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Original Paper

Public Transport Used by People of Advanced Age

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Octogenarian Group

Aim of this research is to evaluate continued driving by people of an advanced age. This work is part of the LiLAC Cohort Study presently in New Zealand: - Use of Public Transport

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Abstract

Background: *Both New Zealand Māori and non-Māori males were most notable in the number who did not make use of public transport in the last twelve months.*

Method: *Transport subsection of the LiLAC study provided the question area for analysis. Enquiry focused on whether older people had travelled on public transport in the last twelve months, how often they made use of the service and why they did not employ such facility. Methods of analysis included binomial logistic regression, Mann-Whitney U test, regression analysis and descriptive analysis.*

Results: *Participants totaled 931 with 421 New Zealand Māori and 510 New Zealand Māori non-Māori.*

New Zealand Māori: The greater majority of New Zealand Māori signified that they did not use public transport. Of those that did, it was the females either on their own or with some difficulty. Of those that had engaged the service, (83-88 years), it was only once a week. Reasons given for not using public transport comprised primarily revolved around personal choice and knowledge of possible facilities. Other reasons given included continued use of a car, again not wanting to, no available facilities, family, health and the use of other methods of transportation.

New Zealand non-Māori: A significant number of male New Zealand non-Māori indicated that had not used the service in the last twelve months. Although of those that did, a comparable number of both male and female non-Māori had similarly either completed the journey on their own or with difficulty.

When asked how often they used the service, the majority indicated that they did not. Reasons being routes either not going where respondents wanted or needed to go; and females expressing concern about accessible bus stops or were inconvenient to use.

Conclusion: *National and/or local government have the opportunity to make improvements in route design, scheduling and diversity in type of bus being made available with the present and future growth of the older population. Also, in line with future developments such authorities could similarly work in conjunction with other providers such as service groups like Lions and Rotary; Retired Serviceman/women Association, Workingmen's Clubs, Age Concern, Driving Miss Daisy, private organisations, taxi firms, or the provision of Uber sharing, in considering the type and style of public transport being made available to the public.*

1. Introduction

Some older people still drive, some have never driven or have no means of personal transportation, while others have now decided to cease driving. Whichever group they may fall into the possibility of 'travel behaviour change' could play a significant role in enabling these older adults to maintain their continued participation as members of their own community. The availability of some form of public transportation to this group can therefore offer them continued accessibility for them to their surrounding environment (Brome, McKenna, Fleming, & Worrall, 2009; Olawole & Aloba, 2014; and Sundling, Nilsson, Helqvist, Pendrill, Emardsonl & Berglund, 2016).

However, through the provision of such a system it should also be recognised/remembered that this does not solely mean the number and times a bus arrives at a specific location. Instead any public transport journey should also measure its degree of accessibility and its infrastructure to members of the older population. Physical recognition therefore that the final section of any journey is generally completed on foot so how have walking and crossing facilities been provided, what safety barriers are there, lighting facilities particularly at night, availability of seating and shelters; covered footpaths and ramps. Similarly, the possibility of boarding constraints, provision of low floor buses and the design of travel information systems (Broome et al., 2009; Waaraa, Risserbl & Stahla, 2013; New Zealand Transport Agencyl 2014; and Chin & Menonl 2015).

To obtain a more constructive understanding of how the public transport system has been utilised by an active older New Zealand Māori and non-Māori population group this third piece of analysis from the LiLAC study has investigated research subjects use of public transport, whether they do travel of public transport, how often and if they do any problems that may arise. These questions were taken from the Transport segment of the Everyday Interests & Activities section; and also the Physical and Nutrition divisions (Dyall & Kerse, 2010; Dyall, Kēpa, Hayman, The, Moyes, Broad, & Kerse, 2013; Kerse, Muru-Lanning, Rolleston, & Teh, 2015).

2. Method

The LiLAC study is both a quantitative and longitudinal cohort study that considers the lives of advanced aged Māori and non-Māori New Zealanders.

The data presented in the third piece of analysis of LiLAC results had been obtained from three subsections (Physical Health-3, Nutrition - 5 and Everyday Interests and Activities-11) of the study. Questions here are directed towards use of public transport and any problems recipients may experience.

Number	***Question***
JB6	Have you ever used public transport in the last twelve months? (e.g. bus)
JB6b	How often do you use public transport in a typical week?
JB6a	Why not?

Recruitment of participants

Participants were recruited from both the Bay of Plenty District Health Board and Lakes District Health Board regions. All those New Zealand Māori were aged between 80-90 (born between 1st January 1920 and 31st December 1930), while all the non-Māori New Zealanders were aged 85 years, having been born in the calendar year of 1925. This group was identified through the use of multiple overlapping strategies including the general and Māori electoral roll, primary care databases, word of mouth, Māori tribal networks; and from these sources contacted and invited to participate.

By the time the first wave was run numbers had reduced slightly to 421 (45.22%) New Zealand Māori and 510 (54.78%) New Zealand non-Māori totaling 931 subjects involved in the study.

Measures

Five methods of statistical analysis were used in assessment of the results: (i) Binomial Logistic Regression, (ii) Chi-Square Test for Association, (iii) Ordinal Logistic Regression, (iv) Mann-Whitney U Test and (v) Descriptive Analysis. Results from this analysis will be presented in either tabular or graphical format along with written assessment. IBM Statistical Package for the Social Sciences 20 (SPSS) was used to generate descriptive statistics and post-hoc comparative analysis.

3. Results

This section is divided into three parts all of which are associated with the older participants use of or not of public transport.

Question JB6 *Have you used public transport in the last twelve months, (e.g. bus)?*

New Zealand Māori

Only 5% of the total number of New Zealand Māori involved in the LiLAC study answered question JB6 enquiring whether they had used public transport in the last twelve months. The remaining 95% of cells are identified as the dependent variable with zero frequencies including non-driving New Zealand Māori and Non-Māori (refer to Table 5).

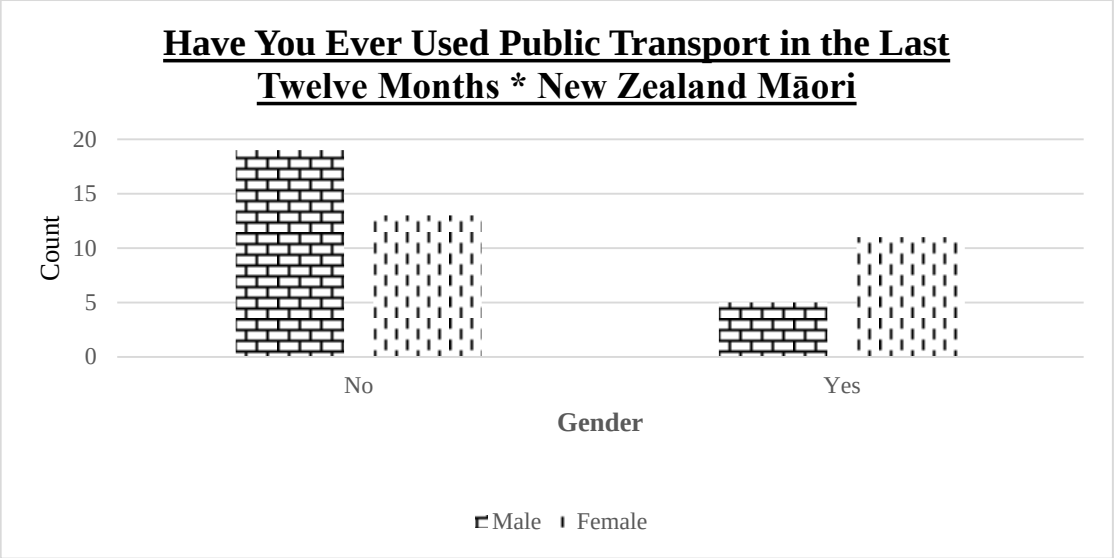


Figure 1.

A binary logistic regression was performed to ascertain the effects of gender and age on the likelihood of New Zealand Māori driving a car. The logistic regression was statistically significant, $X^2(2) = 7.125$, $p < 0.028$. The model explained 19.2% (Nagelkerke R^2) of the variance in older old New Zealand Māori use of public transport within last twelve months and correctly classified 66.7% of the cases. The predictive value for gender was found not to be statistically significant. Therefore, for gender an increase in one unit (i.e. being a New Zealand Māori male) increases the odds ratio by 5.98. This means that the odds of New Zealand Māori males were 5.98 times in the non-use of public transport in comparison to New Zealand Māori females. However, the predictive value for age was found to be statistically significant. Therefore, indicating that with an increase in age there would be a decrease in use of public transport over last twelve months (-0.48) by New Zealand Māori males (refer to Table 5).

Table 5.

Variables in the Equation

								95% Confidence Interval	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1	New Zealand Māori	0.735	0.49	2.248	1	0.134	2.085	0.798	5.451
	AgeMāori	-0.088	0.084	1.111	1	0.292	0.916	0.777	1.079
	Constant	8.298	7.113	1.361	1	0.243	4014.977		

a. Variable(s) entered on Step 1: New Zealand Māori, Age Māori.

Question JB6 *Have you used public transport in the last twelve months, (e.g. bus)?*

New Zealand Non-Māori

Just under half the number of New Zealand Non-Māori population (211) involved in the LiLAC study answered question JB6 enquiring whether they had used public transport in the last twelve months. Although a high percentage of this response came from the male population of New Zealand non-Māori's. The remaining cells are identified as the dependent variable with zero frequencies including driving and non-driving New Zealand Māori and Non-Māori.

A chi-square test for association was conducted between gender and the preference for advanced aged New Zealand Non-Māori use public transport in the last twelve months. All expected cell frequencies were greater than five. Results were not statistically significant association between gender and preference for using public transport in the last twelve months, X^2 (1) = 0.228, p = 0.633 (refer to Figure 2 and Table 6).

