SURVEY OF PUBLIC TRANSPORT-DEPENDENT PEOPLE IN NEW ZEALAND

Transfund New Zealand Research Report No. 108

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BOOZ•ALLEN & HAMILTON (NZ) LTD
Wellington, New Zealand

Transfund New Zealand Research Report No. 108

ISBN 0-478-11066-9
ISSN 1174-0574

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Booz•Allen & Hamilton (NZ) Ltd. 1998. Survey of public transport-dependent people in New Zealand. *Transfund New Zealand Research Report No. 108.* 118pp., 9 Appendices.

Keywords: buses, fares, Hamilton, New Zealand, public transport, roads, services, survey, transport, Wellington

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EXECUTIVE SUMMARY

INTRODUCTION

Background

The total government funding to passenger transport in New Zealand is some $86M pa (per annum), of which $28.6M pa is funded by Transfund New Zealand through the National Land Transport Programme (NLTP, 1994/95, Output 5). A major rationale behind this government funding for public transport, particularly from central government, is that it provides benefits to 'public transport-dependent people', by enabling higher levels of service and/or lower fares than would otherwise occur.

However, hitherto little empirical data have been available about the current levels and patterns of use (or usage) of public transport by 'public transport-dependent people', and about how such people would be affected by funding cuts. These data assist in evaluating the benefits of government funding of public transport.

To this end, a research project was carried out between 1995 and 1997 to review available data about the patterns of use of existing public transport services in New Zealand and responses to service cuts or fare increases, particularly by 'public transport-dependent people'; and to undertake targeted surveys to investigate how present users in selected subgroups would be affected by service cuts and/or fare increases.

Objectives

The overall objective of this project was to:

> *Obtain empirical data on the likely impacts of and responses to service reductions and/or fare increases affecting public transport-dependent people, to assist in the valuation of passenger transport financial assistance to people dependent on public transport.*

This was broken down into three objectives to:

(a) Determine the likely responses to changes in public transport service levels and fares by present users who are considered to be more dependent on public transport for their mobility than average;

(b) Assess the degree of loss of mobility and access (if any) which would be experienced by this group in the event of changes to service levels and fares; and,

(c) Assess the effect of these changes on individual and household welfare.

Overview of Project

The project has been conducted in two stages.

Stage 1 : Analysis of Existing Data

This stage involved collation of existing New Zealand data on the usage of public transport services, particularly by public transport-dependent groups. It is reported in Part 1, and Appendices 1-5, of the report. Public transport travel by 'people with disabilities' was characterised but this group was not to be included in the Stage 2 surveys. A separate research project would be more appropriate for this group.

Stage 2 : Surveys

This stage involved surveys to assess the current usage of passenger transport by public transport-dependent groups, and the effects of service reductions and/or fare increases on these groups. A two part survey approach was adopted for Stage 2, involving:

Task 1- *Household Telephone Survey*: a random survey in Wellington and Hamilton to enable a more sophisticated segmentation of the market by public transport dependence, and to recruit a sample of public transport-dependent people for the personal interview survey. It is reported in Part 2 of the report.

Task 2- *Personal Interview Survey*: a more in-depth survey of people's likely response to a number of public transport scenarios, and the impact of these on their welfare. It is reported in Part 3, and Appendices 6-9, of the report.

This Executive Summary summarises findings of Parts 1, 2 and 3, and sets out overall conclusions of the study, listed in Part 4.

PART 1. ANALYSIS OF EXISTING PUBLIC TRANSPORT DATA (Stage 1)

1.1 Usage of Existing Public Transport Services

This stage analysed existing New Zealand data on the usage (use patterns) of passenger transport services in regard to:

- The levels and patterns of use of public transport services, analysed by different market segments, e.g. car availability, income group, age group, availability of other transport modes.
- Attitudinal data relating to public transport and reasons for its use or non-use by different market groups.
- Evidence on likely responses of different market segments to service reductions and/or fare increases, with a particular focus on how public transport-dependent groups might be affected, and evidence of any hardships caused.
- Travel characteristics of people with disabilities, and their usage of public transport services.

1.2 Main Findings

- *Public Transport-dependent Groups*. The 'primary' public transport-dependent groups are: people who do not have a car available for their use; and people aged between 15 and 19 years of age. These two groups make a significantly higher proportion of their trips by public transport than other groups, and have much higher public transport trip rates.

  The 'secondary' public transport-dependent groups are: people aged between 20 and 39 years of age who may have a car available for their use; and people aged between 5 and 14 years of age who have a car in the household.

- *Attitudinal Differences by Market Segment.* Non-availability of a car for travel is a significant reason for choosing to travel by public transport, with around 20% of public transport trips being made by people in this situation.

People who do not hold driver licences are more dependent on public transport than licence holders, and will respond quicker to fare decreases and service increases than other groups (the response of these people to fare increases and service decreases has not been tested).

People in the younger age groups, including those in the 15-19 group, are more affected by fare increases than other groups, and rate low fares as more important than other age groups. Generally people in the younger age groups do not rate level of service as highly in importance as other groups (particularly middle age groups), although they are more concerned about weekend and evening service levels.

- *Responses to Service Level/Fares Changes.* Responses to fare changes vary according to the availability of alternative forms of transport.

  People with no car available have a lower responsiveness to changes in fares than those with a car available.

  Greater car availability results in higher response to service frequency. People without good access to cars have correspondingly low service frequency responsiveness. In the only documented case of a bus service withdrawal in New Zealand (Tauranga - where most users fell into the groups identified as public transport dependent):

  - The overall level of trip making did not change markedly,

  - Changes in destinations occurred for a significant proportion of the group,

  - A significant proportion were unable to undertake some of their previous activities,

  - The majority were spending more money on travel,

  - The majority considered themselves to be worse off as a result of the service withdrawal.

PART 2. TELEPHONE SURVEY OF PUBLIC TRANSPORT-DEPENDENT PEOPLE (Stage 2, Task 1)

2.1 Survey Methodology

Random telephone interviews totalling 400 householders were carried out, in Wellington and Hamilton, to enable a more sophisticated segmentation of the market by public transport dependence, and to recruit a sample of public transport-dependent people for Stage 2 Task 2.

2.2 Main Findings

- Some groups within New Zealand society make a much higher proportion of their trips by public transport than other groups, and changes to the level of service or cost of public transport would have a greater effect on these groups. The groups with the highest proportion of their trips by public transport are:

  - people in the 12-15 and 15-19 age groups,

  - people in households who do not own a motor vehicle,

  - people in households with very low incomes (< $10,000),

  - students, and full-time workers in Wellington,

  - people making trips to/from work and to/from school/education.

- Two groups - people living in households without any motor vehicles, and people in low income households - make a much higher number of their trips by public transport each day than other groups and also make a lower number of total trips (i.e. by public transport and other modes) each day than other groups. These two groups have a very high dependence on public transport.
- People in the two lower age groups also make a high proportion of their trips by public transport and are highly public-transport dependent.
- Most (65%) public transport trips are those made by people who have no alternative travel mode for that trip. Thus, most public transport users are dependent on public transport to some extent.
- Residents of the Wellington area appear to have a higher degree of dependence on public transport for their mobility than residents of Hamilton, with public transport use being much lower in Hamilton.
- Nearly all public transport users would suffer some inconvenience if public transport services were discontinued, reflecting the lack of alternatives for most public transport trips. The highest degree of inconvenience would be suffered by people in the 12-19 age group, people in households with incomes < $10,000, and people in households without motor vehicles.

PART 3. PERSONAL INTERVIEWS OF PUBLIC TRANSPORT-DEPENDENT PEOPLE (Stage 2, Task 2)

3.1 Survey Methodology

The personal interview survey built on the previous work, and allowed for a detailed examination of the likely responses of/and impacts on public transport-dependent people arising from different public transport service/fare scenarios.

Interviews were conducted with 35 people (27 in Wellington, 8 in Hamilton) drawn from the Telephone Survey respondents. All public transport users present at the time of interview were asked to complete an Activity–Travel Diary of their activities undertaken and travel made on the most recent day in which they travelled by public transport (nearly all on survey day); and to indicate what they would have done in regard to each public transport trip made under three scenarios:

- Doubled public transport fares,
- Halved public transport service frequency, and
- No public transport available for that trip (either no service or at wrong time).

The likely response of each public transport user under each scenario was recorded in terms of any changes in: re-organisation of activities, impact of change in activity, travel behaviour, residential choices, employment choices, and shopping centre choices. Public transport users were also asked to comment on: their subjective assessment of their welfare change (both individual and household); and any long-term changes (in life-style etc.) which they would be required to make.

3.2 Main Findings

- *Overall Response and Impact by User Group:* the analysis of the survey results found that the likely response to changes in service levels and fares differed markedly between different groups of public transport users:
  - People in non-car owning households will generally reduce their activities and travel, or change their activity destination (note: household income was correlated closely with car ownership, with income increasing as car ownership increased). These people would suffer the greatest negative effect, with nearly all considering themselves much worse off (financially, socially, emotionally).
  - A significant (but smaller) proportion of people in households owning one car would experience similar negative effects to that experienced by the non-car owners.
  - The scenarios made little difference to the activities of people in households owning more than one car, with a high proportion of them switching to car where necessary. Most of these people are able to adjust to the changes without great impact, and the effects would be neutral over the whole group.
  - People using public transport for commuting to work or education will almost all continue their activity on at the same level. A change in frequency will merely result in them adjusting their schedule to accommodate this. Fare increases or no public transport service would cause most of them to switch to car. The impact on different trip purposes is related to the financial/car owning status of the household, more than to the trip purpose.
  - Elderly people, who live in low car-owning households, are very likely to reduce their activities (normally shopping/social/personal business) or conduct them locally. This group consider they would experience 'drastic effects'.
- *Impact on Mobility and Access:* the direct impact of the public transport scenarios on mobility and access varied, depending primarily on the person's age and car ownership. A significant proportion of people in non-car owning households would have reduced mobility under all of the scenarios, with the no public transport scenario having the most effect. Although they would still have access to essential services and shops locally, their perceived standard of living would drop appreciably given their lack of access to 'better' services and shops in other areas. Within this group, elderly and single-parents would suffer the most disadvantage, having to reduce activities significantly, and to rely on friends and/or family for their mobility.
- *Short and Long-Term Effects:* a greater degree of travel mode switching is likely to occur in the long term, particularly switching to car for people in car-owning households and people using public transport to travel to and from work. Other lifestyle changes will also be considered in the long term, with a higher proportion of people considering moving residence or changing jobs in the long term than the short term. In the long term, then, changes in public transport patterns will be evident which had not shown up in the short term (where the main effect will be a reduction in patronage levels).

  The impact of the public transport scenarios appears to be greater (in a negative sense) in the short term, when many people are forced to adjust their lifestyle significantly to adjust to the new transport situation. In the longer term more people (mostly in the higher income/car-owning groups) can envisage lifestyle changes they could make which would accommodate the new situation, and thereby lessen its impact on them.

- *Impact on Car Use:* each of the scenarios would have different impacts in terms of car use.
  - Halving service frequency would have the least effect, with only 8% of respondents switching to car for their travel (workers would adjust their travel times, and other modes, e.g. walking, ride with friend, cycle, would be used for other trip purposes where travel mode changed).
  - Doubling the fares would have a greater impact, particularly in the long term when 28% would switch to car.
  - Removing the public transport service would result in the majority of work trips and 20% of non-work trips being made by car.

PART 4. STUDY CONCLUSIONS

4.1 Public Transport Dependence

This project investigated the likely responses to, and impacts of, service reductions and fare increases on 'public transport-dependent people'. There is no standard definition of 'public transport-dependent people', and a working definition for the surveys was developed as follows:

Public Transport-Dependent people are people who meet all the following criteria:

- *Lack a ready alternative means of transport for a significant proportion of their desired trips, i.e. are unable to make these by another transport mode.*
- *Lack an ability to acquire a transport alternative (e.g. this may be related to inadequate income to make use of other modes).*
- *Make a substantial proportion of present trips by public transport.*

Analysis of the telephone and personal interview surveys found that people who met all three of these criteria were the most affected by changes in public transport service and fare levels. Around two-thirds of public transport trips are made by people with no alternative transport 'for that trip'. However, only a small proportion of these people could be classed as public transport-dependent.

Household car ownership was found to be the most important single factor in determining level of public transport dependence, with the most public transport-dependent group being people who live in households without motor vehicles (covering around 10% of people in Wellington and Hamilton).

Age is the next most important factor, with people in the 15-19 years age group being the most public transport-dependent age group. Elderly people in non-car owning households are also very dependent on public transport for their mobility.

4.2 Effects of Changes in Service Levels and Fares

The main findings in regard to the expected effects of changes in public transport service levels and fares changes are set out below.

- The likely response to 'negative' changes in service levels and fares (reduced service, increased fares) differs markedly between different groups of public transport users:
  - People in no-car owning households will generally reduce their activities and travel, or change their activity destination.
  - Little difference will occur in the activities of people in higher car-owning households, with a high proportion of them switching to car where necessary.
- The likely impact on personal welfare from 'negative' changes in service levels and fares varied on a similar basis:
  - The majority of respondents considered they would be worse off if there was no public transport service at all.
  - People in no-car owning households would suffer the greatest negative effect, with nearly all considering themselves much worse off (financially, socially, emotionally).
  - People in higher car-owning households would be able to adjust to the changes without great impact.
- Virtually all work trips, and most education trips, would continue to be made even if no public transport service was available. Only a third of workers considered themselves to be worse off under this scenario.
- The impact on mobility and access of 'negative' changes in service levels and fares varied depending primarily on car ownership and age:
  - A significant proportion of people in no-car owning households would have reduced mobility. Although they would still have access to essential local services and shops, their perceived standard of living would drop appreciably given their lack of access to 'better' services and shops in other areas.
  - Within this group, elderly and single-parents would suffer the most disadvantage, having to reduce activities significantly, and having to rely on friends and family for their mobility.
- Long-term impacts differ markedly from short-term impacts, with many respondents envisaging lifestyle changes which they could make to minimise the impact of the changes in public transport service and fare levels. However, these changes would come at a significant cost for many users, particularly those in no-car owning households.
- Many of the types of impacts from changes in service and fare levels are difficult to quantify in financial terms. Examples of these are: restricted social life, less choice in shopping centres, reduction in ability to visit friends and relatives.

ABSTRACT

A research project was carried out between 1995 and 1997 to review available data about the patterns of use of existing public transport services in New Zealand and responses to service cuts or fare increases, particularly by 'public transport-dependent people'; and to undertake targeted surveys to investigate how present users in selected subgroups would be affected by service cuts and/or fare increases. It assessed the degree of loss of mobility and access (if any) which would be experienced by this group in the event of changes to service levels and fares; and it assessed the effect of these changes on individual and household welfare.

The survey included an analysis of existing data (Part 1), and of current use which was obtained from a household telephone survey (Part 2) and a personal interview survey (Part 3), of public transport services in New Zealand. The study conclusions (Part 4) list the findings on people's dependence on public transport and the effects of changes in service levels and fares on their use of public transport. Appendices complement the report.

INTRODUCTION

The total government funding to passenger transport in New Zealand is some $86M pa (per annum), of which $28.6M pa is funded by Transfund New Zealand through the National Land Transport Programme (1994/95 NLTP, Output 5). A major rationale behind this government funding for passenger transport, particularly from central government, is that it provides benefits to 'public transport-dependent people', by enabling higher levels of service and/or lower fares than would otherwise occur.

However, hitherto few empirical data have been available about the current levels and patterns of use of public transport by 'public transport-dependent people', and about how such people would be affected by funding cuts. These data are required to assist in evaluating the benefits of government funding of public transport.

A research project was carried out between 1995 and 1997 to review existing New Zealand data in regard to patterns of use, or usage, of existing passenger transport services and responses to service cuts or fare increases, particularly by 'public transport-dependent people', and to undertake targeted surveys to investigate how present users in selected subgroups would be affected by service cuts and/or fare increases.

The overall objective of this project was to:

> *Obtain empirical data on the likely impacts of and responses to service reductions and/or fare increases affecting public transport-dependent people, to assist in the valuation of passenger transport financial assistance to people dependent on public transport.*

This was broken down into three objectives to:

(a) Determine the likely responses to changes in public transport service levels and fares by present users who are considered to be more dependent on public transport for their mobility than average;

(b) Assess the degree of loss of mobility and access (if any) which would be experienced by this group in the event of changes to service levels and fares; and,

(c) Assess the effect of these changes on individual and household welfare.

The project was undertaken in two stages:
Stage 1 : Analysis, in 1995, of existing New Zealand public transport data relating to:

- The levels and usage of public transport services, analysed by relevant market segmentation variables, e.g. car availability, income group, age group, availability of other transport modes.

- Attitudinal data relating to public transport and reasons for its use or non-use by different market groups.

- Evidence on likely responses of different market groups to service reductions and/or fare increases, with a particular focus on how public transport-dependent groups might be affected and evidence on any hardships caused.
  Travel characteristics of people with disabilities are also described.

Part 1 of the report contains this information, and *Appendices 1 to 5* complement it.

Stage 2 : Surveys to assess current usage of passenger transport.
The surveys were of public transport-dependent groups, and the effects of service reductions and/or fare increases on these groups. A two part survey approach was adopted, each of which is recorded in Parts 2 and 3 of the report as follows:

Task 1- *Household Telephone Survey*: a random survey in Wellington and Hamilton to enable a more sophisticated segmentation of the market by public transport dependence, and to recruit a sample of public transport-dependent people for the personal interview survey. This is *Part 2* of the report.

Task 2- *Personal Interview Survey*: a more in-depth survey of people's likely response to a number of public transport scenarios, and the impact of these on their welfare. *Part 3,* and *Appendices 6 to 9,* of the report contain this information.

PART 1
ANALYSIS OF EXISTING PUBLIC TRANSPORT DATA

1. INTRODUCTION

Although records are kept of the number of passenger trips made on public transport, very little data are collected about the usage (patterns of use) by market segment (apart from by ticket type, which is primarily used for revenue assessment). Where usage has been investigated it has focused on the proportion of public transport trips undertaken by different groups rather than the relative importance of public transport to that particular market segment.

The importance of public transport to market segments is the focus of this study which was carried out in 1995. The approach undertaken has therefore been to analyse data collected in general transport surveys, normally through household interviews (telephone or face-to-face). The major regional councils (servicing public transport services) were approached and data were made available by the Wellington, Auckland and Canterbury Regional Councils. The results of this analysis are reported.

This Part 1, which sets out the results of Stage 1 of the project, is structured as follows:

- Chapter 2 - sets out an analysis of use patterns of existing public transport services by different market segments, based on data from household interview surveys.

- Chapter 3 - summarises attitudinal data on reasons for use/non-use of public transport and on factors affecting usage.

- Chapter 4 - summarises New Zealand evidence on likely responses of different market segments to service cuts/fare increases.

- Chapter 5 - presents available data on the travel characteristics of people with disabilities, and their usage of public transport services.

Appendices to this Part 1 are placed at the end of the report, and are as follows:

1 - Literature review of market segmentation and target markets.
2 - Summary of the trip rate analysis of Wellington Regional Council GATS survey data.
3 - Literature review of attitudinal evidence in regard to usage of public transport.
4 - Review of New Zealand evidence on public transport fares and service level elasticities.
5 - Report of study of effects on former passengers of withdrawal of bus services in Tauranga.

2. USAGE OF EXISTING PUBLIC TRANSPORT SERVICES

2.1 Market Segmentation Variables

A recent study undertaken for the Canterbury Regional Council (CRC) by Travers Morgan NZ (TMNZ) in conjunction with T. Francis & Associates, reviewed literature relating to public-transport market segmentation variables and carried out a household telephone survey to determine likely responses to changes in service features (TMNZ et al. 1993, copy of relevant portion of report is attached as Appendix 1). An analysis of the literature review and survey results shows that the most important market segmentation variables are:

- Income
- Gender
- Age
- Car Availability (incorporates ability to use car as driver, and holder (or not) of a driver's licence).

The CRC household interview data were analysed by these four variables.

2.2 Analysis of Regional Council Data

Three of the major regional councils (Auckland, Wellington, and Canterbury) were asked if they could run the following cross-tabulations on their household interview data. (Note: Waikato and Otago had not recently undertaken a household survey and were not able to participate.)

- Income x Age x Gender - Number of people in each category - Modal Split (% car driver /car passenger /public transport /walk /cycle & average number of trips for each mode)
- Income x Gender x Car Availability (or Car Ownership) - Number of people in each category - Modal Split (% car driver /car passenger /public transport /walk /cycle & average number of trips for each mode)
- Age x Gender x Car Availability (or Car Ownership) - Number of people in each category - Modal Split (% car driver /car passenger /public transport /walk /cycle & average number of trips for each mode)

Car availability linked to driver licence was the preferred variable, i.e. *"was a car available to you as a driver (if holding driver's licence) or as a passenger for your trip?"* If this was not available, household car ownership was to be used as the best substitute.

2.2.1 Wellington Regional Council Surveys

In 1988 the Wellington Regional Council (WRC) conducted telephone household interviews as part of its GATS (Greater Wellington Area Transport Survey) model development process. The data from these interviews were used for this exercise. The WRC was able to run the cross-tabulations in a form similar to that requested. The results are summarised below.

2.2.1.1 Transport mode by individual variable

Figures 2.1 to 2.4 show the transport mode usage (9 modes grouped into 3 mode groups) by individual market segmentation variable.

Figure 2.1 % trips made, by income (1995 $NZ) versus transport mode (motor vehicle, public transport, slow), from WRC data.

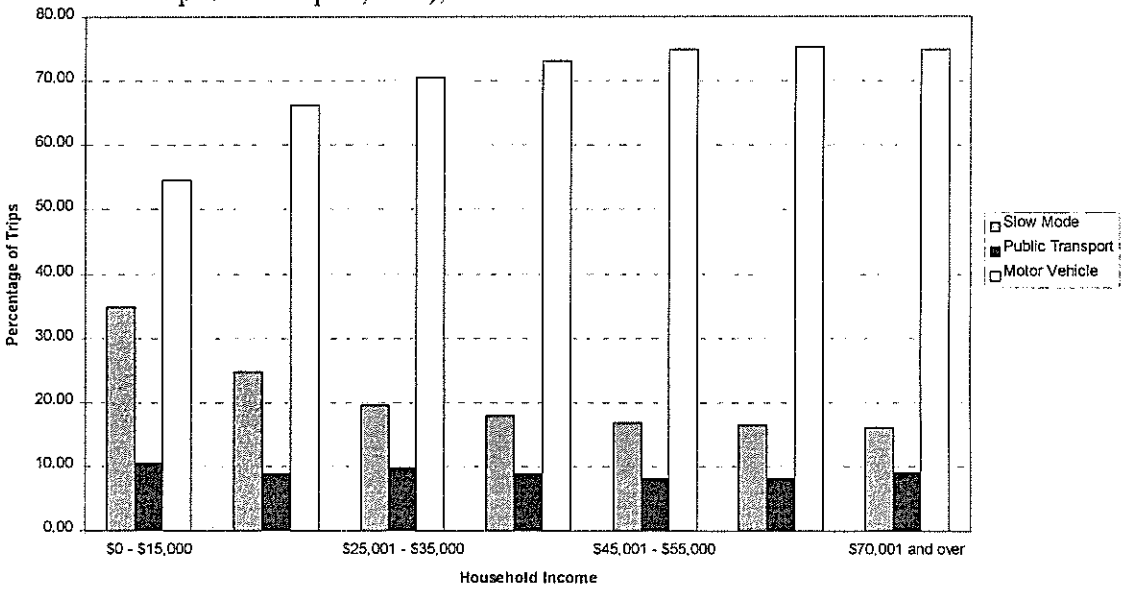


Figure 2.2 % trips made, by age of users versus transport mode (motor vehicle, public transport, slow), from WRC data.

