

Attitudes to Public Transport in New Zealand: Findings from a combined longitudinal and cross-sectional study.

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Abstract

This paper presents the findings from a long-term study of attitudes to public transport (PT) in New Zealand. The study consists of two parts; a cross-sectional survey of drivers from New Zealand's three largest urban areas (Auckland, Wellington, and Christchurch; driver sample), and a panel-study of 17-year-olds from across New Zealand (youth sample). As well as PT attitudes, other measured variables include environmental attitudes, norms regarding PT use, direct and indirect exposure to PT, and use of PT.

PT attitudes of the youth sample were more negative for 2008 than 2007. Regional differences in PT attitudes were found for the driver sample, with Aucklanders exhibiting the most negative attitudes and Wellingtonians the least. Subjective norms were related to PT attitudes for both samples and for all years. However, PT attitudes were related to PT use for the driver sample only.

The main conclusion is that subjective norms need to be considered when attempting to increase PT ridership, as improving the service may not encourage people to use PT if the prevailing norms are against PT use.

1 INTRODUCTION

[Public transport] passengers are packed in like sardines; the ride is slow and dirty and exhausting; the vehicles are places of crime and hooliganism
(Davis, 1969, p. 89).

There is evidence that an individual's beliefs about the users of public transport (PT) affect their attitudes towards PT. Siegfried, Tedschi, and Cann (1982) found that participants' intentions to use buses were reduced when presented with a description of a typical bus user that had dissimilar characteristics compared to one that matched them. Residents of neighbourhoods with limited or no PT accessibility have responded negatively to proposals to open their neighbourhoods up to PT. One of the main concerns is that criminals will use PT to commute to their neighbourhood (Achs, 1991; Beck, 2007; Public to have their say, 2007), even though evidence suggests this does not happen (Liggert, Loukaitou-Sideris, & Iseki, 2003).

For this research attitudes towards PT have been conceptualised as representing prejudice, whether towards the users (e.g. they are criminals), service (e.g. it is late), or other factors (e.g. it is too expensive). Drawing on the prejudice literature, other factors associated with prejudice have been included as part of this study. For instance, increased contact with a target of prejudice is associated with decreased levels of prejudice (see Allport, 1954/1979). Subjective norms (Reno, Cialdini, & Kallgren, 1993; Sherif, 1936/1966) are also linked to levels of prejudice (Blanchard, Crandall, Brigham, & Vaughn, 1994; Crandall, Eshleman, and O'Brien, 2002; Zitek & Hebl, 2007), with more favourable norms being linked to lower levels of prejudice. Negative experiences with PT can affect attitudes towards PT (Friman & Gärling, 2001). As well, environmental attitudes (EA) have been shown to influence mode choice (Collins & Chambers, 2005), and so have been included in the survey.

This paper presents findings from two concurrent studies on New Zealander's attitudes towards PT. The first study is a longitudinal cohort design, the sample consisting of final year secondary school students (Year 13) aged 17 (*youth sample*). Surveying occurred at yearly intervals. The second study involved sampling drivers from New Zealand's three main centres (Auckland, Wellington, and Christchurch) two yearly (*driver sample*). In terms of PT use for travelling to work, data from the 2006 census (Statistics New Zealand, 2007) indicates that 13.4% of Wellingtonians, 5.4% of Aucklanders, and 2.8% of Christchurch residents used PT.

Driving has been found to have affective benefits that PT use does not (Ellaway, Macintyre, Hiscock, & Kearns, 2003; Mann & Abraham, 2006). As well, private vehicles have been rated higher than PT on symbolic affective elements of mode use (e.g. poor – rich, uncool – cool) and instrumental elements (e.g. inconvenient – convenient), while PT rated higher on social orderliness (e.g. egoistic – altruistic) (Van & Fujii, 2008). Therefore the attitudes towards PT of car users and non-car users are likely to be different (e.g. Beale & Bonsall, 2007; Ibrahim, 2003). The target population for behaviour change regarding PT is not current PT users, but non PT-users, hence the decision to sample drivers rather than current PT users.