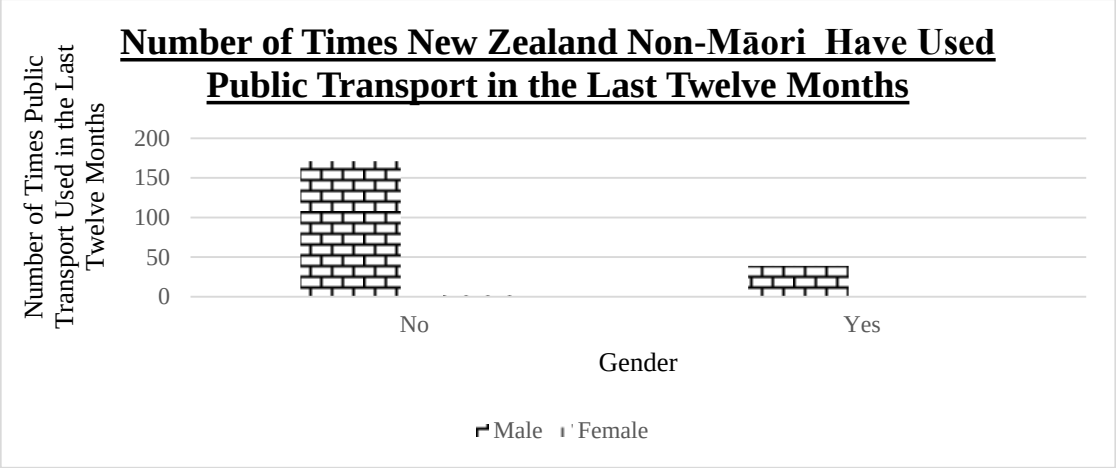


Figure 2.

Table 6.

Chi-Square Tests					
	Value	**df**	**Asymp. Sig. (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-square	0.228[a]	1	0.633		
Continuity Correction[a]	0	1	1		
Likelihood Ratio	0.41	1	0.522		
Fisher's Exact test				1	0.815
	0.227	1	0.634		
N of Valid Cases	211				

a. 0 cells (0.0%) have expected count less than 5 minimum expected count is 0.18

b. Completed only for a 2x2 table.

JB6b *How often do you use public transport in a typical week?*

New Zealand Māori

Within the New Zealand Māori population, the majority used the service only once a week (7.6%). Numbers then reduced with trips being made twice (3.24%) and three times in the week (2.7%). The next most significant use of public transport was by those who used it daily with seven trips being made (1.08%). The remaining 63% of New Zealand Māori who did not use public transport (refer to Figure 3a and 3b).

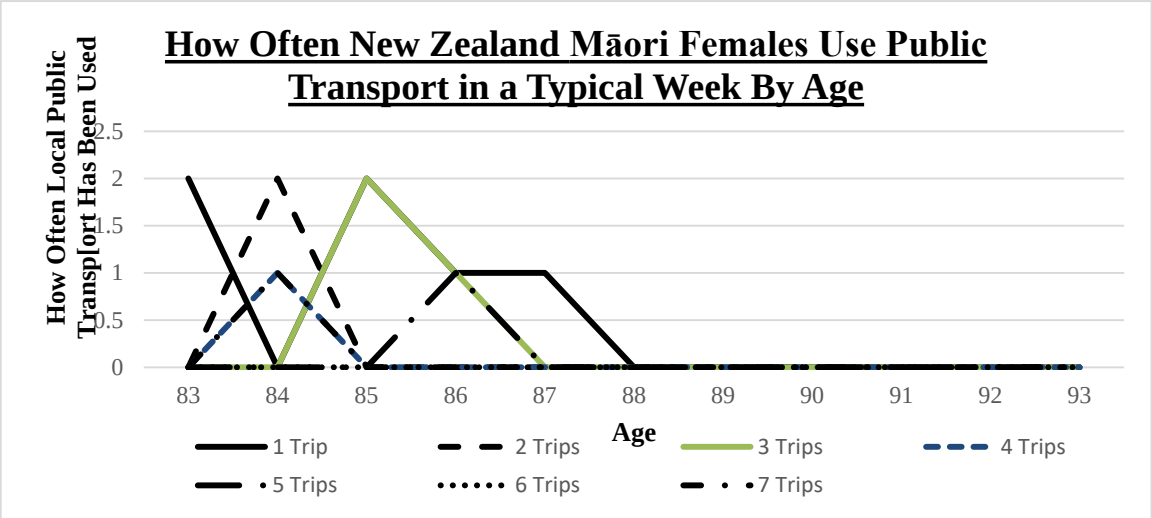


Figure 3a.

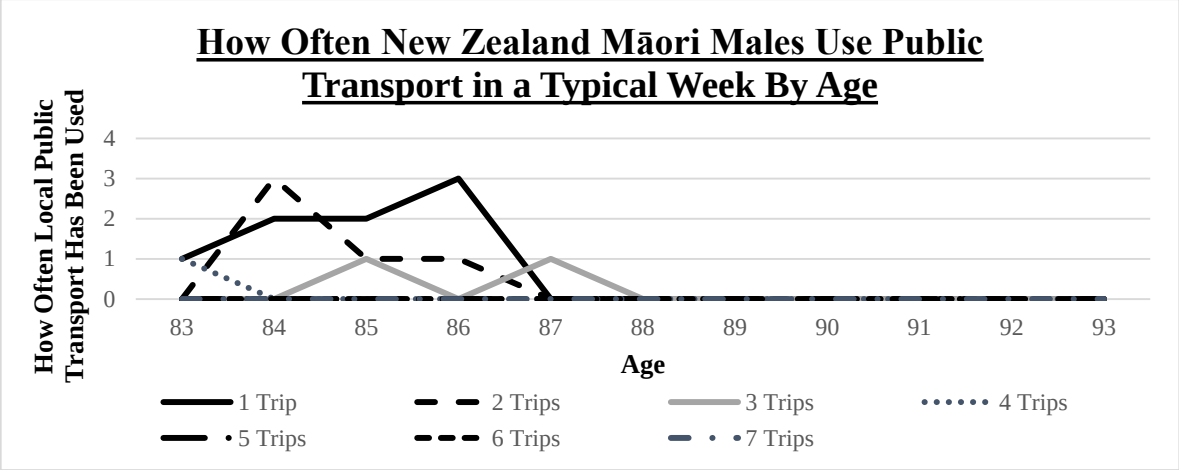


Figure 3b.

The odds ratio of how often New Zealand Māori males use local public transport was like that of New Zealand Māori females (odds ratio of (1.062 (95% CI, 0.48 to 2.354)), Wald $X^2(1) = 0.022$, $p = 0.882$. An increase in age (expressed in years) was associated with a decrease in use local public transport in a typical week by New Zealand Māori with an (odds ratio of 1.244 (95% CI, 0.935 to 1.655)), Wald $X^2(1) = 02.246$, $p > 0.134$.

Table 7.

Parameter										
	Upper	1.903	4.091	7.141	1.684	2.273	3.477	1.655	2.354	
	Lower	0.018	0.037	0.064	0.146	0.195	0.289	0.935	0.48	
	Exp(B)	5.83	1.23	2.14	4.96	6.65	1.003	1.244	1.062	1
	UpperBound	44.393	45.158	45.715	46.573	46.873	47.298	0.504	0.856	
	LowerBound	-4.028	-3.29	-2.75	-1.922	-1.636	-1.24	-0.067	-0.735	
	Sig.	0.102	0.09	0.082	0.071	0.068	0.063	0.134	0.882	
	df	1	1	1	1	1	1	1	1	0
	Wald	2.67	2.869	3.019	3.257	3.341	3.459	2.246	0.022	
	Std. Error	12.353	12.359	12.364	12.371	12.375	12.382	0.146	0.406	
	Estimate	20.183	20.934	21.483	22.325	22.618	23.029	0.218	0.06	0[a]
	Var2	[How Often Public Transport Used in a Typical Week = 0]	[How Often Public Transport Used in a Typical Week = 1]	[How Often Public Transport Used in a Typical Week =2]	[How Often Public Transport Used in a Typical Week = 3]	[How Often Public Transport Used in a Typical Week = 4]	[How Often Public Transport Used in a Typical Week = 5]	Age	[NZMāori Male = 1]	[NZMāori Female = 2]
	Var1	Threshold	Threshold	Threshold	Threshold	Threshold	Threshold	Location	Location	Location
	Label	PE	PE	PE	PE	PE	PE	PE	PE	PE
	Subtype	PE	PE	PE	PE	PE	PE	PE	PE	PE
	Command	PLUM	PLUM	PLUM	PLUM	PLUM	PLUM	PLUM	PLUM	PLUM
	TableNo.	1	1	1	1	1	1	1	1	1

A cumulative odds ordinal logistic regression with proportional odds was run to determine how often advanced aged New Zealand Māori use local public transport in a typical week. The assumption of proportional odds, as assessed by the full likelihood ratio test comparing the fitted model to model with varying location parameters, $X^2(10) = 82.780$, $p = 0.000$. The deviance goodness-of-fit test indicated