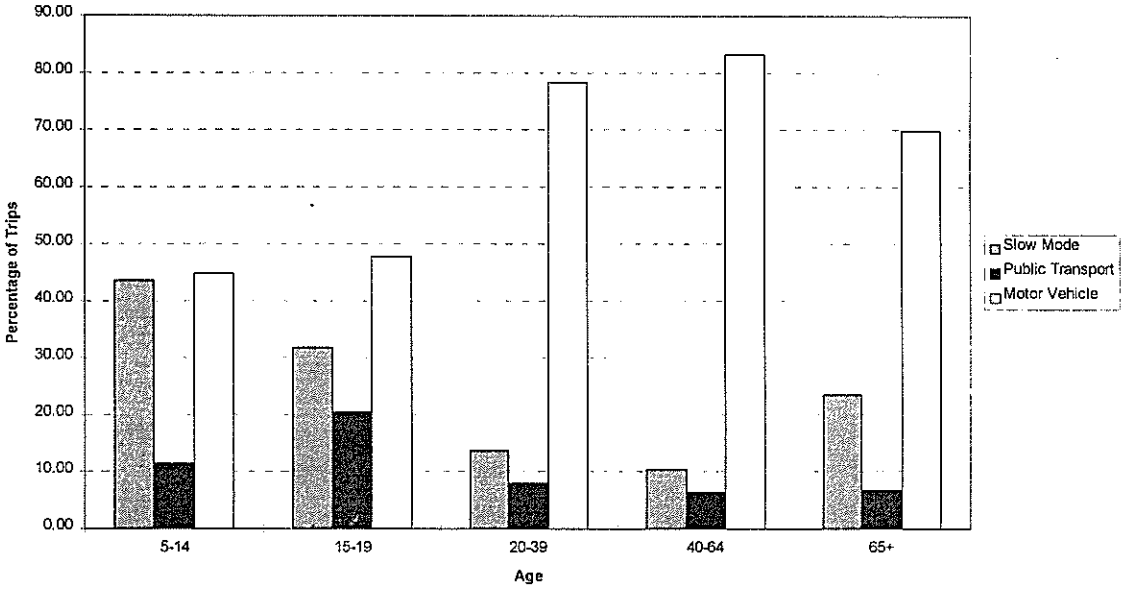


Figure 2.3 % trips made, by gender versus transport mode (motor vehicle, public transport, slow), from WRC data.

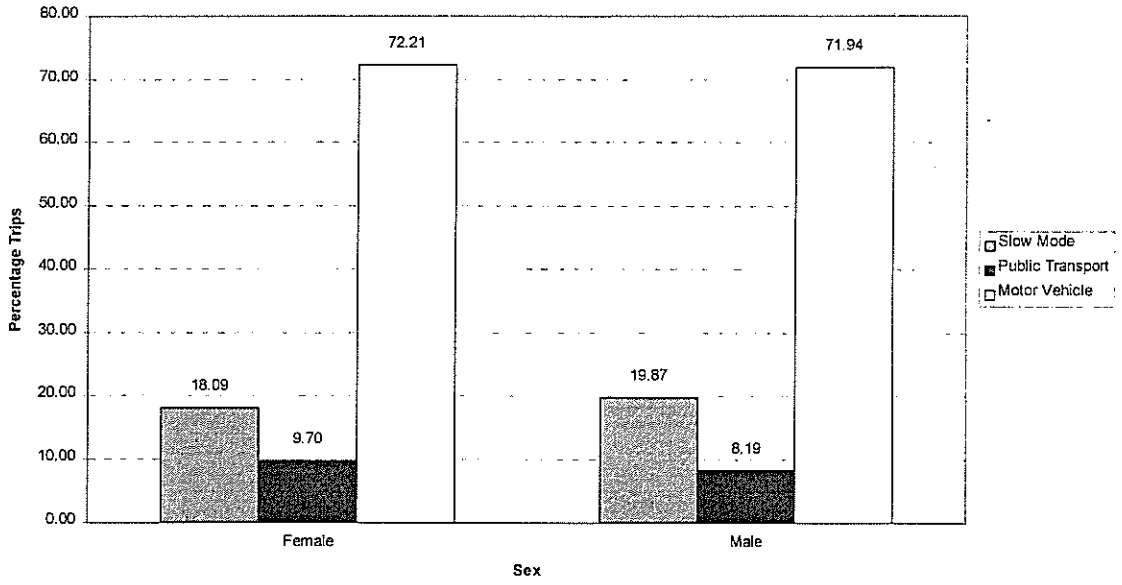
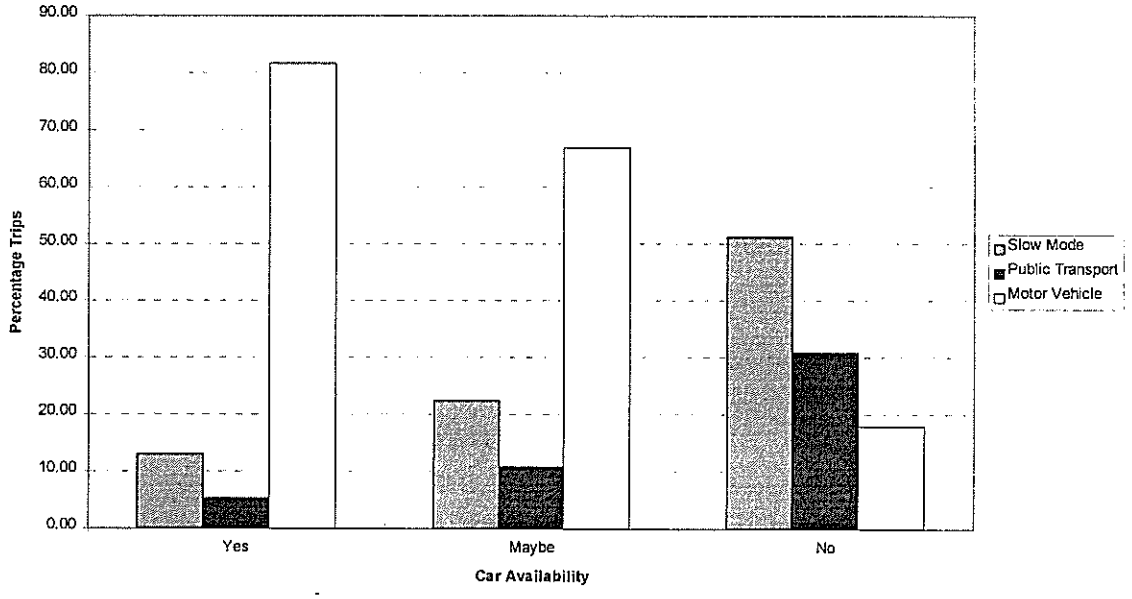


Figure 2.4 % trips made, by car availability versus transport mode (motor vehicle, public transport, slow), from WRC data.



Several observations can be made regarding these graphs:

- Income: on its own, income is not a significant factor influencing the degree of public transport usage.
- Age: the 15-19 year age group makes twice the proportion of trips by public transport as all other groups, although this is still only 20% of trips made by this group.
- Gender: there is little difference between males and females in proportion of trips made by public transport.

- Car Availability: this is the most significant single variable. The WRC has three categories of car availability: Car available without competition; Car available with competition; No car available in household (Yes, Maybe and No categories respectively, in Figure 2.4). The No group made over three times the proportion of trips by public transport as the Maybe group, and six times the Yes group level. However, even for the No group, only 30% of their trips were by public transport, with over 50% being by slow mode, and nearly 20% by car.

2.2.1.2 Cross-tabulations

Figures 2.5 to 2.7 show the results of the cross-tabulations run on the WRC data. The main findings from the WRC cross-tabulations are:

- Although gender was not a major variable on its own in affecting mode choice, it becomes important when related to age and income, with females showing a greater propensity to use public transport than males in the 15-19 age group and in the 65+ age group.

- Although income was not a significant variable on its own in affecting mode choice, it is important when related to car availability. People with no car available in the middle income group, made over 40% of their trips by public transport (compared to 30% for the no-car group as a whole).

- People in the middle age groups (20-39 and 40-64 years) who did not have a car available made over 30% of their trips by public transport compared to the age group average of under 10%.

Figure 2.5 % trips made by public transport, by income x age x gender, from WRC data.

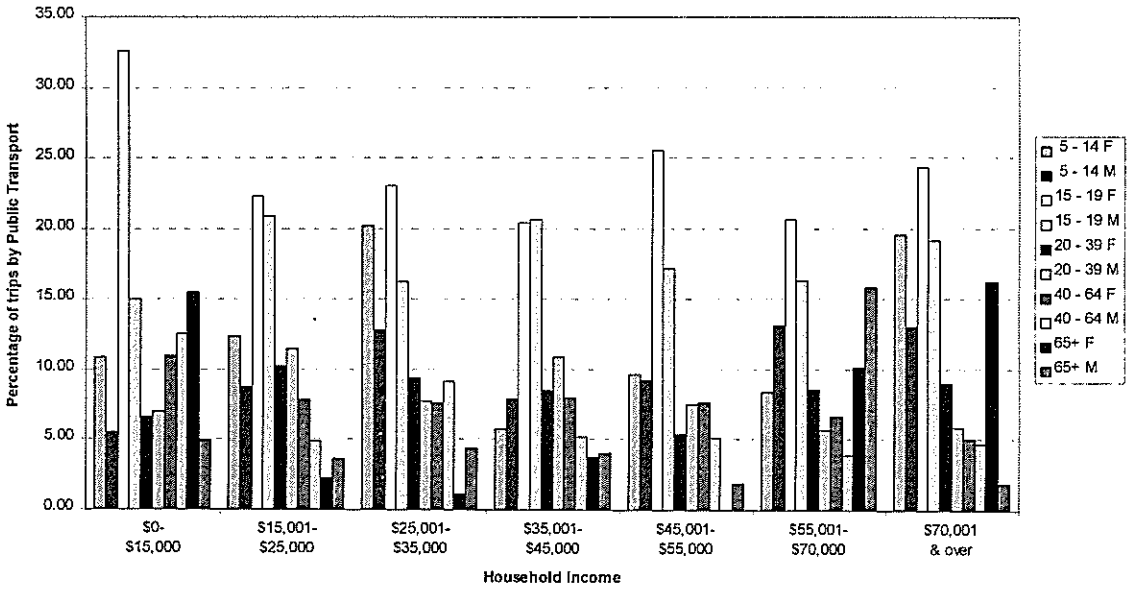


Figure 2.6 % trips made by public transport, by income x gender x car availability, from WRC data.

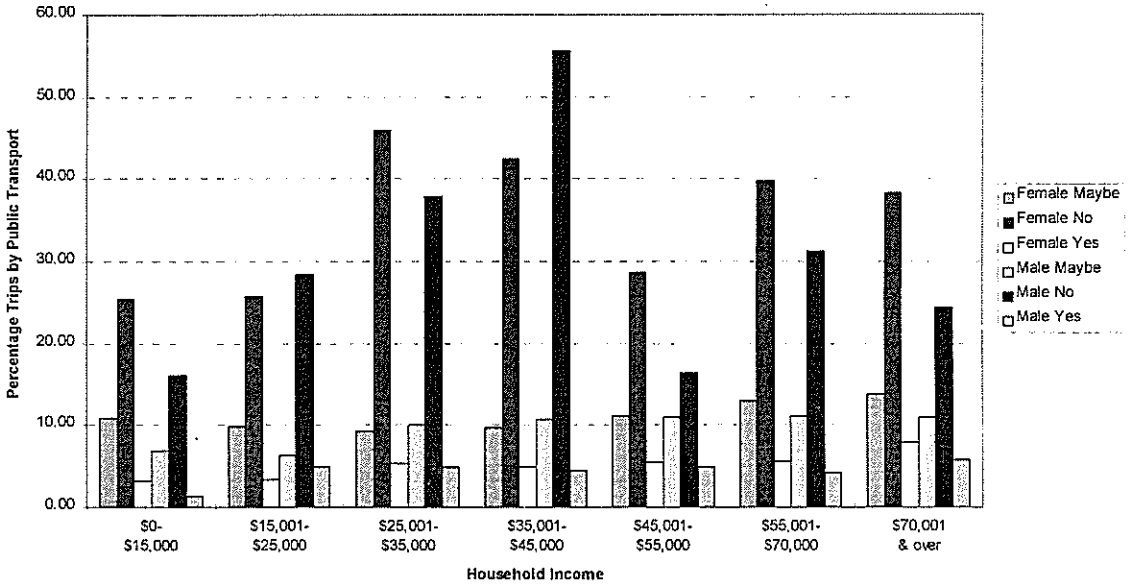
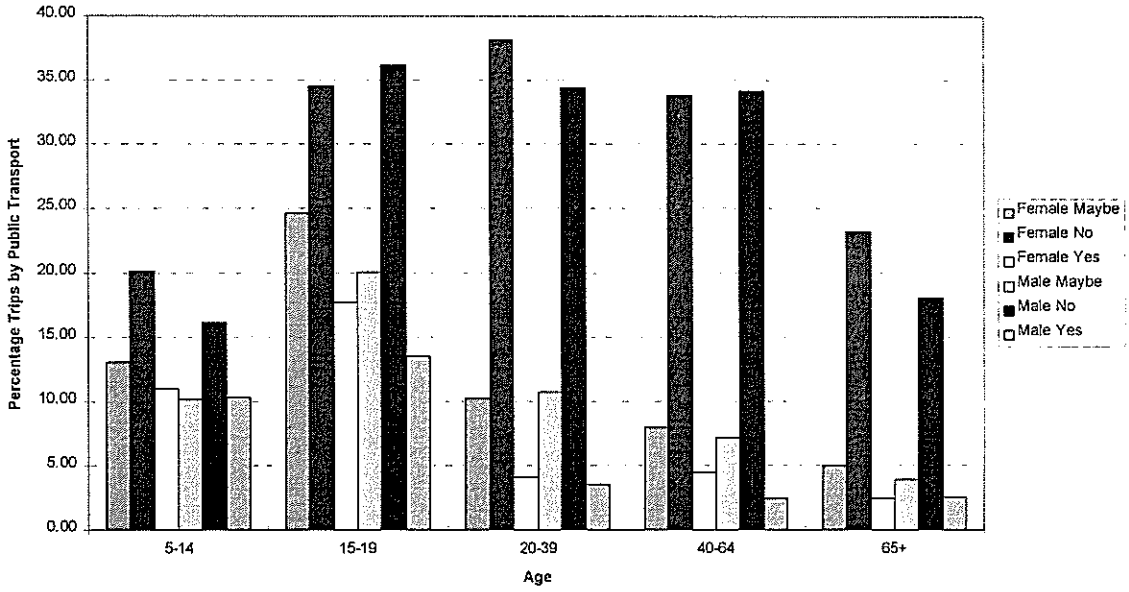


Figure 2.7 % trips made by public transport, by age x gender x car availability, from WRC data.



2.2.1.3 Trip rate data

Public transport trip rates have also been calculated for each of the individual variables and cross-tabulations (the WRC trip rate graphs are attached in Appendix 2). The relationship between variables when trip rates are graphed is similar to that for the proportion of trips by public transport graphs.

2.2.2 Auckland Regional Council Surveys

In 1992 the Auckland Regional Council (ARC) conducted 10,000 telephone household interviews as part of its transport model development process. The data from these interviews were used for this exercise. The ARC does not have data on travel behaviour by gender, and the cross-tabulations have been run without this variable.

2.2.2.1 Transport mode by individual variable

Figures 2.8 to 2.10 show the transport mode usage (17 response categories grouped into 3 mode groups) by individual market segmentation variable. (The car availability classification used by ARC was: choice - a car was available for that particular trip as a driver; captive - all other situations.)

Figure 2.8 % trips made, by income versus transport mode, from ARC data.

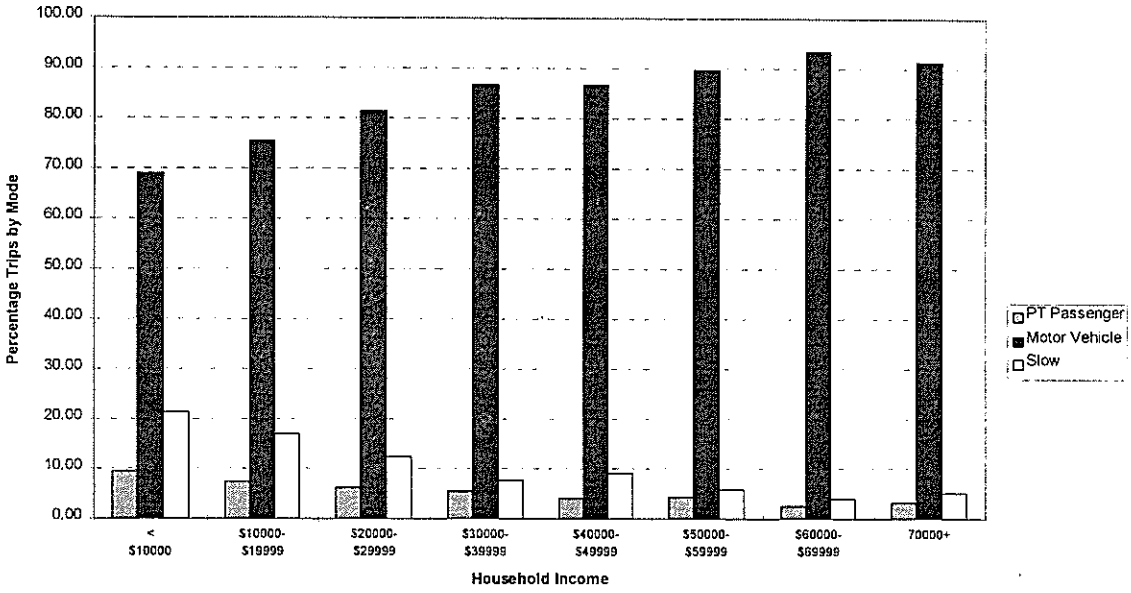


Figure 2.9 % trips made, by age versus transport mode, from ARC data.

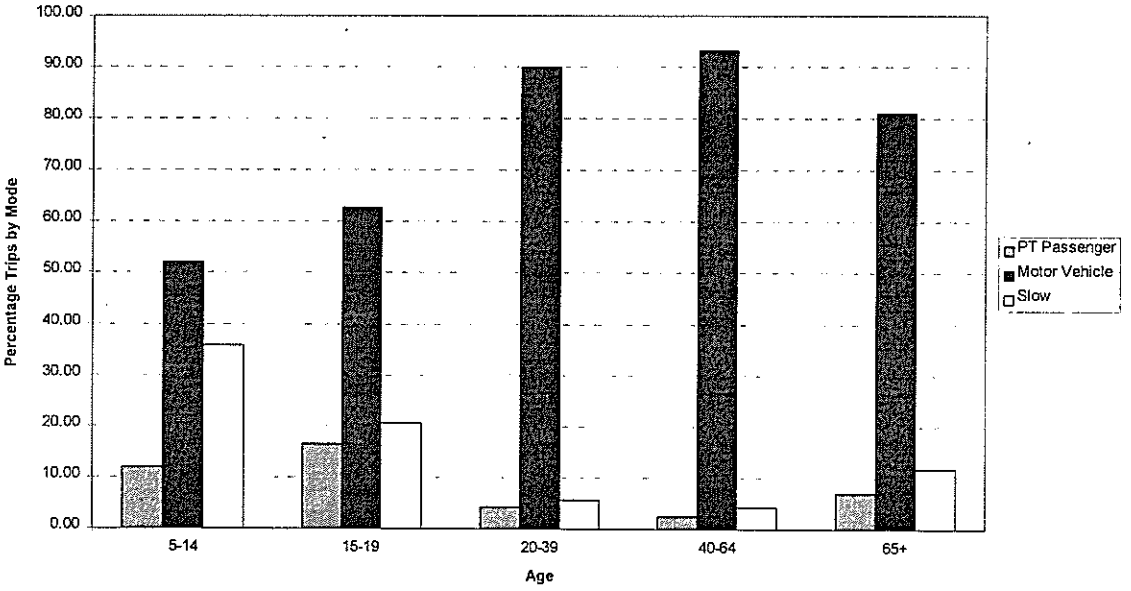
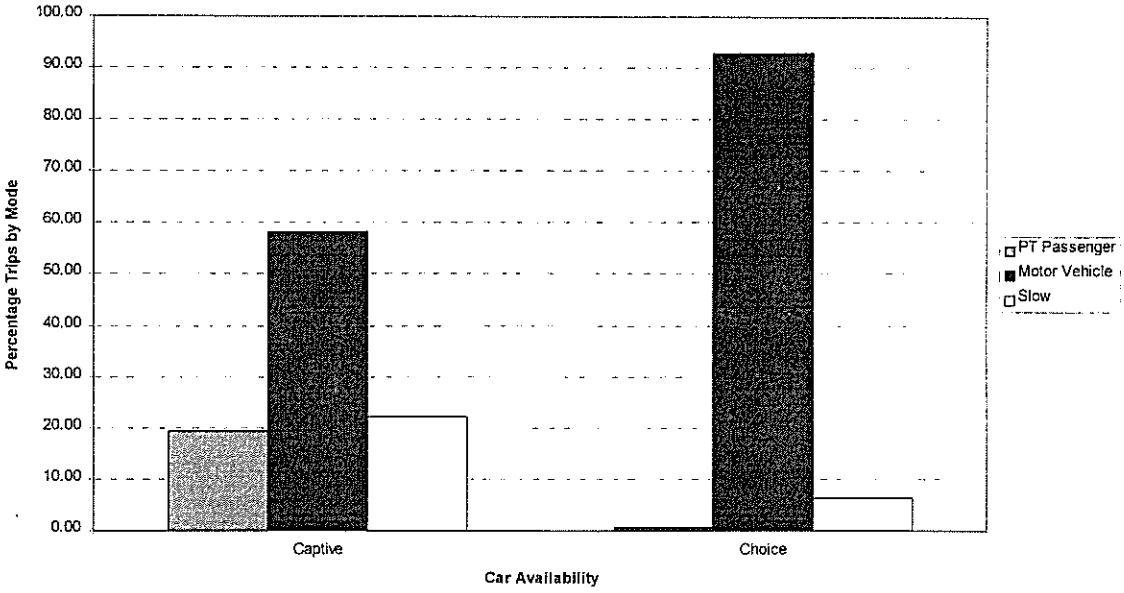


Figure 2.10 % trips made, by car availability versus transport mode, from ARC data.



