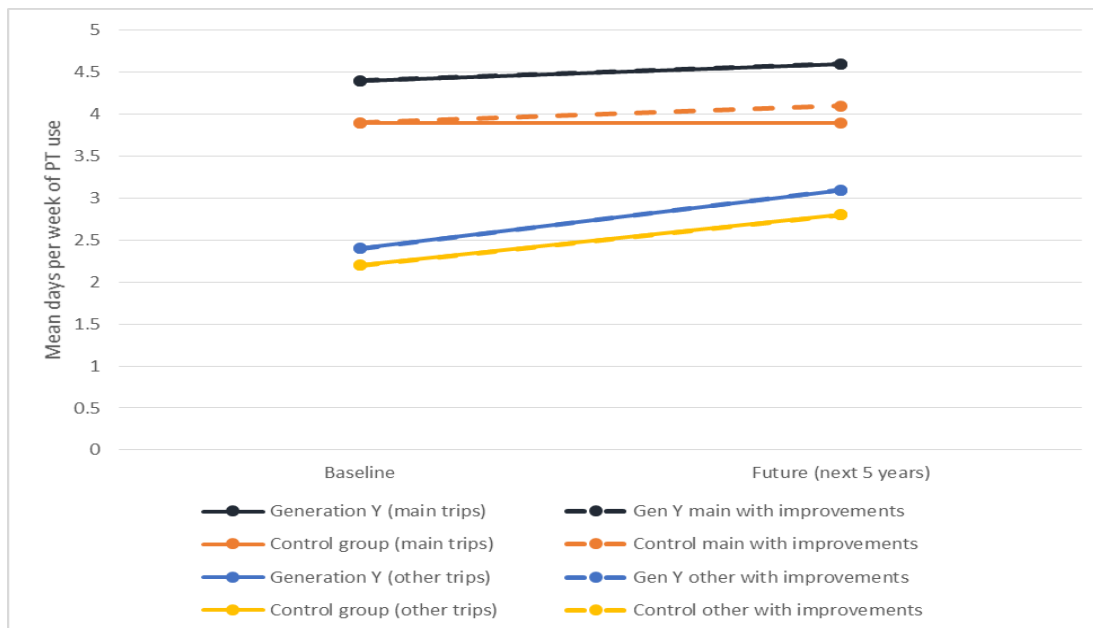
When looking at public transport users only (figure 5.3), it is evident this data is much more stable over time, indicating that new users of public transport anticipate their weekly usage to be roughly equivalent to existing users. This is logical as most people would need to travel around five days for their main trips, and around two to three days for other trips. Mean weekly usage rates are similar to these rates. This figure also shows that Generation Y's significantly higher mean weekly usage of public transport at the baseline (see above) is still present in both future scenarios when only considering public transport users (see above and  $t(570) = 3.7, p < .001$ ). Generation Y's anticipated use of public transport for other trips is also significantly higher than the control group in the improved future service scenario ( $t(514) = 2.0, p < .05$ ). Therefore, while there appears to be higher latent demand for public transport among members of the older control group anticipating change to their travel patterns in the next five years, Generation Y's anticipated weekly usage is still higher on average. This is given further clarification in the overview of anticipated travel patterns section below which incorporates usage rates for the entire subsamples (eg including those who do not anticipate changes to their travel patterns in the future).

The control group's mean weekly usage of public transport for main trips between the future and future with improvements scenarios is significantly higher ( $M=3.9$  to  $M=4.1$  respectively;  $t(220) = -3.1, p < .01$ ). This is the only significant difference between these two time points within the subjects.

**Figure 5.2 Mean weekly public transport use over time (including non-users) (including only those expecting changes to their travel)**



**Figure 5.3** Mean weekly public transport use over time (excluding non-users) (including only those expecting changes to their travel)



### 5.2.6.2 Willingness-to-pay for an improved public transport service

Those who ranked their top three most important service improvements and reported their anticipated weekly public transport use in this scenario were questioned about their willingness to pay for this improved service by way of an increased fare. Table 5.65 reveals that around a third of the respondents were willing to pay an increased fare for an improved service, with no significant difference in these proportions between the two subsamples ( $p > .05$ ). Therefore, around two-thirds of New Zealand travellers wanting an improved public transport service would not be willing to pay an increased fare for the improvements. It is not possible to assess how many of these travellers would continue to use the service if a fare increase was imposed (eg because they had no alternative transport options). It should be noted here that while there was no difference in willingness to pay between the two subsamples, Generation Y did identify cost as a barrier to public transport use at a significantly higher rate (9.5%) than their older counterparts (4.2%), therefore increases to fare costs could potentially have larger implications for members of Generation Y than for older New Zealand travellers.

**Table 5.65** Willingness to pay for service with top three prioritised improvements

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Willing to pay increased fare	115	33.5%	115	39.5%	<i>ns</i>
Not willing to pay increased fare	228	66.5%	176	60.5%	
Total	343	100.0%	421	100.0%	

Those who indicated they would be willing to pay an increased fare were asked to specify how much they would be willing to pay per fare on a scale from 'less than 50c' to 'more than \$5.00'. For the purposes of analysis, the scale was recoded to range from 20c (as close to mid-way between paying nothing and 50c that can be paid in coins with New Zealand currency) and \$7.50 (mid-way between \$5.00 and \$10.00).

Note that only one person (a member of Generation Y) suggested they would be willing to pay more than \$5.00 per fare. This data revealed that the mean acceptable increased fare for Generation Y was \$1.20, compared with \$1.03 for the control group (see table 5.66). There was no significant difference in these mean increases to fares ( $p > .05$ ), therefore revealing the same proportion of both groups would be willing to pay the same increased fare for an improved public transport service in the future.

**Table 5.66 Mean additional fare willing to pay for service with top three prioritised improvements**

	N	Minimum	Maximum	Mean	Standard deviation	Significance
Generation Y	115	.20c	\$7.50	\$1.20	1.0	<i>ns</i>
Control group	115	.20c	\$5.00	\$1.03	0.7	

### 5.2.7 Overview of anticipated future public transport usage

Figure 5.4 displays the percentage of anticipated public transport users over time when including the entire subsamples<sup>17</sup> (eg including those who did not expect changes to their travel in the next five years). For the corresponding table, see table F.3 in appendix F). It is important to reiterate that this data only shows stated preferences for future travel by public transport and is not a projection for future public transport use. For conservative projections based on this data taking into account known relationships between intention and later behaviour, see section 5.2.8.

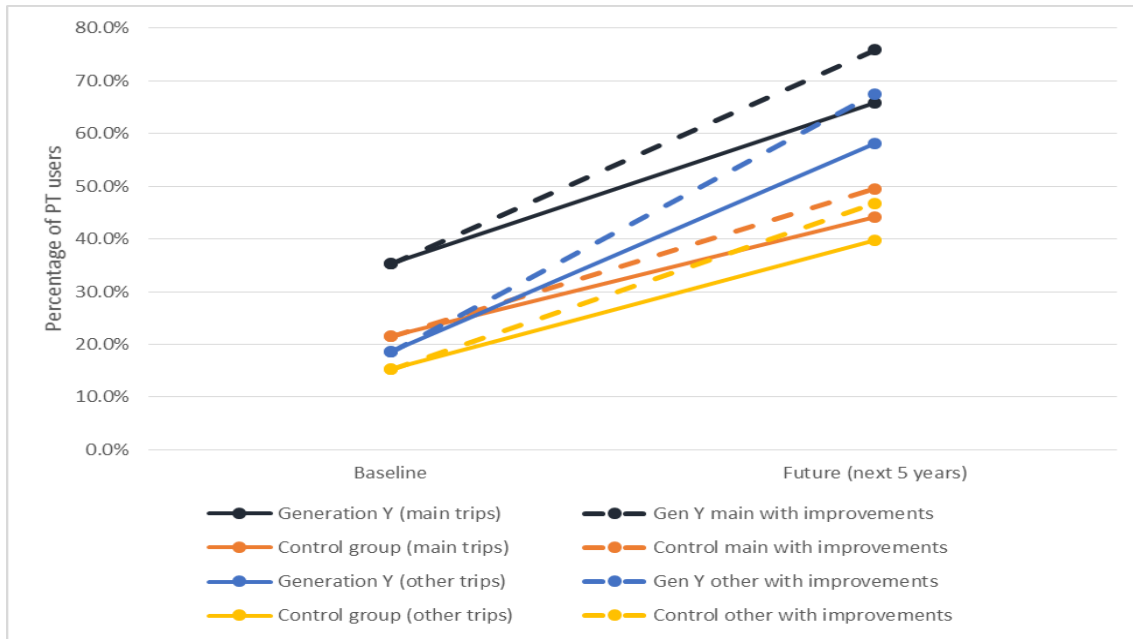
As displayed in figure 5.4, the proportion of respondents who reported weekly public transport use increased substantially between the time points. Overall rates of weekly usage were still lower than for those who only expected changes in their travel, particularly among the control group. This variation is more clearly depicted in figure 5.5 where it can be seen that the higher proportion of the control group expected their travel to remain constant over the next five years (48.5%, N=347) compared with Generation Y (11.3%, N=54), which resulted in large discrepancies between these different measures.

Chi-square analysis reveals that Generation Y has significantly higher reported rates of weekly public transport use than the older control group when comparing the entire subsamples for all time points and trip types except baseline other trips (for statistical results see appendix F, table F.3). Therefore, this data provides evidence that Generation Y anticipates continuing to use public transport at a higher rate than their older counterparts over the next five years, even with the apparent high rate of latent demand among the control group.

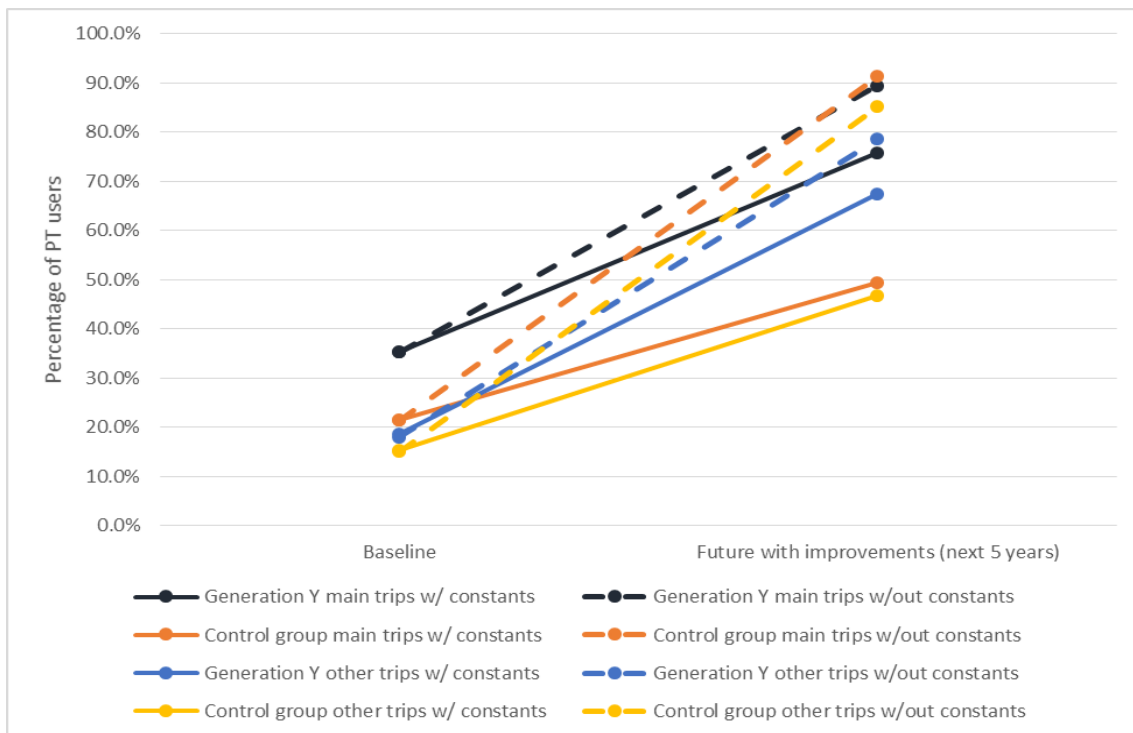
<sup>17</sup> To calculate possible usage rates in the future without improvements, baseline weekly public transport use was input into a new variable for those not anticipating changes to their travel in the next five years for both main and other trips. For those expecting changes to their travel, reported weekly usage in the next five years after the most major life change for main and other trips were input into these respective variables, therefore including usage rates for those not expecting and expecting changes to their travel. Two binary variables were then computed to obtain rates of users versus non-users, where those reporting not using public transport weekly (eg score of 0) for both trips types were recoded as non-users, and those reporting weekly use between one and seven days being coded as users separately for both trip types. For possible usage rates in the future with improvements, the same process was undertaken using reported weekly usage in the improved public transport service scenario. The only difference in the computation of these variables was where respondents indicated that no possible service improvements would have a major impact on their use of public transport (Gen Y N=80, Control N=75), the anticipated future weekly use of public transport reported was imputed for both trip types.



**Figure 5.4** Percentage of anticipated weekly users of public transport over time for entire subsamples



**Figure 5.5** Percentage of anticipated weekly users of public transport for main and other trips over time comparing total subsample data with data from only those anticipating changes to their travel in the next five years



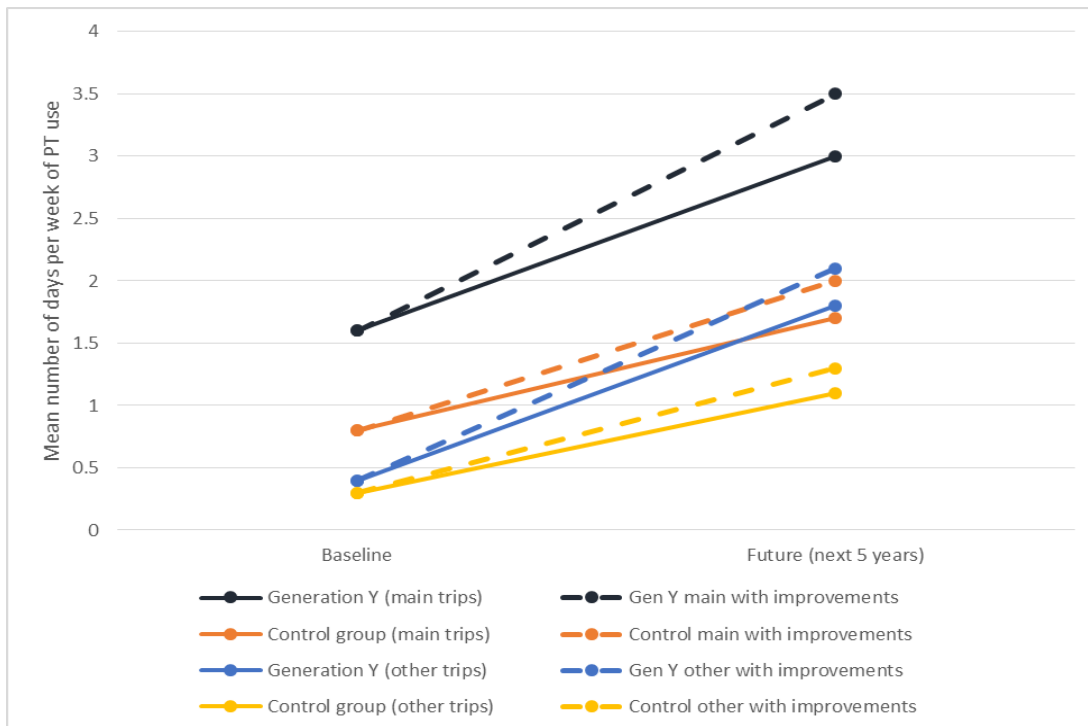
Turning to anticipated mean days per week of public transport use including the entire subsamples (eg including those expecting their travel patterns to remain constant in the next five years), it is evident that as well as a higher proportion of Generation Y using public transport weekly compared with the older control group, this cohort also anticipates using public transport more days per week on average for both