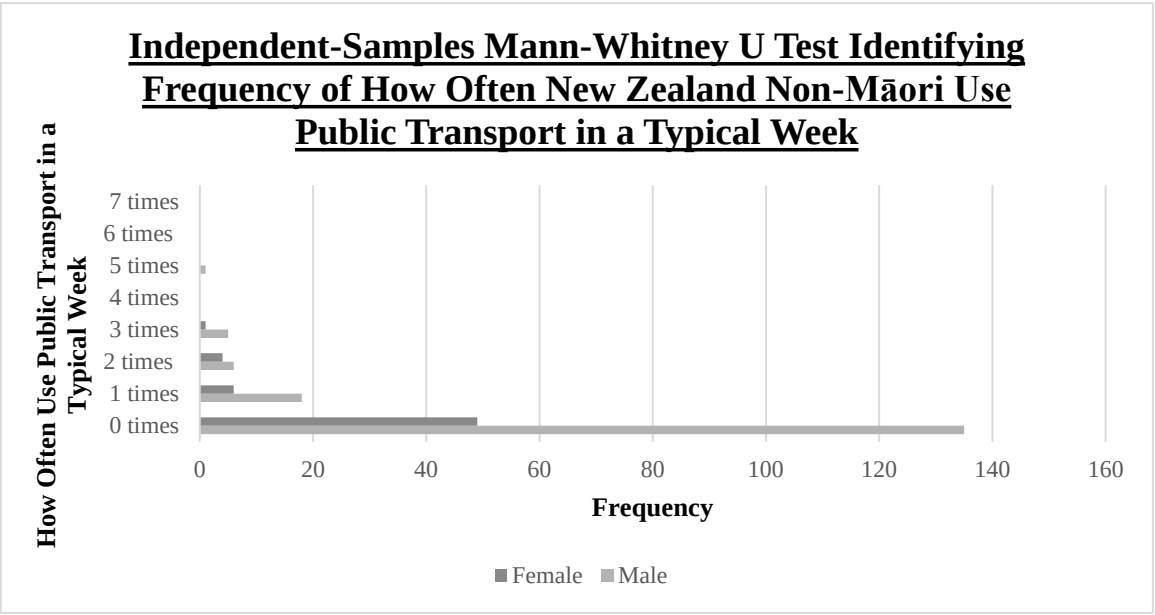
that the model had a good fit to the observed data $X^2(124) = 55.014$, $p = 0.361$, but with a high degree of cells with zero frequencies in 60%. However, the final model was not statistically significantly and therefore did not add to the prediction of the dependent variable, $X^2(2) = 2.242$, $p > 0.05$. The odds ratio of how often New Zealand Māori males use local public transport in a typical week (1.062 (95% CI, 0.48 to 2.354)), Wald $X^2(1) = 0.022$, $p = 0.882$ times that of New Zealand Māori females. An increase in age (expressed in years) was associated with a decrease in use local public transport in a typical week by New Zealand Māori with an (odds ratio of 1.244 (95% CI, 0.935 to 1.655)), Wald $X^2(1) =$ 02.246, $p = 0.134$ (refer to Table 7).

JB6b *How often do you use public transport in a typical week?*

New Zealand Non-Māori

Just over forty percent of New Zealand Non-Māori within the LiLAC research answered question JB6b. Fifty-nine percent of the remaining cells of the entire LiLAC study are identified as the dependent variable with zero frequencies include non-driving New Zealand Māori and Non-Māori, (refer to Table 29). Nearly three times the number of New Zealand Non-Māori males answered question (JB6b) compared to New Zealand Non-Māori females.

Within that sample grouping more New Zealand Non-Māori males were show not to have used local public transport in comparison to female New Zealand Non-Māori. Similarly, a higher number of New Zealand Māori males were also seen to use the local bus service, (refer to Figure 4).



Male	Female
N = 150	N = 54
Mean Rank = 102.41	Mean Rank = 102.74

Figure 4.

Table 8.

Standard Error	**215,366.00**
Standardized Test Statistic	**0.06**
Asymptotic Sig. (2-sided test)	**0.962**

Mann-Whitney U test was run to determine if there were differences in how often older people use public transport in a typical week between Non-Māori males and Non-Māori females. Median use of public transport score between New Zealand Māori was not statistically significant different between New Zealand Non-Māori males (0.00) and New Zealand Non-Māori females (0.00), $z = 0.060$, $p = 0.962$ (Refer to Table 8).

JB6a *Why did you not use public transport in the last twelve months – Why Not?*

In answering question JB6a respondents are offered with nine choices. If, however they decided that none of these met their requirements they were then able to record their own response in the tenth option: Other (refer to Table 9).

On viewing the initial result, the researcher noticed that many respondents both Māori and Non-Māori had chosen to give their own thoughts/decision as to why they did not and had not used public transport in the last twelve months, rather than just ticking one of the offered options.

1. Don't want to.
2. Doesn't go where I want or need to go.
3. Hard to get on / off (bus).
4. None available.
5. Don't know where or when they go.
6. Feels unsafe.
7. Bus stops inconvenient to use.
8. Never have.
9. Can't afford / too expensive.
10. Other.

Table 9.

Consequently, due to this possible content of material available the researcher has decided to divide the analysis into three sections:

(i) Analysis of results as they initially stand,

(ii) Analysis of the content offered only from the seventh option, 'other reason', and then

(iii) Compiling results from (i) and (ii) and completing a final analysis.

JB6a *Why did you not use public transport in the last twelve months – Why Not?*

New Zealand Māori

In general, both male and female New Zealand Māori responded to all the ten options provided in answer to question JB6a asking why New Zealand Māori have not used public transport in the last twelve months as can be seen by the colourful mix in the graphic results with some choosing to mark more than one box.

It should also be noted that although only a small number ticked the option 10 – other box it was found that a larger number of respondents still provided a written explanation giving their reason for not using public transport over the last twelve months. This material has been analysed separately and then these results have been analysed again in conjunction with the original JB6a results.

The age of New Zealand Māori males who answered these options covered the entire age span of New Zealand Māori involved in the LiLAC study, i.e., 83-to-93 years. In contrast New Zealand Māori females' response was found to only include only those aged from between 83 years to 88 years.

Responses given by New Zealand Māori similarly indicated that 74% also introduced a new response figure (0). New Zealand Māori males who did put a zero into the answer box were aged across the entire age span of New Zealand Māori involved in the study. Unlike the singularity in age of New Zealand Māori females (87 years) who provided some response to the choices offered those that put a 0 into the box were aged between 83 to 87 years.

These results have been included in the analysis and the reasoning behind why they chose to make such a mark will be discussed in the results conclusion 83-93 years.

JB6a Responses Including Only Choices 1 –to-10 by Gender and Age

Males

The highest number of New Zealand Māori males believed that they didn't want to use public transport (21 -option 1). Within these results there were two notable peaks with those aged 88 and 92 years old. These results were closely followed by those who did not feel that public transport went where they wanted or needed it to go it to (20 – option 2). A problem particularly of concern with the younger end of the eleven-year age span and again with 88-year old's. Next New Zealand Māori males gave lack of knowledge of where or when public transport went was their third highest cause for not using the service (14 – option 5). Following that New Zealand Māori males spoke about problems with getting on and/or off buses (11 - option 3) and expense (11 - option 9) (refer to Figure 5).

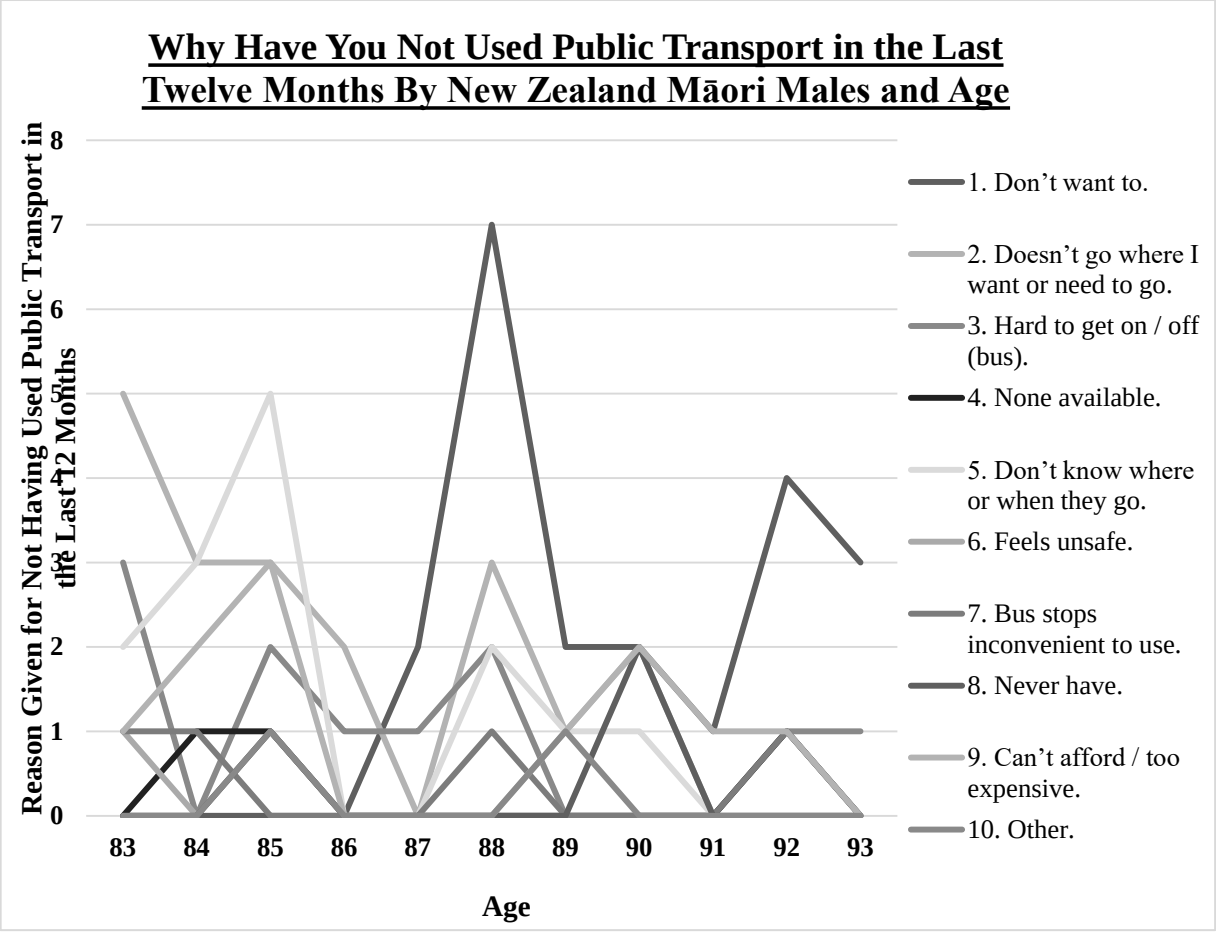


Figure 5.

Females

Female New Zealand Māori results were much clearer with them indicating that they had a lack in knowledge about the route and times that public transport went within their area (19 - option 5). Not far after this New Zealand Māori females next most critical reason for not using public transport was them not wanting or needing to use public transport (14 – option 2). Finally, like New Zealand Māori males the cost associated with using public transport was highlighted by New Zealand Māori females (9 – option 9).