The main purpose for selecting participants in the final year of secondary school was to examine the effect of a major break in travel patterns on attitudes and mode use. That is, they are no longer travelling to secondary school but rather to university, work, or another activity. The best predictor of future PT use in a stable environment is previous PT use (Thøgersen, 2006), but when there is a major change this may not be the case. This is similar to the work conducted by Gärling, Fujii, and Boe (2001) on drivers who had their

travel patterns disrupted by a freeway closure, Fujii and Gärling (2003) who examined university graduates moving into the workforce, and Bamberg's (2006) study of people who had recently moved to Stuttgart.

2 METHOD

2.1.1 PARTICIPANTS

2.1.2 YOUTH SAMPLE

The youth sample consisted of 159 17-year olds (121 females) from across New Zealand. There were 106 participants who identified as New Zealand European, 23 who identified as Māori, and 30 who identified as another ethnicity. The North Island – South Island split for the sample was close to the actual population split (71% and 75% from the North Island for the youth sample and the general population respectively). Most of the participants were selected via a mail-out to specific schools around New Zealand, with the remainder obtained through an advert placed on a popular teen website. At signup the participants provided information shown to maximise retention by other longitudinal studies, such as contact details for friends and family (e.g. Cotter, Burke, Loeber, & Navratil, 2002; Gregory, Lohr, & Gilchrist, 1992; Ribisl et al, 1996).

2.1.3 DRIVER SAMPLES

For 2007 and 2009 1500 drivers, 500 from each region, were sent surveys. The usable response rate was over 33% for both years. Addresses were obtained by recording number plates in each city, and then the Motochek database (NZTA, 2004) was used to determine valid addresses. General demographic data for both years are presented in Table 1.

Table 1 Demographic information for the driver sample

	2007				2009			
	Auck	Well	Chch	Total	Auck	Well	Chch	Total
Gender								
Male	85	95	93	273	57	100	103	260
Female	90	85	114	289	61	91	96	248
Ethnicity								
NZ European	128	138	183	449	88	151	162	401
Māori	5	10	7	22	8	14	10	32
Other	43	37	19	99	23	28	27	78
Mean Age (years)	44	45	46.5	45.5	43	47	49	47
Sample size	176	187	212	575	122	196	202	520

Note: Auck = Auckland, Well = Wellington, Chch = Christchurch

2.1.4 SURVEY

There were two versions of the survey. The first version, given to the participants in 2007, consisted of 150 items. The second survey was given to the youth sample in 2008 and to the driver sample in 2009, and consisted of 156 items. Only those items relevant to this paper will be described here.

The primary measure for both surveys was the *PT prejudice scale*, consisting of 40 mixed-type items (5-point Likert scales and 7-point bipolar scales; see Appendix A for the items). The environmental attitudes scale (*EA scale*) was composed of eight 5-point Likert scale items, and was based on a scale used by Thomas and Walton (2008). For the second survey a *negative experiences* scale was created. This consisted of seven items, each asking about the frequency with which the respondent had experienced specific events (e.g. a passenger is abusive, the bus or train does not arrive), and was scored on a 7-point bipolar scale anchored from very infrequently to very frequently.

Four items measured the frequency of walking and using PT for travel to the participant's main activity (e.g. school, work), both for the past (two years ago) and present. Three items measured general PT use ("I prefer to use public transport when travelling to the city centre", "If I'm going out socialising I'll generally take public transport", and "When travelling to watch an event (e.g. a sports game) I use public transport").

The overall usability of PT was measured for the second survey only. One item asked what percentage of the participant's weekly trips they believed they could make with PT. Two other items asked about accessibility ("Public transport is accessible to most people in my neighbourhood") and affordability ("Public transport is affordable for most people in my city").

Personal beliefs were measured by three items. One was repeated for both surveys; "People should use public transport if they are able to". Two were only used for the second survey; "It's ok to let unaccompanied primary school students use public transport" and "People will use public transport if they are able to".

Five items measured subjective norms regarding PT use. Two were used for both surveys; "I know people who use public transport regularly", "My friends believe that public transport is the best way to travel". Three were added for the second survey; "My friends think I should use public transport", "People from my neighbourhood would use public transport", and "Most people I know avoid using public transport".