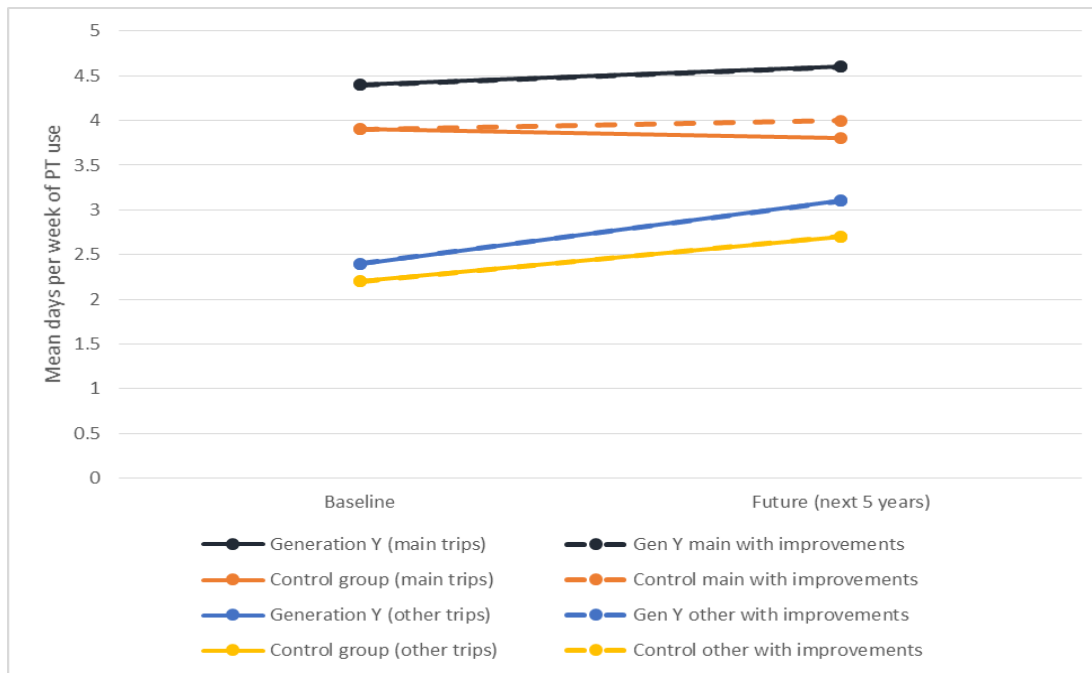
their main and other trips compared with the older control group (see figure 5.6 for means including non-users of public transport and figure 5.7 for means excluding non-users. For the corresponding table, see table F.4 in appendix F). For both these sets of data, the only trip type where Generation Y did not have a statistically significantly higher mean weekly public transport use was baseline other trips, in line with the findings summarised above (see appendix F for the statistical results). Therefore, members of Generation Y anticipated they would continue to use public transport at a higher rate in the next five years compared with their older counterparts.

In line with the data presented above, not including those expecting their travel to remain constant over the next five years, mean weekly usage when considering only public transport users is much more stable between the time points (figure 5.7) compared with when including data for both users and non-users (figure 5.6). This again is a function of the relatively high mean number of days reported at the baseline for public transport users in Generation Y and the control group. The large increases in figure 5.6 are due to the large increases in the proportion of public transport users over time (shown in figure 5.4).

Paired samples *t* tests comparing mean scores within the subsamples reveal that when including non-users, mean weekly public transport use increased significantly for both trip types for both subsamples (see appendix F for statistical results). When examining mean weekly usage excluding non-users, only means for other trips between the baseline and the future scenarios increased for Generation Y. For the older control group, this difference was also statistically significant, as was the mean increase between the future scenario without improvements and the future scenario with improvements for main trips (appendix F lists these statistical results).

**Figure 5.6 Mean weekly public transport use over time (including non-users) for total subsamples**



**Figure 5.7 Mean weekly public transport use over time (excluding non-users) for total subsamples**

### 5.2.8 Projected public transport usage scenarios in the next five years

In order to improve the accuracy of projected future public usage based on the sample's stated anticipated future behaviour and preferences for future travel behaviour, respondents were grouped into 'stages of change' based on whether or not they currently travelled by public transport regularly and their preference for travelling by this mode regularly in the future. These stages of change are from the transtheoretical model (TTM), of intentional behaviour change (see DiClemente 2007). The TTM identifies how prepared and willing individuals are to change a particular behaviour so interventions can be appropriately targeted and has been used to investigate transport behaviour overseas and in New Zealand. In transport research, it has been used to explore potential public transport users' underlying motivations and readiness for behaviour change (Bamberg 2007).

Using the TTM, the subsamples were divided into the following stages of change:

- precontemplation: current non-users of public transport who did not indicate a desire to use public transport in the future
- contemplation: current non-users of public transport who indicated a desire to use public transport in the future
- action: current public transport users who indicated a desire not to use public transport in the future
- maintenance: current public transport users who indicated a desire to continue using this mode in the future.

Anticipated change in public transport use in the future was examined under these four groupings. This showed that those regular users of public transport at the baseline (action and maintenance groups) did not overstate changes to their travel behaviour in the future (eg rates of weekly usage did not increase substantially over time). Rates of public transport use increased considerably for both the

precontemplation and contemplation groups, however, accounting for much of the increased anticipated public transport use presented in the previous section. Because of this, a conservative factor of .20 was applied to these two groups for their future behaviour, based on Bamberg's (2000) previous finding that intention generally accounts for 20% to 30% of variance in actual behaviour (based on meta-analytic review of previous research). In essence, this factor randomly recoded 80% of travellers from these two groups into non-public transport users in all future scenarios.

This analysis resulted in the conservative projected rates of future public transport use shown in figure 5.8 (for the corresponding table please see table F.5 in appendix F). As can be seen, both Generation Y and the control group are projected to increase their use of public transport in the next five years, with larger increases possible if public transport systems are improved (through the service improvement priorities presented above). Over half of Generation Y and approximately a third of the control group are projected to be weekly users of public transport for their main trips if these improvements are made to New Zealand's public transport systems, with very similar figures being achieved for other trips. This is compared to three quarters of Generation Y and half of the control group anticipating to be weekly users for their main trips. Therefore, applying the .20 factor to baseline non-users of public transport reduced projected rates of public transport use in the future substantially.

As with the previous data presented, chi-square analysis revealed that Generation Y had significantly higher rates of public transport use compared with the control group in both future scenarios for both main and other trips in these conservative projections (see appendix F for statistical results).

**Figure 5.8 Conservative projected proportions of weekly public transport users in different future scenarios split by subsample**

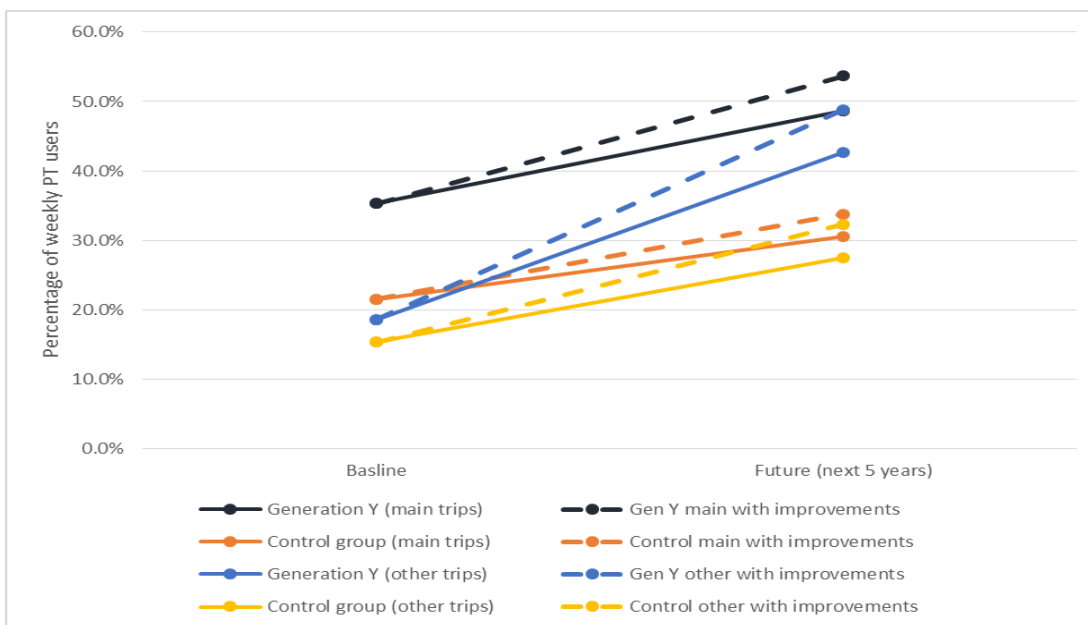


Figure 5.9 (including non-users) and figure 5.10 (excluding non-users) present projected weekly usage rates for the two subsamples for main and other trips (see table F.6 in appendix F for more detailed statistics). When including non-users, weekly usage increased from the baseline for both future scenarios, with additional increases being possible if service improvements are implemented. When excluding non-users, mean weekly usage rates were again more stable, with small increases possible with service improvements.

Independent samples *t* tests revealed that Generation Y had significantly higher mean weekly usage rates in both future scenarios for both trip types when including non-public transport users (see appendix F for full statistical results). When excluding non-users, the only trip type without a significantly higher mean weekly usage rate for Generation Y was 'other' trips in the future scenario without any service improvements. Therefore, a higher proportion of Generation Y is projected to continue using public transport at a higher rate in the next five years compared with their older counterparts.

The results of paired samples *t* tests including non-users (comparing mean weekly usage rates within the subsamples over time) reveal that increases in mean weekly usage were statistically significant for both subsamples between the different time points for all trip types (see appendix F for full statistical results). There were fewer differences when excluding non-users, as highlighted in appendix F.

**Figure 5.9** Projected mean weekly public transport use over time (including non-users) for total subsamples

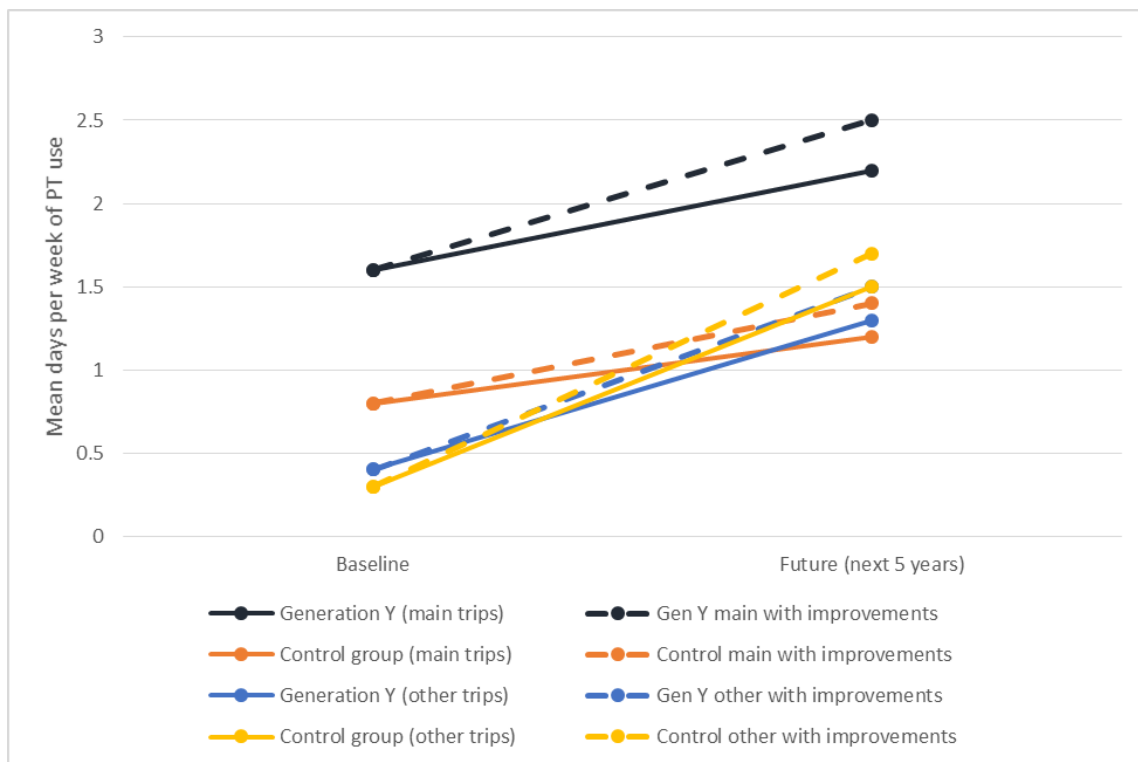


Figure 5.10 Projected mean weekly public transport use over time (excluding non-users) for total subsamples

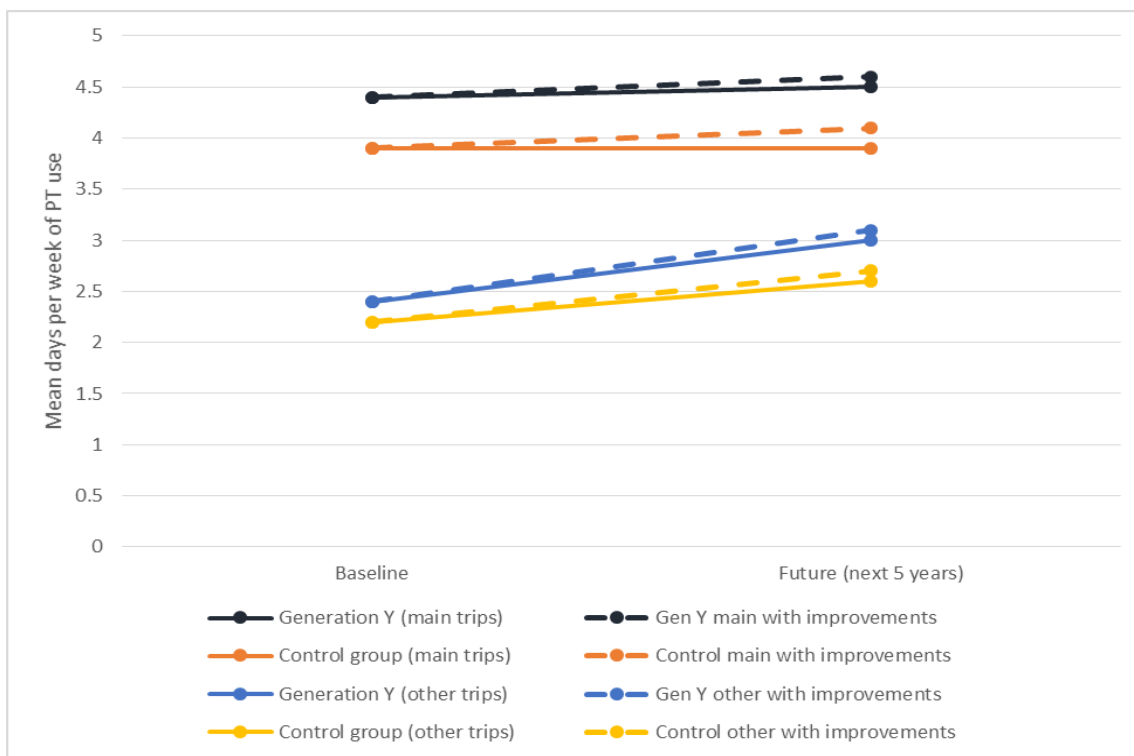


Table 5.67 presents the actual number of Generation Y and their older counterparts projected to use public transport weekly for their main and other trips in the two future scenarios (among other key information) to give a better picture of possible demand for public transport across New Zealand. Overall, these projections show a positive shift towards public transport among both Generation Y and their older counterparts, particularly so for Generation Y’s other trips which appear to have the greatest potential for increased ridership (perhaps due to a perception that the mode will become more convenient for off-peak, weekend and evening trips). It should be noted that while higher proportions of Generation Y are projected to use public transport regularly compared with their older counterparts, the actual number of users is in favour of the control group due to their higher population base (keeping in mind that the control group has a much wider age range than Generation Y), as illustrated in figure 5.11. Therefore, both groups are worth targeting when aiming to increase public transport use. It should be kept in mind that the improved public transport scenario was individualised for each participant, meaning that while service improvement priorities will cater to the majority, there will of course be variation in the impact on ridership of different interventions.