Also, interesting to note was the peak that was present in 87-year New Zealand Māori female's results that incorporated options 1, 10, 2, and 4-5 (refer to Figure 6).

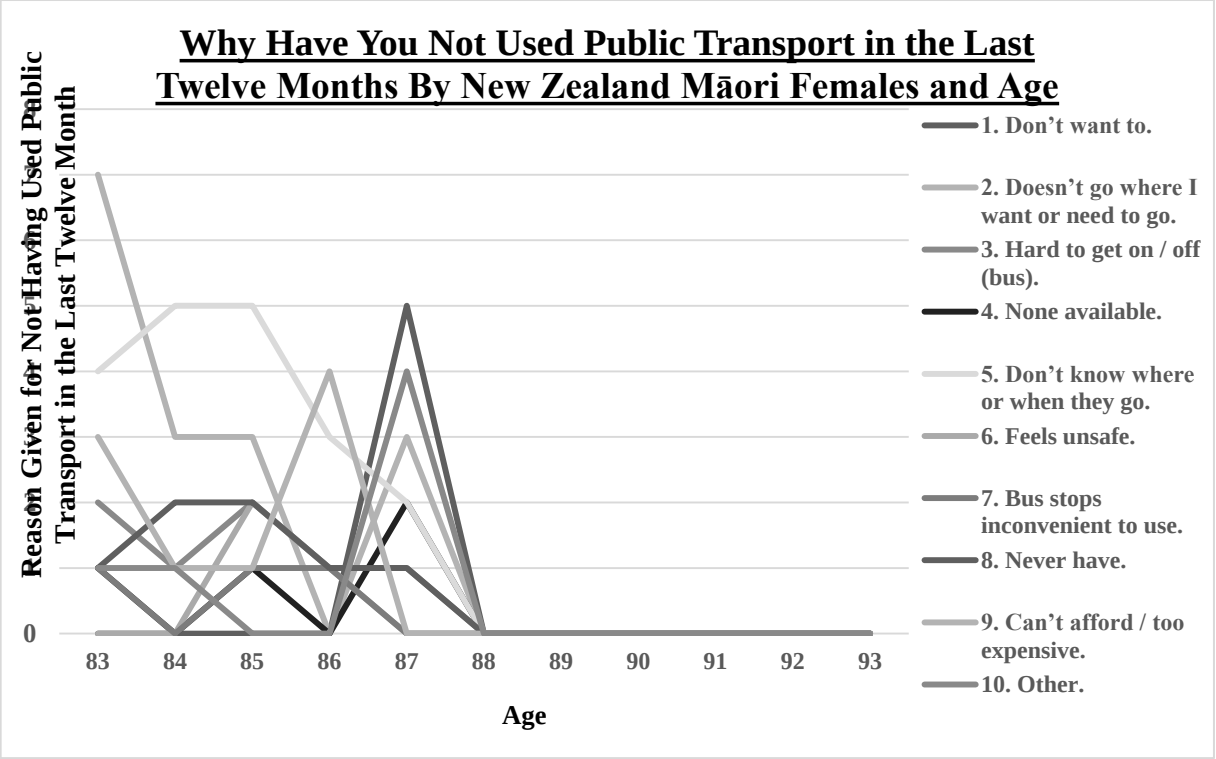


Figure 6.

Due to the high response rate results from the 'Other' reason category these results have firstly been independently examined and then a further analys will conducted combiing both results. If on any occasion the respondents have recorded in writing any of the original ten options these will inturn be included in with the relevant original count.

JB6a Responses Including Only Choice 10 (Other) by Gender and Age

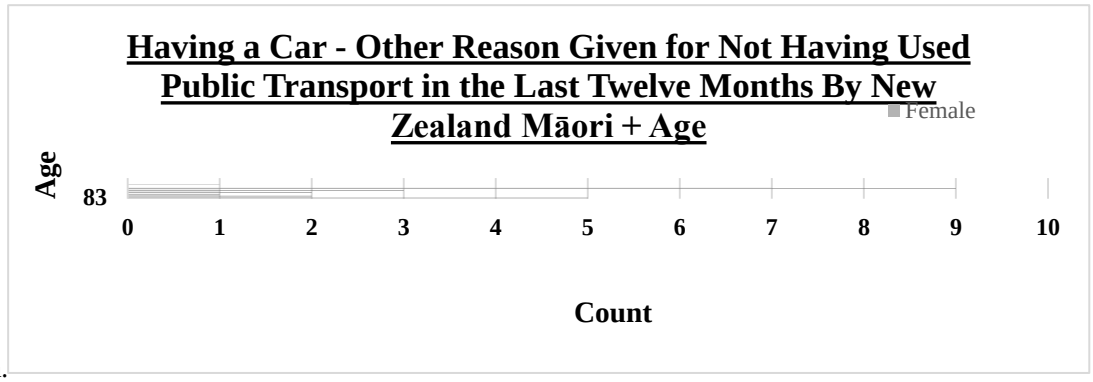
After looking at these subject matter of the answers provided by New Zealand Māori and Non-Māori six headings were established. Of the topics highlighted by the advanced aged recipients there were only two that were not included in the original listing. These revolved around the continued use of their car and health related issues. Otherwise the remaining four categories had been highlighted in the LiLAC study but from the results it was apparent that both New Zealand Māori and Non-Māori still wanted their response to be noted.

Analysis of the written results to option 10 (other) of question JB6a why did you not use public transport in the last twelve months indicated that a small number of New Zealand Māori responded. The remaining 82.04% of cells are identified as the dependent variable with zero frequencies including driving and non-driving New Zealand Māori and Non-Māori.

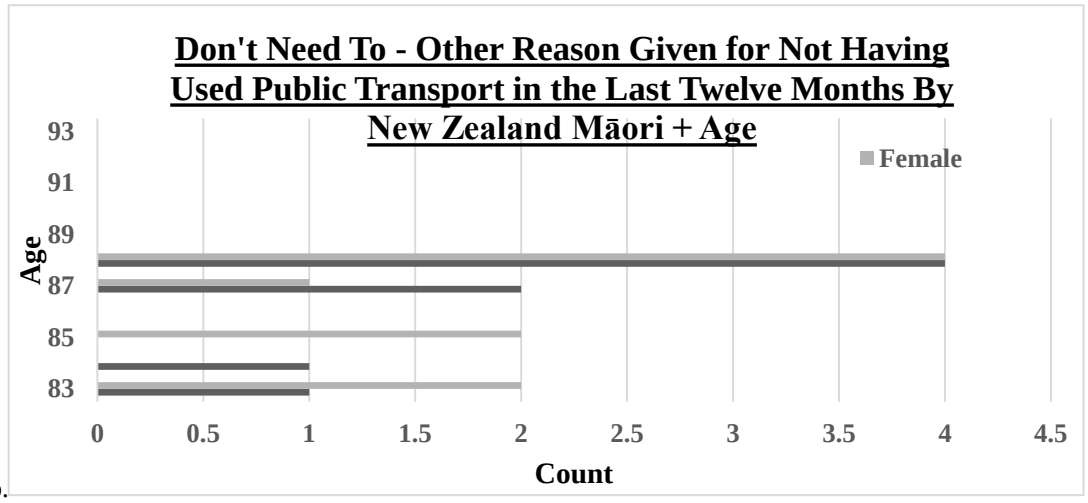
Male

Comments made by New Zealand Māori males came from those aged between 83 to 88 years. In general use of their car, either having no need or want of use of public transport and health concerns were their most notable issues identified by New Zealand Māori males. Interesting to see that although

a higher number of New Zealand Māori males were still driving with 23 males compared to 13 females the overall age range was lower (83 to 88 years). Health was the next consideration relating to such factors as being on medication, unable to leave a facility, dementia, bedridden and, just health reasons in general. A small number of New Zealand Māori males indicated that they did not have any public transport and/or used family members or other people to transport them around, (refer to Figure 7).



a.



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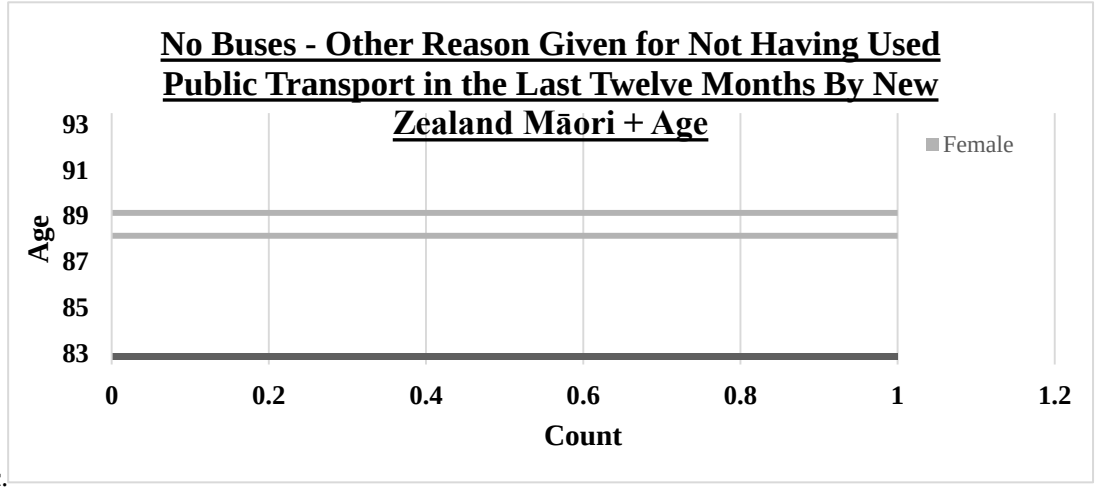

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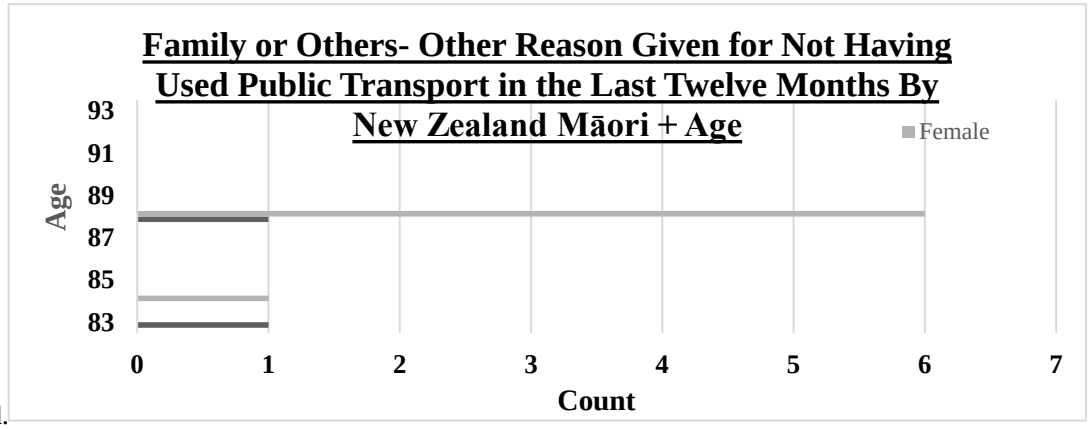

e.