3 RESULTS

3.1 YOUTH SURVEY

3.1.1 DIFFERENCES BETWEEN SAMPLING YEARS

Table 2 presents the means and t-tests for the PT prejudice scale, general PT, subjective norm, and personal belief items. The main results were that PT prejudice scores increased significantly over years, while EA decreased. Walking to the main activity became more frequent over time, but there was no change in current PT use (Table 3). General travel behaviours, such as travel distance and time to the main activity, did not change significantly, but the costs of travelling (petrol, parking, and PT fares) all increased (see Table 4).

3.1.2 RELATIONSHIPS BETWEEN THE PREJUDICE SCALE AND OTHER MEASURES

The EA scale, the subjective norm items, and personal belief items, related significantly to the prejudice scores for 2007 and 2008 (see Table 5). The measures of actual PT use did not relate significantly to PT prejudice for 2007, but two of the general use items did for 2008.

Table 2 Paired sample t-tests comparing years on the repeated scales and Likert scale items for the youth sample

	Year		t (158)
	2007	2008	
Scales			
Prejudice Scale	75.29 (12.86)	77.34 (13.17)	-2.12*
Environmental Attitudes	3.68 (0.58)	3.59 (0.63)	2.14*
General public transport use			
When travelling to watch an event I use public transport	2.58 (1.12)	2.86 (1.11)	-2.69**
If I'm going out socialising I'll generally take public transport	2.55 (1.08)	2.77 (1.12)	-1.97
I prefer to use public transport to travel to the city centre	3.30 (1.15)	3.33 (1.15)	-0.33
Personal beliefs			
People should public transport if they are able	3.87 (0.87)	3.89 (0.9)	-0.31
Subjective norms			
I know people who use public transport	3.96 (0.93)	3.89 (1.01)	0.77
My friends believe that public transport is the best way to travel	2.55 (0.9)	2.69 (0.98)	-1.72

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

Table 3 Changes in the use of public transport and walking to the main activity

	Change in mode use over time (%)			Z test
	Decrease	Same	Increase	
Past Public Transport Use	28	51	21	-2.01*
Current Public Transport Use	36	25	39	-0.40
Past Walk	20	57	23	-0.72
Current Walk	28	35	37	-2.81**

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

Table 4 Ordinal tests comparing years on travel distances, time, and costs for the youth sample

	Year		Z test
	2007	2008	
Travel distance and time			
Distance to main activity (km)	9.02	9.86	-1.20
Time to main activity (min)	18.81	23.32	-1.92
Yearly distance driven (km)	17398.65	13942.95	-1.78
Travel costs			
Weekly petrol costs (NZ\$) ^a	13.72	22.72	-3.45**
Weekly parking costs (NZ\$) ^a	2.70	5.50	-1.66*
Weekly public transport fares (NZ\$) ^a	6.50	14.03	-4.58***

Tests were conducted on ordinal data. The means are indicative only. ^a Dollar values were not inflation adjusted. *** p < .001, ** p < .01, * p < .05

3.1.3 RELATIONSHIPS BETWEEN MODE USE OVER YEARS

To examine the consistency of mode use in the sample, correlations were calculated for between 2005 and 2006, 2006 and 2007, and 2007 and 2008, for both PT use and walking to the main activity. The correlations representing time at the same destination (2005 to 2007, at secondary school) were strong and significant (from .54 to .72). However, the correlations between 2007 and 2008 were much smaller (r = .17 for walking, and r = .07 for PT), and insignificant in the case of PT use.

3.2 DRIVER SURVEY

3.2.1 DEMOGRAPHICS

Demographically, the samples were very similar. There was no difference in the proportion of males and females across years ($p = .395$), but the proportion of respondents from Auckland was lower for 2009 compared to 2007, $\chi^2 (2, n = 1095) = 7.50, p < .05$.

The main differences between samples were money-related, with incomes being higher in 2009 than 2007, and more being spent petrol and parking (see Table 6). The dollar values were not inflation adjusted. The number of accessible cars, level of license (none, learner, restricted, or full; see NZTA, 2005), years driving did not differ significantly between years.