Several observations can be made in regard to these graphs:

- Public transport usage decreases significantly as income increases,
- Public transport usage is very low for the 20-64 age groups (< 5%), and increases again for the 65+ age group,
- Extremely low level of public transport usage by choice travellers,
- The level of public transport usage is significantly lower for the ARC data than for the WRC data.

2.2.2.2 Cross-tabulations

Figures 2.11 to 2.13 show the results of the cross-tabulations on the ARC data. A number of comments can be made:

- The 5-14, 15-19, and 65+ age groups have the highest proportion of trips by public transport, with the highest levels being at lower income levels,
- The 'captive' group has higher public transport usage at lower income levels, with the highest usage for the 'choice' group being in the middle income levels,
- Relating age to car availability shows captive users in the 15-19 age group have the highest proportion of trips by public transport, followed by the 20-39 age group and then the 65+ age group.

Figure 2.11 % trips made, by income x age x public transport use, from ARC data.

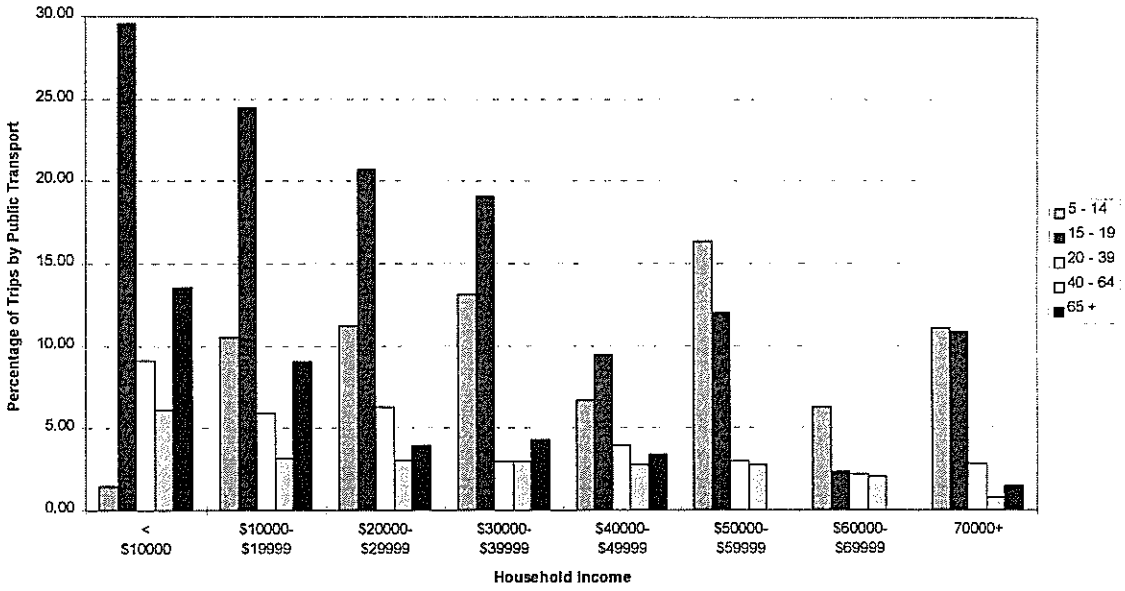


Figure 2.12 % trips made, by income x car availability x public transport use, from ARC data.

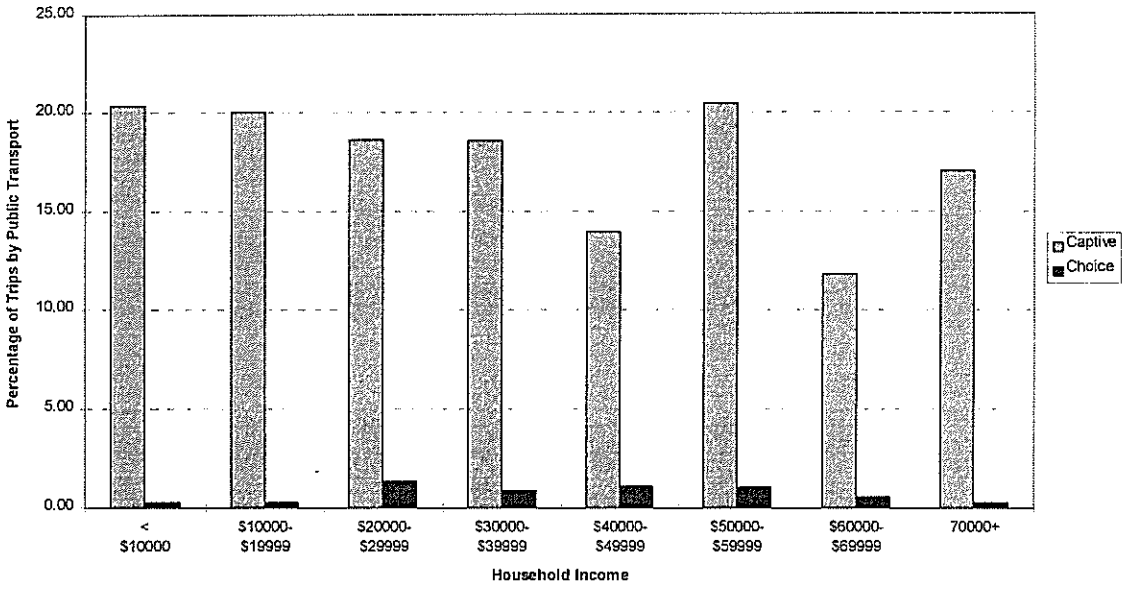
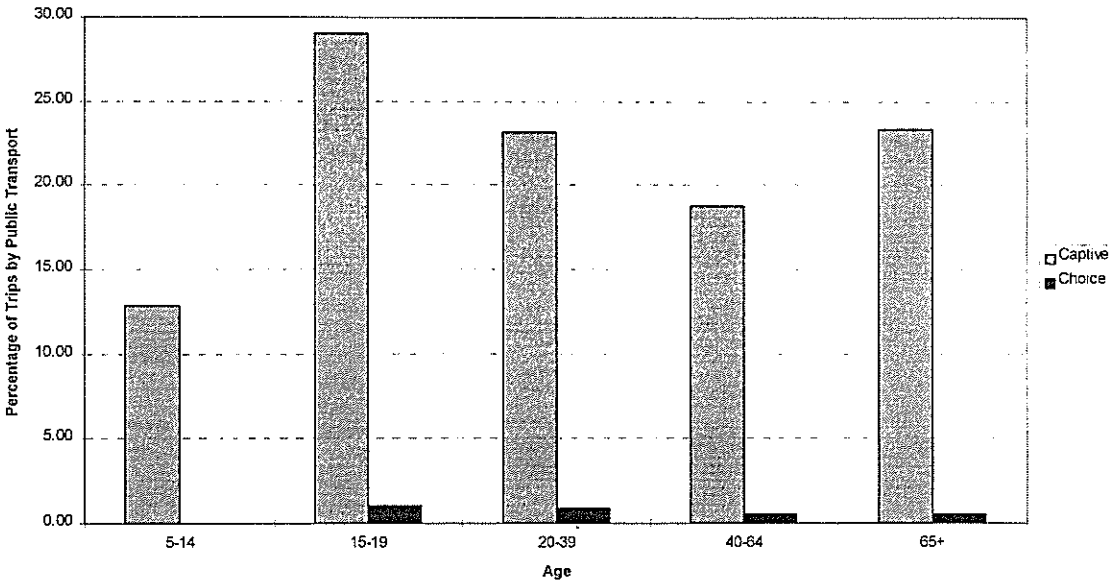


Figure 2.13 % trips made, by age x car availability x public transport use, from ARC data.



2.2.3 Canterbury Regional Council Surveys

The Canterbury Regional Council (CRC) conducted 8000 household interview surveys in 1990 and 1991 to assist in development of the Christchurch Transport Study models. The data from these surveys have been used for this analysis. The only data made available were those for the Income x Gender x Car Availability cross-tabulation, reported in Figures 2.14 and 2.15.

The classification used by the CRC for car availability was: Not Available = no vehicle in household; Available As Driver = 1 or more vehicles in household and person held a driver's licence; Available As Passenger = 1 or more vehicles in household and person did not hold a driver's licence.

Several observations can be made on the CRC data and results:

- A number of categories were not covered by the survey sample, and the numbers involved in several categories were very small (e.g. Female, car not available, $35,000-$45,000 and Female, car not available, $70,000+), so that drawing conclusions was more difficult.
- Overall the proportion of trips by public transport is very low (on a similar scale to Auckland), with most groups making less than 3% of their total trips by public transport.
- The availability of a car had a significant effect on public transport usage, with people in the middle income groups ($45,000-$55,000) who did not have a car available making the greatest proportion of their trips by public transport (a similar result to that for WRC).
- The numbers and % of public transport trips show a similar pattern to that for the proportion of travel by public transport.

Figure 2.14 % trips made, by public transport, by household income (NZ$) x gender x car availability, from CRC data.

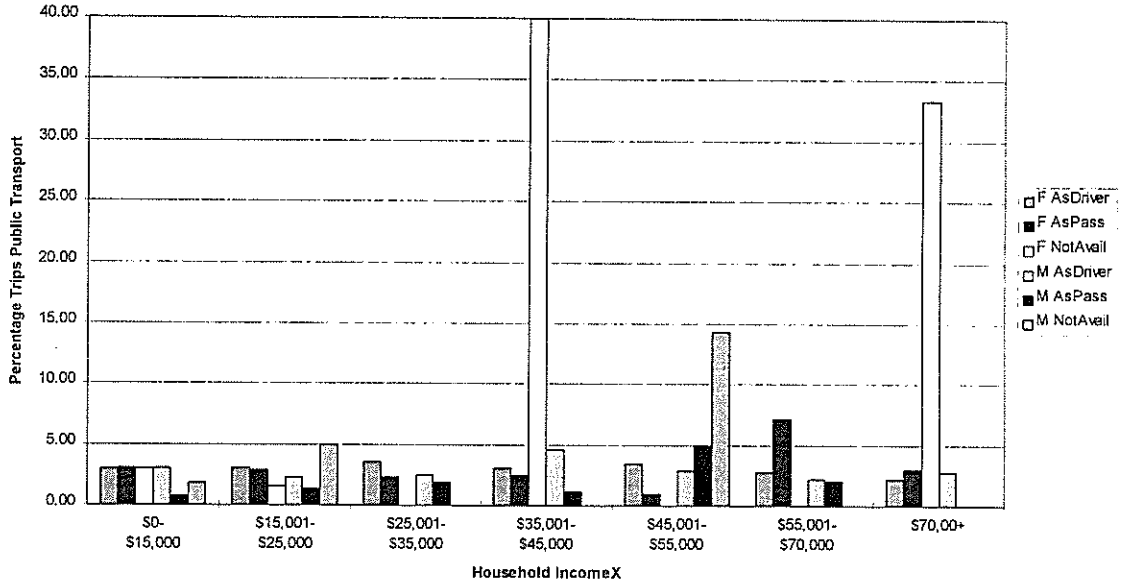
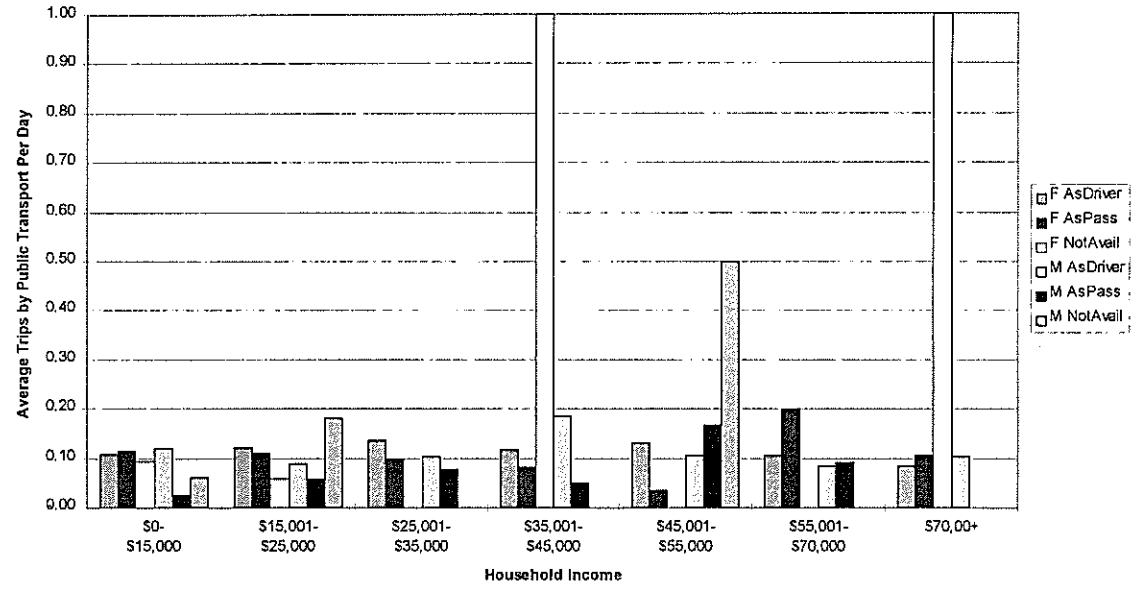


Figure 2.15 % trips made by public transport per day, by household income (NZ$) x gender x car availability, from CRC data.



2.3 Conclusions from Usage of Existing Public Transport Services

Table 2.1 (which is based on the WRC data) shows, for each subgroup resulting from the age x car availability cross-tabulation, the % of the age group to the total population, the % of total public transport trips made by each age group, % of trips made by public transport and related by age; and the public transport trip rate of age each group. Analysis of this table, and of the other results reported in this Chapter 2, reveals the differences in dependence on public transport by different groups within the population.

Table 2.1 Age x Car availability public transport matrix, from WRC data.

Car Availability	Age group (years)					All Age Groups
	5-14	15-19	20-39	40-64	65+	
Percentage of Total Population						
Yes	8.57	3.21	20.13	12.52	3.58	48.01
Maybe	6.57	5.45	15.81	12.24	3.58	43.65
No	1.21	0.80	2.70	1.50	2.13	8.34
Total	16.35	9.46	38.64	26.26	9.29	100.00
Percentage of Total Public Transport Trips						
Yes	9.18	5.44	10.73	5.51	0.69	31.55
Maybe	6.85	11.91	19.63	10.65	1.06	50.10
No	1.42	2.30	8.71	3.48	2.43	18.34
Total	17.45	19.65	39.07	19.64	4.18	100.00
Percentage of Person Trips Made by Public Transport						
Yes	10.64	15.04	3.80	3.38	2.50	5.30
Maybe	11.48	22.29	10.48	7.54	4.38	10.76
No	18.28	35.14	36.43	34.00	21.95	30.80
% PT trips	11.36	20.44	7.92	6.25	6.67	8.93
Public Transport Trip Rate (Trips/Person/Weekday)						
Yes	0.34	0.53	0.17	0.14	0.06	0.21
Maybe	0.33	0.69	0.39	0.27	0.09	0.36
No	0.37	0.90	1.01	0.73	0.36	0.69
PT trip rate	0.34	0.65	0.32	0.23	0.14	0.31

Notable features of these results include:

- The relatively high public transport trip rate for the 15-19 age group as a whole (over twice the average for all age groups); and the relatively low trip rate for the 65+ age group as a whole (under half the average for all age groups).
- For all except the youngest (5-14) age group, the much higher trip rates for people with no car available than for those with a car available (with the 'maybe' category between). In the different age groups, the No Car: Car-public transport trips ratios are around 6 for adult age groups (age 20+), 1.7 for 15-19 age group and close to 1.0 for 5-14 age group.

Based on these assessments, the 'primary' public transport-dependent groups are considered to be :

- People who do not have a car available for their use; and,
- People aged between 15 and 19 years of age.

These two groups make a significantly higher proportion of their trips by public transport than other groups, and have much higher public transport trip rates. Taken together, these two groups made up around 17% of the total population and account for 36% of all public transport trips based on WRC data, or 26% based on CRC data.

The 'secondary' public transport-dependent groups are:

- People aged between 20 and 39 years of age who may have a car available for their use; and
- People aged between 5 and 14 years of age who have a car in the household.

Taken together, these two groups make up around 31% of the total population and account for around 36% of all public transport trips (WRC data). Further comments in regard to the 'primary' public transport-dependent groups follow.

(i) People who do not have a car available for their use

People without a car available for their travel (even under the three different definitions used by the three regional councils), make a much larger proportion of their trips by public transport than those who have a car available or may have access to a car. Their transport options are more limited than other segments of the population, and they also make a much higher proportion of their trips by 'slow mode' than those with access to a car. The groups with no car in the household made 18.4% of the total public transport trips in the WRC survey and 6.8% of total public transport trips in the CRC survey. In the ARC survey 91% of public transport trips were made by 'captive' passengers (no car available as a driver).

The groups with no car available in the household make up 8.3% of all people in both the WRC data and the CRC data. (No details on the number of people are presently available for the ARC data.) Analysis of the WRC data shows that this group is made up predominantly of people from low and middle income households (38% of no-car group have incomes < $15,000, compared to 8.7% of the total population; and 62% of the no-car group have incomes < $25,000, compared to 19.6% of the total population).

In terms of age breakdown, analysis of the WRC data showed that all age groups are represented in the no-car-available group. The proportions of the different age groups are broadly similar to their presence in the total population, apart from the 65+ age group (which make up over 25% of the no-car group but are only 9% of the total population) and the 40-64 age group (which make up less than 18% of the no-car group but are over 26% of the total population).

(ii) People aged between 15 and 19 years of age

The 15-19 age group make significantly more trips by public transport than all other age groups (this is particularly accentuated by separating out the female 15-19 age group). This group made up 9.5% of the total population, and made 19.7% of the total public transport trips (WRC data). Around 8.5% of this age group did not have a car available at all for their travel, but around 34% definitely had a car available, the lowest proportion of all age groups. Around 60% had a car available 'with competition', meaning that their travel options may in practice be relatively limited.

3. ATTITUDINAL DATA

3.1 Data Sources

A number of New Zealand studies have included questions relating to the attitudes of public transport users and non-users (travel by other modes) to public transport services. In most cases this has focused on attitudes towards different public transport service features, particularly in regard to likely response to improvements in these features. In 1993 TMNZ carried out a literature review of attitudes to public transport for the CRC. This review is the main source for this Chapter 3 of the report. A copy of the literature review is attached as Appendix 3.

3.2 Reasons for Travel Mode Choice

The most relevant New Zealand data is from a 1991 study conducted by Steer Davies & Gleave (SDG) for the WRC. This found that the main reasons (unprompted) determining choice of travel mode were, in descending order (Table 3.1, which provides a further breakdown of the SDG results by present mode of travel):

- 'Convenience' factors - 53% overall
- 'Comfort' factors - 21% overall
- 'Cost' factors - 15% overall
- 'No alternative' - 7% overall

Table 3.1 Main reasons for mode choice.

Main Reason	Car Users (%)		PT Users (%)		Slow Mode (%)	
	Work Trips	Other Trips	Work Trips	Other Trips	Work Trips	Other Trips
Convenience Factors	68	56	52	49	40	34
Comfort Factors	8	28	9	13	39	47
Cost Factors	18	4	22	11	15	15
No Alternative	4	-	15	17	2	4

Note: PT - Public Transport; Slow Mode - cycle and walk

These results show that 'convenience' (including travel time) is the most important reason for mode choice for users of all modes, and it is most significant for car users. The principal types of convenience factors for each mode are:

- Car users - travel time, access flexibility, general convenience,
- Public transport users - parking problems, general convenience, access problems,
- Slow mode users - quicker, shorter distance.

'Comfort' is more important for slow mode users, and for car users on non-work related trips. The principal types of comfort factors for each mode are:

- Car users - baggage handling (non-work trips),
- Public transport users - relaxing, reliability,
- Slow mode users - healthy, relaxing.

'Cost' is of similar importance for all modes, apart from car users on non-work trips when it is barely significant.

'No Alternative' is only significant for public transport users, where it is the major reason for about 15-17% of all users. These represent those people who are truly 'captive' to public transport, i.e. if no service was provided their travel options would be severely affected.

In addition, SDG asked respondents to rank seven generic factors in order of importance to their choice of travel mode. Overall ratings, on a scale of 7 (most important) to 1 (least important), were:

- Convenience 6.1
- Cost 5.1
- Safety 4.8
- Comfort 4.5
- Environment 3.7
- Information 2.2
- Image 1.7

These rankings did not differ substantially by the mode used or between work and non-work trips.

3.3 Reasons for Use or Non-use of Public Transport

3.3.1 New Zealand Research

A number of New Zealand studies have covered the reasons for use or non-use of public transport and these are summarised in Table 3.2.

3.3.2 Overseas Research

The results of a number of overseas studies in regard to the reasons for use/non use of public transport are summarised in Table 3.3.

Table 3.2 Reasons for use or non-use of public transport, obtained from New Zealand studies.

Study Title	Study Description	Main Reasons for Use of Public Transport	Main Reasons for Non-use of Public Transport
Bus Transport Christchurch 1984	Telephone survey of 500 people in Chch area	- do not own car -24% - convenience -22%	- prefer convenience of own car
PT Requirements North of the Waimakariri River	On-board bus survey, telephone survey, group discussions for study area	- no car available -71% - bus cheaper than car -14% - car parking difficult - 6%	- car more flexible, comfortable, convenient & faster - bus inconvenient & difficult to use - unaware of bus timetables
Profiles of Commuter Groups Using Public and Private Transport in Hamilton	Survey of commuters in Hamilton		- not fit with work hours -28% - walk distance to/from bus -17% - travel time -12% - need use of car -11%
Public Transport Survey-March 93	Dunedin free bus day - March 1993: post-back householder survey (form in free paper) & on-bus survey	In descending order: - parking - cost - environmental concerns - convenience	- not as convenient as car - fares too high - buses uncomfortable & crowded
Palmerston North Public Transport Study (1990)	Telephone survey of transport-disadvantaged people; consultations community groups; public submissions; on-bus survey; bus-user attitude survey	In descending order: - no car - other - cheaper than car - no parking - did not state - quicker than car	In descending order: - prefer to walk or bike - can borrow car/get a lift - too expensive - inconvenient - don't know timetable - wrong times
Non-Regular User Market Research Project-Survey (1993)	Random household telephone survey in Christchurch - 200 people		In descending order: - prefer convenience of own car - bus takes too long - no service to destination - carrying parcels, groceries etc. - have company car - cycle/walk for exercise - no service at time of trip
Bus Passenger Survey, 1985/86 & 1989	Survey of bus passengers; household telephone survey	- no car available - car parking - no driving licence - no other options	- car more convenient - does not go to desired destination

Table 3.3 Reasons for use or non-use of public transport, obtained from overseas studies.