As highlighted in chapter 3, the Generation Y population is stable across New Zealand, with Auckland the only region showing growth. Therefore, in Auckland this increasing population base should be taken into account when considering possible future usage rates with improved services. Regions with higher (such as Auckland, Wellington and Otago) and lower (eg Tasman) proportions of Generation Y also need to consider this when projecting possible public transport use in their areas.

Auckland Transport produced projection figures which forecast a 44% increase in public transport patronage between 2012 and 2022, a large proportion of which will be gained through increased bus patronage (Auckland Transport 2013b). Our projected increases in public transport users, while not attributed to mode-specific improvements (instead focusing on infrastructure as a whole) are in line with

such findings, forecasting an increase of just over 30% in weekly public transport users, when infrastructure improvements have taken place.

Projections reported to the Greater Wellington Regional Council suggest an increase of 23% in public transport trips made peak morning and home-based work daily commuter trips by 2021 (Elliot et al 2012). Furthermore, projections made for 2021 in the report forecast a:

- 19% increase in peak morning bus boardings
- 37% increase in peak evening bus boardings
- total increase of 19% in peak morning rail boardings
- total increase of 5% in peak evening rail boardings.

These projections provided to Greater Wellington Regional Council are more complex than those reported by Auckland Transport. Yet, these increases are not necessarily attributed to infrastructure improvement, but instead that driving saturation, as mentioned in the literature review, will result in increased mode shift from private vehicle use to public transportation. This may explain why some of the projections outlined above are lower than those reported in table 5.67 (as they do not account for public transport infrastructure improvements).

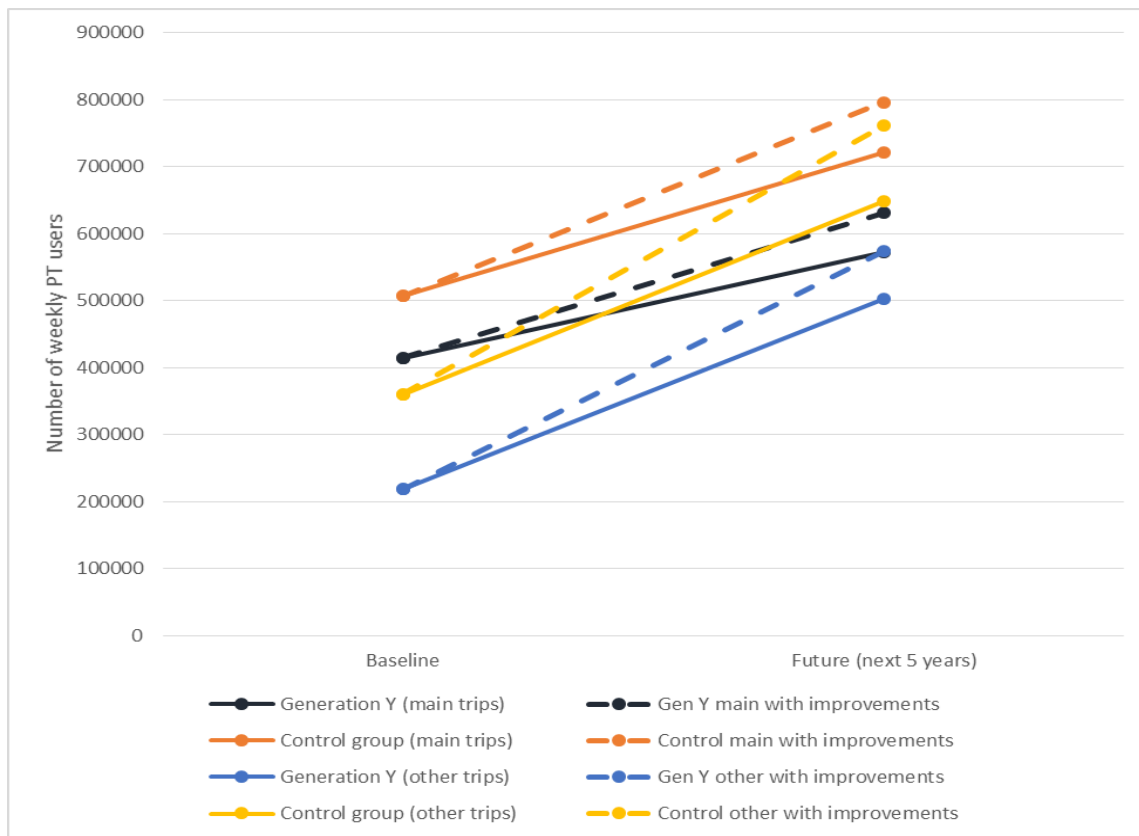
Table 5.67 Conservative projected future public transport use<sup>(a)</sup>

	Generation Y (total N=1,175,980)				Control group (total N=2,357,340)				Total (total N=3,533,320)		
	% weekly PT users	% increase	N weekly PT users	Avg. weekly usage (days)	% weekly PT users	% increase	N weekly PT users	Avg. weekly usage (days)	% weekly PT users	% increase	N weekly PT users
Baseline main trips	35.3%	-	415,121	4.4	21.5%	-	506,828	3.9	26.1%	-	921,949
Future main trips	48.7%	+13.4%	572,702	4.5	30.6%	+9.1%	721,346	3.9	36.6%	+10.5%	1,294,048
Future main trips with improvements	53.7%	+18.4%	631,501	4.6	33.8%	+12.3%	796,780	4.1	40.4%	+14.3%	1,428,281
Baseline other trips	18.6%	-	218,732	2.4	15.3%	-	360,673	2.2	16.4%	-	579,405
Future other trips	42.8%	+24.2%	503,319	3.0	27.5%	+12.2%	648,269	2.6	32.6%	+16.2%	1,151,588
Future other trips with improvements	48.8%	+30.2%	573,878	3.1	32.3%	+17.0%	761,421	2.7	37.8%	+21.4%	1,335,299

<sup>(a)</sup> Current New Zealand population size split by age sourced from Statistics NZ:

[www.stats.govt.nz/browse\\_for\\_stats/population/estimates\\_and\\_projections/NationalPopulationEstimates\\_HOTPA30Jun14.aspx](http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/NationalPopulationEstimates_HOTPA30Jun14.aspx)



**Figure 5.11** Projected number of weekly public transport users in different scenarios split by subsample

### 5.2.9 Benefits and limitations of the survey method

The survey method had a number of benefits, in particular allowing data to be gathered to directly address the research questions beyond what is currently available throughout New Zealand. Respondents were not only asked about their preferences for their future travel behaviour, but also their intended and planned travel patterns in the future. Their baseline behaviour was used to control for some of the known response biases between intended and actual behaviour, with the .20 factor applied for those who were not public transport users at the baseline but reported they would be in the future scenarios. This improves the robustness of the projections presented and provides a clear picture of desired travel patterns and of possible transport demand in the next five years. The survey method also allowed the researchers to explore in depth hypotheses put forward in the previous literature regarding the motivations behind travel choices, factors only able to be explored through primary data collection. This has resulted in a solid body of evidence in which to address the research questions put forth at the inception of this project.

While there are a number of benefits to the survey method undertaken to explore preferred and possible travel patterns among Generation Y, the method also has a number of limitations. These can be summarised as follows:

- The sample collected was one of convenience, meaning that this may have introduced some bias into the dataset. For example, because the survey was conducted online, those without internet access could not respond. The weighting variable calculated ensured the sample matched the weighted NZHTS sample of New Zealand travellers on age and gender. This therefore controlled for any sample biases introduced due to demographic variation between the current sample and the population of

New Zealand travellers; however, it is not possible to eliminate all biases, and as such, this is a limitation of the dataset.

- The survey used a self-report methodology which means the data was possibly affected by factors such as social desirability bias, whereby respondents answer questions based on what they think is in line with social norms and expectations rather than their true feelings. The developed survey included a number of items designed to serve as 'accuracy' or 'bias' checks to assess the magnitude of this potential issue, and these are discussed as appropriate throughout the results. An example of this is the questioning around choice of travel mode, assessing the actual importance of factors such as environmental consciousness (a factor suggested to influence Generation Y's travel patterns in the previous literature) versus convenience of travel options. Expectations around increased public transport use in the future is also a trend that can be affected by factors such as social desirability bias, and as such, the .20 factor was applied to the future projections section to help control for this potential issue; however, it is not possible to eliminate this inherent bias. Other factors such as recall inaccuracies, or over or underestimation are also potential sources of bias in the data. For example, respondents may have failed to factor in days off, such as public holidays, when estimating the number of days they use different transport modes. Again, this is a limitation of the dataset.
- In relation to the top priorities for future improvements to New Zealand's public transport systems, it is important to acknowledge that these are based on the predefined list provided in appendix D. Therefore, other service improvements not listed could have been missed in these final priority lists. It should be noted, however, that the final list of possible service improvements included in the survey was based on extensive consultation with the Transport Agency to ensure that key improvements were listed and all improvements would be viable in terms of being implementable in the future.
- In terms of future projections for public transport use, these need to be considered in relation to the circumstances in which they were reported. All reported rates of public transport use in the future were based on the one most major life change in the next five years expected to have the greatest impact on travel patterns. Therefore, for ease of response the full complexity of future travel decisions in the future was minimised, focusing only on this most major possible change. In addition, the public transport usage in the future with improvements scenario was individualised to each respondent, being based on each person's top three most important possible service improvements. Therefore, actual usage rates could be lower where there are discrepancies between any service improvements introduced and individual priorities. The shortlisted top service priorities are those that will cater to the largest numbers of people. It is also possible that had items been ordered in a different way responses may have varied slightly. For example, if the service improvements had been presented before the initial item asking about anticipated public transport use in the next five years, the larger increase between baseline usage and the future compared with the difference between the two future scenarios may have been reduced. Ordering the items in the way presented in the survey may act as a control for anticipated increased usage in the future improved scenario, however, with the initial responses to future usage without any improvements potentially controlling for any social desirability bias at this stage. This would mean that the increase between the future without improvements and the future with improvements scenarios would be a more robust measure of increases to ridership possible should services be improved. Alternatively it could be possible that the way these items were presented to respondents under-reported possible increases to ridership due to service improvements. This could be explored in any future similar work through a random assignment of participants to the two different ordering options.

## 5.3 Summary and conclusions

The findings of the online survey component of this research can be summarised as follows.

In relation to current travel behaviour:

- As expected, members of Generation Y currently use private vehicles as their main mode of travel less often than their older counterparts (those aged 36 years and older). This is similar to trends seen internationally. On the reverse, this study found Generation Y uses public transport as a main travel mode more often.
- Members of Generation Y are less likely to hold a driver licence than their older counterparts; however, they are more likely to intend obtaining one. When looking at overall rates of those with a licence and those reporting an intention to obtain one, there is no difference in licensing rates between this younger generation and older New Zealand travellers. Therefore it appears there has not been a change in attitudes towards driver licensing among younger New Zealand travellers and hence differences between the two groups with regard to this appear to be an age effect, as opposed to a generational effect.
- In line with lower levels of licensing and perceived freedom of travel choices, Generation Y has lower levels of access to private vehicles compared with older generations. One consequence of this may be that members of Generation Y feel they have less freedom in their travel choices compared with older New Zealand travellers, and were more likely to report they were reliant on public transport for their regular trips. Based on the licensing finding above, it is possible that these differences are again an age effect as opposed to a generational effect, as higher rates of licensing over time are likely to relate to higher use of private vehicles over time (and therefore lower reliance on public transport) for this younger cohort.
- Members of Generation Y use public transport at least weekly at a significantly higher rate for their main trips than older generations, and use it more frequently each week. Members of Generation Y use trains more often compared with the older control group.
- Both subsamples report a strong tendency towards selecting travel modes based on convenience as a top priority. It appears, as a general rule for both groups, that a desire to be environmentally friendly is unlikely to be realised where this is perceived as inconvenient.
- Over 80% of Generation Y members can identify attractors to public transport use. These are most commonly being able to avoid finding and paying for parking, believing public transport to be more environmentally friendly and being able to do other things while travelling (eg use laptop or phone). Generation Y identifies attractors to public transport use at a higher rate than the control group.
- When asked about barriers to public transport use, the largest proportion of Generation Y reported they experience no barriers to its use (17.3%). Those who do experience barriers noted the time taken to travel via public transport, followed by infrequent services and a lack of coverage. The expense associated with the use of public transport is more frequently a barrier for Generation Y than for the control group, in line with their lower levels of disposable income.
- Those residing in Wellington feel they are more familiar with their local public transport system and rate it as higher quality compared with those from other New Zealand regions, suggesting the difference in services offered between Wellington and other regions are valued by residents.

In relation to preferences for future travel behaviour:

- Generation Y reports a desire to increase their travel by walking, followed by cycling, and then public transport in the future. They have a preference for decreasing their weekly travel by car, and also their overall weekly travel. Members of the control group show the same overall pattern, with some differences between the two subsamples in the strength of these preferences.
- As there can be differences between preferences and actual intended behaviour, planned changes to future travel were also measured. Generation Y plan to increase their travel by walking by the largest amount, followed by cycling and then public transport (in line with their desired travel changes). There is a slight planned overall decrease in travel by car, with total weekly travel being more likely to remain constant. The control sample again showed a very similar trend with regards to future travel intentions.

To get more accurate measures of anticipated changes to future travel behaviour, survey questioning became more specific, exploring the particular life changes expected to affect travel patterns over the next five years. Anticipated changes to travel resulting from these various life phases were explored in detail and compared back to actual previous changes experienced by others who had already been through the life phase in question. Key findings from this part of the survey can be summarised as follows:

- Just under 90% of those belonging to Generation Y and just over 50% of those in the older control group feel there will be major changes to their travel patterns in the next five years, implying that Generation Y's travel patterns may be more variable in the future than their older counterparts. This is logical given that older people have, in many cases, already been through the major life changes anticipated to affect the younger cohort's travel patterns over the next few years.
- Life phases most commonly expected to result in major changes to travel patterns in the future include: moving locations, changing jobs or job locations, starting a family, travelling overseas and moving out of a family home.
- Moving locations was most commonly associated with an anticipated increase in public transport use, and this was consistent between the two age-based subsamples and between anticipated changes for the future and previously experienced changes. This provides support for the prior assertion that members of Generation Y (and this data suggests older New Zealanders as well) actively consider and aim to increase their accessibility when moving.
- In contrast, starting a family was most commonly associated with an anticipated increase in private car usage. Again, this was consistent with previous changes to travel patterns experienced by others who had previously had children. This is also in line with previous findings and the assertion that public transport is not seen as a viable regular mode of transport with young children.
- Moving overseas for short-term travel was associated with the highest anticipated increase in public transport use of any life phase. This supports the notion that where public transport is considered convenient, ridership will increase. Differences between regions on baseline public transport use and ratings of quality summarised above also support this assertion.