For both years the main activity, from most frequent to least frequent, were work (77%), a household activity (10%), recreation (6%), education (5%), and other (2%). There were no differences in trends across years, $p = .26$. Car was the main mode used across both years (83%), followed by PT (8%), walking (4%), bicycle (3%), and other (1%). Again there were no differences in trend across years, $p = .712$.

3.2.2 DIFFERENCES BETWEEN SAMPLING YEARS

Public transport prejudice scores did not change significantly over time, but EA was significantly lower for 2009 than 2007 (see Table 7). For the Likert scale items respondent's beliefs regarding whether others should use PT were lower, while there was more favourable responses to using PT to travel to events, for 2009 compared to 2007.

3.2.3 REGION SPECIFIC DIFFERENCES

Table 8 presents regional comparisons, split by year, for the three scales, general PT use items, PT usability items, personal beliefs, and subjective norms. There were significant regional differences for all categories of measures across both years, with the exception of personal beliefs. Most notably, prejudice scores were highest for Auckland and lowest for Wellington. There were significant differences in the use of PT to the main activity, both for past and present use ($p < .001$ in for all tests). In all cases Wellingtonians were the most frequent PT users, while Christchurch residents were the least frequent.

3.2.4 RELATIONSHIPS BETWEEN THE PUBLIC TRANSPORT PREJUDICE SCALE AND OTHER MEASURES

Most of the correlations between the main measures and the prejudice scale were significant, in the expected direction, and generally of a similar magnitude across years (see Table 5). The only non-significant findings were for walking behaviours and the percentage of weekly trips that could be made using PT.

3.2.5 AGE AND PUBLIC TRANSPORT PREJUDICE

A two-way (2 year * 7 age category) ANOVA was conducted on the PT prejudice scores. Public transport prejudice scores decreased with age, $F (6, 1042) = 10.97, p < .001$ (see Figure 1). There was a significant interaction between year and age category, $F (6, 1042) = 2.12, p < .05$. This is due to a significant difference between years for the youngest age group, with the PT prejudice scores being higher for the 17-24 year old groups in 2009 compared to 2007.

Table 5 Correlations between the public transport prejudice scale and other measures for the youth sample and driver sample across years

Year	Youth Sample		Driver Sample		
	2007	2008	2007	2009	
Scales					
	Environmental Attitudes scale	-.16*	-.16*	-.25***	-.17***
	Negative Exposure scale		.51***		.42***
Mode to main activity					
	Past Public Transport Use	-.02	-.01	-.13**	-.14**
	Current Public Transport Use	-.02	-.11	-.15***	-.14***
	Past Walk	-.01	.09	-.03	-.04
	Current Walk	.00	-.17*	-.07	-.10
General public transport use					
	When travelling to watch an event I use public transport	.02	-.22**	-.19***	-.14**
	If I'm going out socialising I'll generally take public transport	-.10	-.13	-.16***	-.21***
	I prefer to use public transport to travel to the city centre	-.07	-.18*	-.28***	-.26***
Public transport usability					
	Public transport is affordable for most people in my city		-.14		-.27***
	Public transport is accessible to most people in my neighbourhood		-.14		-.24***
	Percent of weekly trips where public transport is an option		-.08		.00
Personal beliefs					
	People should public transport if they are able	-.40**	-.26**	-.33***	-.36***
	It's ok to let unaccompanied primary school students use public transport		-.23**		-.25***
	People will use public transport if they are able to		-.4***		-.27***
Subjective norms					
	I know people who use public transport	-.20*	-.16*	-.22***	-.30**
	My friends believe that public transport is the best way to travel	-.39***	-.52***	-.33***	-.34***
	My friends think I should use public transport		-.18*		-.17***
	People from my neighbourhood would use public transport		-.26***		-.26***
	Most people I know avoid using public transport		.53***		.45***

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

Table 6 Ordinal tests comparing years on travel distance, time, costs, and demographics for the driver sample