Author/Date*	**Study Description**	**Main Reasons for Use of Public Transport (PT)**	**Main Reasons for Non-use of Public Transport**
John Paterson Urban Systems (1977)	Users of Sydney CBD parking stations surveyed		- car more flexible/conv -49% - car quicker -17% - PT unreliable -13% - PT too crowded -10% - no service -7% - car cheaper -2% - other -1%
STA SA (1992)	STA Adelaide Performance Tracking Study		- inconvenient 46% - bus not available or accessible locally -40% - need car during day -14% - don't like using public transport -4% - like independence of own car -3% - all others <1%
MTA Vic (1988)	Random household survey in Upfield corridor, Victoria	- convenience -46% - lack of alternatives -37%	- need car for other purposes -51%
Harris (1987)	Survey results, Redcar, UK	- no choice - bus users - speed - rail users	- convenience
Ampt et al.	Home interviews, Bristol, UK		- PT not reliable - PT too expensive - restriction on freedom of movement - low frequency
TAS (1991)			- cost - advantages of car - poor information - poor reliability
CIT (1993)	Contains summary of UK market research evidence on bus users and user attitudes		- convenience of car, & ease of use - bus not a conscious option
CIT (1993)	Contains summary of UTIP/EEC report on urban transport issues		- lack of convenient, direct service (esp. for work trips) - too slow - restricts travel options - other (cost, frequency, reliability)

* See Appendix 3 for references to studies

3.3.3 Summary

The main reasons for use of public transport, in descending order, are:

- No alternative/car not available for trip,
- Convenience,
- Cost,
- Parking difficulties.

The main reasons for non-use of public transport (particularly use of car in preference), in descending order, are:

- Convenience (including greater flexibility and comfort of other modes),
- Travel time,
- Need car during day/after work, etc.,
- Cost,
- Low level of public transport service (frequency, routes, information).

3.4 Factors Affecting Level of Public Transport Usage

3.4.1 Relative Importance of Public Transport Features

A common approach for determining how important different public transport service features are to public transport users, and thereby their relative effect on usage levels, is to ask users to rank the features against one another. New Zealand surveys have generally listed features in descending order of importance:

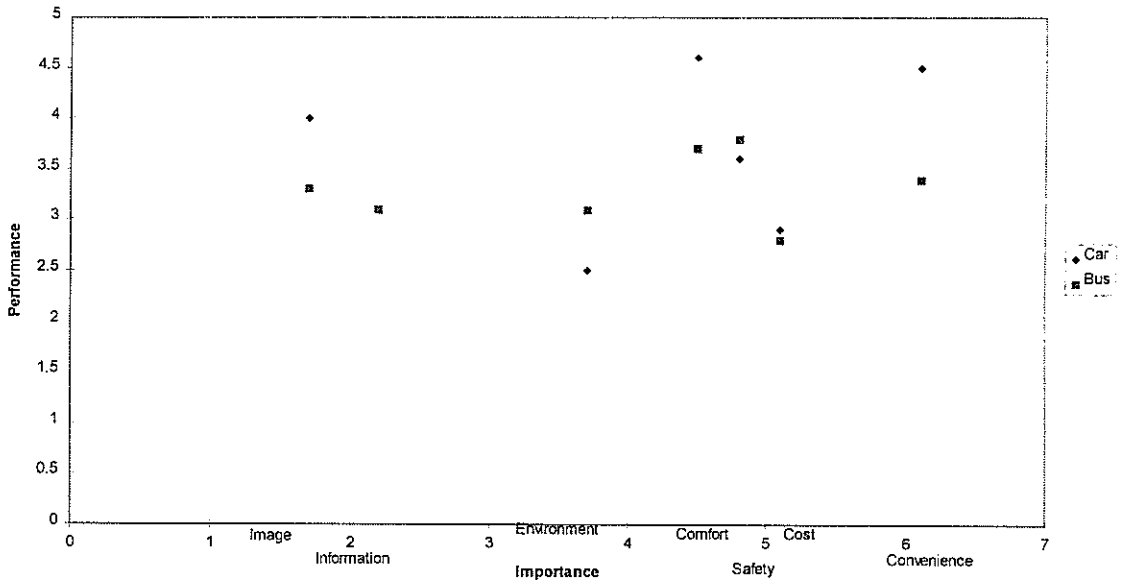
- Reliability (almost always first)
- Frequency, or convenient arrival/departure times
- Short access/egress distances
- Low/moderate fares
- Adequate timetables/information
- Availability of a seat
- Adequate evening/weekend services
- Avoidance of transfers
- Short travel/in-vehicle time
- Friendly/helpful drivers.

3.4.2 Importance versus Performance

Figure 3.1 shows the importance rating of different mode choice factors and the performance rating of these factors for both bus and car travel from recent Wellington research (SDG 1991).

From Figure 3.1 the car can be seen to perform better than bus on the most important mode choice factors (convenience and cost), with the bus performing appreciably better than car only on comfort, the fourth most important factor.

Figure 3.1 Ratings of importance versus performance of transport mode choice factors.



3.5 Attitudinal Differences by Market Segment

The findings of the New Zealand studies which have attempted to differentiate attitudes to public transport use and features by different market segmentation variables are summarised in Table 3.4.

From studies conducted so far, attitudes to different public transport service features, and the fare level, appear to vary significantly by:

- Age group:
  - younger people (15-29 years) more affected by higher fares, and less concerned about journey time than other age groups;
  - older people (over 60 years) have a more positive attitude to public transport use as a travel mode;
  - people in the mid-life group (30-44 years) are more interested in the level of service provided.

- Non-Driver Licence Holder:
  - this group (which is made up largely of the young and elderly) are more dependent on public transport (than licence holders) and will respond more quickly to fare decreases and service level increases.

Table 3.4 Findings of New Zealand studies about public transport (PT) attitudes by market segment.

Author/Date *	**Study Description**	**Study Findings**
Dawson, P.L. (1976)	1974 national survey of 3000 people to identify market segments with greatest potential for increasing PT patronage.	Three groups with common attitudes to PT identified: - (mainly pensioners & housewives) - favourable to PT on 3 most important factors: comfort, flexibility/speed & reliability - (mainly active mobile males) - unfavourable to PT on speed & flexibility, neutral on reliability & comfort - (mainly young single people) - neutral to PT re speed & flexibility, unfavourable on reliability & comfort
Steer Davies & Gleave (1991)	National survey of public attitudes to transport issues	- females more concerned about service frequencies than males - females (esp. aged 60+) rated ease of access more poorly - 60+ people more favourable views overall than younger groups - metropolitan area residents very critical of evening & weekend service levels
TMNZ (Sept 1992)	Telephone Survey (600 residents) & group discussions as part of project to develop PT strategy for Auckland North Shore	- infrequent services-greater problem than ave for 30-44 group, lesser for 60+ group - not enough destinations- greater problem than ave for 30-44, lesser for 60+ age group - have to transfer - much less of a problem for 15-29 and 60+ age groups - fares too high - greater problem for 15-29 age group - travel time too long - much lesser problem for 60+ group - not enough weekend/night services- greater problem for 15-29 group
TMNZ & Francis,T. (1993)	Random household telephone survey in Christchurch - 200 people	Responsiveness to different service improvements**: - trip origin/ destination - no major difference between trips to CBD & other trips - age groups 15-24 & 60+ most responsive, especially for door-to-door service, non-stop service & no parking - non-licence holders showed greater responsiveness than licence holders, especially for fares halved & frequency doubled - frequency of bus use - most frequent users are most responsive, especially for fares halved & frequency doubled - gender - little difference between male & female - trip purpose - little difference between work/education & other trips

* See Appendix 3 for references to studies.

** Improvement scenarios: halved fare, doubled frequency, no transfer, door-to-door service, non-stop service

3.6 Conclusions from Attitudinal Data

Analysis of the available data in respect to attitudes of public transport users to public transport service features, and reasons for mode choice show, in regard to the public transport-dependent groups identified earlier in the report, that:

- Non-availability of a car for travel is a significant reason for choosing to travel by public transport, with around 20% of trips being made by people in this situation.

- People who do not hold driver licences are more dependent on public transport than licence holders, and will respond quicker to fare decreases and service increases than other groups. (Their response to fare increases and service decreases has not been tested.)

- People in the younger age groups, including those in the 15-19 group, are more affected by fare increases than other groups and rate this service feature as more important than other age groups.

- Generally people in the younger age groups do not rate level of service as highly in importance as other groups (particularly middle age groups), although they are more concerned about weekend and evening service levels.

4. RESPONSES TO CHANGES TO FARES &/OR SERVICE LEVELS

4.1 New Zealand Evidence

4.1.1 Fares and Service Level versus Feature Elasticity

Table 4.1 provides a summary of evidence (of which most but not all is related to New Zealand situations) on the likely effect on the level of public transport usage of changes in the readily quantifiable aspects of bus services.

Table 4.1 Likely effect on public transport (PT) usage of service changes.

Variable	Likely Effect/Comments
Fares	• Typical elasticity -0.45
Service Frequency	• Typical elasticity 0.5 to 0.6 • Wait time generally valued at twice in-vehicle time • Frequency generally more important than walk distance
Walk Time or Distance	• Typical elasticity -0.5 with respect to distance/time at both ends of trip • Trip generation falls rapidly with walk distance between 300-700 m (both ends of trip), then settles to relatively low level above 700 m • Walk time generally valued at 2 x in-vehicle time
In-vehicle Time	• Typical elasticity c.0.4
Overall Trip Time	• Typical PT generalised cost elasticity around -1.0 • PT generally only competitive with car when PT:car trip time ratio less than 2.0
Reliability	• Important, but rarely properly quantified • Indications are that unplanned waiting time valued at 2-3 times planned waiting time

Note: based on a sample of studies, reported in TMNZ & Francis (1992).

In broad terms, the level of public transport usage is considered to be moderately elastic to changes in service and fare variables, and in most cases the proportionate change is around half the proportionate change in the variable, e.g. if fares were to double, a patronage decrease of about 50% might be expected.

4.1.2 Fares

A summary of New Zealand evidence on urban public transport fare elasticities was prepared as part of an earlier TMNZ (1990) study for Transit New Zealand (now Transfund New Zealand), and relevant extracts of this work are attached as Appendix 4.

The New Zealand fare elasticity values (total market) are in the range 0.13 to 0.60, with the weight of evidence being for values around 0.3 to 0.4. Examination of the data further indicates that:

- Off-peak elasticities are (on rather limited evidence) broadly double peak elasticities,
- Elasticities in small towns tend to be higher than in larger centres,
- No clear evidence shows that urban rail elasticities are markedly higher or lower than bus elasticities.

One New Zealand study found that response to fare changes varied according to three factors (Galt & Eyre 1987):

- The degree to which travel is necessary,
- The accessibility of alternative forms of transport,
- The transport mode.

A number of other points about fare elasticities were also noted:

- Peak journeys tend to be more captive than off-peak journeys and, accordingly, peak passengers are less responsive to fare changes,
- Charging higher fares in the peak period can encourage some travellers to switch to off-peak periods (where flexible work hours are an option, or non-work travel is involved),
- Short distance journeys often have higher fare elasticity values because the option of walking is available as an alternative to bus travel.

4.1.3 Service Frequency

As noted earlier (Table 4.1), a typical service frequency elasticity of 0.5 to 0.6 has been reported (generally determined on the basis of the number of in-service vehicle kilometres provided, which cannot adequately reflect the impact of express services, high frequency minibus, etc.). Frequency generally has been found to be more important than walk distance. Peak passengers have been reported to be more captive than off-peak passengers and therefore are likely to be less responsive to service changes (Galt & Eyre 1987).

The only reported instance in New Zealand where the effect of service cuts on individual users has been examined is in Tauranga, where nearly all the urban bus services were withdrawn in 1986 (Perrins 1988, Appendix 5). An on-bus survey of passengers on all inbound services on one day was undertaken one week before the bus services were withdrawn.

The pre-withdrawal survey showed that :

- Alternative transport: most passengers had no readily accessible alternative transport,
- Gender: most users were female (73%),
- Age: most were in 15-29 age group (35%) or 60+ (28%),

- Main trip purposes: shopping/personal business (43%), work (34%), trips to doctor/hospital (11%),
- Most frequent users: 41% travelled every day, 37% 2-3 trips per week,
- Employment: 41% in full or part-time employment, 22% retired, 21% housewives/homemakers.

Respondents were asked to indicate their expectations of the effect of the bus service withdrawal on them. The expected effects on individuals ranged from minor inconvenience to serious hardship, depending largely upon the age of the respondent and the availability of alternative transport.

A postal follow-up survey of bus passengers who participated in the initial survey was undertaken 6 months after withdrawal of the bus services. Around 37% of passengers initially surveyed completed the post-back survey (which was 76% of those who had indicated willingness to participate in the follow-up survey).

The follow-up survey showed that :

- 79% of the respondents were still travelling to the same places they used to visit;
- Most of these people were making these trips at the same frequency as when they used the bus;
- 33% were making trips to other destinations to replace their bus trip (most of these by taxi);
- Majority of respondents (63%) considered they had changed their activities as a result of withdrawal of bus services:

  - 32% did more shopping and personal business locally,
  - 10% had given up their jobs or changed their hours of work,
  - 15% made less visits to the doctor or hospital;

- The proportion[1] that were now not able to undertake some activities at all:

  - 29% not able to visit friends and relatives,
  - 29% not able to go shopping,
  - 21% not able to visit the doctor or hospital;

- Few respondents made major changes to their lives as a direct result of the service withdrawal:

  - 4% of respondents learned to drive,
  - 7% bought cars, 4% motorbikes, 14% bicycles;

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[1] The report author stated that these results *'..should..be treated with caution. In most cases, it is more likely that most respondents were not able to shop or visit friends or do other things quite as often or as easily as they could when the buses were operating rather than not being able to undertake these trips at all'.*

- Most respondents were spending more money on travel (63%);
- 77% believed they were worse off as a result of the service withdrawal.

Respondents were asked to indicate how they were now making the trips that they used to make by bus. Table 4.2 shows respondents' post-withdrawal mode of travel, and compares it with their pre-withdrawal survey expectation. This shows that:

- Travelling by car (primarily as a passenger) was the most common way of replacing bus trips, followed by taxi and bus trips;
- There were significant differences between individual's expectations and actual behaviour, with many more people able to travel by car than expected. Also, a new bus service started up replacing part of the previous bus service.

Table 4.2 Travel mode after service withdrawal.

Mode of Travel	**Expected**		**Actual**	
	Number	**%**	**Number**	**%**
Car Driver	4	5.6	9	9.5
Car Passenger	8	11.0	26	27.4
Taxi	13	18.1	14	14.7
Other Bus	0	0.0	12	12.6
Ferry	0	0.0	3	3.2
Walk	17	23.6	7	7.4
Motorbike	2	2.8	5	5.2
Bicycle	11	15.3	7	7.4
Combination of modes	17	23.6	12	12.6
Total	72	100.0	95	100.0

In regard to the overall impact of the bus service withdrawal on individual's lives:

- A small number were experiencing a dramatic change of lifestyle, unable to make even a small number of trips. This applied particularly to elderly people who did not have families or friends close by to assist them.
- Many respondents now had to rely heavily on family and friends for lifts, causing inconvenience for both parties and a considerable loss of independence for the respondents.
- Many respondents commented that although taxis were available they could not afford to use them regularly, if at all.
- 90% of respondents indicated they would use a bus service if a new one started.
- Over half the respondents were willing to pay twice the original fare for a new bus service.

4.2 Selected Overseas Evidence

4.2.1 Fares

Overseas studies have generally found fares elasticity in the range -0.1 to -0.6, with factors such as peak/off-peak travel and service levels influencing the actual value. A significant overseas study was the United Kingdom Transport and Road Research Laboratory (TRRL) 1980 report titled *"The Demand for Public Transport"* which was an international collaborative study of the factors affecting public transport patronage. The TRRL report identified fare elasticity values differentiated for the following factors:

- Size of town: small towns generally had higher fare elasticity values,
- Type of public transport: bus had higher values than short distance rail, but lower than long distance rail,
- Time of day and trip purpose: off-peak travel and weekend/non-work trips had higher values than peak travel/work trips,
- Type of passenger/car availability: captive passengers (no car available) had lower values than passengers with car available. The elasticity of elderly passengers was higher than these groups.
- Length of journey: medium trips had lower values than short distance trips, which were lower than long inter-urban trips.

4.2.2 Service Levels

In regard to service levels, the TRRL report concluded that elasticities in the range 0.2 to 0.5 found in Before & After studies are reasonably reliable. This report also suggests different service level elasticity values at low and high service frequencies at 0.55 and 0.35 respectively. Other relevant overseas experience is in Holland where an elasticity for work trips against changes in vehicle kilometres was found to be 0.58 compared to 0.76 for non-work trips.

A later TRRL report (Hopkins et al. 1988) examining the relationship between bus service levels in urban areas and bus use and travel behaviour had the following main conclusions:

- Bus use is strongly related to level of bus service in terms of service headway and less so to walk distance from home.
- The use of other modes of transport is similarly related to bus service level. Overall trip making is slightly higher but car use is much higher in areas with poorer service.
- Most of the variation in bus use is associated with more people using the bus, rather than those who use the bus increasing their bus trips as the service gets better.

- Most socio-economic variables do not correlate with level of service, but car ownership does. While it does have a large effect there is also a large independent effect of level of service.
- People perceive service level as being very important with a sharp difference between very frequent services (up to 10 minute headways) where people tend to catch a bus 'on-spec', compared to less frequent services where journeys have to be planned with a specific bus in mind. However, service level cannot be divorced from reliability which is especially important at low frequencies.
- The best estimate for a value for the elasticity of service headway would appear to be in the range of -0.5 to -0.6.
- Service headway elasticity varies for different sections of the population. It is very low for retired people, very high for car owners, and males. It is also very high for males with car access, and generally high at weekends.
- The elasticity for walk distance to bus stop is much lower (-0.09 to -0.20). It too is higher for males and licence holders, and also high for old people.
- The elasticity for walk distance at both ends of a journey is much higher at about -0.5. This varies in much the same way as home to bus stop walk distance.
- While it is difficult to say much about thresholds for headway elasticity, walk distance appears to have strong thresholds, with a fairly 'flat' relationship at low distances followed by a sharp fall off after about 350 m, flattening out at around 700 m, above which a base level of people carry on using the bus for journeys.

In regard to the relationship between socio-economic factors and journey purpose with service frequency the report found the following:

- Age: retired people had a much lower headway elasticity than the average person.
- Gender: males tended to have higher elasticities than females.
- Car availability: greater car availability led to higher elasticity. People without good access to cars have correspondingly low elasticities.
- Journey purpose: elasticities for work journeys tend to be higher than for non-work journeys. Social and recreation trips also showed a high elasticity, shopping had a fairly 'average' elasticity, while that for personal business was very low.
- Employment group: managerial and professional people had a high elasticity, while the other groups were close to the average.
- Time of day and day of week: elasticities were highest on Sundays, and were much higher on Saturdays than on weekdays. Elasticities were highest during the interpeak period, with the lowest elasticities occurring in the early mornings and late weekday evenings.

A recent study commissioned by the Dutch Ministry of Transport investigated the effects of a variety of possible service reduction measures on different user groups (van Beek & van Knippenberg 1994). The study involved 300+ face-to-face interviews with users of low occupancy urban and rural bus services. Respondents

were asked to indicate their likely response to five possible service reduction measures:

- Doubling of fares,
- Decreased frequency,
- Cancellation of service at the time of day that the journey was made,
- Total cancellation of the bus line,
- Increasing distance between their homes and the bus stop (or between the destination address and the bus stop).

Table 4.3 sets out the probability of the different types of possible response for each service reduction measure. The report authors drew the following conclusions from these results:

- Extreme responses such as buying a car, travelling to another destination, or moving home have relatively low probabilities.
- Less extreme responses such as accepting the higher fare or larger distance to the bus stop have relatively high probabilities.
- Changing to another mode also has a relatively high probability: between 20% and 60%. Respondents who gave this response were asked which transport mode(s) they would use. In most cases they would cycle (this was expected as: many bus travellers could not travel by car; in the Netherlands the bicycle is a popular transport mode; and the bus is used for relatively short journeys which are not suitable for cycle travel).
- Making the bus journey less frequently also has a relatively high probability, especially in the case of doubled fares.

4.3 Conclusions from Responses to Changes to Fares &/or Service Levels

Analysis of the available data on the likely response to fare increases/service decreases for the public transport-dependent groups identified earlier in the report, showed that:

(i) Fare Changes

- Responses to fare changes vary according to the availability of alternative forms of transport.
- People with no car available have a lower fares elasticity than those with a car available.

Table 4.3 Probability of response for service reduction measures.

Response	Double fares	Decreased frequency	Cancellation of period of the day	Total cancellation of service	Increased distance to bus stop
Keep travelling by bus	45	0	0	0	0
Depart at different time	0	47	0	0	0
Travel another day or period of day	0	0	19	0	0
Use another bus line	0	0	0	38	15
Accept longer distance to bus stop	0	0	0	0	55
Travel to another destination	1	2	3	1	1
Another transport mode	34	38	57	44	21
Stop making journey	4	3	7	5	1
Travel less frequently	10	3	4	4	3
Buy a car	4	3	4	4	0
Move home	0	0	0	1	0
Other response	2	4	5	3	2
Total	100	100	99	100	98

(ii) Service Changes

- In the only documented case of a bus service withdrawal in New Zealand (and where most users fell into the groups identified as public transport dependent):

  - The overall level of trip making did not change markedly,

  - Changes in destinations occurred for a significant proportion of the group,

  - A significant proportion were unable to undertake some of their previous activities,

  - The majority were spending more money on travel,

  - The majority considered themselves to be worse off as a result of the service withdrawal.

- Greater car availability results in higher service-frequency elasticity values. People without good access to cars have correspondingly low service-frequency elasticities.

5. TRAVEL CHARACTERISTICS OF PEOPLE WITH DISABILITIES

People with disabilities are commonly viewed as a subgroup of public transport-dependent people. However, many are able to drive a car and have access to a car, and therefore cannot be classified as public transport-dependent.

5.1 Prevalence of Disability

A 1990 study undertaken for the Minister of Labour, New Zealand Government, found that 11.4% of the population between 15 and 59 were 'people with disabilities' (Stroombergen et al. 1991). As disability is largely a function of ageing (studies show that between 60% and 80% of those with serious disabilities are elderly), the total proportion of people with disabilities is higher than this. However, not all people with disabilities are dependent on passenger transport for their mobility. Most North American analysts estimate that roughly 5% of the population have a disability or impairment serious enough to, and likely to, interfere with transport use.

A 1981 study into physical disability in the Wellington Hospital Board Area (Jack et al. 1981) found, in the study area, that:

- 8.7% of people have some form of physical disability,
- Over 40% of all people with disabilities are elderly,
- Almost all people with disabilities live in the community; only about 6% live in institutions.

5.2 Travel by People with Disabilities

People with disabilities have a wide range of travel needs. They include:

- People with long-term or permanent physical or sensory disabilities which significantly impair their ability to move about under their own motive power, i.e. walking and cycling are not possible. This group is further differentiated by:
  - ability to use regular public transport services,
  - physical ability to drive a motor vehicle,
  - availability for their use of a specially adapted motor vehicle.
- People with long-term or permanent intellectual, psychiatric, or cognitive disabilities which prevent them from driving a motor vehicle, but which do not impair their physical abilities. This group is differentiated by:
  - potential ability to learn to use public transport services,
  - availability and suitability of public transport services.
- People with temporary physical or cognitive disabilities.