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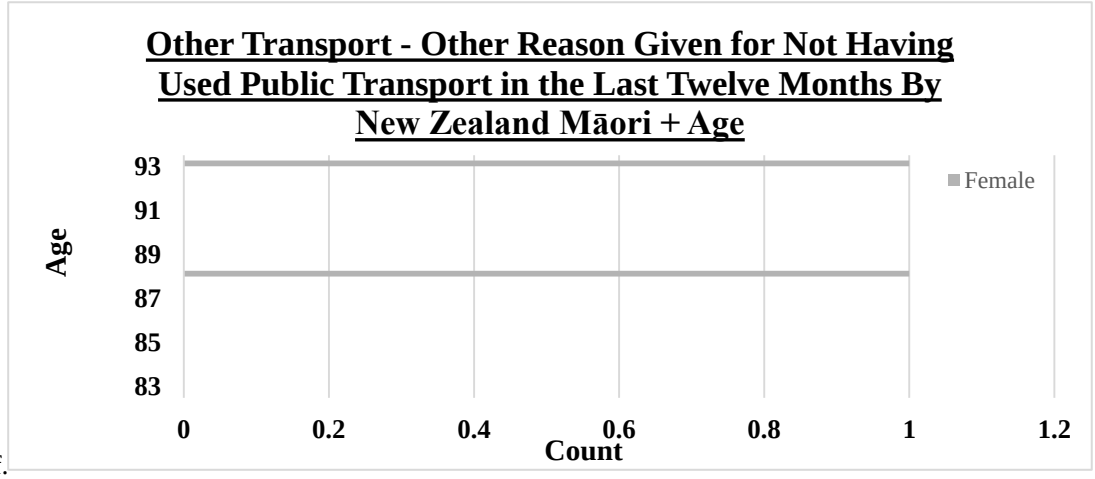


Figure 7.

Female

New Zealand Māori female's age between 83 to 90 years similarly indicated that they had their own car for use as their primary reason for not using public transport in the last twelve months. A slightly higher number of New Zealand Māori females compared to males indicated that they had either no need or have wanted to use public transport in the last twelve months. However, their use of family and/or other person for transportation was larger with 7 compared to 2 for New Zealand Māori males. Examples of

such use included their moko, son; family transport or someone else. Under the health category reasons given as the next major cause included dementia, nowhere to go without help and health.

Double the number of New Zealand Māori females also highlighted the fact that there were no buses available (refer to Figure 7).

JB6a *Why public transport was not used in the last twelve months?*

New Zealand Māori

Combining JB6a Results and Other Reason Sub-section.

Option 10 – Other has also been indentified by some respondents choosing to just tick this box without then giving a written input.

A new response category number '0' was added as some of the New Zealand Māori have also chosen to place this number in the option 10 answer box without giving a written response.

4. Results

After reviewing the written responses supplied by New Zealand Māori it was found that some fitted in with the previous nine options that had been offered to the respondents, while others introduced some new concepts as to why they had not used public transport in the last twelve months. These new ideas included the fact that they were still driving their car, they used family or someone else to drive them, health reasons were preventing them from driving, or they used another method of transport.

Following this review these results were then incorporated in with the previous material obtained from options 1 to 9. In places it was decided by the researcher to bring together some of the results under one heading either because of their similarity in nature and with that also the low number of responses; while with others they remained. Below is a table identifying where and how this decision was made (refer to Table 10).

Table 10.

Option Title	Incorporating Option Numbers
Don't need or want to use public transport want to.	1, 2 + 8
Don't know where or when they go.	5
No Bus. None available, bus stop inconvenient.	4 + 7
Feels unsafe.	6
Can't afford / too expensive.	9
Have a car.	
Family or other driver.	
Health.	3
Other form of transport	
Other.	10

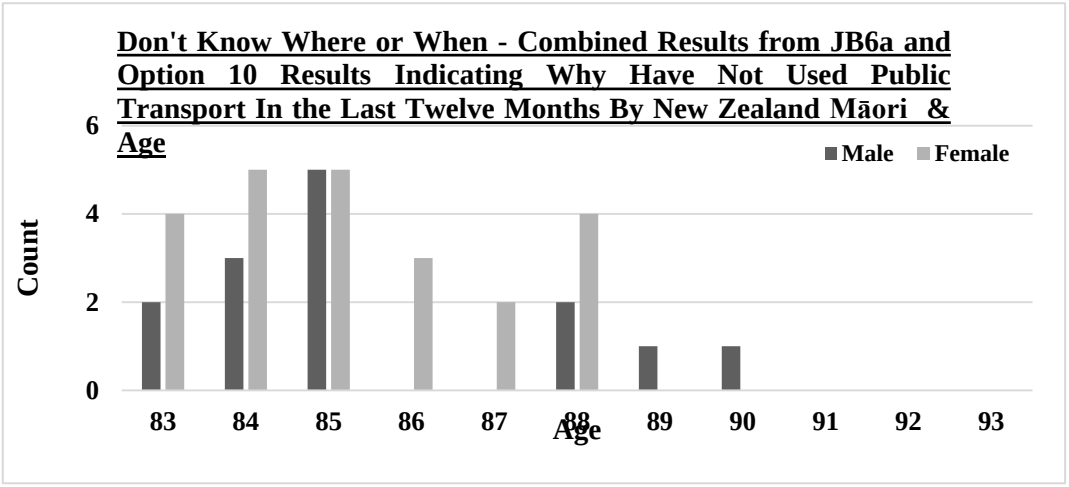
New Zealand Māori Male

As part of the original ten options New Zealand Māori male results particularly indicated that they either had no knowledge or need for the use of public transport as shown in the first two graphic displays. Although numbers were reduced the lack in use and provision of facilities; along with associated costing were the next highest concern about busing as identified by New Zealand Māori males, although results in answer to this option were reduced.

Under the new topic headings as was introduced following research into the content of New Zealand Māori written responses continued use of the car and health issues were the most significant reason as to why public transport had not been used in the last twelve months.

Within these results it was evident from the responses that the entire age span of between 83 to 93 years of New Zealand Māori males responded to this question (refer to Figure 8).

a.



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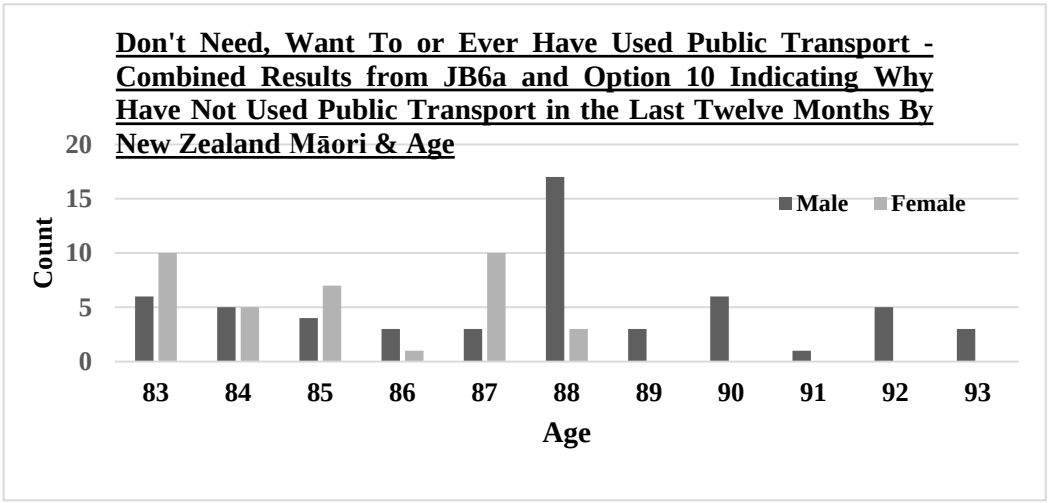