	Year		Z test
	2007	2009	
Travel distance and time			
Distance to main activity (km)	10.95	11.31	-0.62
Time to main activity (min)	22.66	21.32	-0.33
Yearly distance driven (km)	15150.18	15710.12	-0.68
Travel costs			
Weekly petrol costs (NZ\$) ^a	37.82	44.12	-4.67***
Weekly parking costs (NZ\$) ^a	10.96	11.65	-2.48*
Weekly public transport fares (NZ\$) ^a	5.74	6.31	-0.92
Demographics			
Income (NZ\$) ^a	55341.76	61120.24	-2.73**
Age (years)	45.47	46.95	-1.80

Tests were conducted on ordinal data. The means are indicative only.^a Dollar values were not inflation adjusted. *** p < .001, ** p < .01, * p < .05

Table 7 Independent sample t-tests comparing years on the repeated scales and Likert scale items for the driver sample

	Year		t (1093)
	2007	2009	
Scales			
Prejudice Scale	74.14 (12.62)	73.89 (13.82)	0.31
Environmental Attitudes	3.61 (0.57)	3.48 (0.59)	3.63***
General public transport use			
When travelling to watch an event I use public transport	2.55 (1.08)	2.74 (1.1)	-2.98**
If I'm going out socialising I'll generally take public transport	2.25 (1.01)	2.36 (1.05)	-1.87
I prefer to use public transport to travel to the city centre	2.79 (1.08)	2.83 (1.1)	-0.71
Personal beliefs			
People should public transport if they are able	3.64 (0.9)	3.48 (0.93)	2.73**
Subjective norms			
I know people who use public transport	3.72 (0.97)	3.71 (0.96)	0.24
My friends believe that public transport is the best way to travel	2.52 (0.83)	2.55 (0.84)	-0.74

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

4 DISCUSSION

This paper presents findings regarding general changes in attitudes towards PT and associated measures for two samples, a panel sample of 17-year-old secondary school students (surveyed in 2007 and 2008), and a cross-sectional sample of drivers surveyed in 2007 and 2009.

4.1 GENERAL CHANGES

For the youth sample, PT prejudice scores increased significantly while EA scores became less favourable. EA also became less favourable for the driver sample, but PT prejudice scores do not change significantly. The increase in PT prejudice scores may be age related, as the scores for the youngest segment of the driver sample also increased significantly. General travel times and distances did not change for either sample. This means that the increase in travel costs is likely to be due to changes in the price of fuel over surveying periods (e.g. under NZ\$1.60 a litre in July 2007, and over NZ\$2.00 a litre in July 2008; Ministry of Economic Development, 2009). There are few other changes for either group over time.

The modest changes suggest that people's beliefs and general travel behaviours are fairly constant, at least within a one to two year period, even when major changes to travel patterns occur. One qualifier to this is the relationships within PT use and walking to the main Activity for the youth sample. While the relationships were strong when the context was constant (i.e. at school), relationships for the frequency of mode use between the final year of school and the first year outside of school were much smaller. This finding supports Thøgersen (2006) in that past behaviour predicts future behaviour in a stable context, but extends the research by demonstrating that when contexts change past behaviour becomes as less useful predictor.

Table 8 Analysis of variance tests comparing regions on the scales and Likert scale items, divided by year