As this shows, not all people with disabilities are dependent on public transport. For example, a person may be physically incapable of walking, cycling or using public transport, but may own their own specially adapted vehicle and be able to make all the trips they desire by private transport.

Very few New Zealand data are presently available on travel and trip making by people with disabilities. The 1981 study of the Wellington Hospital Board Area (Jack et al. 1981) found that:

- 12.3 persons per 1000 population (3,820 for Wellington area) cannot move away from home without the use of a walking aid.
- Of these 3,820 in the Wellington area, about 300 use a wheelchair and 850 cannot get about without help from another person.
- Generally persons with disabilities (defined as people with some lack or defect of a limb, organ, or mechanism of the body resulting in a substantial loss of functional ability which markedly restricts everyday living) who needed help were assisted by members of their own families.
- An estimated 440 persons with disabilities in Wellington area (1.4 persons per 1000 population) can rarely get the help they need to go out.
- An estimated 3,550 (11.4 persons per 1000) disabled persons have no car available in their household. Most of these are unable to use (regular) public transport easily.
- An estimated 5,850 disabled persons (18.8 persons per 1000) cannot easily use public transport, including 3,380 who cannot use it at all (11 persons per 1000).
- 13 persons in every 1000 experience problems in getting into or around public places because of access barriers.

Table 5.1 sets out the findings of the study in regard to use of public transport by handicapped persons, and the difficulties experienced.

Table 5.1 Use of public transport by persons with disabilities.

Use of Public Transport		**Disabled Persons (%)**
Used	- alone without difficulty	21.5
	- alone with difficulty	20.8
	- only with someone else	6.4
Not used	- no strength or confidence	6.3
	- difficult to get on and off	12.2
	- unable to get on and off	15.9
	- other reasons related to disability	2.8
	- reasons not related to disability	13.8
Not known		0.3
Total		100.0

5.3 Travel Using Regular Public Transport Services

No New Zealand data are presently available in regard to the level of use of regular public transport services by people with disabilities. Anecdotal evidence suggests it is low, but no records of use by this group have been kept. A key consideration here is the definition of 'disability' that is adopted.

5.4 Travel Using Total Mobility Scheme

5.4.1 Background

The taxi-based Total Mobility Scheme, which became operational in 1984, was designed to provide subsidised transport for people with disabilities who could not use ordinary public transport because of their disability. The Scheme is available to people with physical, sensory, and intellectual disabilities as well as to some people with psychiatric illness. It is available through membership of any of the participating disability agencies. The Scheme uses existing taxi services with the cost to users discounted by way of a subsidy paid by regional councils and by Transit New Zealand. Capital grants have also been made available to enable wheelchair hoists to be fitted to taxis and minivans.

5.4.2 Usage and Subsidy Levels

Details of 1993/94 usage levels and subsidy amounts are set out in Table 5.2, based on 1995 data provided by Transit New Zealand.

Table 5.2 Total mobility usage (by number of trips) and expenditure (1995 NZ$) on subsidies for 1993/94 by region (1995 data from Transit New Zealand).

Region	No of Trips	Subsidy ($)	Ave Subsidy/trip ($)
Northland	23,333	70,000	3.00
Auckland	228,734	1,060,100	4.63
Waikato	47,441	153,300	3.23
Bay of Plenty	26,332	74,000	2.81
Gisborne	2,685	9,100	3.39
Hawke's Bay	3,073	18,800	6.12
Taranaki	13,763	33,500	2.43
Manawatu/Wanganui	43,777	231,500	5.29
Wellington)	120,000[1]	475,300	4.58[1]
Nelson/Marlborough)		74,500	
Canterbury	177,352	769,300	4.34
West Coast	11,500	34,500	3.00
Otago	85,055	192,500	2.26
Southland	51,279	97,800	1.91
Total	834,324	3,294,200	3.95

Note: (1) Wellington & Nelson/Marlborough combined

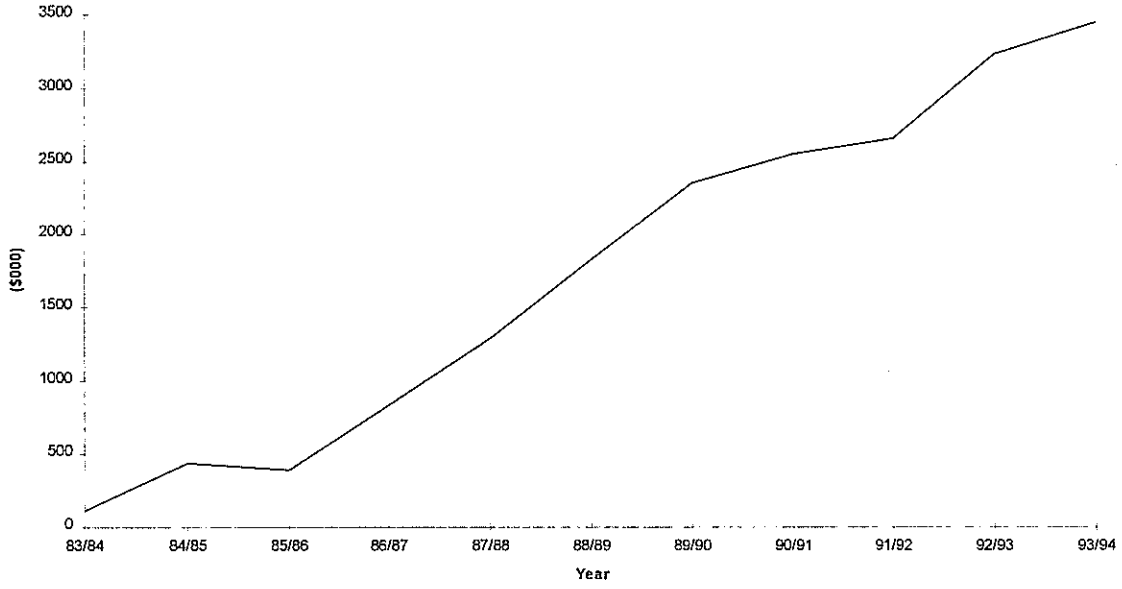
Table 5.3 shows the number of people making use of the Total Mobility Scheme in 1993/94 (as distinct to the number of trips made) and subsidy per user, for the five largest regional councils (MOT 1995). This table also provides an estimate of potential demand for the Total Mobility service based on 2.5% of the population being people with disabilities (using the American Disabled Association definition).

Table 5.3 Total mobility users in 5 major New Zealand regions for 1993/94.

Region	Number of Users	Subsidy (1995 NZ$) /User	Ave Trips/ User	Potential Users	Added Users
Auckland	7,303	141.72	31	23,850	16,547
Wellington	4,069	122.88	31	10,075	6,006
Canterbury	6,569	125.54	31	11,050	4,481
Otago	2,169	124.10	38	4,650	2,481
Waikato	1,770	122.32	25	8,475	6,705
Total/Average	21,880	$127.31	31	58,100	36,220

Use of the Total Mobility Scheme services, and the subsidy required, has increased every year since its introduction in 1984 (Figure 5.1).

Figure 5.1 Growth in Paratransit subsidy (1995 NZ$000) (95% Total Mobility) for all New Zealand since 1984.



The main reasons which have been cited for the growth in usage of Total Mobility services are:

- Gradual expansion of the Scheme throughout New Zealand during that time, and an increasing awareness of its availability;
- Increasing participation in the community by people with disabilities, meaning increased travel requirements;
- Reduction in provision of transport assistance by government and voluntary agencies resulting in people using Total Mobility to replace trips previously subsidised by other sources;
- Reduction in the number of 'volunteers' and family care-givers available because of economic and social factors;
- An ageing population, thereby increasing the number of people with disabilities.

5.4.3 Analysis of Total Mobility Travel Characteristics

Very few data are available on the travel characteristics of trips made on the Total Mobility Scheme. In 1992 a survey of Scheme users in Dunedin and Palmerston North was made over a two week period (Chambers et al. 1993). The objectives of the survey were to (i) identify the users of the Scheme; and to (ii) identify the purposes of their trips.

This 1992 survey identified only the disability agency that the responding user was registered with. In both cities over 75% of the users were registered with one of: Arthritis Foundation, CCS (formerly Crippled Children Society), IHC (formerly Intellectually Handicapped Society), Multiple Sclerosis Foundation, or Royal NZ Foundation for the Blind (Table 5.4).

Table 5.4 Purpose of the Total Mobility trips recorded in the survey.

Trip Purpose	% Trips
Work (voluntary or paid)	22.2
Shopping/Bank/Post Office	22.0
Medical (incl. Dentist)	20.6
Visiting friends/ relatives	8.5
Club/Group meeting	6.1
CCS Activity	3.0
Education Institute	3.0
Training	2.9
Meals	2.1
Other	9.6
Total	100.0

Other characteristics of the trips that were surveyed were:

- Nearly all trips (92.4%) took place on weekdays,
- Most trips took place during the morning, afternoon, and early evening hours.

5.5 International Evidence

A number of international studies have examined the travel characteristics of people classified as 'transport disadvantaged' and, in particular, those of people with disabilities. A recent report into travel by the transport disadvantaged notes several findings from North American studies (MOT Working Group report 1994):

- 40-50% of people originally identified as transport disadvantaged, on the basis of their physical or developmental disability, drove their own cars.
- 5% of the population have a disability or impairment both serious enough to, and likely to, interfere with transport use. Of these, half (2.5% of total population) live in areas where transport services are actually provided.
- Few transport-disadvantaged people actually try to register for special transport services; those that do register are rarely frequent users of the system; and very few who use the service make more than 20-40% of all their trips on the system.
- The first preference of people in this group is to go by private car, or be driven by family or friends if necessary.
- Most people who do use special transport services are already active users of other social services. i.e. agency clients who are often not independent people.
- 1984 US National Health Institute of Health Special Study found that less than 18% of the most severely disabled ever used special transport services of any kind.
- One study found that a very high percentage of people with disabilities drove their own car, i.e. over half of those with the most severe disability (unable to conduct one or more major life activities) drove their own car, and over two-thirds of those with lesser disabilities drove cars.

5.6 Conclusions from Travel Characteristics of People with Disabilities

The main conclusions drawn from the analysis of the available data on the travel characteristics of people with disabilities are:

- There is a paucity of New Zealand data on travel by people with disabilities, both in terms of their overall travel patterns and their travel using public transport services (both regular public transport services and Total Mobility Scheme services).
- It is not clear to what extent people with disabilities are dependent on public transport services. To be able to ascertain this more information would be required in regard to:

- the proportion of trips made by this group on public transport services,
- the availability of alternative forms of transport,
- the suitability of public transport for travel by this group.

- It is likely that the Total Mobility Scheme is providing transport assistance for only a small proportion of the trips by people with disabilities (less than 40% of those who are eligible for the service are estimated to be using it, and present usage levels are no more than two or three trips a week per user).

Before conclusions about the likely impact of public transport fares and changes to service levels on people with disabilities can be made, a separate research project into the travel characteristics and transport needs of this group of people is needed.

PART 2
TELEPHONE SURVEY OF PUBLIC TRANSPORT-DEPENDENT PEOPLE

6. INTRODUCTION

This Part 2 of the report sets out the results of the Household Telephone Survey of public transport-dependent people, which was Stage 2, Task 1 of the project. The report is structured as follows:

- Chapter 7 - sets out the objectives and methodology that was used for the telephone survey, carried out in Wellington and Hamilton.
- Chapter 8 - describes the characteristics of the survey respondents and implications for interpretation of the results.
- Chapter 9 - summarises the overall results for the survey sample, highlighting the differences between the Wellington and Hamilton surveys.
- Chapter 10 - presents results of further analysis of the results focusing on key public transport-dependent factors.
- Chapter 11 - presents conclusions from the Household Telephone Survey.

7. SURVEY OBJECTIVES & METHODOLOGY

7.1 Survey Objectives

The Stage 1 data analysis and literature appraisal suggested that several groups within society were more dependent on public transport than others. Based on this work, public transport-dependent people could be separated into two groups:

- 'Primary' public transport-dependent groups:
  - people who do not have a car available for their use
  - people aged between 15 and 19 years of age.
- 'Secondary' public transport-dependent groups:
  - people aged between 20 and 39 years of age who may have a car available for their use
  - people aged between 5 and 14 years of age who have a car in the household.

The definition of 'public transport-dependent people' that was developed for use in Stage 2 (reported in Parts 2 and 3 of this report) is as follows:

> *Public Transport Dependent people are people who meet all the following criteria:*
>
> - *Lack a ready alternative means of transport for a significant proportion of their desired trips, i.e. unable to make these by another transport mode.*

- *Lack an ability to acquire a transport alternative (this may be due to, for example, inadequate income to make use of other modes).*
- *Make a substantial proportion of present trips by public transport.'*

Because of the limited data available on 'public transport-dependent people', a household telephone survey was considered a necessity to supplement the available data.

The main objective of the Telephone Survey was therefore to:

Enable a more sophisticated segmentation of the market by public transport dependence.

A supplementary objective for the Telephone Survey was to:

Recruit a sample of public transport-dependent people for Task 2 (Personal Interview Survey).

7.2 Survey Methodology

7.2.1 Survey Mechanics

McDermott Miller carried out, in 1996, the telephone survey on behalf of Symond Travers Morgan (STM), although STM had prime responsibility for designing the questionnaire. All analysis was carried out by STM.

Conducting the survey in two locations, a major urban area and a secondary urban area, was considered preferable. The specific locations chosen were Wellington and Hamilton. As publicly funded public transport services are largely confined to the urban areas, a rural location was not included.

A random telephone survey of all people aged 12 years and over was conducted in each area (Wellington included the whole region excluding the Wairarapa, and Hamilton was Hamilton City excluding the rural sections). Telephone numbers within the survey area were randomly selected and every second person in that selection was surveyed (using the next birthday method). Calls were spread over one week (8-14 February 1996), and were made between 6.30pm and 9pm. Two callbacks were made if people were unavailable.

McDermott Miller were required to achieve 200 completed telephone interviews in Wellington and also in Hamilton. The actual number of completed interviews was 203 in Wellington and 216 in Hamilton.

7.2.2 Survey Design

The survey was structured in four sections as follows:

A. Trips made

In this section respondents were asked to provide details of all the trips (other than walks less than 5 minutes long) that they had made in the last 24 hours. A trip was defined as *"when you travel between two locations or significant activities, other than short walking trips less than 5 minutes"*. The purpose of this section was to build a picture of trip making for different groups. Respondents were asked to provide details of alternative modes which would have been available to them for each trip.

B. Public transport trip-making difficulties

In this section respondents were asked to identify any trips which they had difficulty making because suitable public transport was lacking.

C. Public transport use

Respondents were asked to provide details of their use of public transport, including how they would make trips if public transport was not available, and the degree of inconvenience this would cause them.

D. Demographics

Demographic details of respondents were gathered.

8. CHARACTERISTICS OF SURVEY RESPONDENTS

8.1 Personal Demographic Characteristics of Respondents

Personal demographic characteristics of age, gender, employment for respondents, for each area and in total, are shown in Tables 8.1-8.3.

Comments about the personal demographics of the sample selected (relative to the 1991 census data and survey data held by the Wellington Regional Council (WRC) and Environment Waikato) are that:

- The sample is fairly representative for the age groups selected, although the 15-19 group is slightly under-represented, and the over 60 age group is slightly over-represented in Wellington.
- Males are under-represented in both Wellington and Hamilton.
- At first inspection, the unemployed and beneficiaries appear to be most under-represented. However, analysis of the household income shows that lower income groups are fully represented. Many people in these categories may have described their employment as either part-time worker or homemaker.

The samples selected for Wellington and Hamilton were very similar for personal demographics. The main difference was a higher proportion of students/people aged 15-19 in Hamilton, and a higher proportion of retired people over 60 in Wellington.

Table 8.1 Age (%) of respondents.

Age (years)	Wellington	Hamilton	All
Under 15	2.5	3.8	3.1
15 - 19	6.9	11.7	9.4
20 - 39	43.6	45.1	44.4
40 - 59	27.7	22.0	24.8
60 +	19.3	17.4	18.3
Total	100.0	100.0	100.0

Table 8.2 Gender (%) of respondents.

Gender	Wellington	Hamilton	All
Male	38.1	42.5	40.3
Female	61.9	57.5	59.7
Total	100.0	100.0	100.0

Table 8.3 Employment Type (%) of respondents.

Employment Type	Wellington	Hamilton	All
Full-time worker	46.5	42.7	44.6
Part-time worker	11.4	10.3	10.8
Homemaker	9.9	9.9	9.9
Unemployed	1.5	1.9	1.7
Retired	17.8	14.1	15.9
Beneficiary	1.0	2.4	1.7
Student	11.4	15.0	13.2
Other	0.5	3.7	2.2
Total	100.0	100.0	100.0

8.2 Household Demographic Characteristics of Respondents

Several household demographic characteristics for respondents, for each area and in total, are provided in Tables 8.4 and 8.5.

Comments about the household demographics of the sample selected (relative to data sources detailed in Section 8.1) are that the sample is fairly representative for:

- Household income, with lower income groups slightly over-represented and higher income groups slightly under-represented, and
- Household size.

The samples selected for Wellington and Hamilton were also very similar in regard to household demographics. The main differences were a much higher proportion of households with incomes over $60,000 in Wellington than in Hamilton (although a higher proportion in Hamilton answered 'don't know'), and a higher proportion of larger household sizes in Hamilton.

Table 8.4 Household size (%) of respondents.

No. of People	Wellington	Hamilton	All
One person	13.9	12.3	13.0
Two people	30.7	31.1	31.0
Three people	20.8	15.6	18.1
Four people	17.8	19.8	18.8
Five of more people	16.8	21.2	19.1
Total	100.0	100.0	100.0

Table 8.5 Household income (%) of respondents.

Household Income (NZ$)	Wellington	Hamilton	All
Under $10,000	4.5	6.6	5.6
$10,001 to $20,000	11.4	13.2	12.3
$20,001 to $30,000	15.3	9.9	12.6
$30,001 to $40,000	14.8	10.8	12.8
$40,001 to $50,000	11.4	12.3	11.8
$50,001 to $60,000	5.5	7.5	6.5
$60,001 to $70,000	5.0	2.4	3.7
Over $70,000	15.3	8.5	11.8
Don't Know	11.8	21.7	16.9
Refused	5.0	7.1	6.0
Total	100.0	100.0	100.0

8.3 Motor Vehicle Ownership

The details of respondent households in regard to motor vehicle ownership are shown in Tables 8.6 and 8.7.

A significant proportion of households (10%) represented in each city did not own a motor vehicle. Hamilton appears to have a higher proportion of households with three or more motor vehicles, although it also has a slightly higher proportion of households with no motor vehicles. Nearly half of the households without a motor vehicle cannot afford to own one, while around 20% either do not have a licence or cannot get one. Nearly 1/3 of the Wellington households without a motor vehicle said they did not need one.

Table 8.6 Motor vehicle ownership (%) in respondents' households.

No. of Motor Vehicles	Wellington	Hamilton	All
None	9.9	12.3	11.1
One	43.1	33.9	38.5
Two	32.2	29.7	30.9
Three	7.9	10.4	9.2
Over three	6.9	13.2	10.1
Refused	0.0	0.5	0.2
Total	100.0	100.0	100.0

Table 8.7 Reasons for not owning motor vehicle (%).

Reason for No Motor Vehicle	Wellington	Hamilton	All
Can't afford it	55.0	42.4	47.8
Don't have a licence	15.0	19.2	17.4
Can't get a licence	0.0	3.8	2.2
Don't like to drive	0.0	15.4	8.7
No need for one (e.g. get lift)	30.0	11.5	19.6
Other (specify)	0.0	7.7	4.3
Total	100.0	100.0	100.0

8.4 Implications from Survey Results

Overall the sample selected is reasonably representative of the Wellington and Hamilton areas. The major distortion would be caused by males being under-represented. However, as females make up a higher proportion of public transport users (e.g. 54% in Wellington) this will not affect the conclusions in regard to public transport dependence.

When interpreting the results, note that children under 12, who are a significant proportion of public transport users (e.g. about 10% in Wellington), were not surveyed.

9. RESULTS FROM TELEPHONE SURVEY

9.1 Introduction

The results of each section of the household telephone survey for each area, and for both areas combined are given. The results have been separated into the three sections of the survey:

- Trip Analysis - analysis of trips that respondents have carried out in the 24-hour period before the telephone interview (no attempt has been made to build up a trip matrix by destination or time).
- Trip-Making Difficulties - analysis of trips that respondents had difficulty making because of the lack of suitable public transport services.
- Public Transport Usage - analysis of public transport usage by respondents in the last two to three months before the interview and their likely action if public transport services were not available.

9.2 Trip Analysis & Modal Choice Factors

9.2.1 Trip Purpose and Mode

Tables 9.1-9.3 show the trip purpose and mode of trips made in the last 24 hours. The main features are:

Trip Purpose

- The most common purpose was trips to/from work (29% of trips), followed by all shopping trips (18%), and trips to entertainment or sport (14%).
- Wellington and Hamilton were very similar in regard to trip purpose, with the main difference being the proportion of school/education trips (4% in Wellington and 9% in Hamilton).

Mode of Travel

- The vast majority of trips were made by motor vehicle (82%), with car driver being the dominant mode (68%).
- Public transport made up only 7% of trips overall, though public transport usage in Wellington (11.8%) is nearly 4 times that of Hamilton (3.1%).
- The other significant difference between the two areas was the greater proportion of trips by cycle in Hamilton (3.7%) compared to that (0.9%) in Wellington.
- A significant finding was the very low proportion of carpools involving workmates (2.4%).

Table 9.1 Trip purpose (% of trips).

Purpose	Wellington	Hamilton	All
Work	29.8	28.0	28.8
To/from school/Education	4.2	8.6	6.6
Employer's Business	2.6	3.1	2.9
Convenience Shopping	14.9	11.0	12.7
Comparison Shopping	5.3	5.2	5.3
Personal Business	7.0	7.6	7.3
Entertainment/Sport	15.8	12.3	13.9
Visiting friends/relatives	11.8	10.8	11.2
Dropping off others	6.6	8.7	7.8
Other	2.0	4.7	3.5
Total	100.0	100.0	100.0

Table 9.2 Main mode of travel (% of trips).

Mode	Wellington	Hamilton	All
Car/van as driver	67.1	69.6	68.5
Car/van as passenger	11.4	15.6	13.7
Truck	0.6	0.6	0.6
Motorcycle	0.0	1.2	0.7
Bus	8.5	3.1	5.5
Train	3.1	0.0	1.4
Ferry	0.2	0.0	0.1
Taxi	1.5	0.1	0.7
Bicycle	0.9	3.7	2.5
Walking/running	6.6	5.9	6.2
Other	0.2	0.1	0.2
Total	100.0	100.0	100.0

Table 9.3 Who did you travel with (as car passenger)?