Data gathered on anticipated future travel patterns based on progression through these major life phases was used to make projections for public transport use. Note that a conservative .20 factor was applied to improve the accuracy of the projections, based on the previous finding that intention typically explains 20% to 30% of the variance in actual later behaviour (see sections 5.2.7 and 5.2.8 for a full explanation).

- For Generation Y's main trips, the proportion of public transport users is projected to increase from 35.3% to 48.7% in the next five years with no improvements introduced. This could increase to 53.7% with improvements introduced.
- Overall rates for other trips (such as recreational trips) are projected to increase at a much higher rate for Generation Y, with a baseline of 18.6% increasing to 42.6% without improvements and 48.8% with improvements.
- For the older control group's main trips, this increase is from 21.5% at the baseline to 30.6% without improvements. With improvements, the proportion rises to 33.8%. Similar overall rates are projected for other trips for the older control group.
- These projections are considered to be robust, having taken into account known relationships between intention and later behaviour, being in line with regional plans for public transport growth in New Zealand and through data checks performed (eg inspection of rates of weekly use over time revealing no increase for users over time, and realistic weekly use for baseline non-users over time). However, the data is subject to the limitations outlined in section 5.2.9
- These projections fit most accurately with the second scenario (shift in travel behaviours will continue) presented in previous literature, as opposed to traditional patterns enduring (eg Generation Y's travel patterns becoming more like their older counterparts over time) or an ongoing decline (in overall travel). Overall the data reveals a tendency for both subsamples to increase their public transport use, with evidence that Generation Y in New Zealand will additionally increase their rates of driver licensing over time. There is also an anticipation of increased overall travel among members of Generation Y. A generational difference with regard to public transport use is therefore likely between the two groups, with Generation Y's higher baseline use of public transport projected to be sustained over time, even with higher anticipated access to a driver licence.

Top priorities for public transport improvements to increase ridership identified and ranked by respondents are fairly consistent between the two age-based subsamples overall, with only three in the top 10 priorities between the two groups varying. This is a positive outcome as it means there are service improvements that can be made to benefit both groups.

- Top priorities for both groups include (ordered by highest to lowest for Generation Y): increased coverage during peak times, improved coverage, increased bus priority lanes, increased frequency during evening and weekend off-peak times, shorter overall trip times, introduction of integrated ticketing and increased frequency during daytime off-peak
- Unique priorities for Generation Y include: free service transfers, improved real-time information provision and the introduction of Wifi on services.

There is variation in top priorities between regions, showing that differences between current services result in differing priorities for improvements.

Improvements to public transport systems by way of these top priorities is projected to have positive impacts on ridership beyond the positive changes to public transport user rates desired and intended among members of Generation Y and their older counterparts in New Zealand.

Around one-third of those anticipating changes to their travel are willing to pay for improvements to their local public transport system, an average of around \$1.00 per fare.

In conclusion:

- There is a high latent demand for public (and active) transport among members of Generation Y and older travellers in New Zealand over the next five years. In relation to public transport, one interpretation of this finding is that existing public transport investment strategies are being recognised by New Zealanders and that public transport is being seen as a more viable option. This suggests that further investment should be targeted to address this latent demand.
- Members of Generation Y currently use and are projected to continue to use public transport at a higher rate than their older counterparts, indicating that the increased use is not temporary, and that overall investment in public transport should be maintained. There is evidence therefore that changes observed within Generation Y with regard to public transport are likely to be a generational effect (as opposed to an age effect only).
- Use of public transport for baseline other trips (such as recreational trips) is low for Generation Y (18.6%) compared with their main trips (35.3%). However, latent demand for public transport for other trips suggests this could more than double, so that about half of Generation Y could be weekly public transport users regardless of trip type (48.8% patronage for other trips and 53.7% for main trips).
- Members of Generation Y are highly transitional in their travel behaviour, with about 90% anticipating their travel patterns will change in the next five years (as opposed to 50% in the older group. This is probably due to the higher rate of change to lifestyles likely for younger people compared with older people, who have already been through such changes in many cases). This indicates there is an opportunity to encourage positive changes to travel patterns over this time.
- Specific life stages that could be targeted for positive travel interventions include moving location, where there is an opportunity for growth, and starting a family, where there may be an opportunity for greater retention of public transport use.
- There is a lot of overlap in service improvement priorities between members of Generation Y and their older counterparts. So while Generation Y is an excellent population base to specifically target with regard to public transport use, any improvements introduced aimed at this subgroup are likely to have flow-on positive effects for the rest of the New Zealand population.
- Improvements to the public transport services provided in New Zealand by way of the shortlisted top priorities presented in this report are projected to increase ridership rates beyond what is possible based on desired changes to travel patterns alone among New Zealand travellers.
- The findings unique to Generation Y suggest that pricing mechanisms around transfers and improved information (both real-time travel information and general information access through a Wifi service) would increase public transport use for this group.

## 6 Overall conclusions and recommendations

### 6.1 Conclusions

The key research questions of the project are addressed below, followed by a short list of recommendations.

#### **1 What is the most appropriate definition of Generation Y in a New Zealand context?**

Following a review of previous definitions of Generation Y and existing datasets of interest to the project (in the literature review phase of this work), the cohort was defined as consisting of those individuals turning between 15 and 35 years of age in 2014, or born between 1979 and 1999 (inclusive). This definition aligns with age brackets defined by Statistics NZ and provides the best alignment with age ranges in relevant existing New Zealand datasets (such as those investigated in chapter 3). It also excludes the more extreme ends of birth years included in some prior definitions of Generation Y, and as such fits with the majority of prior definitions employed.

#### **1 What are Generation Y's current travel patterns internationally and in New Zealand? How do these differ from that of previous generations?**

International literature reviewed indicates that Generation Y travel differently from previous generations, most notably travelling less overall than older generations. There is a wealth of evidence showing that those belonging to the Generation Y cohort generally have lower rates of licensing, vehicle registration and car ownership and in addition show increased rates of public transport usage. These trends have been observed in many countries across the world, including the US, Australia, Canada, Japan, the UK and many other European countries. There is little New Zealand-specific previous research and evidence available, a gap addressed over the course of this project.

Analysis of existing New Zealand datasets revealed that Generation Y has trended towards lower travel time budgets (while older generations have experienced an increase), with a reduction in recreational travel in particular. In addition, Generation Y in New Zealand (particularly the youngest members) has lower rates of driver licensing and vehicle kilometres driven per year. Use of public transport was also shown to be increasing.

These general travel trends were also evident in the online survey data, with members of Generation Y reporting higher public transport use and lower rates of driver licensing and private vehicle access than older New Zealanders. Both the focus groups and survey explored influencers behind these differences in travel patterns for Generation Y, detailed below.

#### **2 What are the reasons for any differences in the travel patterns of this generation compared with previous generations? Does this generation have different values leading to these changes?**

Travel decisions (as with other decision making) is a complex process, with a multitude of influencing factors. It has previously been asserted that the differences in travel behaviour among Generation Y compared with previous generations may be a consequence of the economic environment and policy implications that exist today, as well as changes to lifestyles, values and norms. The literature emphasises that Generation Y, as well as other sectors of the population, value travel that is affordable, versatile and convenient.

Possible reasons for changes to travel patterns among Generation Y compared with older travellers were explored in both the focus groups and online survey. The qualitative evidence collected suggested that factors such as increased participation in tertiary education, delays in milestones such as home purchases and starting a family, increased viability of the mode due to service improvements and increased environmental concern were important influencers motivating public transport use for the generation. Increased difficulty in obtaining a licence due to the introduction of the GDLS was also identified as having an impact.

The online survey component of this work gathered quantitative data that supported these assertions. Convenience was again found to be the key factor of influence in mode choice decisions, therefore an increase in the convenience of public transport use in previous decades due to service improvements was likely to be a key player in increased ridership rates among Generation Y (resulting in increased exposure to the mode). While the online survey subsample belonging to Generation Y reported significantly lower rates of vehicle licensing compared with their older counterparts, there was no difference between the two when considering those intending to obtain a licence. This gave further support to the finding of the focus group that younger members of New Zealand's population still value having a licence, and as such other constraints (such as the introduction of the GDLS) may be responsible for the reduced rate, rather than a change in social norms or values.

New GDLS laws were proposed during the period of this research project. These law changes, in force from 1 December 2014, impose time limits for holding learner and restricted licences forcing new drivers to progress to a full licence within five years of obtaining a restricted licence. It remains to be seen whether the new laws will result in an increased move towards young people attaining their full licence, especially when the cost of vehicle ownership, as outlined in the literature review, remains a barrier to the acquisition of a licence for young people. Or whether young people will instead delay gaining their learner licence till they are in a position to afford to progress through the GDLS within the time limits imposed.

**3 What will Generation Y's travel patterns be in the future in New Zealand? Is it likely that Generation Y's current travel patterns will remain constant over time? Alternatively, is it likely that Generation Y's travel patterns will change to match those of older generations over time? How will the transition through major life stages affect travel patterns for this cohort?**

There was little evidence relating to these key research questions in the literature, with available projections lacking age specificity. Overall, the projections suggested a continued stagnation of vehicle kilometres travelled per person annually, both globally and in New Zealand. However there was insufficient literature available to reach conclusions on whether or not recent trends in travel behaviour among this younger generation would continue as they age and progress through key life transitions and phases. Three potential future scenarios were suggested in the literature: 1) traditional travel patterns will endure, 2) the shift in travel behaviours will continue and 3) there will be an ongoing decline in overall travel.

This was a key focus of the online survey, which explored respondents' preferred and anticipated changes to their travel patterns over the next five years, with a particular emphasis on projected changes to public transport usage over time. Overall, this data showed that differences between Generation Y and their older counterparts with regard to public transport use are likely to endure into the future, with Generation Y projected to continue using public transport at a higher rate. Overall, the projections revealed a high level of latent demand for public transport in the future among Generation Y and older New Zealand travellers. It should be noted that in some instances it was difficult to deduce through analysis whether differences between the two sub-samples were an age effect (eg a difference due to age alone, and therefore unlikely to endure as Generation Y ages) or a generational effect (eg a difference within the Generation Y grouping specifically, unlikely to be related to age differences alone). The findings suggested that some differences



were indeed an age effect (for example, differences in licensing rates), whereas others were more likely to be a generational effect (for example, increased use of public transport among Generation Y). Data from older generations when they were in the same age bracket as Generation Y would be required to fully explore the difference between age and generational effects.

The introduction of service improvements (by way of the priorities ranked by respondents and outlined in this report) is projected to give the greatest boost to public transport use. For the full projections for public transport use in the future, please see section 5.2.8.

Future use of other transport modes (eg private vehicle and active modes) were explored to a lesser extent in the survey, with the preliminary evidence suggesting both Generation Y and its older counterparts were motivated to increase their use of active modes in the future. Generation Y also planned to reduce its use of private vehicles to a lesser extent than older travellers.

Consistent with the focus group findings, key life stages such as moving location, participating in tertiary study, and travelling overseas, were associated with higher anticipated public transport use. Starting a family was associated with increased private vehicle use. Overall, the trends revealed in the survey data suggest Generation Y is likely to move closer towards the travel patterns of older New Zealanders over time as they age and transition through different life stages; however, this generation is likely to continue using public transport at a higher rate than older generations, with service improvements resulting in increased ridership across New Zealand's population.

#### **4 What are the public transport requirements in the future for this group given these projected travel trends?**

Section 5.2.8 details projected public transport use for both Generation Y and older New Zealanders, revealing the number of both subsamples projected to use public transport over the next five years with and without service improvements (as well as baseline figures). Projected average weekly usage for these population bases is also included. This data provides the transport sector with an overall snapshot of possible requirements on which to base future planning.

The latent demand for both Generation Y and the older control group indicates a relative increase in weekly patrons of about 40% for main trips over the next five years. The predicted increase in other trips is substantially higher, particularly for Generation Y. To place these increases in context the Auckland region projected a relative increase in patronage of 42% over a 10-year period (from 2012 to 2022). Based on the projections here increased public transport investment would need to be made to meet this demand, without even taking into account the additional demand of around another 10% that could be encouraged if key service improvements were made.

While they might appear as stretch targets, these numbers have been considerably reduced to account for known self-reporting biases and to ensure they are conservatively based on the data collected. Such increased demand is unlikely to be realised without a considerable increase in investment. There is also a clear desire to improve public transport immediately from at least one third of patrons, who state they are willing to pay more for improved levels of service.

#### **5 What are the barriers to public transport use for Generation Y? What are the attractive features of public transportation for Generation Y? Do these differ to traditional attractors and barriers which apply to the total population?**

The literature review suggested that barriers and attractive features of public transportation for Generation Y are consistent with those traditionally identified for older age groups, with potential

differences lying in the prioritisation of these factors. Potential barriers to public and active transport modes in the literature for Generation Y included reliability, safety, affordability and convenience. The literature suggests that those in Generation Y place the greatest value on service frequency and reliability, including during off-peak travel periods (coinciding with the desire of younger people to socialise and participate in recreational activities and work requirements during traditionally off-peak times, such as later at night). Also, increased emphasis on technological advancements that could improve the travel experience may also be highly valued by the Generation Y cohort.

Both the qualitative and quantitative evidence collected in this study supported these assertions from the literature overall. Common barriers to public transport use for Generation Y reported in the survey included the time taken to travel via public transport, followed by infrequent services and a lack of coverage. The expense associated with the use of public transport was more frequently a barrier for Generation Y compared with the older travellers, which was in line with their lower levels of disposable income.

In relation to attractors to public transport use, those most commonly reported by Generation Y included the ability to avoid finding and paying for parking, the travel mode being more environmentally friendly and having the ability to do other things while travelling (eg use laptop or phone). Generation Y identified attractors to its use at a significantly higher rate than older New Zealand travellers.

Overall, there was a lot of consistency between both age groups in terms of the attractors and barriers reported, with some differences about the rate at which these were selected between the two groups. This suggests that differences between younger and older New Zealanders (such as income levels) result in some variation in the motivators and difficulties experienced when using public transport, but that the core factors apply to both older and younger people alike (depending on individual circumstances).

## **6 What do the observed and likely future travel trends of this generation mean for the wider transport sector? What are the appropriate interventions that can be introduced to maximise and encourage public transport usage among Generation Y, now and in the future?**

The high level of latent demand for public transport use for both Generation Y and older travellers revealed in the survey component of this work shows there is an opportunity for New Zealand to improve ridership among its population base, with Generation Y projected to continue being a higher use base. The self-prioritised list of future service improvements reveals where investments will best be made to maximise public transport use into the future, with a positive finding being that there is a lot of overlap in service improvement priorities between Generation Y and their older counterparts. Therefore, improvements aimed at promoting ridership among Generation Y are likely to have positive flow-on effects for the rest of New Zealand's population.

While there were three factors unique to Generation Y that could be targeted, there is still a lot to improve on among the core factors around convenience that will have greater benefit. Changing these factors could be more like fixing the check engine light rather than fixing the engine. For example, while environmentally friendly attitudes may not be enough to encourage a shift to public transport for those who view it to be inconvenient, these attitudes could help retain those who are already using public transport. In the case of providing free Wifi, this may not cause a major shift in public transport use for non-users, but it may create a positive attitude towards public transport use (as it is easy to talk about the benefit of free Wifi) and consequently increase retention of existing patrons.

Free Wifi could be trialled on trains and train platforms, as Generation Y appears to favour trains more than older patrons do, and trains would have greater passenger reach than buses in terms of cost effectiveness. Free Wifi services are being investigated for longer journey services in the Canterbury region, have been

previously used on the Wellington Airport bus and longer bus routes in the Waikato region, and are being put in place at Auckland stations with some positive customer feedback. Previous work looking at payment mechanisms suggests that such a service should be free of charge, and Generation Y in particular would rather offset costs via targeted advertising (see chapter 3, Study 1). An identification or sign-up process within the system could also provide an opportunity to receive service-specific feedback, or even push out messages to targeted train services, such as real-time information about the service.