	2007				2009			
	Auckland	Wellington	Christchurch	F (2, 572)	Auckland	Wellington	Christchurch	F (2, 517)
Scales								
Public Transport Prejudice scale	78.2 (12.07) ^a	70.27 (11.96) ^b	74.18 (12.63) ^c	19.01***	78.59 (14.32) ^a	72.11 (12.52) ^b	72.78 (14.13) ^b	9.64***
Environmental Attitudes	3.53 (0.54) ^a	3.71 (0.56) ^b	3.59 (0.58) ^{ab}	4.44**	3.58 (0.7)	3.46 (0.58)	3.45 (0.54)	1.91
Negative exposure scale					2.96 (0.99) ^a	2.82 (1.05) ^{ab}	2.58 (1) ^b	5.87**
General PT use								
When travelling to watch an event I use public transport	2.31 (0.97) ^a	3.06 (1.11) ^b	2.29 (0.97) ^a	35.25***	2.56 (1.16) ^a	3.21 (1.03) ^b	2.4 (0.96) ^a	33.66***
If I'm going out socialising I'll generally take public transport	1.92 (0.93) ^a	2.51 (1.03) ^b	2.29 (0.97) ^b	16.6***	2.22 (1.13) ^a	2.62 (1.06) ^b	2.2 (0.95) ^a	9.88***
I prefer to use public transport to travel to the city centre	2.66 (1.1) ^a	3.14 (1.08) ^b	2.58 (0.97) ^a	15.77***	2.96 (1.19) ^a	2.97 (1.02) ^a	2.63(1.09) ^b	5.92**
Public transport usability								
Public transport is affordable for most people in my city					3.27 (1.05) ^a	3.63 (0.82) ^b	3.89 (0.72) ^c	20.67***
Public transport is accessible to most people in my neighbourhood					3.48 (1.18) ^a	3.78 (0.92) ^b	3.71(1.04) ^{ab}	3.23**
Percent of weekly trips where public transport is an option					23.2 (29.56) ^a	36.7 (32.76) ^b	19.85 (28.09) ^a	16.68***
Personal beliefs								
People should use public transport if they are able	3.6 (0.95)	3.71 (0.89)	3.6 (0.88)	0.95	3.48 (1)	3.54 (0.89)	3.44 (0.93)	0.57
It's ok to let unaccompanied primary school students use public transport					2.81 (1.03)	3.05 (1.06)	2.94 (1.06)	1.88
People will use public transport if they are able to					3.26 (0.97)	3.48 (0.87)	3.41 (0.96)	2.05
Subjective norms								
I know people who use public transport	3.7 (0.9) ^a	3.98 (0.89) ^b	3.51 (1.05)	12.39***	3.46 (1.06) ^a	3.96 (0.8) ^b	3.61 (0.99) ^a	12.57***
My friends believe that public transport is the best way to travel	2.34 (0.84) ^a	2.7 (0.83) ^b	2.5 (0.8) ^{ab}	8.46***	2.3 (0.81) ^a	2.78 (0.81) ^b	2.49 (0.84) ^a	13.44***
My friends think I should use public transport					2.46 (0.92) ^a	2.53 (0.85) ^a	2.32 (0.82) ^a	3.05**
People from my neighbourhood would use public transport					3.33 (0.98) ^a	3.65 (0.79) ^b	3.33 (0.96) ^a	7.8***
Most people I know avoid using public transport					3.48 (1.05) ^a	2.67 (0.88) ^b	3.08 (0.99) ^c	27.16***

Note: Means with different superscripts differ significant on the Tukey HSD post-hoc test.