Travelled with Driver	Wellington	Hamilton	All
Household member	77.4	56.2	64.1
Neighbour	1.6	0.0	0.6
Friend	11.3	41.9	30.5
Workmate (colleague/boss/client)	3.2	1.9	2.4
Other	6.5	0.0	2.4
Total	100.0	100.0	100.0

9.2.2 Reasons for Not Using Public Transport

For all trips not made by public transport, respondents were asked to indicate whether public transport was available for that trip. If public transport was available respondents were asked why they did not use it for that trip, and in what circumstances would they use public transport. The results are set out in Tables 9.4-9.6, and a summary of them is:

- Around 59% of trips made by other transport modes could not have been made by public transport. The proportion of trips in this category was significantly higher for Hamilton (67%) than for Wellington (49%).
- Only 20% of non-public transport trips could have been readily made by public transport.
- The main reasons why people who could have used public transport for the trip but did not were:
  - 'prefer flexibility of own car' - 24%
  - public transport 'takes too long' - 21%
  - public transport 'doesn't run at the time I want to travel' - 10%
  - public transport too expensive - 8%
- Around 30% of people for whom public transport was available would not use public transport under any circumstances, and about half (51%) would only do so if their 'car/ride was not available'.

Table 9.4 Could you have made this trip by public transport? (% of non-public transport trips).

Question	Wellington	Hamilton	All
Yes, readily	25.4	16.8	20.5
Yes, but with difficulty	20.4	8.6	13.6
No	48.5	66.5	58.9
Don't Know	5.6	8.1	7.1
Total	100.0	100.0	100.0

Table 9.5 Why did you not use public transport if public transport was available for trip? (% of trips).

Question	Wellington	Hamilton	All
It doesn't go where I wanted it to go	4.1	7.7	5.6
It doesn't run at a time I wanted to go	9.5	9.4	9.5
It takes too long	23.0	17.2	20.5
It is too far to walk to the bus stop	6.3	3.4	5.1
I have to make other trips	0.0	0.4	0.2
I have a company car	1.6	1.3	1.5
I have a company car park	1.3	1.7	1.5
I prefer the flexibility of my/own car	21.5	26.2	23.5
I cycle/walk for exercise	4.1	6.9	5.3
I travel with others	3.2	4.3	3.6
Public transport is too expensive	9.8	6.4	8.4
I didn't think about it/never consider using it	0.6	1.3	0.9
I had too many parcels/groceries etc,to carry	7.9	3.0	5.8
A car is more comfortable/private	0.9	1.7	1.3
Don't know	0.6	3.9	2.0
Other	5.7	5.2	5.5
Total	100.0	100.0	100.0

Table 9.6 In what circumstances would you use public transport for this trip if public transport was available for this trip? (% of trips).

Question	Wellington	Hamilton	All
None	31.6	24.6	28.6
My car/ride was not available	51.9	50.3	51.2
Bad weather	3.5	9.1	5.9
No parking at destination	1.3	0.0	0.7
Public transport fares were cheaper	1.3	1.7	1.5
Public transport came closer to home	0.4	0.0	0.2
Public transport went to my destination	0.4	0.0	0.2
My carpool was disbanded	0.9	0.0	0.5
Public transport journey time was shorter/quicker	4.8	4.6	4.7
If I did not have a company car/carpark	0.9	0.6	0.7
If public transport improved	2.6	8.0	4.9
If I moved house/lived elsewhere	0.4	0.6	0.5
If I changed jobs/worked elsewhere	0.0	0.6	0.2
Total	100.0	100.0	100.0

Note- as up to three reasons could be given for Tables 9.5 and 9.6, the above percentages are based on the total number of replies.

9.2.3 Trips made by Public Transport

Availability of Alternatives to Public Transport

For every trip made by public transport, respondents were asked whether they had an alternative to public transport available for that trip; and, if they did, what was their first (best) alternative. If a motor vehicle was not available for that trip respondents were asked why not. The results are set out in Tables 9.7-9.9, and are summarised below:

- Around 65% of public transport trips did not have an alternative travel mode available. This proportion was higher in Wellington (69%) than Hamilton (57%).
- For those with an alternative, 75% involved car (car driver 50%, car passenger 25%). The major difference between areas was in the proportion with cycle as an alternative, 8% in Hamilton and 0% in Wellington.
- For people with an alternative that was not a motor vehicle, the main reason a car was not available was that it was being used by another household member (43%).

Table 9.7 Was an alternative to public transport available for this trip? (% of trips).

Question	Wellington	Hamilton	All
Yes, readily	25.0	39.3	29.3
Yes, but with difficulty	6.3	3.6	5.4
No	68.8	57.1	65.2
Total	100.0	100.0	100.0

Table 9.8 If alternative to public transport was available, what was your first (best) alternative? (% of trips).

Question	Wellington	Hamilton	All
Car/Van - Driver	55.0	41.7	50.0
Car/van - Passenger	25.0	25.0	25.0
Bicycle	0.0	8.3	3.1
Walk/Run	5.0	8.3	6.3
Other	15.0	16.7	15.6
Total	100.0	100.0	100.0

Table 9.9 If alternative was available, but not a motor vehicle, why was motor vehicle not available? (% of trips).

Question	Wellington	Hamilton	All
No motor vehicle in the household	0.0	50.0	28.6
Household motor vehicle used by others	66.7	25.0	42.9
Other	33.3	25.0	28.6
Total	100.0	100.0	100.0

Reasons for Using Public Transport

For all trips made by public transport, respondents were asked why they used public transport for that trip. The reasons are set out in Table 9.10, and are summarised below:

- The main reason for using public transport was that it was more convenient than other modes (40% of trips).
- The second main reason for Hamilton was that public transport was quicker than other modes (40%).
- By contrast the secondary reasons in Wellington were that public transport was cheaper (25%), and that there was no parking at the destination (25%).
- 'No parking at destination' was not a factor in Hamilton.

Table 9.10 Why did you use public transport for this trip? (% of trips).

Question	Wellington	Hamilton	All
Public transport is quicker	5.0	40.0	16.7
Public transport is cheaper	25.0	0.0	16.7
My destination has no parking	25.0	0.0	16.7
Public transport is more convenient	35.0	50.0	40.0
Other	10.0	10.0	10.0
Total	100.0	100.0	100.0

Note- as up to three reasons could be given, the above percentages are based on the total number of replies.

9.2.4 Taxi and Slow Mode Trips

For all trips made by taxi and slow mode (i.e. cycle and walk), respondents were asked whether a motor vehicle had been available for that trip; and, if it was, why they did not use it. If a motor vehicle had not been available, respondents were asked why not. The results are set out in Tables 9.11-9.13, and are summarised below:

- A motor vehicle was available for 60% of trips made by taxi or slow mode.
- For trips with a motor vehicle available, the main reason for not using it was because the chosen mode was more convenient (36% overall). In Wellington the next most common reason was no parking at destination (25%), while for Hamilton the reason was that the chosen mode was quicker (33%).
- Where a motor vehicle was not available the main reason was that no vehicle was owned by the household (46%). In Wellington a significant reason was that the vehicle was being used by others (31%).

Table 9.11 Was a motor vehicle available for this trip (by walk, cycle, taxi)? (% of trips).

Question	Wellington	Hamilton	All
Yes, readily	45.0	76.5	59.5
Yes, but with difficulty	0.0	5.9	2.7
No	55.0	17.6	37.8
Total	100.0	100.0	100.0

Table 9.12 If a motor vehicle was available, why did you not use it (i.e. walk, cycle, taxi trips when motor vehicle was available)? (% of trips).

Question	Wellington	Hamilton	All
Quicker	6.3	33.3	13.6
Cheaper	21.9	8.3	18.2
No parking at my destination	25.0	0.0	18.2
Too far to walk/cycle	3.1	0.0	2.3
More convenient	31.3	50.0	36.4
Other	12.5	8.3	11.4
Total	100.0	100.0	100.0

Note- as up to three reasons could be given, the above percentages are based on total number of replies.

Table 9.13 Where a motor vehicle was not available, why was this (i.e. walk, cycle, taxi trips when motor vehicle was not available)? (% of trips).

Question	Wellington	Hamilton	All
No motor vehicle owned in the household	43.8	50.0	46.2
Household motor vehicles(s) used by others	31.3	10.0	23.1
I don't hold a current driver's licence	0.0	10.0	3.8
Other	25.0	30.0	26.9
Total	100.0	100.0	100.0

9.3 Trip-making Difficulties

All respondents were asked to indicate whether there were any urban trips which they would like to make but do not because of lack of (or cost of) suitable public transport. Those who said 'yes' to this question were asked to indicate, for each trip they were prevented from making, the trip purpose, likely time of travel and the likely frequency of travel. The results are set out in Tables 9.14-9.16, and are:

- Most respondents (82%) did not have any trips which they could not make because suitable public transport was not available.
- For those which did have trip difficulties, the main difficulty was related to level of service, e.g. public transport was not available at origin (22%) or destination (29%), or unsuitable timing (29%) rather than cost (9%) or physical difficulties with using it (1%).
- The highest proportion of trips which could not be made were work trips (32%), followed by visiting and entertainment/sport (20% each).
- 30% of the desired trips were on Saturday, with the next most common time period (22%) being 9am-12 noon weekdays. Sunday was only a problem in Hamilton (4%).
- Most of the desired trips would be made at a frequency less than 5 trips/week (73%).

Table 9.14 Are there any trips within the urban area which you cannot make because of lack of suitable public transport ? (% of respondents).

Question	Wellington	Hamilton	All
Yes	17.2	17.6	17.4
No	71.3	66.8	69.0
Don't know	11.5	15.6	13.6
Total	100.0	100.0	100.0

Table 9.15 Type of difficulties which prevent making this trip? (% of trips).

Question	Wellington	Hamilton	All
Cost/fares too high	9.3	8.3	8.7
Public transport not available at my origin	18.5	25.0	22.2
Timing of public transport not suitable	24.1	33.3	29.4
My destination not served by public transport	31.5	26.4	28.6
Unable to use public transport	0.0	1.4	0.8
Other	16.7	5.6	10.3
Total	100.0	100.0	100.0

Note- as up to three reasons could be given, the above percentages are based on the total number of replies.

Table 9.16 What would be the purpose of this trip? (% of trips).

Question	Wellington	Hamilton	All
Work	33.3	31.1	32.2
Education/School etc.	4.8	6.7	5.7
Employer's business (i.e. as part of work)	2.4	0.0	1.1
Convenience/Grocery shopping	14.3	6.7	10.3
Comparison shopping/Non-grocery shopping	4.8	4.4	4.6
Personal business	2.4	4.4	3.4
Entertainment/sport	11.9	26.7	19.5
Visiting friends/relatives	23.8	17.8	20.7
Other	2.4	2.2	2.3
Total	100.0	100.0	100.0

Table 9.17 What time would you make this trip? (% of trips).

Question	Wellington	Hamilton	All
Weekday before 7am	7.1	8.9	8.0
Weekday 7am - 9am	14.3	13.3	13.8
Weekday 9am - 12 noon	21.4	22.2	21.8
Weekday 12 noon - 3pm	2.4	0.0	1.1
Weekday 3pm - 6pm	7.1	6.7	6.9
Weekday 6pm - 8pm	14.3	8.9	11.5
Weekday after 8pm	4.8	4.4	4.6
Saturday	28.6	31.1	29.9
Sunday	0.0	4.4	2.3
Total	100.0	100.0	100.0

Table 9.18 How frequently would you make this trip ? (% of trips)

Question	Wellington	Hamilton	All
Never	7.1	17.8	12.6
Less than 5 trips per month	33.3	26.7	29.9
Less than 5 trips a week	35.7	24.4	29.9
5-6 trips a week	7.1	26.7	17.2
7-10 trips a week	14.3	4.4	9.2
More than 10 trips a week	2.4	0.0	1.1
Total	100.0	100.0	100.0

9.4 Usage of Public Transport

9.4.1 Public Transport Usage Before Survey

All respondents were asked to indicate how often they had used public transport in the last few (e.g. 2-3) months immediately before the telephone survey. The results are shown in Table 9.19, and the main findings were:

- 59% did not use public transport at all. The proportion of non-users was higher in Hamilton (74%) than in Wellington (43%).
- Only 14% used public transport 5 or more times per week, with the proportion of high frequency users higher in Wellington (21%) than in Hamilton (8%).

Table 9.19 Frequency of public transport usage before telephone survey (% of respondents).

Question	Wellington	Hamilton	All
Not at all	43.1	73.7	58.8
Less than 5 trips per month	26.7	11.3	18.8
Less than 5 trips a week	8.9	7.5	8.2
5-6 trips a week	3.0	1.9	2.4
7-10 trips a week	11.9	4.2	8.0
More than 10 trips a week	6.4	1.4	3.9
Total	100.0	100.0	100.0

Note: One return trip = 2 trips

9.4.2 Frequency of Public Transport Usage by Trip Purpose

All respondents who had used public transport at least once in the last 2-3 months before the survey were asked for what trip purposes they used public transport, and then how often they had used public transport for that trip purpose. The results are presented in Tables 9.20A-C to show how often the trips made by each trip purpose were made by public transport. The main findings from all 3 parts (A-C) of Table 9.20 are summarised below:

- The trip purposes with the greatest proportion of high frequency (>7 trips/week) travellers were school/education (75%) and work (51%).
- Trips other than for work and school/education purposes generally had around 60% of respondents travelling < 5 trips/month.
- The main differences between the two areas were: Wellington has a much greater proportion of respondents making high frequency work trips (55% 7+/week) than Hamilton (15%); and Hamilton has a greater proportion of respondents making high frequency entertainment/sport (12.5%) and visiting trips (25%) than Wellington (0%).

9.4.3 Alternatives to Public Transport

All respondents who had used public transport at least once in the last few months before the survey were asked how they would make the trips they had made by public transport if public transport had not been available. The results for the two areas, and for the combined areas, are shown in Table 9.21A-C.

Table 9.20 Frequency of public transport use by trip purpose, before telephone survey (% of respondents who had used public transport in those months).

A. Wellington survey results

Trip Purpose	None	<5/mth	<5/wk	5-6/wk	7-10/wk	>10/wk	Other	Total
Work	9.8	11.8	17.6	5.9	51.0	3.9	0.0	100.0
School/education	0.0	10.0	30.0	0.0	60.0	0.0	0.0	100.0
Shopping	12.8	56.4	28.2	2.6	0.0	0.0	0.0	100.0
Personal Business	11.1	55.6	22.2	0.0	11.1	0.0	0.0	100.0
Entertainment/Sport	18.9	45.9	27.0	8.1	0.0	0.0	0.0	100.0
Visiting friends/relatives	6.3	37.5	43.8	12.5	0.0	0.0	0.0	100.0

B. Hamilton survey results

Trip Purpose	None	<5/mth	<5/wk	5-6/wk	7-10/wk	>10/wk	Other	Total
Work	7.7	15.4	30.8	23.1	15.4	0.0	7.7	100.0
School/education	0.0	0.0	10.0	0.0	60.0	30.0	0.0	100.0
Shopping	6.9	48.3	41.4	0.0	3.4	0.0	0.0	100.0
Personal Business	12.5	37.5	37.5	0.0	0.0	12.5	0.0	100.0
Entertainment/Sport	0.0	25.0	50.0	0.0	12.5	12.5	0.0	100.0
Visiting friends/relatives	0.0	50.0	25.0	0.0	25.0	0.0	0.0	100.0

C. Combined survey results

Trip Purpose	None	<5/mth	<5/wk	5-6/wk	7-10/wk	>10/wk	Other	Total
Work	9.4	12.5	20.3	9.4	43.8	3.1	1.6	100.0
School/education	0.0	5.0	20.0	0.0	60.0	15.0	0.0	100.0
Shopping	10.3	52.9	33.8	1.5	1.5	0.0	0.0	100.0
Personal Business	11.8	47.1	29.4	0.0	5.9	5.9	0.0	100.0
Entertainment/Sport	15.6	42.2	31.1	6.7	2.2	2.2	0.0	100.0
Visiting friends/relatives	5.0	40.0	40.0	10.0	5.0	0.0	0.0	100.0

The main findings (from Table 9.21A-C) are:

- Nearly all work and school/education trips would continue to be made. However 35% of visiting trips, 24% of entertainment/sport trips, and 17% of both shopping and personal business trips would not be made.
- A change to being car driver for over 30% of most trip purposes would be made, and a change to being car passenger would be made for 50% of school/education trips. A significant difference between the two areas is that 40% of school/education trips transfer to cycle in Hamilton (0% Wellington), while 40% of these trips transfer to walk/run in Wellington (but only 10% in Hamilton).

Table 9.21 Alternative modes if public transport was not available (% of respondents who had used public transport before survey).

A. Wellington survey results

Trip Purpose	Car - Driver	Car Pass.	Bicycle	Walk/Run	Go elsewhere	Not make trip at all	Other
Work	39.2	31.4	3.9	15.7	2.0	2.0	5.9
School/education	0.0	50.0	0.0	40.0	0.0	10.0	0.0
Shopping	35.9	10.3	0.0	30.8	0.0	12.8	10.3
Personal Business	33.3	11.1	0.0	22.2	22.2	0.0	11.1
Entertainment/Sport	32.4	24.3	5.4	2.7	0.0	27.0	8.1
Visiting friends/relatives	25.0	18.8	6.3	12.5	0.0	31.3	6.3

B. Hamilton survey results

Trip Purpose	Car - Driver	Car Pass.	Bicycle	Walk/Run	Go elsewhere	Not make trip at all	Other
Work	30.8	23.1	15.4	15.4	0.0	0.0	15.4
School/education	0.0	50.0	40.0	10.0	0.0	0.0	0.0
Shopping	24.1	17.2	6.9	27.6	0.0	20.7	3.4
Personal Business	25.0	25.0	0.0	37.5	0.0	12.5	0.0
Entertainment/Sport	37.5	0.0	12.5	37.5	0.0	12.5	0.0
Visiting friends/relatives	0.0	25.0	0.0	0.0	0.0	50.0	25.0

C. Combined survey results

Trip Purpose	Car - Driver	Car Pass.	Bicycle	Walk/Run	Go elsewhere	Not make trip at all	Other
Work	37.5	29.7	6.3	15.6	1.6	1.6	7.8
School/education	0.0	50.0	20.0	25.0	0.0	5.0	0.0
Shopping	30.9	13.2	2.9	29.4	0.0	16.2	7.4
Personal Business	29.4	17.6	29.4	17.6	0.0	17.6	5.9
Entertainment/Sport	33.3	20.0	6.7	8.9	0.0	24.4	6.7
Visiting friends/relatives	20.0	20.0	5.0	10.0	0.0	35.0	10.0

9.4.4 Inconvenience of No Public Transport

All respondents who had used public transport at least once in the last few months were asked how much inconvenience it would cause them if public transport was not available for their travel. The results for the two areas, and for the combined areas, are shown in Table 9.22A-C.

The main findings (from Table 9.22A-C) are:

- Respondents indicated that the greatest inconvenience if public transport was not available was for school/education trips (50%), followed by work trips (33%).
- The least inconvenience was for personal business and entertainment/sport, with 29% and 18% respectively indicating that lack of public transport would cause them no inconvenience.
- The main difference between the two areas was the lesser effect on school/education trips in Hamilton (40% indicated severe inconvenience) than in Wellington (60%).

Table 9.22 Inconvenience to user for different trip purposes if public transport was not available (% of respondents who had used public transport before survey).

A. Wellington survey results

Trip Purpose	Severe	Consider-able	Moderate	Little	None	Total
Work	33.3	27.5	19.6	17.6	2.0	100.0
School/education	60.0	10.0	20.0	10.0	0.0	100.0
Shopping	25.6	23.1	15.4	20.5	15.4	100.0
Personal Business	33.3	22.2	22.2	0.0	22.2	100.0
Entertainment/Sport	24.3	16.2	21.6	18.9	18.9	100.0
Visiting friends/relatives	18.8	37.5	18.8	12.5	12.5	100.0

B. Hamilton survey results

Trip Purpose	Severe	Consider-able	Moderate	Little	None	Total
Work	30.8	30.8	7.7	23.1	7.7	100.0
School/education	40.0	0.0	30.0	20.0	10.0	100.0
Shopping	27.6	20.7	27.6	20.7	3.4	100.0
Personal Business	12.5	25.0	0.0	25.0	37.5	100.0
Entertainment/Sport	12.5	0.0	50.0	25.0	12.5	100.0
Visiting friends/relatives	50.0	25.0	0.0	25.0	0.0	100.0

C. Combined survey results

Trip Purpose	Severe	Consider-able	Moderate	Little	None	Total
Work	32.8	28.1	17.2	18.8	3.1	100.0
School/education	50.0	5.0	25.0	15.0	5.0	100.0
Shopping	26.5	22.1	20.6	20.6	10.3	100.0
Personal Business	23.5	23.5	11.8	11.8	29.4	100.0
Entertainment/Sport	22.2	13.3	26.7	20.0	17.8	100.0
Visiting friends/relatives	25.0	35.0	15.0	15.0	10.0	100.0

10. ANALYSIS OF PUBLIC TRANSPORT DEPENDENCE

10.1 Introduction

Analysis of the survey data was carried out to examine key public transport-dependence factors in order to:

- Examine the applicability of the proposed definition of public transport-dependent people, and which groups would be defined as public transport dependent under this definition;
- Test the findings of the Stage 1 analysis in terms of which groups should be defined as public transport dependent;
- Identify any other key factors in defining public transport dependence.

10.2 Public Transport Usage

One aspect of the definition of public transport dependence adopted for this telephone survey was *'people who make a substantial proportion of their trips by public transport'*. The survey allows analysis of this in terms of the proportion of trips made in the 24 hours (one day's travel) by public transport just before the survey was carried out.

Table 10.1 shows the proportion of trips made on the sample day, by public transport, for different age groups, and for each area. Several comments can be made:

- The 12-15 year age group make a very high proportion of their trips by public transport in both areas, the highest of all age groups surveyed.
- The 15-19 age group are next highest in both areas, although the Wellington proportion is over double that of Hamilton.
- Differences between Wellington and Hamilton are significant for the adult age group: Wellington people in the over 20 age groups make 7-13% of their trips by public transport, whereas the corresponding Hamilton groups make only around 1% of their trips by public transport, i.e. a ratio of around 10:1 between the two centres.

Table 10.1 Proportion (%) of trips made by public transport related to different age groups.

Age (years)	Wellington	Hamilton	All
12 - 15	30.8	34.6	33.3
15 - 19	21.1	8.4	12.4
20 - 39	13.1	0.9	6.1
40 - 59	8.0	0.7	4.6
60 +	6.9	1.4	4.2
Average	11.8	3.1	7.0

Table 10.2 shows the proportion of trips made on the sample day by public transport, depending on household car ownership, and for each area. Several comments can be made:

- Households who do not own a motor vehicle make a substantial proportion (24%) of their trips by public transport, about 34% of their trips in Wellington and 15% in Hamilton.
- Car-owning households make much lower proportions of their trips by public transport, around 10% in Wellington and 2-3% in Hamilton.
- No clear pattern is shown of decreasing public transport usage as car ownership per household increases beyond the first car.

Table 10.2 Proportion (%) of trips made by public transport related to number of motor vehicles in household.