Provision of real-time information was another service that was more desirable to Generation Y. Applying real-time information to public transport users could help manage expectations around delays so passengers can more effectively manage their time and comfort, particularly around temporal factors such as weather, delays to services, or even levels of crowding on the service. Information sharing could be via official channels or even through use of crowd sourcing from other patrons who use the same regular service. For car drivers, they could select to be alerted in poor driving conditions, such as peak levels of congestion or to traffic incidents on their main route, and be directed to nearby park and ride facilities when there are no better alternative routes.

Finally, free transfers appear to be particularly welcomed among Generation Y. This is not simply because price is a larger driver for the Generation Y group, as older users are also concerned with price. It could be that Generation Y are more likely to trip-chain between services, which is a known inconvenience and barrier to public transport use. It could be that these users simply want price mechanisms around their travel that acknowledge the inconvenience and price accordingly. However, it is likely that a reduced overall trip cost is key to this priority for improvement.

Key life stage interventions could also encourage use when people shift locations, or encourage public transport trip retention when people have children. For example, targeting new movers in New Zealand could be achieved through New Zealand Post relocation databases (where people sign up to a service to forward their mail), or even through geo-located travel options from links on real-estate or rental service websites. It was found in the project that members of Generation Y specifically aimed to select new home locations based on accessibility and as such there is an opportunity to increase ridership at this time.

## 6.2 Recommendations

The following recommendations are made based on the findings of this work:

- The top priorities for future improvements to New Zealand's public transport systems should be considered in future investment decisions (see table 6.1). Targeting the top seven priorities that are consistent between both Generation Y and older travellers is likely to be of the biggest benefit, and will have a positive impact on ridership rates for larger segments of New Zealand's population. Cost-benefit analyses should be undertaken and used in these investment decisions, as the current priority list does not take the cost-benefit of the intervention areas into account. The location within New Zealand for these interventions also needs to be considered.

**Table 6.1 Top 10 priorities for Generation Y and older New Zealand travellers**

	Generation Y (N=342)	Total %		Control group (N=291)	Total %
1	Increased frequency (peak)	29.8%	1	Improved coverage	32.6%
2	Improved coverage	24.6%	2	Increased frequency (peak)	28.2%
3	Bus priority lanes	22.2%	3	Increased frequency (evening and weekend off-peak)	22.3%
4	Free service transfers	20.5%	4	Integrated ticketing	21.0%
5	Increased frequency (evening and weekend off-peak)	22.8%	5	Shorter overall trip times	17.5%
6	Shorter overall trip times	19.3%	6	Bus priority lanes	13.4%
7	Integrated ticketing	16.4%	7	Increased frequency (daytime off-peak)	16.5%
8	Increased frequency (daytime off-peak)	13.7%	8	Cycle facilities on-board	14.8%
9	Improved real-time info	15.2%	9	Short transfer wait times	14.1%
10	Wifi on services	10.5%	10	Bus signal priority at lights	11.7%

- Interventions implemented in New Zealand and overseas (eg free public transport use for secondary/tertiary students, or free use of the system after a certain number of public transport trips per week, encouraging increased use of public transport for recreational or social trips) should also be reviewed and implemented where possible. This is linked to Generation Y's request for free transfers to be prioritised, indicating that smarter ticketing options rewarding regular users would be valued and could encourage increased ridership.
- It is possible that improving the provision of real-time information and Wifi (two priorities for future improvement identified by Generation Y) could have benefits in addressing latent demand by improving knowledge among potential users of the services available.
- Public transport requirements should be investigated and investment decisions made in light of the projections detailed in this report, as existing projections may underestimate latent demand, cause unnecessary stress on the transport network, and lead to reactive rather than proactive investment.
- Strategies and interventions targeting people as they go through certain life stages could also be implemented, for example:
  - Moving locations was found to relate to a strong desire among Generation Y members to maximise accessibility (and therefore increase public transport use) in their new location. Financial constraints could reduce their ability to do so; however, the provision of high-quality information regarding public and active transport options in new areas of interest could assist in maximising public and active transport use.
  - Attending a tertiary institution was shown to relate to increased public transport use. Interventions such as introducing free or reduced cost ticketing are likely to be particularly successful for students, who generally have lower incomes than other groups.
  - Starting a family was related to an anticipated increased use of private vehicles, due in particular to reported difficulties travelling with young children. However, parents engaged with during the course of this work suggested they would like to expose their children to public transport, and that their children (particularly from the age of the toddler) would probably enjoy the experience.

Introducing family concession tickets, particularly for weekend or recreational trips, could therefore be a successful strategy to encourage retention of public transport use among new parents and exposure from a young age for the next generation of New Zealanders.

- Further work exploring preferences for future use of active transport (a topic outside the scope of this project) should be considered, with the preliminary data collected throughout the project suggesting a potentially high level of latent demand for increased travel by walking and cycling.
- Further work using this rich data set should be reviewed and undertaken where useful, for example:
  - **Longitudinal study:** Those who gave permission to be resampled in the future should be approached to take part in a shorter, follow-up survey in two years' time. This longitudinal work would be the first of its kind in New Zealand and would allow the transport sector to assess the accuracy of peoples' predictions for their future travel behaviour, as well as any discrepancies between desired travel and actual travel and gather data to better understand the barriers to New Zealanders travelling as they desire. This would give robust data in a New Zealand context regarding the accuracy of predicted future travel behaviour, and therefore could be used to improve the accuracy of future projections.
  - **Regional analysis:** Further analyses disaggregated by region (in particular for Auckland and Wellington, where a good sample base was collected) could be undertaken, providing invaluable information for regional councils when making transport planning decisions. This work could include projected public transport use split by region based on the gathered data, as well as descriptive data (such as barriers and attractors to public transport) by region.
  - **Life stage analysis:** Factors that would inform targeted travel interventions around key life changes, such as moving locations or starting a family could be further explored. However, it is likely that to achieve appropriate sample sizes within these subgroupings further data collection would be required to supplement the existing data. Where this work is undertaken, opportunities to specifically target different life stage groups should be considered (for example, people changing location could be identified and contacted through the use of New Zealand Post's mail direction service).
- It would also be possible to use the gathered data for Generation Y as a control group to explore changes in future generations (when these reach a similar age to Generation Y currently) in regards to attitudes towards travel patterns

## 7 References

- Agresti, A (1996) *An introduction to categorical data analysis*. New York: John Wiley & Sons.
- Automotive Association (2013) Top 10 driver distractions according to AA Insurance. *AA Insurance 2012–2013 drivers index survey*. Accessed 31 March 2015. [www.google.co.nz/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=driving+distracted+aa+survey+2013](http://www.google.co.nz/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=driving+distracted+aa+survey+2013).
- Auckland Transport (2013a) *Customer satisfaction survey*. Prepared by Opus International Consultants Ltd for Auckland Transport.
- Auckland Transport (2013b) *10 year public transport patronage growth plan*. Board meeting agenda notes, 21 November 2013, managed by Deloitte.
- Auckland Transport (2014) AT HOP wireless internet popular with commuters May 2014. Accessed 5 September 2014. <https://at.govt.nz/about-us/news-events/at-hop-wireless-internet-popular-with-commuters/>
- Bamberg, S (2000) The promotion of new behavior by forming an implementation intention: results of a field experiment in the domain of travel mode choice. *Journal of Applied Social Psychology* 30, no.9: 1903–1922.
- Bamberg, S (2007) Is a stage model a useful approach to explain car drivers' willingness to use public transportation? *Journal of Applied Social Psychology* 37, no.8: 1757–1783.
- Blumenberg, E, DT Brian, M Smart, K Ralph, M Wander and S Bamberg (2012) What's youth go to do with it? Exploring the travel behaviour of teens and young adults. *University of California Transportation Centre*.
- Blumenberg, E, M Wander, BD Taylor and M Smart (2013) The times, are they a-changin'? Youth, travel mode and the journey to work. *Annual Meeting of the Transportation Research Board*, 2013.
- Broome, K, E Nalder and L Worrall (2010) Age-friendly buses? A comparison of reported barriers and facilitators to bus use for younger and older adults. *Australasian Journal on Ageing* 29, no.1: 33–38.
- Brown, S, B Carter, M Collins, C Callerson, G Giffin, J Greer, R Griffith, E Johnson, K Richardson and D Bearfield (2009) Generation Y in the Workplace. *Journal of the Bush School of Government and Public Services*: 1–56.
- Bureau of Infrastructure, Transport and Regional Economics (BITRE) (2012) *Traffic growth: modelling a global phenomenon*. Report 128. Accessed 8 March 2015. [www.bitre.gov.au/publications/2012/files/report\\_128.pdf](http://www.bitre.gov.au/publications/2012/files/report_128.pdf)
- Cairns, S and K Okamura (2003) Costs and choices: the effects of educating young adults about transport prices. *Journal of Infrastructure Planning and Management* 60: 101–113.
- Chang, J, G Rive, J Thomas, C Morahan and C Crooks (2013) Customers' requirements of multimodal travel information systems. *NZ Transport Agency research report 540*.
- Davis, B, T Dutzik and P Baxandall (2012) *Transportation and the new generation: why young people are driving less and what it means for transportation policy*. Washington DC: Frontier Group.

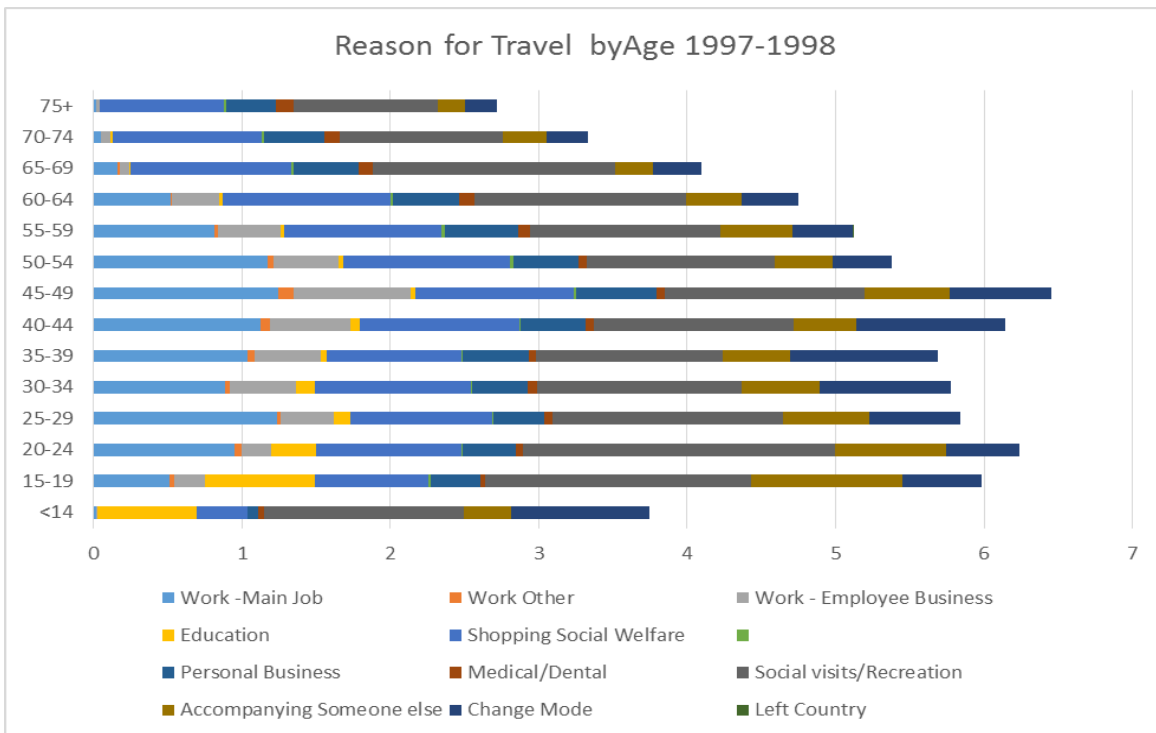
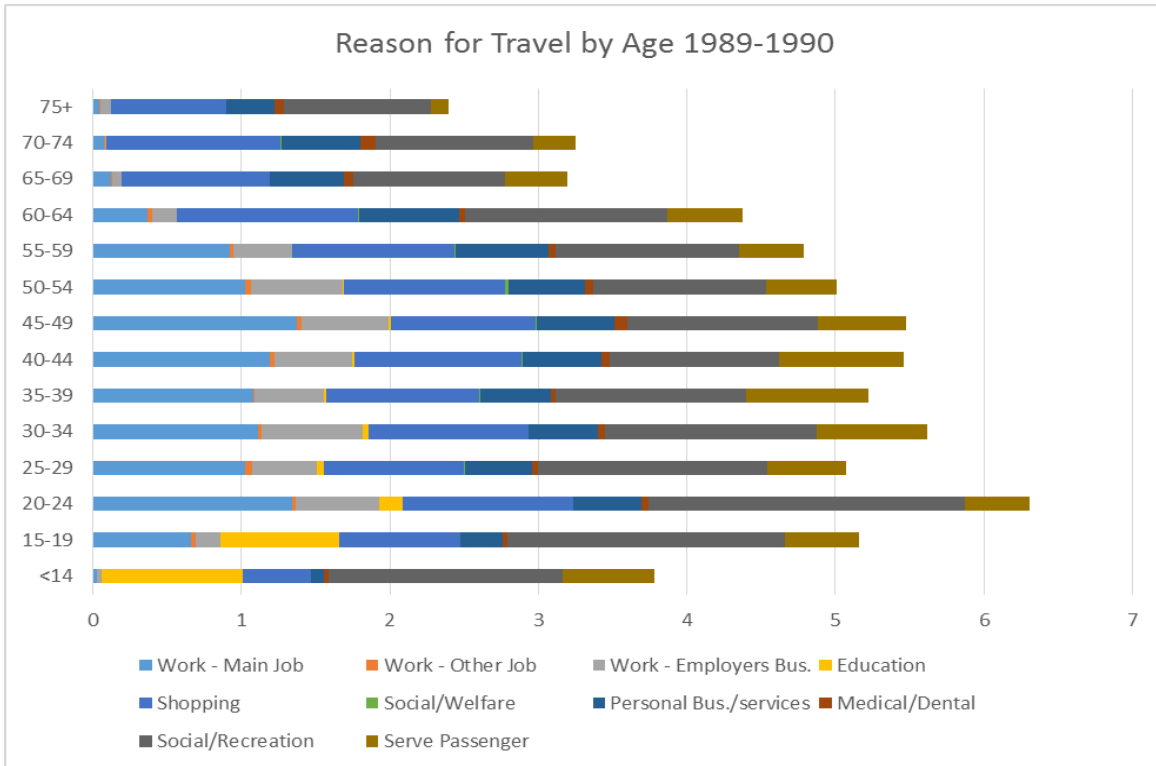
- Delbosc, A and G Currie (2012a) Using online discussion forums to study attitudes toward car and transit among young people in Victoria. In *Proceedings of 35th Australasian Transport Research Forum*, Perth, Australia.
- Delbosc, A and G Currie (2012b) Are changed living arrangements influencing youth driver license decline. In *Proceedings of Transportation Research Board 92nd Annual Meeting*, Washington DC.
- Delbosc, A and G Currie (2013a) Investigating attitudes toward cars among young people using online discussion forums. In *Proceedings of Transportation Research Board 92nd Annual Meeting*, Washington DC, 24 October 2013.
- Delbosc, A and G Currie (2013b) Causes of youth licensing decline: a synthesis of evidence. *Transport Reviews* 33, no.3: 271–290.
- DiClemente, C (2007) The transtheoretical model of intentional behaviour change. *Drugs and Alcohol Today* 7, no.1: 29–33.
- Dingler, M, A Koenig, S Sogin and CPL Barkan (2010) *Determining the cause of train delay*. Presented at the *2010 Annual American Railway Engineering and Maintenance of Way Association (AREMA) Conference*, Orlando, Florida.
- Dutzik, T and P Baxandall (2013) *A new direction: our changing relationship with driving and the implications for America's future*. Washington DC: Frontier Group.
- Elliot, N, A Wilson and G Cornelis (2012) *Wellington transport models: TN24: baseline forecasting report*. Prepared by Opus International Consultants for the Greater Wellington Regional Council.
- First Data Government and Transit Task Force (2010) *Transit payment systems: a case for open payments*. First Data White Paper. Accessed 8 March 2015. [www.firstdata.com/downloads/thought-leadership/transit-payment-systems\\_wp.pdf](http://www.firstdata.com/downloads/thought-leadership/transit-payment-systems_wp.pdf)
- Frick, R and B Grimm (2014) *Long-distance mobility: current trends and future perspectives*. IFMO report. Accessed 6 October 2014. [www.ifmo.de/tl\\_files/publications\\_content/2014/ifmo\\_2014\\_Long\\_Distance\\_Mobility\\_en.pdf](http://www.ifmo.de/tl_files/publications_content/2014/ifmo_2014_Long_Distance_Mobility_en.pdf)
- Frith, W, MK Mara and J Langford (2012) Demand for transport services: impact on networks of older persons' travel as the population of New Zealand ages. *NZ Transport Agency research report 481*, 66pp.
- Goodwin, P (2012) *Peak travel, peak car and the future of mobility: evidence, unresolved issues, policy implications and a research agenda*. Accessed 8 March 2015. [www.internationaltransportforum.org/jtrc/DiscussionPapers/DP201213.pdf](http://www.internationaltransportforum.org/jtrc/DiscussionPapers/DP201213.pdf)
- Grimsrud, E and A El-Geneidy (2014) Transit to eternal youth: Lifecycle and generational trends in Greater Montreal public transport mode share. *Transportation* 41, no.1: 1–19.
- Haustein, S, CA Klöckner and A Blöbaum (2008) Car use of young adults: the role of travel socialization. *Transport Research Part F*, 12: 167–178.
- Johnson Controls (2010) *Generation Y and the Workplace Annual Report 2010*. Global Workplace Innovation.