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

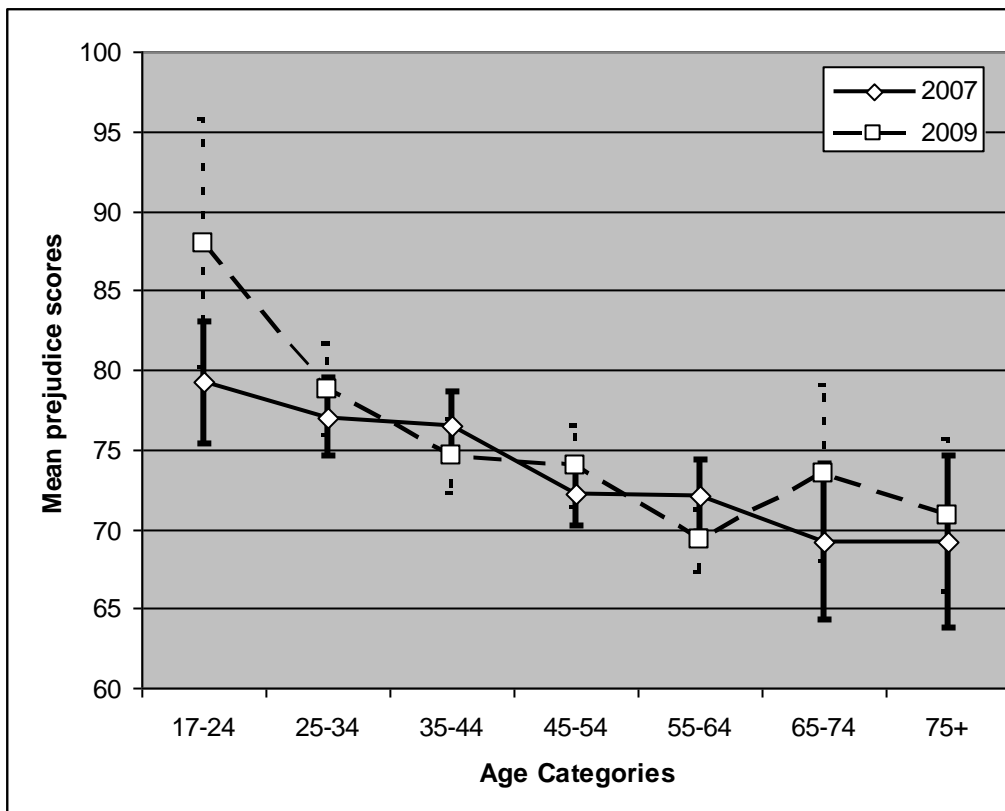


Figure 1 Mean prejudice scores by survey year and age category. Bars represent 95% confidence intervals

As indicated by Fujii and Gärling (2003), major changes in travel patterns provide a break from habitual use. The relevance of this is for choosing when to target interventions designed to increase PT ridership. If travel habits are broken by changing from secondary school to university, starting work, moving house, or changing jobs, then interventions will have one fewer barrier to overcome.

4.2 RELATIONSHIPS BETWEEN THE PUBLIC TRANSPORT PREJUDICE SCALE AND OTHER MEASURES

For both samples PT prejudice scores were significantly related to subjective norms, personal beliefs, and the EA scale. However, the PT use measures were significantly related to prejudice scores for the driver samples only. One difference between the samples, then, is that younger people will not necessarily become more favourably inclined towards PT simply by using it. In contrast, for both samples the more favourable the personal beliefs and the perceptions of the norms of their location the more positively PT is viewed (e.g. Blanchard, Crandall, Brigham, & Vaughn, 1994; Crandall, Eshleman, and O'Brien, 2002). This highlights the importance of considering social norms when examining ways to improve PT ridership.

4.3 REGIONAL DIFFERENCES FOR THE DRIVER SAMPLE

There are significant differences in the PT prejudice scale across regions for both years. For 2007 all three regions differed significantly, with Aucklanders exhibiting the greatest level of prejudice and Wellingtonians expressing the least. The same trend was found for 2009, but Wellington and Christchurch residents did not differ significantly. Wellingtonians always had the most positive subjective norms, while Aucklanders had the least positive norms. Personal beliefs (e.g. people should use PT if they are able) were consistent across regions, and were either neutral or positive in nature. This suggests that the perception of how others view PT, the

subjective norms, have a stronger association with prejudice on a regional level than personal beliefs. There may also be some effect of affordability and accessibility, as both of these were rated lowest by the Auckland respondents.

In terms of contact, Wellingtonians always reported the highest level of general PT use and Aucklanders tended to be the second most frequent users. This finding was repeated when examining PT as a mode for travelling to the main activity, matching the census results (Statistics New Zealand, 2007). This means that higher levels of PT contact in general are not necessarily associated with lower mean levels of prejudice. This can be explained in part by examining negative exposure. The types of contact Auckland respondents have had with the PT system were more negative than the Christchurch respondents, which will have affected their overall perception of the PT system. Combined with the perceived differences in affordability and accessibility, this may indicate that the quality of service moderates the effect of contact on PT attitudes.