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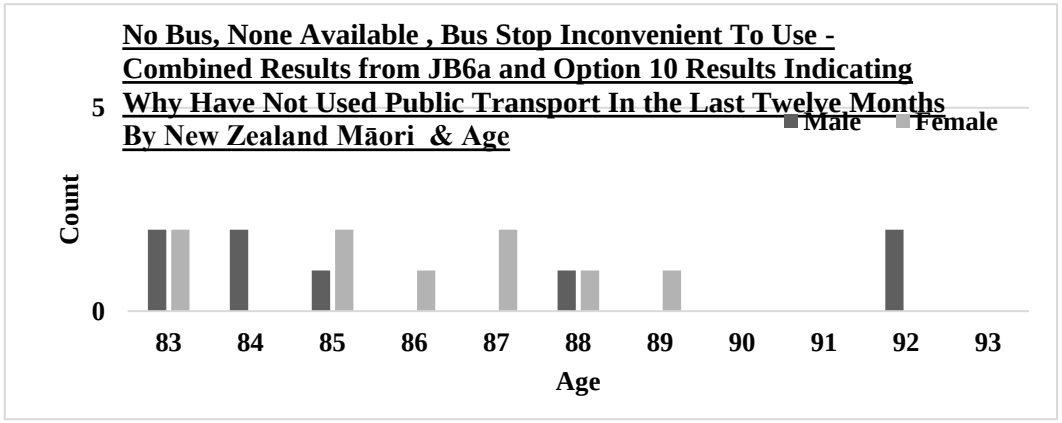
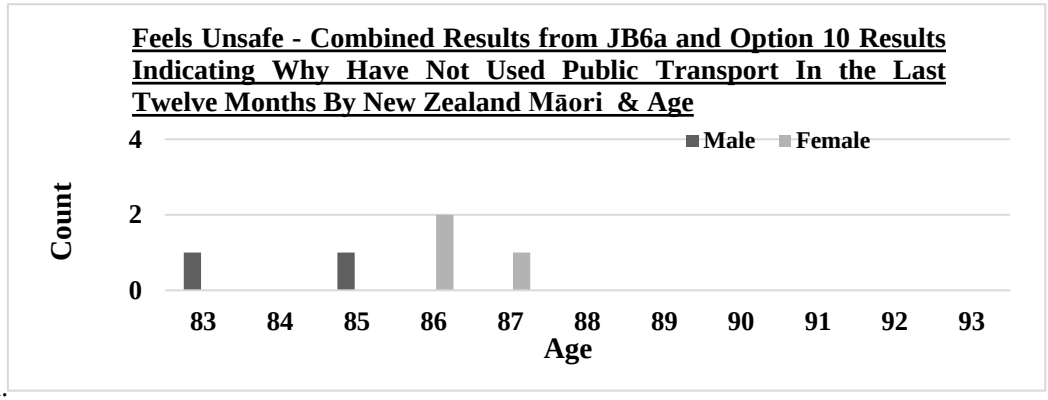
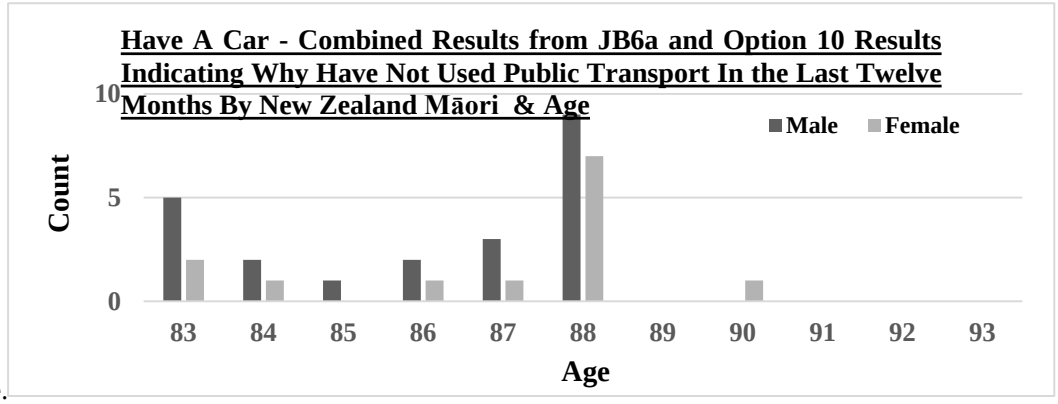

No Bus, None Available , Bus Stop Inconvenient To Use - Combined Results from JB6a and Option 10 Results Indicating Why Have Not Used Public Transport In the Last Twelve Months By New Zealand Māori & Age
Male
Female
Count
5
0
83
84
85
86
87
88
89
90
91
92
93
Age

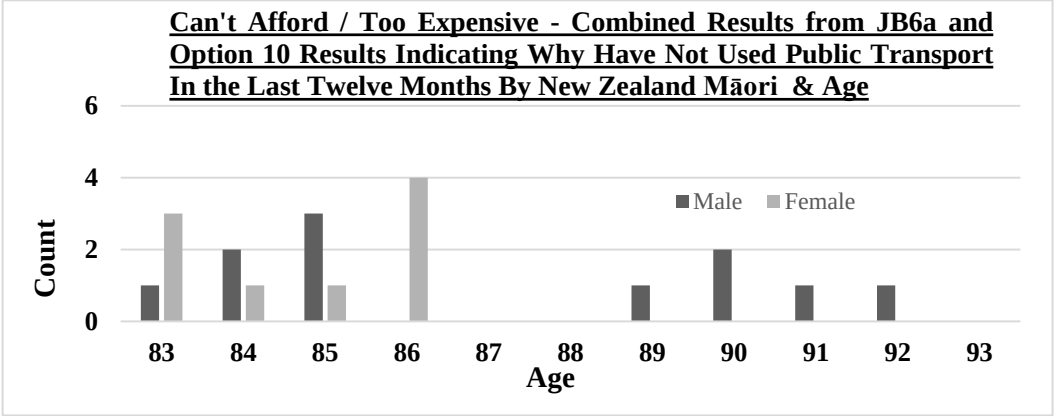
d.


Feels Unsafe - Combined Results from JB6a and Option 10 Results Indicating Why Have Not Used Public Transport In the Last Twelve Months By New Zealand Māori & Age
Male
Female
Count
4
2
0
83
84
85
86
87
88
89
90
91
92
93
Age

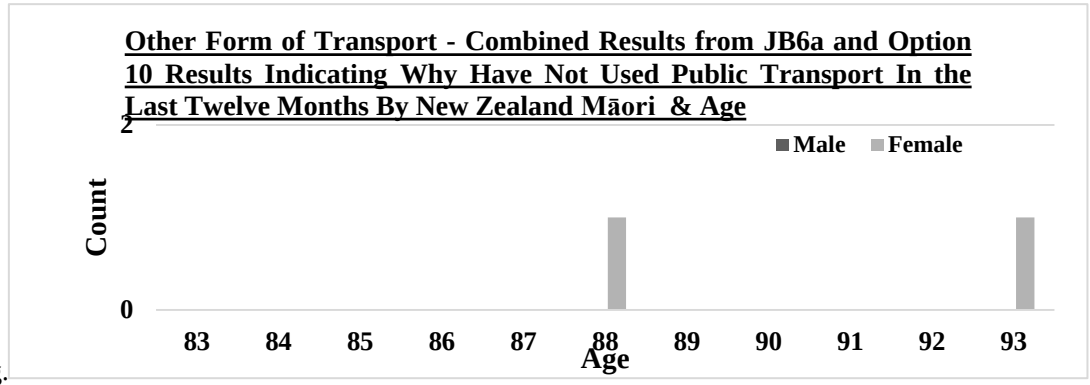
e.


Have A Car - Combined Results from JB6a and Option 10 Results Indicating Why Have Not Used Public Transport In the Last Twelve Months By New Zealand Māori & Age
Male
Female
Count
10
5
0
83
84
85
86
87
88
89
90
91
92
93
Age

f.


Can't Afford / Too Expensive - Combined Results from JB6a and Option 10 Results Indicating Why Have Not Used Public Transport In the Last Twelve Months By New Zealand Māori & Age
Male
Female
Count
6
4
2
0
83
84
85
86
87
88
89
90
91
92
93
Age

g.



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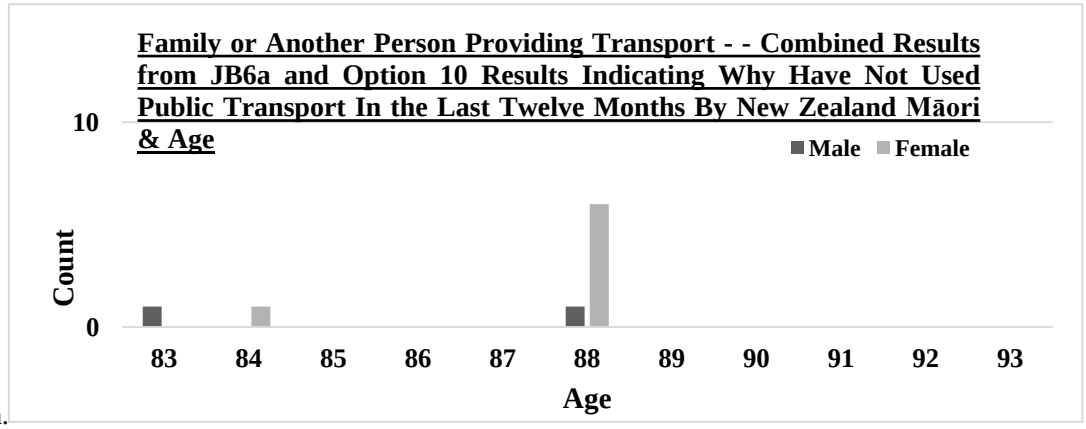

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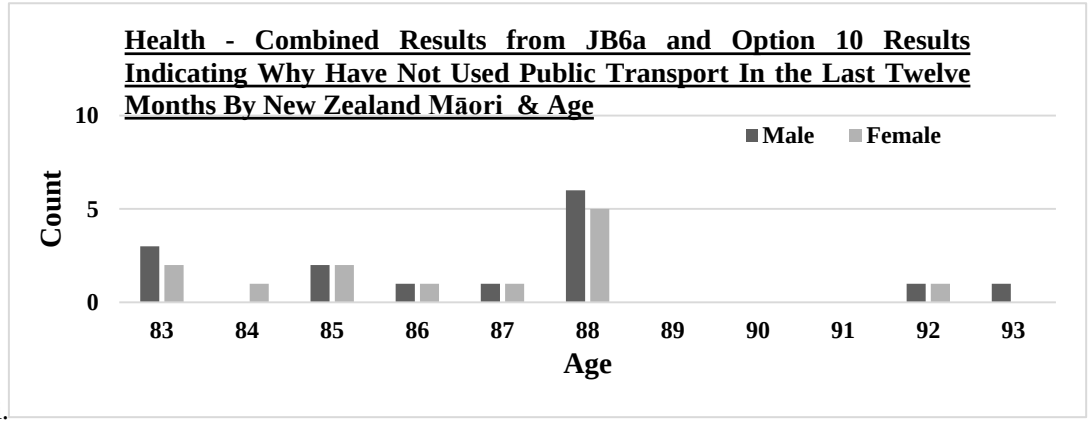

j.