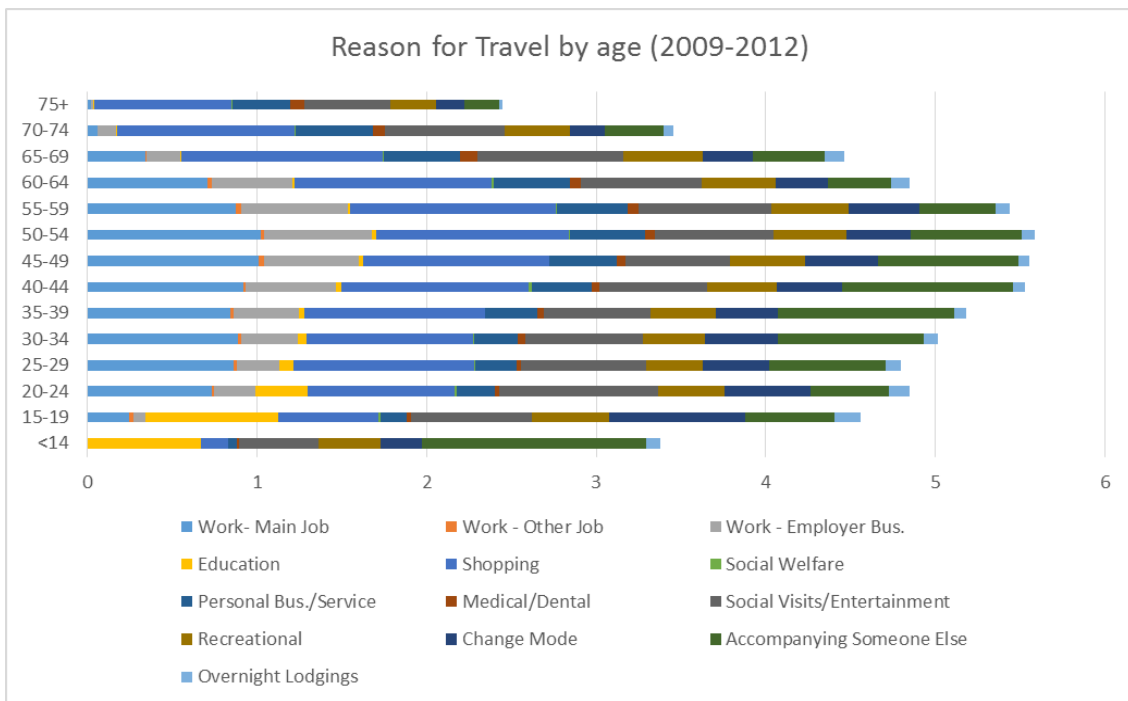
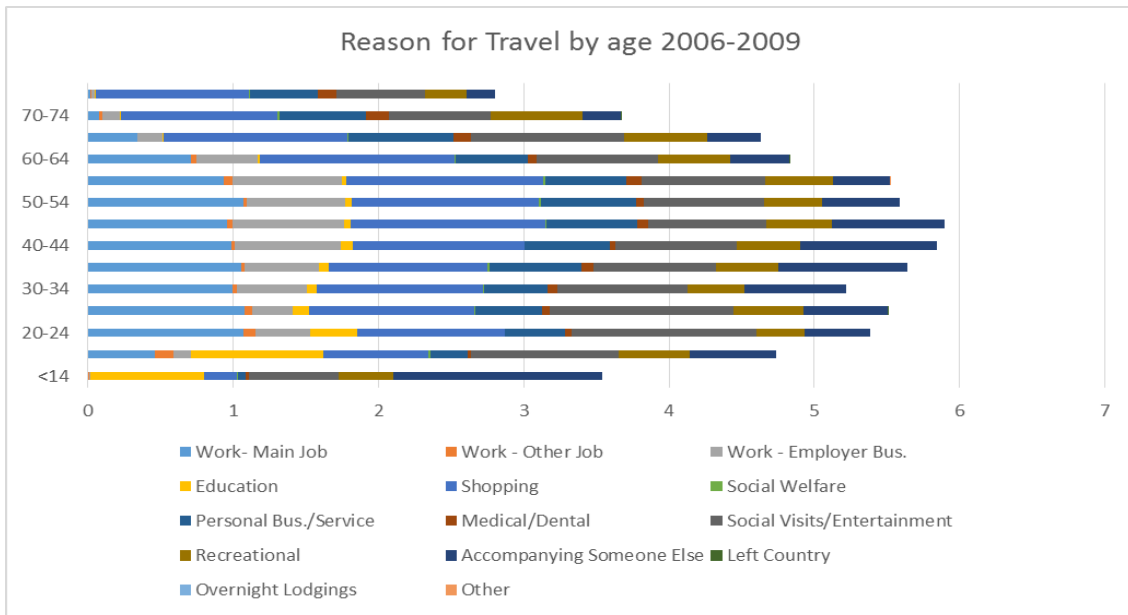
- Johnston, K (2014) *Kiwi teens turn off driving*. Fairfax New Zealand News. Accessed 8 March 2015. [www.stuff.co.nz/motoring/news/9779944/Kiwi-teens-turn-off-driving](http://www.stuff.co.nz/motoring/news/9779944/Kiwi-teens-turn-off-driving)
- Karaca-Mandic, P and G Ridgeway (2010) Behavioural impact of graduated driver licensing on teenage driving risk and exposure. *Journal of Health Economics* 29: 48–61.
- Kuhnimhof, T, R Buehler and J Dargay (2011) A new generation: travel trends for young Germans and Britons. *Transportation Research Record: Journal of the Transportation Research Board* 2230: 58–67.
- Kuhnimhof, T, J Armoogum, R Buehler, JM Denstadli and T Yamamoto (2012) Men shape a downward trend in car use among young adults – evidence from six industrialized countries. *Transport Reviews* 32, no.6: 761–779.
- Litman (2013) *The future isn't what it used to be: changing trends and their implications for transport planning*. Victoria Transport Policy Institute. Accessed 8 March 2015. [www.vtpi.org/future.pdf](http://www.vtpi.org/future.pdf)
- Marzoughi, R (2011) Barriers to teenage mobility in the Greater Toronto Area: attitudes, concerns and policy implications. *Transportation Research Record: Journal of the Transportation Research Board*, 2231: 61–67.
- Metz, D (2004) Travel time constraints in transport policy. *Journal of Transport, Proceedings of the Institution of Civil Engineers* 157, Issue TR2: 99–105.
- Ministry of Business and Innovation and Employment (MBIE) (2013). *Youth labour market factsheet*. Accessed 08 March 2014. [www.dol.govt.nz/publications/lmr/pdfs/lmr-fs/lmr-fs-youth-mar13.pdf](http://www.dol.govt.nz/publications/lmr/pdfs/lmr-fs/lmr-fs-youth-mar13.pdf)
- Ministry of Transport (2009) *Land Transport Rule: Road User Amendment Rule 2009. Executive summary*. Wellington: Ministry of Transport.
- Ministry of Transport (2014) *Time limits for holding learner and restricted licenses*. Accessed 05 September 2014. [www.transport.govt.nz/land/timelicences/](http://www.transport.govt.nz/land/timelicences/)
- Ministry of Transport (2015) *Future demand*. Accessed 20 February 2015. [www.transport.govt.nz/ourwork/keystrategiesandplans/strategic-policy-programme/future-demand/](http://www.transport.govt.nz/ourwork/keystrategiesandplans/strategic-policy-programme/future-demand/)
- Murray, SJ, D Walton and JA Thomas (2009) *Attitudes to public transport in New Zealand: findings from a combined longitudinal and cross sectional study*. Wellington: Opus Central Laboratories.
- NZ Transport Agency (2014) *About limits*. Accessed 28 February 2014. [www.nzta.govt.nz/resources/roadcode/about-limits/alcohol-and-drugs-limits.html](http://www.nzta.govt.nz/resources/roadcode/about-limits/alcohol-and-drugs-limits.html)
- OECD iLibrary. (2013, 07). Youth Unemployment Rate % of youth labour force (15-24). Retrieved from OECD iLibrary: [http://www.oecd-ilibrary.org/employment/youth-unemployment-rate\\_20752342-table2](http://www.oecd-ilibrary.org/employment/youth-unemployment-rate_20752342-table2)
- Pew Research Center (2013) *Young adults after the recession: fewer homes, fewer cars, less debt*. Accessed 7 April 2013. [www.pewsocialtrends.org/files/2013/02/Financial\\_Milestones\\_of\\_Young\\_Adults\\_FINAL\\_2-19.pdf](http://www.pewsocialtrends.org/files/2013/02/Financial_Milestones_of_Young_Adults_FINAL_2-19.pdf)
- Powell, RA and HM Single (1996) Methodology matters-v: focus groups. *International Journal for Quality in Health Care* 8, no.5: 499–504.
- Prendergast, LS and RD Williams (1981) Individual travel time budgets. *Transportation Research* 15A: 39–46.



- Redman, L, M Firman, T Garling and T Hartig (2012) Quality attributes of public transport that attract car users: a research review. *Transport Policy* 25: 119-127.
- Rive, G and JA Thomas (2012) *The influence of successful public transport on household location decisions*. Working paper. Opus Central Laboratories: Wellington.
- Rode, S (2003) *Increasing public transport use by young adults at night*. Accessed 8 March 2015. [www.uni-due.de/~qpd402/alt/Projekte/Modis/daten/ueber/ModisRode.pdf](http://www.uni-due.de/~qpd402/alt/Projekte/Modis/daten/ueber/ModisRode.pdf)
- Schoettle, B and M Sivak (2013) *The reasons for the recent decline in young driver licensing in the U.S.* Accessed 8 March 2015. <http://deepblue.lib.umich.edu/bitstream/handle/2027.42/99124/102951.pdf>
- Statistics NZ (2006) *QuickStats about education and training*. Wellington: Statistics NZ.
- Statistics NZ (2007) *How petrol prices have tracked since the 1980s*. Accessed 8 March 2015. [www.stats.govt.nz/browse\\_for\\_stats/economic\\_indicators/prices\\_indexes/how-petrol-prices-have-tracked-since-1980s.aspx](http://www.stats.govt.nz/browse_for_stats/economic_indicators/prices_indexes/how-petrol-prices-have-tracked-since-1980s.aspx)
- Statistics NZ (2009) *Young people 1986-2006: relationship change*. Wellington: Statistics NZ.
- Statistics NZ (2013a) *2013 QuickStats: about national highlights*. Wellington: Statistics NZ.
- Statistics NZ (2013b) *Youth labour market dynamics in New Zealand*. Accessed 8 March 2015. [www.stats.govt.nz/browse\\_for\\_stats/income-and-work/employment\\_and\\_unemployment/youth-labour-market-dynamics-NZ.aspx](http://www.stats.govt.nz/browse_for_stats/income-and-work/employment_and_unemployment/youth-labour-market-dynamics-NZ.aspx)
- Statistics NZ (2014) *Labour force categories used in the Household Labour Force Survey*. Accessed 8 March 2015. [www.stats.govt.nz/browse\\_for\\_stats/income-and-work/employment\\_and\\_unemployment/Labour-force-categories-in-HLFS.aspx](http://www.stats.govt.nz/browse_for_stats/income-and-work/employment_and_unemployment/Labour-force-categories-in-HLFS.aspx)
- Sweeney, R (2006) *Millennial behaviours and demographics*. Accessed 8 March 2015. <http://certi.mst.edu/media/administrative/certi/documents/Article-Millennial-Behaviors.pdf>
- Taylor, J, M Barnard, C White and J Lewis (2007) *Understanding the travel aspirations, needs and behaviour of young adults*. UK: Department for Transport. 68pp.
- The Press (2014) *ECan considers bus wi-fi*. Accessed 05 September 2014. [www.stuff.co.nz/the-press/news/transport/9945927/ECan-considers-bus-wi-fi](http://www.stuff.co.nz/the-press/news/transport/9945927/ECan-considers-bus-wi-fi)
- Turner, SA, AP Roozenburg and T Francis (2006) *Predicting accident rates for cyclists and pedestrians. Land Transport New Zealand research report 289*. 180pp.
- van der Waard, J, B Immers and P Jorritsma (2014) New drivers in mobility: What moves the Dutch in 2012 and beyond. *Transport Reviews: A Transnational Transdisciplinary Journal* 33, no.3: 343-359.
- Walton, D, J Thomas and V Dravitzki (2003) Commuters concern for the environment and knowledge of the effects of vehicle emissions. *Transportation Research Part D. Transport and the Environment* 9: 335-340.

# Appendix A: Plots for reason for travel by age group for various travel periods





## Appendix B: Focus group script

### Public transport and the next generation Focus groups script

#### Project purpose:

The purpose of this focus group is to learn more about your travel patterns, with a particular focus on how you think these will change over time.

There is evidence that younger people today have different travel patterns to those of previous generations, and we would like to explore the reasons for these differences, as well as gain a better understanding of how these are likely to evolve in the future. An understanding of this is extremely important for transport infrastructure planning and decision-making in New Zealand.

Therefore, NZTA has sponsored this work to gather empirical evidence to inform infrastructure and transport funding reviews being undertaken very soon.

Note that when we refer to younger people in the focus group today, we are referring to those aged 15-35 years currently, unless otherwise specified.

#### Focus group etiquette:

- Toilet breaks, emergency exit information and request cell phones are turned off.
- Emphasise that we are not here to reach a consensus, but to discuss a range of views. There are no right or wrong answers.
- We have purposefully ensured a range of people from different ages and backgrounds to attend and are very interested in each person's differing view and the reasons for these different views.
- Cross talk among group, not to/from the facilitator – Facilitator will guide the discussion to cover the topics the NZTA wants to hear about and may bring the group back to a particular point if more clarification is needed.
- Give everyone an opportunity to talk.
- Session will be audio-tapped to allow us to analyse information after the session.