No. of Motor Vehicles	Wellington	Hamilton	All
None	34.3	14.6	23.7
One	8.4	3.6	6.1
Two	13.3	1.7	6.8
Three	4.2	3.8	3.9
Over three	14.6	0.0	4.2
Average	11.8	3.1	7.0

Table 10.3 shows the proportion of trips made by public transport by household income:

- Very low income households (under $10,000) make a very high proportion of their trips by public transport (46% in Wellington and 31% in Hamilton).
- For households above this income level, there is a weak tendency for the proportion of trips by public transport to decrease as income increases.
- The difference between Wellington and Hamilton is significant. In Hamilton, apart from those on very low incomes, all groups made less than 2% of their trips by public transport (an average of around 1%), whereas all except for the highest income groups made at least 10% of their trips by public transport in Wellington.

Table 10.4 shows the proportion of trips by public transport depending on employment type, for each area. Several comments can be made:

- Students made the highest proportion of their trips by public transport, with Wellington students making 26% of their trips by public transport, and 10% by Hamilton students.
- Full-time workers are the next highest group in Wellington (12.5% of their trips), followed by part-time workers (9%).
- Retired people are the second highest group in Hamilton, although they only make 2% of their trips by public transport.

Table 10.3 Proportion (%) of trips made by public transport related to household income (NZ$).

Household Income (NZ$)	Wellington	Hamilton	All
Under $10,000	46.2	30.8	35.9
$10,001-$20,000	18.0	1.1	7.3
$20,001-$30,000	12.0	1.4	6.7
$30,001-$40,000	12.0	0.0	5.2
$40,001-$50,000	10.1	0.0	2.9
$50,001-$60,000	7.4	1.9	1.1
$60,001-$70,000	0.0	0.0	6.3
Over $70,000	11.5	0.0	8.7
Don't Know	13.8	7.0	8.4
Refused	11.7	0.0	0.0
Average	11.8	3.1	7.0

Table 10.4 Proportion (%) of trips made by public transport according to employment type.

Employment Type	Wellington	Hamilton	All
Full-time worker	12.5	1.2	6.3
Part-time worker	8.9	1.2	4.4
Homemaker	5.9	0.0	3.2
Retired	6.8	2.0	4.8
Student	25.8	10.1	15.8
Average	11.8	3.1	7.0

Table 10.5 shows the proportion of trips made by public transport according to trip purpose, for each area. Several comments can be made:

- Overall work and education trips have the highest proportion (34% for all groups) by public transport, with shopping trips the next highest (10%).
- However, the differences are significant between Wellington and Hamilton: 23% of work trips were made by public transport in Wellington, compared with only 2% in Hamilton; and 43% of school/education trips are made by public transport in Wellington and 14% in Hamilton.

In summary, the groups who made the highest proportion of their trips by public transport were:

- People in the 12-15 and 15-19 age groups,
- People in households who do not own a motor vehicle,
- People in households with very low incomes (< $10,000),
- Students, and full-time workers in Wellington,
- People making trips to/from work and to/from school/education.

Table 10.5 Proportion (%) of trips made by public transport related to trip purpose.

Trip Purpose	Wellington	Hamilton	All
Work	23.5	2.1	12.0
School/Education	43.5	13.8	22.2
Employer's Business	7.1	0.0	2.9
Convenience Shopping	3.7	1.4	2.6
Comparison Shopping	6.9	8.6	7.8
Personal Business	0.0	0.0	0.0
Entertainment/Sport	4.7	3.6	4.1
Visiting friends/relatives	7.8	1.4	4.4
Dropping off others	0.0	0.0	0.0
Others	9.1	3.1	4.7
Average	11.8	3.1	7.0

10.3 Public Transport Trip Rates

Daily public transport trip rates and overall trip rates have been calculated from the one day's travel data for each of the demographic groups analysed above. The trip rates are set out in Tables 10.6-10.9, and the main findings are:

- Wellington's public transport trip rate (0.3) is three times that of Hamilton (0.1), although Hamilton's overall trip rate (3.2) is slightly higher than Wellington's (2.7). The overall average public transport trip rate was 0.2 and the overall trip rate 2.9.
- The 12-15 age group had the highest public transport trip rate overall (1.0), followed by the 15-19 group (0.4). Overall trip rates were similar for <60 age groups (3.0-3.3), but the over 60 group had a much lower trip rate (1.9).
- Households with no motor vehicles had the highest public transport trip rate (0.4), around double that of other car ownership groups. This group also had a much lower overall trip rate, of 1.7 against the average of 2.9.
- Students had the highest public transport trip rate (0.5), over double that of any other employment group. Retired people had the lowest public transport trip rate (0.1), and the lowest overall trip rate (1.9).
- The lowest household income group had the highest public transport trip rate (0.6), at least double that of any other household income group. This group also had a much lower average trip rate, of 1.7 against the 3.1 average.

Table 10.6 Daily trip rates by age.

Age (years)	Wellington		Hamilton		All	
	PT Trips	All Trips	PT Trips	All Trips	PT Trips	All Trips
12 - 15	0.8	2.6	1.1	3.3	1.0	3.0
15 - 19	0.6	2.7	0.3	3.3	0.4	3.1
20 - 39	0.4	2.9	0.0	3.7	0.2	3.3
40 - 59	0.2	2.9	0.0	3.0	0.1	3.0
60 +	0.1	1.8	0.0	1.9	0.1	1.9
Average	0.3	2.7	0.1	3.2	0.2	2.9

Table 10.7 Daily trip rates by number of motor vehicles in household.

No. of Motor Vehicles	Wellington		Hamilton		All	
	PT Trips	All Trips	PT Trips	All Trips	PT Trips	All Trips
None	0.6	1.8	0.2	1.6	0.4	1.7
One	0.2	2.7	0.1	3.1	0.2	2.9
Two	0.4	2.8	0.1	3.7	0.2	3.2
Three	0.1	3.0	0.1	3.6	0.1	3.3
Over three	0.4	2.9	0.0	3.6	0.1	3.4
Average	0.3	2.7	0.1	3.2	0.2	2.9

Table 10.8 Daily trip rates by employment type.

Employment Type	Wellington		Hamilton		All	
	PT Trips	All Trips	PT Trips	All Trips	PT Trips	All Trips
Full-time worker	0.4	2.9	0.0	3.6	0.2	3.2
Part-time worker	0.2	2.4	0.0	3.7	0.1	3.0
Homemaker	0.2	3.4	0.0	2.7	0.1	3.0
Retired	0.1	2.1	0.0	1.7	0.1	1.9
Student	0.7	2.7	0.3	3.4	0.5	3.1
Average	0.3	2.7	0.1	3.2	0.2	2.9

Table 10.9 Daily trip rates by household income (NZ$).

Household Income (NZ$)	Wellington		Hamilton		All	
	PT Trips	All Trips	PT Trips	All Trips	PT Trips	All Trips
Under $10,000	0.7	1.4	0.6	1.9	0.6	1.7
$10,001-$20,000	0.4	2.2	0.0	3.1	0.2	2.7
$20,001-$30,000	0.3	2.4	0.0	3.5	0.2	2.9
$30,001-$40,000	0.3	3.0	0.0	3.7	0.2	3.3
$40,001-$50,000	0.2	2.3	0.0	3.2	0.1	2.8
$50,001-$60,000	0.0	3.4	0.1	3.4	0.0	3.4
$60,001-$70,000	0.3	2.6	0.0	4.4	0.2	3.2
Over $70,000	0.5	4.0	0.0	4.1	0.3	4.0
Average	0.3	2.8	0.1	3.4	0.2	3.1

Note - 24% of respondents did not know, or refused to answer, in regard to their household income.

10.4 Availability of Alternative Travel Modes

For every trip made by public transport, the respondent was asked to indicate if an alternative travel mode was available for that trip. Analysis of the results found:

- Overall, 65% of the public transport trips did not have an alternative mode available for use of the trip maker (69% for Wellington and 57% for Hamilton). Of those trips for which an alternative to public transport was available, 30% were available 'readily', and 5% available 'with difficulty'.
- The 15-19 age group had the highest proportion of trips among all age groups without an alternative available (73%), and the 12-15 group had the lowest (54%). The other age groups were around 65%.

  The differences between Wellington and Hamilton were significant however. In Wellington, the over 60 age group was second highest (80%), behind the 15-19 age group (88%), and the 12-15 age group was the lowest (25%); whereas in Hamilton the 60+ age group was lowest (0%), with all the other groups in the range of 50-67%.
- No clear pattern emerged between household income or car ownership and availability of alternative modes.
- Part-time workers had the highest proportion of trips without an alternative among employment types (88%), while homemakers had the lowest (25%). Other groups were in the range of 60-66% of trips without an available alternative.
- For trip purpose and availability of alternative transport, 86% of trips to visit friends or relatives, and 71% of trips to entertainment/sport did not have an alternative available. The next highest was work trips (70%), followed by dropping off others (67%), and school/education trips (58%). There were differences between Wellington and Hamilton, mainly in regard to work trips, with only 40% of these trips in Hamilton not having an alternative mode against 74% in Wellington.

For those public transport trips where an alternative mode was available, respondents were asked to indicate what that mode was. The significant findings were:

- Overall, for trips which had an alternative mode available, 50% had car driver as their first (best) alternative, 25% car passenger, 3% cycle, 6% walk/run, and 16% other.
- An alternative mode was available for nearly half of the 12-15 age group public transport trips. Of these, 66% were as car passengers and 33% as other.
- Although over 33% of trips made by people in households with no cars had an alternative, none of these had car driver as an alternative. 43% of trips had car passenger as an alternative, 29% walking, and 29% other.
- Of the 29% of trips made by people on incomes <$10,000 and who had an alternative mode available, only 25% had car driver as the alternative, 25% had cycle, and 50% had other.

- Of trips made by students 37% had an alternative available. 40% of these had car driver as the alternative, 50% car passenger, and 10% bike.

10.5 Inconvenience to User if No Public Transport Available

People who made at least one trip by public transport in the 2 to 3 months before the survey were asked how much inconvenience they would suffer if public transport was not available for that trip. Respondents were asked to rank the inconvenience on a 5 point scale, with severe (5) being the highest level of inconvenience and no inconvenience (0) being the lowest. This ranking was done for different trip purposes. Tables 10.10-10.13 show the proportion of public transport users who indicated they would suffer severe inconvenience for different trip purposes and by the four demographic factors used earlier. The analysis found:

- A reasonable proportion of nearly all groups indicated they would suffer severe inconvenience as a result of public transport not being available for the trips they currently make by public transport. As this was a subjective measure of welfare loss it is difficult to draw too much from the findings, although they are reasonably consistent with the other findings recorded in Sections 10.1-10.4 of this report.
- For different age groups and trip purpose, the highest level of inconvenience was found for the 12-15 age group for school trips (67% of trips would suffer severe inconvenience), with 15-19 age group for work trips next (57%). The worst affected group overall appeared to be the 60+ age group.
- People in households with incomes < $10,000, going to shop (80%) or personal business (100%) recorded the highest level of inconvenience in regard to the different income groups.
- People in households with no cars going to school or education recorded the highest level of inconvenience (100%) in regard to car ownership groups.
- The highest inconvenience level for employment type groups was recorded by full-time workers going to education (100%).

(Abbreviations used in Tables 10.10-10.13:
Sch. School; Educ. Education; Pers.Bus. Personal Business; Ent. Entertainment)

Table 10.10 % of public transport trips causing severe inconvenience, by age and purpose.

Age (years)	Trip Purpose					
	Work	Sch./Educ.	Shopping	Pers. Bus.	Ent./Sport	Visiting
12 - 15	-	66.7	0.0	-	0.0	0.0
15 - 19	57.1	40.0	25.0	0.0	14.3	0.0
20 - 39	28.6	50.0	24.1	33.3	27.3	33.3
40 - 59	30.0	-	11.1	25.0	12.5	0.0
60 +	50.0	-	38.1	0.0	28.6	50.0

Table 10.11 % of trips by public transport causing severe inconvenience, by household income (NZ$) and purpose.

Household Income (NZ$)	Trip Purpose					
	Work	Sch./Educ.	Shopping	Pers. Bus.	Ent./Sport	Visiting
Under $10,000	40.0	-	80.0	100.0	-	-
$10,001-$20,000	50.0	-	50.0	25.0	40.0	60.0
$20,001-$30,000	16.7	33.3	30.0	33.3	42.3	33.3
$30,001-$40,000	46.2	-	16.7	50.0	33.3	50.0
$40,001-$50,000	25.0	-	9.1	0.0	37.5	0.0
$50,001-$60,000	0.0	50.0	0.0	0.0	0.0	0.0
$60,001-$70,000	20.0	-	0.0	-	0.0	-
Over $70,000	30.8	-	0.0	0.0	0.0	0.0

Table 10.12 % of trips by public transport causing severe inconvenience, by motor vehicle ownership and purpose.

No. of Motor Vehicles	Trip Purpose					
	Work	Sch./Educ.	Shopping	Pers. Bus.	Ent./Sport	Visiting
None	30.0	100.0	12.5	22.0	50.0	-
One	17.4	50.0	13.3	20.0	15.8	0.0
Two	56.5	50.0	0.0	0.0	30.0	0.0
Three	25.0	0.0	0.0	100.0	0.0	0.0
Over three	0.0	50.0	56.5	-	0.0	71.4

Table 10.13 % of trips by public transport causing severe inconvenience, by employment type and purpose.

Employment Type	Trip Purpose					
	Work	Sch./Educ.	Shopping	Pers. Bus.	Ent./Sport	Visiting
Full-time worker	32.6	100.0	12.5	50.0	12.5	20.0
Part-time worker	33.6	-	27.3	0.0	33.3	0.0
Homemaker	-	-	22.2	0.0	33.3	50.0
Retired	-	-	42.1	0.0	33.3	50.0
Student	40.0	44.4	11.1	50.0	22.2	20.0

10.6 Difficulties in Making Trips by Public Transport

Respondents were asked to indicate whether *'there are any trips within the urban area which you would like to make but do not because of lack of (or high cost of) suitable public transport?'* Analysis of the results found:

- Around 17% of respondents in both Wellington and Hamilton indicated that they could not make at least one trip because of lack of suitable public transport.

- There does not appear to be any direct linkage between age, income, car ownership, or employment type and trip difficulties.
- The groups with the highest proportion of members (and significantly above the area average) with trip difficulties were:

  for Wellington:
  - people aged 15-19 years (30%),
  - people in households with incomes $40,000-$50,000 (30%) and $60,000-$70,000 (23%),
  - people in households with no cars (20%) and three cars (27%),
  - students (23%);

  for Hamilton:
  - people aged 40-59 years (29%),
  - people in households with incomes over $60,000,
  - people in households with no cars (29%),
  - part-time workers (21%).

- Overall, low frequency users of public transport (less than 7 trips per week) indicated more trip difficulties than high frequency users.

10.7 Characteristics of Public Transport Trip Making

Table 10.14 (on p.84) shows the public transport trip-making characteristics for each of the subgroups obtained by cross-tabulating the age by household income by vehicle ownership. The number of respondents in each subgroup is also shown. (As several subgroups contained no or very few respondents, the results must therefore be treated with some caution.)

Table 10.15 (p.85) shows the top four subgroups for Hamilton and Wellington in terms of proportion of trips made by public transport and daily public transport trip rates (obtained from Table 10.14). Most of these subgroups comprise people in low income households without cars. Significantly, these subgroups make up a very small proportion of the total respondents (5% in Hamilton and 6% in Wellington). Thus, the majority of respondents make nearly all of their trips by non-public transport modes, i.e. they do not use public transport.

Table 10.14 Demographic matrix for public transport (PT) trip making.

Household Income (NZ$)		Under $10,000		$10,001 - $20,000		Over $20,000		Grand Total
No. of Motor Vehicles		1+ cars	No cars	1+ cars	No cars	1+ cars	No cars	
Number of Respondents Age (yr)								
Hamilton	12-15	2	0	0	0	1	0	8
	15-19	0	2	0	1	10	0	25
	20-59	4	2	12	5	88	3	143
	60+	2	2	5	5	7	0	36
Total		8	6	17	11	106	3	212
Wellington	12-15	0	0	0	0	0	0	5
	15-19	2	0	0	0	7	1	14
	20-59	2	2	8	4	106	7	144
	60+	2	1	7	4	15	0	39
Total		6	3	15	8	128	8	202
Grand Total		14	9	32	19	234	11	414
No. of PT Trips								
Hamilton	12-15	3	0	0	0	0	0	9
	15-19	0	4	0	0	1	0	7
	20-59	0	1	0	0	1	0	4
	60+	0	0	0	1	0	0	1
H Total		3	5	0	1	2	0	21
Wellington	12-15	0	0	0	0	0	0	4
	15-19	4	0	0	0	3	0	8
	20-59	2	0	2	4	32	5	47
	60+	0	0	0	3	2	0	5
W Total		6	0	2	7	37	5	64
Grand Total		9	5	2	8	39	5	85
Percentage of Trips Made by PT								
Hamilton	12-15	18.8	-	-	-	0.0	-	15.0
	15-19	-	25.0	-	0.0	1.3	-	2.1
	20-59	0.0	6.3	0.0	0.0	0.1	0.0	1.3
	60+	0.0	0.0	0.0	2.5	0.0	-	0.0
Total		4.7	10.4	0.0	1.1	0.2	0.0	2.9
Wellington	12-15	-	-	-	-	-	-	12.5
	15-19	25.0	-	-	-	5.4	0.0	3.1
	20-59	12.5	0.0	3.1	12.5	3.8	8.9	2.3
	60+	0.0	0.0	0.0	9.4	1.7	-	0.0
Total		12.5	0.0	1.7	10.9	3.6	7.8	3.6
Grand Total		8.0	6.9	0.8	5.3	2.1	5.7	3.2
PT Trip Rate								
Hamilton	12-15	1.50	-	-	-	0.00	-	1.13
	15-19	-	2.00	-	0.00	0.10	-	0.28
	20-59	0.00	0.50	0.00	0.00	0.01	0.00	0.03
	60+	0.00	0.00	0.00	0.20	0.00	-	0.03
Total		0.38	0.83	0.00	0.09	0.02	0.00	0.10
Wellington	12-15	-	-	-	-	-	-	0.80
	15-19	2.00	-	-	-	0.43	0.00	0.57
	20-59	1.00	0.00	0.25	1.00	0.30	0.71	0.33
	60+	0.00	0.00	0.00	0.75	0.13	-	0.13
Total		1.00	0.00	0.13	0.88	0.29	0.63	0.32
Grand Total		0.64	0.56	0.06	0.42	0.17	0.45	0.21

Table 10.15 Subgroups making high use of public transport.

Subgroup	% trips by PT	PT trip rate	% of respondents
Hamilton			
15-19 yr age, < $10,000, no car	25	2.0	1
12-15 yr age, < $10,000, 1+ car	19	1.5	1
20-59 yr age, < $10,000, no car	6	0.5	1
60+ yr age, $10,000-$20,000, no car	3	0.2	2
Wellington			
15-19 yr age, < $10,000, 1+ car	25	2.0	1
20-59 yr age, < $10,000, 1+ car	13	1.0	1
20-59 yr age, $10,000-$20,000, no car	13	1.0	2
60+ yr age, $10,000-$20,000, no car	9	0.8	2

11. CONCLUSIONS FROM TELEPHONE SURVEY

The following key findings can be drawn from analysis of the telephone survey results:

- Some groups within New Zealand society make a much higher proportion of their trips by public transport than other groups, and changes to the level of service/cost of public transport would have a greater effect on these groups. The groups with the highest proportion of their trips by public transport are:
  - people in the 12-15 and 15-19 age groups,
  - people in households who do not own a motor vehicle,
  - people in households with very low incomes (< $10,000),
  - students, and full-time workers in Wellington,
  - people making trips to/from work and to/from school/education.

- Two groups - people living in households without any motor vehicles, and people in low income households - make a much higher number of trips by public transport each day than other groups, and they make a lower number of total trips (i.e. by public transport and other modes) each day than other groups. These two groups have a very high dependence on public transport.

- People in the two younger age groups also make a high proportion of their trips by public transport and are highly public transport dependent.

- The majority (65%) of public transport trips are those made by people who have no alternative travel mode for that trip. Thus, most public transport users are dependent on public transport to some extent.

- Residents of the Wellington area appear to have a higher degree of dependence on public transport for their mobility than residents of Hamilton, with public transport usage being proportionally much lower in Hamilton.

- Nearly all public transport users would suffer some inconvenience if public transport services were discontinued, reflecting the lack of alternatives for the majority of public transport trips. The highest degree of inconvenience would be suffered by people in the 12-19 age group, people in households with incomes < $10,000, and people in households without motor vehicles.

- The telephone survey confirms the definition proposed for Public Transport Dependence (in Section 7.1, Part 2 of this report). Most public transport users do not have an alternative travel mode available for the trips made by public transport and are dependent on public transport to some extent.

PART 3
PERSONAL INTERVIEWS OF PUBLIC TRANSPORT-DEPENDENT PEOPLE

12. INTRODUCTION

This Part 3 of the report presents the results of the Personal Interview Survey of public transport-dependent people, which was Task 2 of the project's Stage 2.

The Personal Interview Survey was of people's likely response to a number of public transport scenarios, and the impact of these on their welfare. It followed the Household Telephone Survey from which the sample of public transport-dependent people was recruited for the interviews.

This Part 3 is set out as follows:

- Chapter 13 - sets out the objectives and methodology that was used for the personal interview survey, carried out in 1997 in Wellington and Hamilton.
- Chapter 14 - describes the characteristics of the survey respondents.
- Chapter 15 - summarises the survey results, and analyses these by different public transport-dependent factors.
- Chapter 16 - presents the conclusions from the Personal Interview Survey.

Appendices to this Part 3 are placed at the end of the report, and are as follows:
6 - Activity–Travel Diary.
7 - Characteristics of respondents.
8 - Public transport trips made by respondents.
9 - Respondent responses to and impact of public transport scenarios.

13. SURVEY OBJECTIVES & METHODOLOGY

13.1 Survey Objectives

The personal interview part of this project (Stage 2, Task 2) was built on the household telephone survey (Stage 2, Task 1), and allowed for a detailed examination of the likely responses of/impacts on/ public transport-dependent people arising from different public transport service and fare scenarios. This cannot be done very well in a telephone survey, and is best handled by a face-to-face interview where different activity and travel options can be fully discussed.

In addition, the interviews enabled respondents to relate their activity/travel patterns to their household activity/travel patterns. Individual travel decisions are generally made in the context of the household activity/travel patterns rather than in isolation, and the personal interviews will allow for a fuller examination of these household interrelationships.

13.2 Survey Methodology

13.2.1 HATS Approach

The Household Activities and Travel Simulation (HATS) approach formed the basis for the personal interview methodology. The HATS approach was first used in Oxford, UK. Households were asked to keep activity diaries for one week. This was followed up with a personal interview with all household members, centred round the HATS 'game'.

One of the conclusions from this research was that constraints upon household activities (e.g. joint household activities, meal times) were as important to consider as other variables in travel demand. The household life cycle was found to be a statistically valid basis for segmenting travel behaviour, with 62% of the variance between households being explained by child care arrangements.