4.4 LIMITATIONS

The major limitation for this research is related to sampling. The school leaving age in New Zealand is 16 years old (Education Counts, 2009). The youth sample does not represent all 17-year-olds in New Zealand, but rather represents only those 17-year-olds who remained in secondary education until the final year. Based on data from Stock (2008), approximately 20% of the adolescents of the age cohort had left school before their final year, and therefore could not have been sampled. Before the age of 20 years old it is usually necessary to complete a university entrance qualification, obtained in the final year of schooling, to continue to tertiary study at a university (New Zealand Vice-Chancellors' Committee, 2008). For this reason the youth sample would be more likely to continue to university than a random sample which included adolescents who left school at 16 years old. Continuing onto tertiary education is likely to result in a lower income than moving into the workforce. As car use is less frequent with lower incomes (Corpuz, 2007), this means that the transport constraints for the youth sample are likely to be greater than for the overall cohort. The main effect of this bias is likely to be an underestimation of the negative attitudes to PT. This assumption is supported when visually comparing the mean prejudice scores of the youth sample and the youngest category for the driver sample (17-24), with the latter group having the higher scores.

For the driver sample there is likely to be a self-selection bias. Although the original sample selection was random, the choice to return a survey was not. The driver sample over-represents New Zealand Europeans and under-represents Maori, and over-represents the age range 35 to 64 years old at the expense of the younger and older groups.

There was no targeted sampling to increase the numbers for underrepresented demographics. Overall, then, the findings for each sample can only be confidently generalised to the segment of the population that matches these demographics.

4.5 CONCLUSION

Subjective norms (e.g. people from my neighbourhood would use PT) appear to have a major role in prejudice towards PT, more so than personal beliefs which appear to be constant across regions with differing levels of PT prejudice. While improvements to the infrastructure surrounding PT is important (Thompson & Brown, 2006; Transit

Cooperative Research Program; 2005) if the norms of an area are negatively inclined towards PT use then people may be unwilling to use it.

This means that when developing campaigns to encourage PT use, while it is important to emphasise improvements to the services it is also important to change inaccurate perceptions about PT users, and to normalise PT use. For instance, as well as highlighting the convenience of PT, or new improvements to the service, a campaign could benefit from illustrating the range of people who use PT, from students to business people. If the belief that a typical PT user is “unlike me” reduces the intention to use PT (Siegfried et al, 1982), then demonstrating that a typical user is “like me” may increase this intention.

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Appendix A. Public transport prejudice scale items. Items in bold were reverse scored.

Five-point Likert scale items; Strongly Disagree (1) to Strongly Agree (5)

Public transport is only really an option if the weather is good
The only reason to use public transport is if you can't afford to drive
Public transport is for people who worry about the environment
My peers would travel by public transport if it was the most convenient way to travel
I would feel embarrassed to tell others that I rely on public transport to travel around
Most people feel comfortable talking to strangers on public transport
People like public transport because of the relaxed atmosphere
People believe that cities are much better with fewer cars
People in my city prefer to travel to work by public transport
People who wear expensive clothes generally feel comfortable on public transport
Subsidies for public transport are a form of social welfare
Most people agree that strange people travel by public transport
People in my city typically feel safe while waiting for public transport
Most people believe that travelling by public transport is a productive use of their time
I have nothing in common with people that take public transport
Public transport is only good for short trips
Travelling by public transport is a good way to meet people
It's hard to relax on public transport
Owning a reliable car means not having to use public transport
It is mostly young people who use public transport
Public transport enables pensioners to stay mobile
Crime and the public transport system go hand-in-hand
Public transport is used by a lot of new immigrants
Using the public transport system reduces people's freedom to change their travel plans
Improvements are being made to the public transport system
The public transport system is suitable for most people's travel needs
In my experience public transport tends to run late
I have found that public transport is generally too crowded

Seven-point semantic differential scales First anchor = 1, second anchor = 7

Set 1.

Compared to driving a car, how is public transport generally perceived in your city?

As taking less time – As taking more time
As less convenient – As more convenient
As less comfortable – As more comfortable
As more safer personally – As less safe personally
As having a lower accident risk – As having a higher accident risk
As less reliable – As more reliable

Set 2.

The people who use public transport are seen by most people as... Friendly - Unfriendly
Public transport vehicles are perceived as... Dirty - Clean
Most people find the staff on public transport to be... Good - Bad
Travelling by public transport is perceived as being... Uncomfortable - Comfortable
Public transport vehicles are generally... Not crowded - Crowded
Using public transport for general travel purposes is seen as... Unappealing - Appealing