#### Introductions:

First name, overview of current travel patterns (eg main modes and access to private vehicle etc), main weekly activity (this will separate out those at high school, university, working etc), and living/home situation (will separate out those with kids versus not and those who are single etc).

[Facilitator to introduce self and provide this detail first]

[Facilitator to add main different groupings present to whiteboard as people introduce themselves (e.g. single professional, in a couple with children, single student, etc). Perspectives of people belonging to these different groupings will then be added to the whiteboard over the course of the focus group to enhance visualisation of the differences between the groups]

#### Basic structure of the focus group:

First we are going to explore your current travel patterns, and the reasons for these. Later we will ask you to think about your future travel patterns and how you think these will or won't change over time as you move into your next life stage or stages. We understand that anticipating what you will do in the future is difficult, so we're most interested in how you think you will travel given the different changes to your current situation that could happen. We'll go into more detail about this when we get to that part of the discussion.

Your current travel patterns:

First of all, we'd like to hear about your decision-making around your current travel patterns, and what influences your travel.

What factors do you consider when deciding whether to make a trip?

[Prompts: cost, time of day, distance, importance of trip (e.g. what's important for discretionary trips?), different modes available to complete trip, ability to avoid trip by other options available, e.g. use online shopping instead of visiting a store or catch-up with a friend over the phone or via social media instead of in person]

[Additional questions: Are interactions with others using digital communication an important part of your life? Is the ratio of face-to-face versus over the phone versus over the internet changing for you over time? Why or why not? Include in this questioning around the ages at which they started using such technologies]

[Additional question: Are there any other ways that you believe technology has affected your travel patterns?] [Prompts: payment cards, information provision systems that give real-time travel information, any other advancements that make different types of travel more attractive, reduced the need to travel (e.g. online shopping)]

What factors do you consider when deciding how to get somewhere (e.g. work, school, shopping)?

[Prompts: distance, environmental factors, trip purpose, cost, parking, availability of different modes, quality of services available, time of trip, congestion]

[Additional question: Do you prefer to use certain modes (e.g. PT, car, cycle, walk) for different types of trips (e.g. for recreational trips versus work trips)? Why or why not? Is distance travelled important?]

[Additional question: are there any travel modes you do not use regularly? Why do you not use these?]

What factors attract you to using public transport (if any)?

[Prompts: Service frequency, cost, convenience, reliability, no need to find/pay for parking, provisions such as WiFi, safety, cost of fuel/maintaining/owning a car, social pressure or norm?]

[Additional question: Do you believe level of service available to you off-peak currently is adequate? Is off-peak service frequency particularly important or attractive to you for your travel needs? Why or why not?] [Prompts: for social or recreational trips that are completed during off-peak times, or for those working irregular hours, such as shift work]

Are there any factors that reduce the attractiveness of using public transport for you?

[Additional question: Is there any reason that public transport is just not suitable for your travel needs? E.g. because you have children or need to travel at irregular or off-peak times or because you travel mostly in off-peak, safety becomes a concern?]

[Additional question: are there any technological advances that you would like to see that would increase the attractiveness of using PT? e.g. improved real-time information, better payment systems]

[Additional question: do you think factors that attract you to (or discourage you from using) PT are different to those for older people? Why or why not?]

Have you ever had any major life changes that have made you consider significant changes in how you travelled?

[Prompts: moved city, moved out of home, started/finished studying, bought a house, had children, changes to ownership of vehicles etc]

[Additional questions: Did you change your travel patterns at this time? What were the main reasons for this?]

Travel patterns in New Zealand currently:

In New Zealand (and internationally), there has been a trend towards less travel amongst younger people than previously seen in older generations.

Do you believe you have different travel patterns to your parents or older siblings/friends?  
Why do you think this is or isn't the case?

[Prompting questions if required]

What do you think has been the impact of the economic environment? [Prompts: unemployment rates, lower disposable income, increasing costs of car ownership and maintenance, including fuel prices and parking costs]

What do you think has been the impact of the trend seen in delaying major life milestones? (e.g. parenthood, first jobs, moving out and purchasing first homes, relationship with increased tertiary education)

Do you think younger people today have different values now which has affected travel patterns? Why or why not? [Prompts: do they value their time differently, such that travel time is less of a priority? Do they value different costs differently, such that they are more likely to invest in a phone for instance rather than a car? Is there a new social norm towards using public transport?]

Do you think there has been a change in perspectives towards private vehicles amongst younger New Zealanders? How have these changed? Has there been a change in the status attached to owning a car? What has been the impact of changes in the licencing system in NZ? Is it harder to get a licence now than for previous generations? Do you see this as an important step in life?

Do you think there has been a change towards increased environmental consciousness that relates to these changing travel patterns? Why or why not?

What do you think has been the impact of improvements to public transport services in New Zealand? Have you noticed any such improvements personally? If so, what improvements?

What do you think has been the impact of increased urban living? E.g. more people moving to urban centres and increased densification within these – exposure from young age to public transport, impact of parental influences. Also increased congestion?

Do you think that the rapid change in technology today has related to changing travel patterns? Why or why not? [Prompts: has the increased use of social media reduced the need to travel for social purposes? Has the widespread use of technology made PT a more attractive mode as people can use their smartphone or laptop whilst travelling? Has improved information provision improved the travel experience such that PT use is more attractive?]

Note: If participants don't believe their travel patterns differ to their parents' etc, ask why they think other people of their age have different travel patterns to older people (as is evidenced in the literature), and use above prompts as needed.

Your likely travel patterns in the future:

Now we'd like you to think about your likely future travel patterns. To do this, we'd like you to think about the major changes to your life that you think will occur in the next few years. For example, if you're currently at university, you may be entering your first professional job in the next few years. Others may be planning to start a family in the not-too-distant future. As we have a mix of people with different lifestyles present (e.g. those studying versus working and those with children versus without children) we are very interested in hearing the differing views of all of you. We've already heard about how you travel now and you've heard the viewpoints of those in different life stages to you, so think about all these influences as we discuss the next set of questions.

What do you believe will happen to your travel patterns in the short term (e.g. before there are any major changes to your life)?

Why do you think your travel patterns will remain the same or change?

What do you believe will happen to your travel patterns in the long term (e.g. once you move into the next life stage)?

Why do you think your travel patterns will remain the same or change?

*For provincial focus group:*

Would you like to move to a main urban centre in the future (e.g. Auckland, Wellington or Christchurch)?

Why or why not? Would transport options be an important factor in this decision?

Do you believe your travel patterns would change if you did this? Why do you think they would or would not change?

*For Auckland-based focus group:*

Would you like to move to a provincial area in the future (e.g. Nelson, Palmerston North or Hastings)?

Why or why not? Would transport options be an important factor in this decision?

Do you believe your travel patterns would change if you did this? Why do you think they would or would not change?

Do you believe that the changes in younger people that we've discussed signals a change in the culture of the younger generation meaning that the different travel patterns we've talked about amongst this group will continue over time?

Alternatively, do you believe that these changes will not endure, and instead match the travel patterns of older generations over time as younger people age?

Why or why not?

[Alternative question if required: How have your friends/family under 35 years of age changed/not changed their travel patterns as they've moved through various life stages?]

What do you believe will happen with the travel patterns of those younger than 15 years of age as this group ages?

Do you think they will mirror the differing travel patterns observed amongst younger people today in New Zealand?

Why or why not?

What do you think will happen with public transport use amongst younger people in particular in the future?

Do you think this is a viable mode as people move through different life stages, such as having children?

What are the reasons that you think public transport use will increase/decrease/stay the same?

Would improved public transport services influence your current travel patterns? How?

What types of improvements to public transport services would you find most attractive in the future? [Prompts: increased frequency of services, increased frequency of off-peak services, increased coverage of services, provision of WiFi, provision of other technological improvements, provision of cycle facilities, increased reliability, increased affordability]

Do you believe that the trend observed amongst younger people of delaying traditional life stages (such as entering the workforce, starting a family or leaving home) will continue in the future?

Why or why not?

If yes, do you think they will be increasingly delayed over time?

*[One to remove if run out of time]*

Closing:

Does anybody have any closing thoughts or comments?

Do anybody think there is anything we've missed in the discussion which is important to younger people's travel, either today or in the future?

[After final discussion]

We'd like to thank you all for your participation today and sharing your valuable insights with us. The information you have shared today will form an important part of the project which in turn will help inform transport infrastructure decision-making in New Zealand.

[Hand out incentives]

---



## Appendix C: Survey weighting calculations

Post stratification is a weighting method used to reduce potential bias in estimates produced from a sample by weighting up data collected, by means of comparison with auxiliary data. For the Generation Y survey the sample collected was compared with that of the Ministry of Transport's New Zealand Household Travel Survey (NZHTS), a representative sample of New Zealand travellers.

Age and gender were used to define characteristics of the sample on which post-stratification calculations were based. The proportion of males and females in the representative sample (weighted NZHTS) were calculated as were the proportions of males and females in the sample collected through the online survey.

To calculate an age specific weighting, ages were grouped into five-year age bands and the proportion of the sample allocated to each specific age band calculated. Five-year age groupings were selected for the online survey as the sampling frame was unable to capture specific demographic combinations.

It was not possible to use imputation methods for such cases where respondents had not disclosed either their age or gender, therefore these participants (N=2) were not included in the final sample.

Weightings for gender and age were calculated by dividing the proportion observed in the weighted NZHTS sample by the proportion observed in the unweighted online survey sample.

## Appendix D: List of possible service improvements from online survey

- 1 Introduction of bus priority lanes to improve service punctuality
- 2 Introduction of bus signal priority at lights to improve service punctuality
- 3 Improved coverage of services (eg to areas previously not well serviced)
- 4 Increased frequency of peak services to allow for spontaneity of travel
- 5 Increased frequency of daytime off-peak services
- 6 Increased frequency of evening and weekend off-peak services
- 7 Free service transfers (during trip chaining)
- 8 Short wait times during transfers (when trip chaining)
- 9 Savings to overall trip times (eg through introduction of Express services)
- 10 Improved quality of vehicles (eg better seats, introduction of air-conditioning)
- 11 Introduction of additional seats on services
- 12 Provision of Wifi on services
- 13 Provision of Wifi at stations/stops
- 14 Ability to pay for services (eg top up payment cards) via cell phone
- 15 Ability to pay for services (eg top up payment cards) via the internet
- 16 Integrated ticketing using one ticket for all services (eg buses, trains, ferries)
- 17 Concession tickets for families
- 18 Improvement of real-time information provision (eg time to next service and delay information in a smart phone application)
- 19 Improved driver training for bus drivers
- 20 Friendlier/more helpful staff
- 21 Additional bus stops along existing routes
- 22 Improved quality of station/stop facilities (eg warmer shelter, additional seats and other amenities)
- 23 Improved lighting at stops
- 24 Introduction of CCTV on board services and at stations/stops
- 25 Provision of cycle facilities at stations/stops
- 26 Provision of cycle facilities on vehicles
- 27 Expansion of facilities to park at stations/stops
- 28 Improved footpaths to stations/stops
- 29 Improved cycle routes to stations/stops

## Appendix E: Service improvement priorities split by region

Table E.1 Top 10 service improvement priorities for Auckland split by subsample (ordered by highest priority for Generation Y)

	Generation Y subsample (N=184)				Control group (N=281)		
		Total N	Total %			Total N	Total %
1	Increased frequency (peak)	52	28.3%	1	Improved coverage	41	22.3%
2	Bus priority lanes	46	25.0%	2	Increased frequency (peak)	52	28.3%
3	Improved coverage	41	22.3%	3	Increased frequency (evening and weekend off-peak)	34	18.5%
4	<b>Free service transfers</b>	31	16.8%	4	Bus priority lanes	46	25.0%
5	Increased frequency (evening and weekend off-peak)	34	18.5%	5	Increased frequency (daytime off-peak)	29	15.8%
6	Shorter overall trip times	28	15.2%	6	Shorter overall trip times	28	15.2%
7	Increased frequency (daytime off-peak)	29	15.8%	7	Integrated ticketing	22	12.0%
8	Integrated ticketing	22	12.0%	8	Increased parking facilities	14	7.6%
9	Increased parking facilities	14	7.6%	9	<b>Improved cycle routes to stations/stops</b>	11	6.0%
10	<b>Short transfer wait times</b>	17	9.2%	10	<b>Improved station/stop facilities</b>	12	6.5%
<b>Lowest ranked service improvements</b>							
1	Additional seating on-board	5	2.7%	1	Improved station/stop lighting	1	0.4%
2	Improved footpaths to stations/stops	6	3.3%	2	Additional seating on board	0	0.0%
3	Introduction of CCTV	4	2.2%	3	Wifi at stations/stops	0	0.0%
4	Additional bus stops	3	1.6%	4	Improved driver training	0	0.0%
5	Improved station/stop lighting	0	0.0%	5	Additional bus stops	0	0.0%

Table E.2 Top 10 service improvement priorities for Wellington split by subsample (ordered by highest priority for Generation Y)

	Generation Y subsample (N=126)				Control group (N=202)		
		Total N	Total %			Total N	Total %
1	Increased frequency (evening and weekend off-peak)	32	25.4%	1	Integrated ticketing	29	23.0%
2	Integrated ticketing	29	23.0%	2	Improved coverage	25	19.8%
3	Increased frequency (peak)	28	22.2%	3	Increased frequency (peak)	28	22.2%
4	Improved coverage	25	19.8%	4	Increased frequency (evening and weekend off-peak)	32	25.4%
5	<b>Shorter overall trip times</b>	24	19.0%	5	<b>Cycle facilities on-board</b>	9	7.1%
6	Free service transfers	23	18.3%	6	Free service transfers	23	18.3%
7	Bus priority lanes	17	13.5%	7	<b>Family concession tickets</b>	6	4.8%
8	Improved real-time info	17	13.5%	8	Bus priority lanes	17	13.5%
9	Increased frequency (daytime off-peak)	12	9.5%	9	Increased frequency (daytime off-peak)	12	9.5%
10	<b>Wifi on services</b>	11	8.7%	10	<b>Short transfer wait times</b>	8	6.3%
<b>Lowest ranked service improvements</b>							
1	Improved station/stop lighting	1	0.8%	1	Increased parking facilities	2	1.0%
2	Introduction of CCTV	1	0.8%	2	Introduction of CCTV	1	0.5%
3	Improved footpaths to stations/stops	1	0.8%	3	Improved station/stop lighting	1	0.5%
4	Wifi at stations/stops	0	0.0%	4	Bus signal priority at lights	1	0.5%
5	Additional bus stops	0	0.0%	5	Additional bus stops	0	0.0%

**Table E.3 Top 10 service improvement priorities for Christchurch (subsamples combined)**

	Christchurch sample (N=161)		
		Total N	Total %
1	Increased coverage	24	14.9%
2	Increased frequency (peak)	24	14.9%
3	Shorter overall trip times	18	11.2%
4	Short transfer wait times	19	11.8%
5	Increased frequency (daytime off-peak)	21	13.0%
6	Bus priority lanes	13	8.1%
7	Free service transfers	12	7.5%
8	Increased frequency (evening and weekend off-peak)	14	8.7%
9	Wifi on services	14	8.7%
10	Improved station/stop facilities	14	8.7%
<b>Lowest ranked service improvements</b>			
1	Cycle facilities at stations/stops	4	1.2%
2	Integrated ticketing	1	0.6%
3	Increased parking facilities	1	0.6%
4	Wifi at stations/stops	0	0.0%
5	Improved footpaths to stations/stops	0	0.0%

Note: Generation Y and the older control group are combined for this output due to low samples sizes (to improve the robustness of the priority rankings).