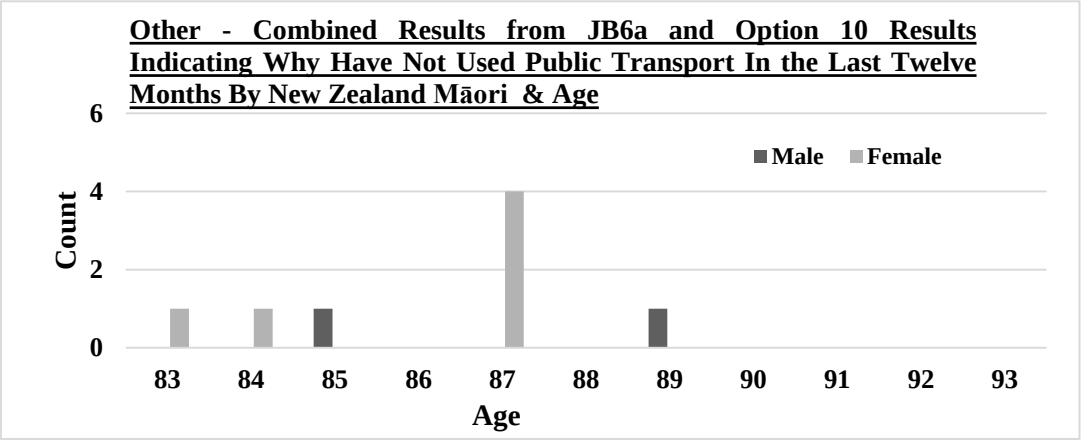

Figure 8.

New Zealand Māori Female

In the nine options New Zealand Māori females presented a similar pattern to that of New Zealand Māori males. Although in comparing results it is apparent that a greater number of male New Zealand Māori indicated that they did not have a need or wanted to use public transport. Whereas about either not knowing or the availability of bus services New Zealand Māori females particularly identified these issues. New Zealand Māori females expressed a similar concern about the cost in using public transport to that of New Zealand Māori males.

Within the original options New Zealand Māori females also indicated a lack of feeling of safety in the use of public transport.

Similarly, to New Zealand Māori males the entire age span of New Zealand Māori females between 83 to 93 years responded to the question.

New Zealand Māori females also indicated several other issues with regards to their not wanting to use public transport over and above that shown in the New Zealand Māori males results. Again, use of their car and health were other reasons given for not using public transport. However, they also identified the use of family or another driver, another form of transport such as a scooter or the local barge.

Finally, a higher number of New Zealand Māori females chose to just tick the option ten box without providing a written explanation. This is over and above the 0-response identified below (refer to Figure 8). A significant number of New Zealand Māori males (168) and females (138) chose to place a zero in the option 10 box, but also then did not go onto provide a written explanation. Because of this development the researcher has decided to include this material in with the final results (refer to Table 11).

Table 11.

Why Did You Not Use Public Transport in the Last Twelve Months?		
New Zealand Māori	**Male**	**Female**
0 = No.	168	138

Neither having a need or knowledge of public transport and that a significant number of both male and female New Zealand Māori were still driving were the predominant issues presented as to why New Zealand Māori appeared to be not using public transport.

Although with that, for both male and female New Zealand Māori health did present a concern as to why they were not using such facilities. Also, for New Zealand Māori females it was apparent that they did employ the services of their family or another person the drive them around to a greater degree compared to New Zealand Māori male with only one identifying this factor.

Some chose to just place a ‘0’ in the box. It could also be concluded that both male and female New Zealand Māori were indicating that by using the ‘0’i.e. ‘No’ they were indicating that they had in fact not used public transport in the last twelve months. The zero-mark having previously been offered in

previous questions.

Follow-up communication with those and the ones that who only ticked the option 10 – other box without giving a reasoning could be worthwhile.

JB6a *Why public transport was not used in the last twelve months – Why Not?*

New Zealand Non-Māori

Nearly seventy-percent of the New Zealand Non-Māori population answered question JB6a. The remaining thirty-percent plus of cells are identified as the dependent variable with zero frequencies including driving and non-driving New Zealand Māori and Non-Māori, (refer to Table 41).

More New Zealand Non-Māori females responded to question JB6a compared to New Zealand Non-Māori males.

New Zealand Non-Māori male and female responded to all options provided in question JB6a as to why they had not used public transport within the last twelve months.

Though within these responses New Zealand Non-Māori also like New Zealand Māori introduced a new response figure (0) which accounted for 15.43% of the replies given.

JB6a Responses Including Only Choices 1 –to-9 by Gender

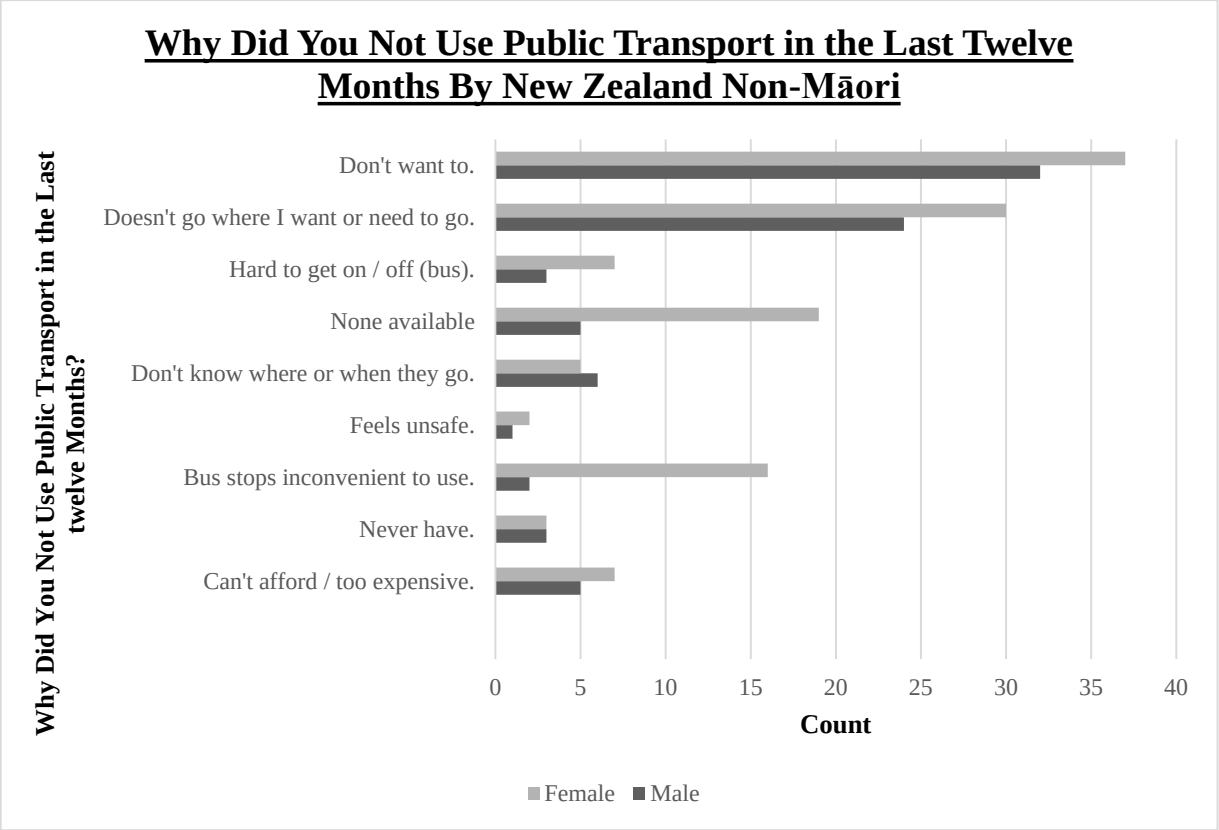

Figure 9.

Males

Not wanting to use public transport services was the primary reason New Zealand Non-Māori males indicated as to why they had not used public transport in the last twelve months (1). Next New Zealand Non-Māori males pointed out that they did not believe that local bus services/routes either did not go where they wanted them or need for them to go (2). Following this similar numbers of New Zealand Non-Māori males indicated concern about bus services not being available for them (4), that they had a lack of knowledge of their routes or timetable (5) and ticket prices were too expensive (9) (refer to Figure 9).

Females

New Zealand Non-Māori females also highlighted options 1 and 2 as their main reasons for not having used bus services in the last twelve months. After that they specified choice (4) no bus services being available and that stops were inconvenient to use (7). Buses design (3), price of tickets (9) and not knowing where or when they ran (5) were the next three most important issues for New Zealand Non-Māori females (refer to Figure 9).

JB6a Responses Including Only Choice 10 (Other) by Gender

Male

Only one New Zealand Non-Māori marked choice 10 but not providing a written explanation.

Female

One New Zealand Non-Māori female made a similar record as above.

However another New Zealand Non-Māori females also pointed out that her husband drove her as part of her reply for option 2 - Doesn't' go where I want or need to go.

JB6a *Why public transport was not used in the last twelve months?*

New Zealand Non-Māori

Combining JB6a Results and Other Reason Sub-section.

Option 10 – Other has also been indentified by some respondents choosing to just tick this box without then giving a written input.

A new response category number '0' was added as some of the New Zealand Māori have also chosen to place this number in the option 10 answer box without giving a written response.

New Zealand Non-Māori males particularly identified not having wanted to use the bus service (option 1) and believing that of the buses and bus routes that there are, they do not fulfil their needs (option 2).

Female New Zealand Non-Māori's also identify options 1 and 2 as their major causes for not using local bus services. Nevertheless, they also highlight that they believe no bus services are available to them. Also, of the bus stops that there are, they believe they are not convenient to use (refer to Table 12).

One New Zealand Non-Māori male and female just marked the JB10 box but did not provide any written response.