**Table E.4 Top 10 service improvement priorities for 'other' regions (subsamples combined)**

	'Other' regions sample (N=72)		
		Total N	Total %
1	Improved coverage	17	23.6%
2	Increased frequency (peak)	10	13.9%
3	Improved cycle routes to stations/stops	8	11.1%
4	Shorter overall trip times	10	13.9%
5	Cycle facilities on-board	6	8.3%
<b>Lowest ranked service improvements</b>			
1	Additional seating on-board	0	0.0%
2	Cell phone payment	0	0.0%
3	Improved station/stop lighting	0	0.0%
4	Introduction of CCTV	0	0.0%
5	Increased parking facilities	0	0.0%

Note: Generation Y and the older control group are combined for this output due to low samples sizes (to improve the robustness of the priority rankings). Only the top five service improvements are reported for the same reason.

## Appendix F: Online survey results tables

Table F.1 Self-reported weekly users of public transport comparing baseline, future and future with service improvements data

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Baseline main trips</i>					
Users	168	35.3%	153	21.5%	***
Non-users	308	64.7%	560	78.5%	***
Total	476	100.0%	713	100.0%	
<i>Future main trips</i>					
Users	296	70.4%	258	71.5%	
Non-users	124	29.6%	103	28.5%	
Total	421	100.0%	361	100.0%	
<i>Future with improvements main trips</i>					
Users	306	89.5%	266	91.4%	
Non-users	36	10.5%	25	8.6%	
Total	342	100.0%	291	100.0%	
<i>Baseline other trips</i>					
Users	86	18.1%	108	15.1%	
Non-users	309	81.9%	605	84.9%	
Total	476	100.0%	713	100.0%	
<i>Future other trips</i>					
Users	264	63.0%	227	63.4%	
Non-users	155	37.0%	131	36.6%	
Total	419	100.0%	359	100.0%	
<i>Future with improvements other trips</i>					
Users	269	78.6%	247	85.2%	*
Non-users	73	21.4%	43	14.8%	*
Total	342	100.0%	290	100.0%	

\* p<.05, \*\*\* p<.001

**Table F.2** Baseline and anticipated future mean days per week of public transport use in next five years, including with and without service improvements

	Generation Y subsample			Control group			Significance
	N	Mean (days)	Std deviation	N	Mean (days)	Std deviation	
<i>Including non-users (range 0–7)</i>							
Baseline main trips	476	1.6	2.3	713	0.8	1.8	***
Future main trips	421	3.2	2.5	361	2.8	2.2	**
Future improved scenario main trips	342	4.1	2.5	291	3.7	1.8	*
Baseline other trips	476	0.4	1.1	713	0.3	1.0	
Future other trips	419	1.9	2.2	359	1.8	2.1	
Future improved scenario other trips	342	2.5	2.1	290	2.4	2.0	
<i>Excluding non-users (range 1–7)</i>							
Baseline main trips	168	4.4	1.6	153	3.9	1.7	**
Future main trips	296	4.6	1.6	258	3.9	1.6	***
Future improved scenario main trips	306	4.6	1.5	266	4.1	1.5	***
Baseline other trips	88	2.4	1.5	109	2.2	1.7	
Future other trips	264	3.1	2.0	227	2.8	2.0	
Future improved scenario other trips	269	3.1	1.9	247	2.8	1.9	*

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The paired samples  $t$  test results comparing mean weekly public transport use between the future scenario and then the future scenario with improvements when including non-users are as follows:

- For Generation Y, the mean number of days per week was significantly higher in the improved public transport service scenario for main ( $t(340) = -6.2, p < .001$ ) and other trips ( $t(339) = -3.9, p < .001$ )
- For the control group, the same statistically significant difference was observed for main ( $t(287) = -6.3, p < .001$ ) and other trips ( $t(285) = -4.4, p < .001$ ).

**Table F.3** Rates of public transport use at baseline and anticipated for future without and with service improvements for entire sample (including those not expecting changes to their travel in the next five years)

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Baseline main trips</i>					
Users	168	35.3%	153	21.5%	***
Non-users	308	64.7%	560	78.5%	***
Total	476	100.0%	713	100.0%	
<i>Future main trips</i>					
Users	314	65.9%	315	44.2%	***

	Generation Y subsample		Control group		Significance
	N	%	N	%	
Non-users	163	34.1%	398	55.8%	***
Total	476	100.0%	713	100.0%	
<i>Future with improvements main trips</i>					
Users	360	75.9%	352	49.5%	***
Non-users	115	24.1%	359	50.5%	***
Total	475	100.0%	711	100.0%	
<i>Baseline other trips</i>					
Users	87	18.6%	109	15.3%	
Non-users	389	81.4%	604	84.7%	
Total	476	100.0%	713	100.0%	
<i>Future other trips</i>					
Users	277	58.2%	284	39.8%	***
Non-users	199	41.8%	429	60.2%	***
Total	476	100.0%	713	100.0%	
<i>Future with improvements other trips</i>					
Users	320	67.5%	332	46.8%	***
Non-users	154	32.5%	378	53.2%	***
Total	474	100.0%	709	100.0%	

\*\*\* p<.001

The chi-square results are as follows: When comparing the two subsamples' expected rates of weekly public transport use including those not expecting changes to their travel patterns in the next five years, Generation Y had statistically significant higher proportions of travellers expecting to use public transport compared with the older control group for:

- main trips in the next five years without any service improvements,  $\chi^2(1, N = 1190) = 53.8, p < .001$
- other trips in the next five years without any service improvements,  $\chi^2(1, N = 1189) = 38.6, p < .001$
- main trips in the next five years with service improvements introduced,  $\chi^2(1, N = 1186) = 81.9, p < .001$
- other trips in the next five years with service improvements introduced,  $\chi^2(1, N = 1184) = 49.5, p < .001$



**Table F.4** Baseline and anticipated future mean days per week of public transport use in next five years, including with and without service improvements for entire sample

	Generation Y subsample			Control group			Significance
	N	Mean (days)	Std deviation	N	Mean (days)	Std deviation	
<i>Including non-users (range 0-7)</i>							
Baseline main trips	476	1.6	2.3	713	0.8	1.8	***
Future main trips	476	3.0	2.5	713	1.7	2.2	***
Future improved scenario main trips	475	3.5	2.4	711	2.0	2.3	***
Baseline other trips	476	0.4	1.1	713	0.3	1.0	
Future other trips	476	1.8	2.2	713	1.1	1.8	***
Future improved scenario other trips	474	2.1	2.1	709	1.3	1.9	***
<i>Excluding non-users (range 1-7)</i>							
Baseline main trips	168	4.4	1.6	153	3.9	1.7	**
Future main trips	314	4.6	1.6	315	3.8	1.7	***
Future improved scenario main trips	360	4.6	1.5	352	4.0	1.6	***
Baseline other trips	88	2.4	1.5	109	2.2	1.7	
Future other trips	277	3.1	2.0	284	2.7	1.9	*
Future improved scenario other trips	320	3.1	1.9	332	2.7	1.9	*

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The independent samples  $t$  tests (comparing mean weekly usage between Generation Y and the control group including non-users, highlighted in the table above) show that Generation Y has significantly higher weekly use of public transport for:

- main trips in the future without improvements,  $t(924.4) = 9.4$ ,  $p < .001$
- other trips in the future without improvements,  $t(890.4) = 6.0$ ,  $p < .001$
- main trips in the future with improvements to the public transport system,  $t(1183) = 10.9$ ,  $p < .001$
- other trips in the future with improvements to the public transport system,  $t(928.3) = 6.8$ ,  $p < .001$

These differences were all also present when excluding non-users. For example, the independent samples  $t$  tests showed that Generation Y users of public transport have significantly higher weekly use of public transport for:

- main trips in the future without improvements,  $t(624.0) = 5.8$ ,  $p < .001$
- other trips in the future without improvements,  $t(559) = 2.3$ ,  $p < .05$
- main trips in the future with improvements to the public transport system,  $t(708.8) = 5.1$ ,  $p < .001$
- other trips in the future with improvements to the public transport system,  $t(650) = 2.5$ ,  $p < .05$ .

Paired samples  $t$  tests reveal there were also significant differences in mean weekly public transport use within the subsamples. For example, for Generation Y mean weekly public transport use significantly increased between:

- main trips at the baseline and main trips in the future scenario without improvements,  $t(475) = -11.1$ ,  $p < .001$
- main trips in the future scenario without improvements and main trips in the future scenario with improvements,  $t(474) = -6.1$ ,  $p < .001$
- other trips at the baseline and other trips in the future scenario without improvements,  $t(475) = -13.5$ ,  $p < .001$
- other trips in the future scenario without improvements and other trips in the future scenario with improvements,  $t(473) = -3.9$ ,  $p < .001$ .

The same results were found for the older control group, with mean weekly public transport use increasing significantly between:

- main trips at the baseline and main trips in the future scenario without improvements,  $t(712) = -10.5$ ,  $p < .001$
- main trips in the future scenario without improvements and main trips in the future scenario with improvements,  $t(710) = -6.3$ ,  $p < .001$
- other trips at the baseline and other trips in the future scenario without improvements,  $t(712) = -11.5$ ,  $p < .001$
- other trips in the future scenario without improvements and other trips in the future scenario with improvements,  $t(708) = -4.5$ ,  $p < .001$ .

When excluding non-users to control for the increase in public transport users across the time points in both subsamples, paired samples  $t$  tests reveal that weekly usage among users of public transport only increased significantly for other trips between the baseline and the future for Generation Y ( $t(73) = -2.2$ ,  $p < .05$ ). For the control group, mean weekly usage for public transport users increased significantly both for main trips between the future without improvements and the future with improvement scenarios ( $t(306) = -3.0$ ,  $p < .01$ ) and for other trips between the baseline and future (as with Generation Y;  $t(98) = -2.7$ ,  $p < .01$ ).

**Table F.5 Rates of public transport use at baseline and projected rates for future without and with service improvements for entire sample**

	Generation Y subsample		Control group		Significance
	N	%	N	%	
<i>Baseline main trips</i>					
Users	168	35.3%	153	21.5%	***
Non-users	308	64.7%	560	78.5%	***
Total	476	100.0%	713	100.0%	
<i>Future main trips</i>					
Users	232	48.7%	218	30.6%	***
Non-users	245	51.3%	495	69.4%	***
Total	477	100.0%	713	100.0%	
<i>Future with improvements main trips</i>					
Users	254	53.7%	240	33.8%	***
Non-users	220	46.3%	470	66.2%	***
Total	474	100.0%	710	100.0%	
<i>Baseline other trips</i>					
Users	87	18.6%	109	15.3%	
Non-users	389	81.4%	604	84.7%	
Total	476	100.0%	713	100.0%	
<i>Future other trips</i>					
Users	204	42.8%	196	27.5%	***
Non-users	274	57.2%	517	72.5%	***
Total	478	100.0%	713	100.0%	
<i>Future with improvements other trips</i>					
Users	231	48.8%	230	32.3%	***
Non-users	243	51.2%	481	67.7%	***
Total	474	100.0%	711	100.0%	

\*\*\* p&lt;.001

Chi-square results are as follows: When comparing the two subsamples' projected rates of weekly public transport use in the next five years, Generation Y had statistically significant higher proportions of travellers expecting to use public transport compared for the older control group for:

- main trips in the next five years without any service improvements,  $\chi^2(1, N = 1190) = 39.7, p < .001$
- other trips in the next five years without any service improvements,  $\chi^2(1, N = 1191) = 29.6, p < .001$
- main trips in the next five years with service improvements introduced, :  $\chi^2(1, N = 1184) = 45.8, p < .001$

- other trips in the next five years with service improvements introduced,  $\chi^2(1, N = 1185) = 32.1$ ,  $p < .001$ .

**Table F.6 Baseline and projected future mean days per week of public transport use in next five years, including with and without service improvements for entire sample**

	Generation Y subsample			Control group			Significance
	N	Mean (days)	Std deviation	N	Mean (days)	Std deviation	
<i>Including non-users (range 0-7)</i>							
Baseline main trips	476	1.6	2.3	713	0.8	1.8	***
Future main trips	476	2.2	2.5	713	1.2	2.0	***
Future improved scenario main trips	475	2.5	2.5	711	1.4	2.1	***
Baseline other trips	476	0.4	1.1	713	0.3	1.0	
Future other trips	476	1.3	1.9	713	0.7	1.5	***
Future improved scenario other trips	474	1.5	2.0	709	0.9	1.7	***
<i>Excluding non-users (range 1-7)</i>							
Baseline main trips	168	4.4	1.6	153	3.9	1.7	**
Future main trips	234	4.5	1.6	224	3.9	1.7	***
Future improved scenario main trips	253	4.6	1.5	238	4.1	1.6	***
Baseline other trips	88	2.4	1.5	109	2.2	1.7	
Future other trips	201	3.0	1.9	198	2.6	1.8	
Future improved scenario other trips	232	3.1	1.9	236	2.7	1.9	*

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The independent samples  $t$  tests (comparing mean weekly usage between Generation Y and the control group including non-users, highlighted in the table above) show that Generation Y have significantly higher weekly use of public transport for:

- main trips in the future without improvements,  $t(865.5.4) = 7.3$ ,  $p < .001$
- other trips in the future without improvements,  $t(851.5) = 5.0$ ,  $p < .001$
- main trips in the future with improvements to the public transport system,  $t(892.6) = 7.7$ ,  $p < .001$
- other trips in the future with improvements to the public transport system,  $t(879.4) = 5.6$ ,  $p < .001$

A number of differences were all also present when excluding non-users. For example, the independent samples *t* tests showed that Generation Y users of public transport had significantly higher weekly use of public transport for:

- main trips in the future without improvements,  $t(452.0) = 4.4$ ,  $p < .001$
- main trips in the future with improvements to the public transport system,  $t(479.6) = 3.9$ ,  $p < .001$
- other trips in the future with improvements to the public transport system,  $t(466) = 2.3$ ,  $p < .05$

Paired samples *t* tests reveal there were also significant differences in mean weekly public transport use within the subsamples. For example, for Generation Y mean weekly public transport use significantly increased between:

- main trips at the baseline and main trips in the future scenario without improvements,  $t(475) = -6.1$ ,  $p < .001$
- main trips in the future scenario without improvements and main trips in the future scenario with improvements,  $t(474) = -3.0$ ,  $p < .01$
- other trips at the baseline and other trips in the future scenario without improvements,  $t(475) = -9.6$ ,  $p < .001$
- other trips in the future scenario without improvements and other trips in the future scenario with improvements,  $t(473) = -4.1$ ,  $p < .001$ .

The same results were found for the older control group, with mean weekly public transport use increasing significantly between:

- main trips at the baseline and main trips in the future scenario without improvements,  $t(712) = -5.7$ ,  $p < .001$
- main trips in the future scenario without improvements and main trips in the future scenario with improvements,  $t(710) = -2.9$ ,  $p < .01$
- other trips at the baseline and other trips in the future scenario without improvements,  $t(712) = -6.5$ ,  $p < .001$
- other trips in the future scenario without improvements and other trips in the future scenario with improvements,  $t(708) = -3.9$ ,  $p < .001$ .

When excluding non-users to control for the increase in public transport users across the time points in both subsamples, paired samples *t* tests reveal that weekly usage among users of public transport increased significantly for main trips ( $t(210) = -3.8$ ,  $p < .001$ ) and other trips ( $t(178) = -4.1$ ,  $p < .001$ ) between the two future scenarios. For the control group, mean weekly usage for public transport users increased significantly both for other trips between the baseline and future ( $t(82) = -2.7$ ,  $p < .01$ ) and main trips between the two future scenarios ( $t(196) = -2.3$ ,  $p < .05$ ).