The only written response by a New Zealand Non-Māori female was given alongside their initial marking of option 2 – Husband. This response was placed in the new combined data response under the heading – Family or Others.

New Zealand Non-Māori males (33) and females (54) also chose to place a zero in the option 10 box and not provide a written explanation. Because of this development the researcher has decided to include this material in with the results (refer to Table 13).

Table 12.

Why Did You Not Use Public Transport in the Last Twelve Months?		
New Zealand Non-Māori	**Male**	**Female**
Don't want to.	32	37
Doesn't go where I want or need to go.	24	30
Hard to get on / off (bus).	3	7
None available	5	19
Don't know where or when they go.	6	5
Feels unsafe.	1	2
Bus stops inconvenient to use.	2	16
Never have.	3	3
Can't afford / too expensive.	5	7
Other.	1	1
Family or Others.	0	1

Table 13.

Why Did You Not Use Public Transport in the Last Twelve Months?		
New Zealand Non-Māori	**Male**	**Female**
0 = No.	33	54

Not wanting to and appropriateness of bus routes were the two main causes behind male and female New Zealand Non-Māori for not using local bus services (options 1 and 2).

However, in combining New Zealand Non-Māori females results it could be concluded that they were making a summary observation/comment about bus services in general. Pointing out that they felt that there were no bus services available to them (option 4), that bus stops were inconvenient to use (option 7), they had difficulty maneuvering on and off buses (option 3) and that they were too costly (option 9). New Zealand Non-Māori males correspondingly identified options 4 and 7 but to a lesser degree (refer to Table 12 and Figure 10).

By using a '0' it could be concluded that both male and female New Zealand Non-Māori were indicating that by using the '0', i.e. 'No' they were indicating that they had in fact not used public transport in the last twelve months. The zero-mark having previously been offered in previous questions (refer to Table 13).

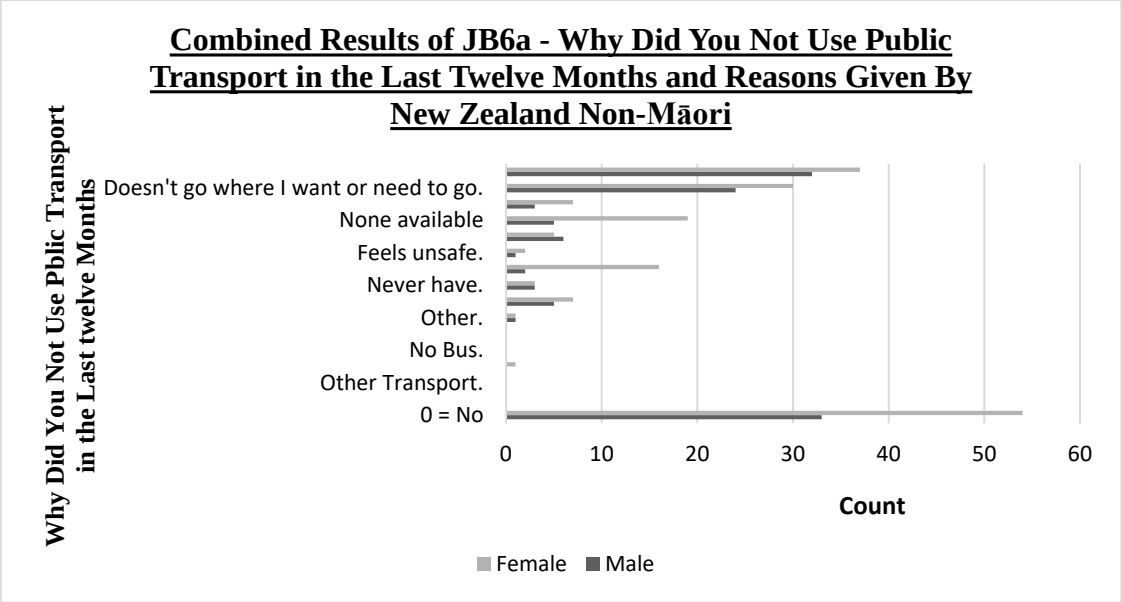

Figure 10.

5. Discussion

This time the research was directed towards respondents use of public transport facilities. Here they were asked as to whether they did travel on public transport, made use of such services. Following this they were then asked if they had used public transport in the last twelve months, and if they did, how often they made use of such a facility and if they hadn't why not. Material for analysis was obtained from the Physical Health and, Everyday Interest and Activities divisions of the LiLAC Study.

New Zealand Māori

Initially results did indicate that a predominate number of both male and female New Zealand Māori's did not make use of public transport with reference to New Zealand Māori females; and of those that did they completed it on their own or with some difficulty. New Zealand Māori aged between 83-88 were the most significant users of public transport during a week. Of those that did make trips on public transport services New Zealand Māori_male results presented a more flowing in nature particularly for those aged between 83-87 years utlising the service one to two times in the week. Female New Zealand Māori results in comparison displayed peaks that were particularly apparent in those aged between 83-85 years employing the service between 1-3 times in the week. Most New Zealand Māori males answering why they did not use public transport indicated that they did not want to, closely followed by those who felt the service did not go where they wanted or needed it to go. This was particularly relevant with those New Zealand Māori males aged 88 years. New Zealand Māori females indicated that there was a lack of knowledge about available services, followed by those who had no need for the service. Other reasons given by male and female New Zealand Māori was that they were still driving and again not needing use of the service. After combining the initial why question with that of the Other option, results indicated that neither having a need or knowledge of public

transport service along with that fact that respondents were still driving was why they were not presently using public transport.

New Zealand non-Māori

New Zealand non-Māori displayed a similar result to that of New Zealand Māori in those that did not use public transport; and of those that did make use of such a service they were either able to do it on their own or with some difficulty. Unlike New Zealand Māori this number was equally distributed between both the males and females. However, a significant number of males indicated that they had not used public transport in the last twelve months compared to the minimal response to either the yes or no factor in the question. When asked how often they had used public transport in the last twelve months New Zealand non-Māori respondents were noticeable in the numbers who did not use public transport at all, with reference to New Zealand non-Māori males. However New Zealand non-New Zealand Māori females also indicated that no service was available to them. However, when combining the why not question as to their use of public transport in a typical week with respondent's completion of the Other section it was still apparent that a high number still did not use any public transport service followed by those who did not want to or felt the service route was not practicable.

Use of public transport such as buses by older people does not appear to play a substantial role in enabling them to continue conveying themselves from one location to another. This does not mean to say that this population group does not utilise such services as some are, nor that they would not be interested in employing this service, but the picture could be viewed as being multi-faceted. Older people are still driving, while others may have the benefit of being transported by their partner and/or family; or they may be making use of various forms of transportation like walking, cycling, train, taxi, rickshaw, water buses or ferries (Brome, McKenna, Fleming, & Worrall, 2009; Waaraa, Risserb, & Stahla, 2013; New Zealand Transport Agency, 2014; Chin & Menon, 2015; and Backpacking Asia, 2017).

Instead older people's thoughts on the availability of public transportation services revolve around two factors. One that they did not feel that they presently required the use of such a facility and two, that that there was a lack of knowledge about what services were available to them. To both recognise and incorporate this present and future generation the government, regional council and/or local authorities through both their policy planning and service development they need to recognise the ongoing placement of this population group within the community and possible associated requirements. Balanced also by such work should be the recognition of future demographic changes in structure of the same populace age grouping. A future generation that will be larger in size and more independent in nature (Organisation of Economic Co-operation & Development, 2001; and Shergold, Lyons, & Hubers, 2015).

Authorities therefore need to consider making services more compatible. This is not only in time scheduling, route design but also the form of transportation that is made available. In the United Kingdom transportation around London presents such an illustration. It is made up of several inter-related services – bus, underground rail, docks light railway, over-ground rail and tram. All of which may be used through the purchase of one Oyster Travelcard – Smart Ticketing (http://londonpass.com, 2017; and Transport

Ticketing Global, 2018)). Another example is with the Hamilton City Council in New Zealand strategy with the establishment of Summerset Retirement Village on the southern outskirts of the city. Presently residents of the village must go outside of the village and cross the road to catch the bus. However, planning for bus transportation will soon incorporate the village as part of its route with the bus stopping inside of the village complex (Access Hamilton Strategy, 2010).

Governmental, regional and/or local authorities may also consider the purchase of mini-buses to be used at specified times of the day when it may be considered that older people were more likely to use such a service. An example of such a service is the one run by the Waipa District Council employs shuttle bus service for residents of Pirongia travelling to Te Awamutu (Waipa District Council, 2017). Although not directly related to older people the shared costing of taxi services with the local council is another example as to where and how public transport may be made more equitable for the ageing population. To curb drink driving the Hamilton City Council runs a yearly 'Cab It or Cop It' promotion which encourages the public to order a taxi rather than driving home intoxicated. Discounted use of taxis through the local council may be another way encouraging older people to remain connected with their society (Leaman, 2015).

Here you have both a present and future independent generation of older people. Consideration needs to be made of this population group as well as looking at the issue in a more practicable sense. As was shown by respondents' significant personal input when asked why they did not use public transport. Respondent's not just, in quotation marks a "retired generation" full-stop, but one that is still fully involved in their life styles, are part of their community and still a contributor of the environment. So, will and maybe more so the coming future Baby Boomer generation.

It is essential therefore that for any future research and developments made by government, council and the service industry within the arena of public transport they should also recognise the important role such a facility may have in the continued mental and physical growth of this mobile independent generation.

6. Conclusion

Physicality in the use of public transport services by older people was not their prime concern. Rather it was the actuality of social disinterest with many still driving, no buses being available, appropriateness of routes and the availability of scheduling details.

If authorities are interested in providing a responsive service for this, and the upcoming older generation they need to be prepared to make some alteration in the format of their present facilities (for a specified period) With that should be an in-depth analysis of the requirements of older people including (for example) timetables, numbers, routes and events); consider the implementation / utilisation of mini buses or vans with wheelchair accessibility perhaps during specified times of the day; for local and/or national government to work in conjunction with other transport providers, subsidising service groups pick-ups or private firms.

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