13.2.2 Household Activity–Travel Diary

Given the premise that the responses to public transport fares increases &/or service level reductions would be influenced by the household type of respondents, a household activity–travel diary approach was used. This involved attempting to get each member of the household to complete an activity–travel diary for the survey day. As nearly all travel is conducted to link two activities (rather than as an activity in its own right), the activity–travel diaries give both the respondent and the interviewer a good understanding of the dynamic linkage between trips and activities. Discussion of likely response to a particular public transport scenario can then be carried out within the context of a particular day's activities and travel. The completed diaries for other household members help respondents assess their activity–travel options given the patterns of other household members.

The decision was to focus on one day's activities and travel, rather than on a week as in HATS, because one day was expected to obtain better results for the following reasons:

- Most public transport users make the same types of trips by public transport on a daily basis, and it was considered that excellent results could be obtained by surveying one day on which the primary respondent made a public transport trip.
- Getting the co-operation of people to complete a whole week's activity–travel diary would be very difficult given the time and effort required from each respondent.
- Most of the information collected over the week would not be used because the time required for the personal interview survey to obtain responses to each scenario could only feasibly focus on one day's travel. In addition, respondent fatigue would distort the results if responses were sought for every individual trip completed during the week; and responses would be less reliable as more time would have elapsed since the respondent had made the trip.
- Respondents' travel patterns had already been examined in some depth during the Telephone Survey. In particular, one whole day's travel (i.e. the telephone survey

day) had been recorded, and details regarding usual public transport usage (including trip purpose and frequency) over a week had been obtained in that survey.

13.2.3 Methodology

A. Initial Telephone Contact

Each person (called a 'respondent') who had indicated availability for the personal interview survey was contacted by telephone to confirm their availability. An interview day and time was then arranged for the evening of the day on which they were most likely to make a public transport trip. On the day before or on the morning of the interview day the respondent was contacted again to confirm that a public transport trip was going to be made. If not, the interview was re-arranged.

Recruiting public transport user respondents for the interviews from those Telephone Survey respondents who had indicated they were willing to participate in further research, proved to be more difficult than expected.

Altogether 57 people (20 in Hamilton, 37 in Wellington), all of whom had used public transport in the last few months, had indicated they would be willing to participate in a follow-up personal survey. A minimum sample size of 40 (20 in each area) was set for the personal interview survey.

Demographic analysis of the personal interview sample shows that it represented a broad cross-section of the population in regard to age, household income, employment type and household motor vehicle ownership. Particularly well represented are people in households with no cars (highly public transport dependent), although people from Wellington in the younger age groups and very low income groups are not well represented. Because of the relatively high dependence on public transport by all public transport users for the trips they do make by public transport, the sample obtained enabled a more useful analysis to be carried out than if a more narrowly defined sample (e.g. public transport users from households with no motor vehicles) had been used.

Of the 37 Wellington respondents:

- Five were either 'not interested' in being interviewed, or 'too busy'.
- Seven could not be contacted after repeated call backs, or numbers had been disconnected and/or re-assigned to someone else.
- Seven were no longer public transport users or could not give a definite day when they would be using public transport.

A similar result was obtained in Hamilton. Given that only 5 months had elapsed since the Telephone Survey, this may indicate a high degree of change in life situation and travel patterns by public transport users. To supplement the remaining respondents, several more were recruited from public transport users in the Telephone Survey who, at that time, had not indicated interest in taking part in further surveys. In total, 35 personal interviews (27 in Wellington and 8 in Hamilton) were conducted, and

activity/travel diaries were completed for 42 public transport users (i.e. diaries were completed for a number of other household members).

B. Personal Interview

An activity - travel diary (example attached as Appendix 6) was completed covering activities and travel on the interview day for each member of the respondent's household who was available. The interviewer assisted in the completion of the diaries.

The interviewer then asked each household member who made a public transport trip on that day what they would have done in regard to each public transport trip under three scenarios:

- Doubled public transport fares.
- Halved public transport service frequency.
- No public transport available for that trip (either no service or at wrong time).

The likely response of each public transport user under each scenario was recorded in terms of any changes in:

- Re-organisation of activities undertaken by respondent and household: change in activities, change in time/location when/where undertaken.
- Impact of change in activity: quality, choice, flow-on-effects.
- Travel behaviour: e.g. total trip making, mode, destination, time of travel, frequency, journey time, cost.
- Residential choices: i.e. would the respondent change residence location?
- Employment choices: i.e. would employment location be changed?
- Shopping Centre choices.

Public transport users were also asked to comment on:

- Their subjective assessment of their welfare change (both individual and household).
- Any long-term changes which they would be required to make.

14. CHARACTERISTICS OF SURVEY RESPONDENTS

14.1 Demographic Characteristics of Respondents

With 35 personal interviews being conducted, scenario responses were recorded for 36 public transport users, 28 in Wellington and 8 in Hamilton (respondent characteristics are summarised in Appendix 7). The age, household income, motor vehicle ownership, and public transport use of the respondents are shown in Tables 14.1-14.4. The personal interview characteristics are compared with the characteristics of public transport users from the Telephone Survey (these were people who had indicated that they had used public transport at least once during the last two months.

The composition of the personal respondents, in comparison to the public transport users in the Telephone Survey, differs in that:

- Age: the under 15 age group is not represented at all (5% of telephone survey); the 15-19 age group is missing from the Hamilton interviews (they were 25% of Hamilton respondents in telephone survey).
- Income: the under $10,000 group is missing from Wellington interviews (5% of Wellington respondents in telephone survey); middle and high income groups are under-represented in Hamilton respondents; over $70,000 group is over-represented in Wellington interviews.
- Car Ownership: no-car households are over-represented in interviews; and high car-owning households are under-represented.
- Public Transport Use: low public transport use group is under-represented in interviews; and high public transport use group is over-represented.

Given the differences between the respondent profiles of the two surveys, the results obtained in the personal interview survey will not be able to be directly translated to the telephone survey public transport users. However, most of the more public transport-dependent groups have been covered in the personal interview (particularly when the Wellington and Hamilton results are combined), and the results will be very useful in analysing the likely behaviour of public transport-dependent people.

Table 14.1 Age of respondents (no. of respondents).

Age (years)	Personal Interview Survey			Telephone Survey		
	Wellington	Hamilton	All	Wellington	Hamilton	All
Under 15	-	-	-	4	4	8
15 - 19	3	-	3	12	14	26
20 - 39	9	6	15	54	22	76
40 - 59	8	1	9	29	7	36
60 +	6	1	7	16	9	25
Total	26	8	34	115	56	171

Table 14.2 Household income (NZ$) (no. of respondents).

Household Income (NZ$)	Personal Interview Survey			Telephone Survey		
	Wellington	Hamilton	All	Wellington	Hamilton	All
Under $10,000	-	1	1	5	3	8
$10,001 - $20,000	3	3	6	13	12	25
$20,001 - $30,000	2	-	2	19	4	23
$30,001 - $40,000	7	-	7	16	5	21
$40,001 - $50,000	2	2	4	13	10	23
$50,001 - $60,000	1	-	1	7	3	10
$60,001 - $70,000	1	-	1	7	0	7
Over $70,000	7	-	7	16	1	17
No Response	3	2	5	-	-	-
Total	26	8	34	96	38	134

Table 14.3 Motor vehicle ownership by respondents (no. of respondents).

No. of Motor Vehicles	Personal Interview Survey			Telephone Survey		
	Wellington	Hamilton	All	Wellington	Hamilton	All
None	6	5	11	15	19	34
One	10	1	11	51	17	68
Two	9	1	10	35	11	46
Three	-	1	1	6	4	10
Over three	1	-	1	8	5	13
Total	26	8	34	115	56	171

Table 14.4 Public transport use by respondents (no. of respondents).

No. of Trips	Personal Interview Survey			Telephone Survey		
	Wellington	Hamilton	All	Wellington	Hamilton	All
< 5 trips per month	1	2	3	54	24	78
< 5 trips a week	9	3	12	18	16	34
5-6 trips a week	1	1	2	6	4	10
7-10 trips a week	11	2	13	24	9	33
> 10 trips a week	4	-	4	13	3	16
Total	26	8	34	115	56	171

14.2 Trips Made by Public Transport

The public transport trips made by the respondents are summarised in Appendix 8. The number of public transport trips made by trip purpose and mode are shown in Table 14.5.

Table 14.5 Trips made by public transport by respondents.

Mode	Education	Personal Business	Shopping	Social/ Recreation	Work	Total
Hamilton						
Bus	0	7	11	2	3	23
Taxi	0	0	1	0	0	1
Total	0	7	12	2	3	24
Wellington						
Bus	5	0	8	9	20	42
Cable Car	0	0	0	0	2	2
Taxi	0	0	0	0	1	1
Train	5	0	2	0	13	20
Total	10	0	10	9	36	65
Grand Total	10	7	22	11	39	89

15. RESULTS OF PERSONAL INTERVIEW SURVEY

15.1 Overview

Each household member who made a public transport trip on the interview day (or the day before) was asked to indicate what their likely response would have been under three scenarios:

- Scenario 1: Halved public transport service frequency.
- Scenario 2: Doubled public transport fares.
- Scenario 3: No public transport available for that trip.

The likely response was sought in regard to the specific public transport trip(s) made by that person on the interview day. This meant that, where a person made more than one type of public transport trip, they could have different responses for each trip. Each person's response was recorded in terms of the short- and long-term changes in activity, travel behaviour, residence and employment; and the impacts of these changes in the short and long term.

The likely response, and impact, of each scenario have been summarised below. The survey results have been analysed in terms of two key variables: household motor vehicle ownership, and trip purpose. Analysis of the results of this survey found that responses/impacts tended to vary more with these two variables than any others.

The previous work on this project found that household motor vehicle ownership, household income, and respondent's age were important public transport-dependent variables. The latter two factors were not as important in this survey (the responses did not vary as significantly with these variables). In addition, household income is closely correlated with motor vehicle ownership (with income tending to increase with the number of vehicles owned); and age is correlated with trip purpose (the trip purpose of most people under 20 was education, and for those over 60 it was social/personal business).

Because of the much smaller number of respondents for Hamilton than for Wellington, and the unavailability of students (who make up a large proportion of users) for the personal interview survey in Hamilton, separate results have not been determined for the two cities.

The survey results are outlined below, and are summarised in Tables 15.1 - 15.8.

15.2 Scenario 1: Halved Public Transport Service Frequency

The respondents' likely responses to and impact of Scenario 1, i.e. service frequency being halved, are shown in Table 15.3 by motor vehicle ownership, and in Table 15.4 by trip purpose, and are summarised below.

15.2.1 Likely Response

Short Term

In the short term around 30% of people would reduce their activities, and thereby their travel. These would be people in households with no or one motor vehicle, and are primarily those who use public transport for their shopping/personal business and social/recreational trips. Only 12% of people would change destinations. These would mostly be people in no-car owning households making shopping/personal business/social trips.

People who would switch mode account for 39%, and are mostly those in high car-owning households who are making shopping/personal business/social trips. Few workers would switch modes, but would rather adjust their work hours to suit the new public transport timetable. The switch is to other than car. Only 11% would consider moving residence, and all of these use public transport for education or work.

Long Term

In the long term, greater changes would be made, particularly in regard to car use, with 28% switching to car in the long term compared to 8% in the short term. These would primarily be workers, and those in higher car-owning households. More workers would also consider other job options in the long term, including telecommuting.

15.2.2 Likely Impact

Short Term

People in lower car-owning households considered the impact would be less choice (using local shops/services), less fun activities, less personal time, more stress, and increased travel costs (where taxis had to be used). Overall, most people considered this scenario would be less convenient, although half of the workers considered it a neutral change.

Long Term

Nearly all the people in no-car owning households considered they would be worse off overall, generally for the reasons identified under short-term impact. Only half of the people in two-car owning households, and half of the workers, considered they would be worse off.

15.3 Scenario 2: Doubled Public Transport Fares

The respondents' likely responses to/impact of Scenario 2, i.e. fares being doubled, are shown in Table 15.5 by motor vehicle ownership, and in Table 15.6 by trip purpose, and are summarised below.

15.3.1 Likely Response

Short Term

The short-term response for Scenario 2 would be almost identical to Scenario 1 in terms of frequency of activity and travel, and destination. The significant difference would be in mode choice, with 47% of people changing mode under Scenario 2 compared to 39% under Scenario 1. Most of the mode switching would be by people in higher car-owning households, switching primarily to car. 67% of workers would probably change modes. 14% of people would consider moving residence, with all of these being from car-owning households. 11% of workers would consider job options, including working at home.

Long Term

As under Scenario 1, in the long term greater mode switching would take place (67% in the long term compared to 47% in the short term). People in car-owning households would almost all switch to car, whereas only 9% of people in no-car owning households would. 19% of people would consider moving residence in the long term (these would all be from car-owning households). 17% of workers would consider working at home or telecommuting.

15.3.2 Likely Impact

Short Term

33% of people commented that they would be worse off financially through increased travel costs. Although 14% of people (all in lower car ownership households) considered it would cut down their opportunities (mainly social activities), 20% of people in two-car owning households saw advantages in switching to car.

Long Term

Around 55% considered they would be worse off overall, particularly in financial terms. People in no-car owning households considered they would be worse off in a number of ways: financially, reduced social activities, less flexibility, more housebound. By contrast, only 30% of people in two or more-car owning households considered they would be worse off, with several people considering they would be better off.

15.4 Scenario 3: No Public Transport Service

The respondents' likely responses to/impact of Scenario 3, no public transport service, is shown in Table 15.7 by motor vehicle ownership, and in Table 15.8 by trip purpose, and are summarised below.

15.4.1 Likely Response

Short Term

In the short term 36% of people would reduce their activities (slightly more than for other scenarios). Most of these would be from no-car owning households (55% of this group) and one-car owning households (39%). Only 10% of two-car owning households would reduce their activities. Half the people in no-car owning households would change their destination to the local shops/services. Only 6% of the workers and 20% of the education trip people would consider giving up their job or education.

67% of the workers would switch to car, while only 19% of the people making non-work trips would use car (walk, bicycle, lift with friends/family, taxi). None of the people in no-car owning households would switch to car. 14% of people would consider moving residence.

Long Term

A greater proportion of people would consider moving residence in the long term (35%), compared to the short term (14%). These would be people from lower car-owning households, and 33% of workers. 27% of the people in no-car owning households would try to buy or borrow a car in the long term.

15.4.2 Likely Impact

Short Term

14% expected to be worse off financially (all people in lower car-owning households), but the major impact was a decreased 'quality of life' for 25% of people (particularly for people making social/recreation trips by public transport). Journey time would decrease for several people (switching to car), and increase for another (switching to bicycle).

Long Term

The long-term impacts were similar to those for Scenario 2, with around 55% considering they would be worse off overall, particularly in terms of 'quality of life', as well as financially. However, a significant proportion of people in two or more car-owning households, and 67% of workers, considered the scenario would have a neutral effect.

Table 15.1 Likely response to public transport scenarios.

Scenario	Short-Term Response (% change)			Long-Term Response (% change)		
	Activity	**Travel**	**Residence/Job**	**Activity**	**Travel**	**Residence/Job**
Service Frequency Halved	• 30% reduce activities • 12% change destinations • Changes by no-car owners/non-work/education trips	• 39% switch mode (8% to car) • Switchers mostly higher car owners making non-work/education trips	• 11% may move residence (all work/education trips)		• 28% switch to car (mainly workers/higher car owners)	
Fares Doubled	• Identical to halving frequency	• 47% switch mode (higher car owners/67% of workers)	• 14% may move residence (all car owners) • 11% of workers consider job options		• 67% switch mode (car owners switch to car; only 9% of no-car owners)	• 19% may move residence (car owners) • 17% of workers consider working at home
No Public Transport Service	• 36% reduce activities (55% of no-car owners, 39% of one-car owners, 10% of two-car owners) • 12% change destinations (50% of no- car owners)	• 67% of workers switch to car; 19% of non-work trips • No no-car owners switch to car	• 14% may move residence • 6% of workers & 20% of education trip people may give up job/education			• 35% may move residence (lower car owners & 33% of workers) • 27% of no-car owners try to buy/borrow car

Table 15.2 Likely impact of public transport scenarios.

User Category	Short Term Impact (% change)			Long Term Impact (% change)		
	Service Frequency Halved	**Double Fares**	**No PT Service**	**Service Frequency Halved**	**Double Fares**	**No PT Service**
Overall	• Less convenient	• 33% worse off- increased travel costs	• 14% worse off financially • 25% decreased 'quality of life'		• 55% worse off overall, particularly financially	• 55% worse off overall, particularly in terms of 'quality of life', as well as financially
No-car Owners	• Less choice, less fun/social activities, less personal time, more stress, increased travel costs	• 25% reduced social opportunities	• As for other scenarios	• Worse off overall	• All: worse off in many ways: financially, reduced social activities, less flexibility, more housebound	
1 Car Owners	• Similar to no-car owners	• 25% reduced social opportunities	• As for other scenarios			
2+ Car Owners		• 20% -advantages in using car	• Journey time decrease for 15%	• 50% worse off	• 30% worse off; 20% better off	• 20% worse off • 20% better off
Work trips	• Neutral			• 50% worse off		• 67% neutral

Table 15.3 Scenario 1: Public transport service frequency halved - response/impact by motor vehicle ownership.

No. of Mot.Veh.	No. of People	SHORT TERM		LONG TERM	
		Response	**Impact**	**Response**	**Impact**
None	11	• 8 people would reduce their activities, and travel less: The 3 who wouldn't reduce their travel all use PT to get to work • Some trips would no longer be made • 3 would use local services/shops rather than travel to city centre • 5 would have to use taxis sometimes	• Travel costs increase where use taxis • For most people this would mean: less fun activities, more stress, and less personal time • Using local shops means less choice	• One person would walk more often, several people would try to arrange alternative transport/get a ride with a friend • Two people would consider moving residence/employment (both use PT for work)	• Two people thought they would have more disposable income given they would travel less • Nearly all considered they would be worse off, generally for reasons identified in short term impact
1	13	• Only one person would reduce activities (social/recreation PT trip) • Most of workers would adjust work hours to accommodate new timetable • 5 people would consider mode change: 1 train, 2 walk, 1 car, 1 taxi • 3 people consider moving	• 3 people indicated their waiting time for PT would increase • 2 people increased travel costs: car running costs/parking charges • Overall, a reduction of personal time, less convenient & more stressful	• 4 people use car more (1 person buy extra car) • 1 person get a ride for some trips or use taxi • 1 person consider telecommuting	• Majority consider they would be worse off overall, particularly because of longer travel time
2	10	• 3 people would adjust their work/educ.hours; And thus travel times • 3 people may switch to car and 1 to walk • 1 person would switch to local school (i.e. only 1 suitable PT trip now) • 1 person change to area where easier to use PT	• Only 3 people considered they would be worse off overall (for these 3, less flexibility, more inconvenient)	• 5 people switch to car • 1 person explore telecommuting • 2 people consider moving residence • 1 person switch to local school	• 5 people consider they would be worse off, mostly due to increased travel time
3+	2	• 1 person switch to car	• Waiting time increase	• One person adjust work hours	• Not worse off overall

Table 15.4 Scenario 1: Public transport service frequency halved - response/impact by trip purpose.

Trip Purpose	No. of People	SHORT TERM		LONG TERM	
		Response	**Impact**	**Response**	**Impact**
Education	5	• 3 people adjust personal timetable, and travel time • 2 people switch to walk if necessary • 1 person change to local school • 1 person consider moving	• 2 people increased waiting time • 2 people less social time	• 1 person buy car	• Most worse off overall: less social time, more travel time
Shop./ Pers. Bus.	11	• 7 people reduce activities • 6 people switch mode: bicycle, ride with friends/family, taxi if necessary • 4 people travel less frequently • 2 people shop locally	• 3 people - travel costs increase • Less choice; less independence; life less enjoyable	• 2 people buy car	• Most people worse off, as for short term impact
Soc./Rec.	5	• 2 people reduce outings • 3 people may switch mode: train, walk, taxi • 1 person less travel • 1 person change destination	• Majority: more travel time, and 'less time for living'	• 1 person get ride for some trips, or taxi; if taxi, fewer trips • 1 person may move to South Island	• Majority of people worse off: less time available • 1 person: daughter asthmatic and will suffer from having to walk more- increased doctor's bills
Work	18	• Majority adjust work hours, and thereby travel times • Only 3 definitely switch modes (to car) • 2 people consider moving residences	• Half people considered it less convenient; other half neutral	• 7 people consider using car • 3 people consider moving residence • 2 people change work location	• Half consider themselves worse off, mainly because of increased travel time

Note: some people made more than one trip, for different purposes.

Table 15.5 Scenario 2: Public transport fares doubled - response/impact by motor vehicle ownership.

No. of Mot.Veh.	No. of People	SHORT TERM		LONG TERM	
		Response	**Impact**	**Response**	**Impact**
None	11	• 6 people would reduce their activities, and travel less • 3 people would change their destination (go local) • 3 people would change mode: taxi, bicycle, lift with friends, walk	• 4 people commented worse off financially • 2 people increased waiting time • 3 people reduced social activities	• 1 person buy car (work trip) • 4 people change mode: walk, taxi-use bus less often • 1 person consider moving closer to shops	• Most people consider they would be worse off; financially, less money for clothes, social events; less flexibility-housebound
1	13	• 6 people reduce activities, and travel less frequently • 5 people switch to car • 3 people consider moving residence • 2 people examine employment alternatives	• 3 people stated they would have less disposable income • Several people indicated it would cut down their opportunities	• 8 people would change mode, mostly to car (buy one if necessary) • 5 people would consider moving residence • 2 people would work at home if possible	• 4 people thought they would have less disposable income • 8 people considered they would be worse off, but several found this hard to assess (i.e. positive & negative)
2	10	• 9 people would probably change mode: 5 to car, 2 walk, 2 taxi or ride with friend • 2 people would consider moving	• 5 people thought they would be worse off financially • 2 people saw advantages from switching to car: decreased journey time & more convenience	• All would consider changing mode, mostly to car • 1 person consider changing to local school; and 1 person moving from Wellington & changing jobs	• 3 people considered they would be worse off; several people better off
3+	2	• 1 person use car	• Neutral		• Neutral

Table 15.6 Scenario 2: Public transport fares doubled - response/impact by trip purpose.

		SHORT TERM		LONG TERM	
Trip Purpose	No. of People	Response	Impact	Response	Impact
Education	5	• Little change: 1 person consider moving; and 1 person make fewer trips (retired)	• Activity restrictions on elderly person	• All look for alternative mode (mainly ride with friends/family) • 2 people move residence	• Majority considered they would be worse off; 2 less disposable income; 1 more isolated (retired person)
Shpg/ Pers. Bus.	11	• 6 people would reduce activities: shop less frequently, only make nec. trips • 2 people shop/per bus locally • 6 people change mode: 3 car, 2 ride with friends/family, 2 walk • 1 person consider moving	• 4 people thought they would be worse off financially • 4 people less social activities • For 1 person taking the car would be more convenient	• 1 person move closer to shops • 1 person buy car, have to leave earlier to get park	• 6 people consider themselves worse off; 2 people neutral; and 2 people better off (given all changes they would make)
Soc/Rec.	5	• 3 people reduce number of outings, and thereby travel • 1 person switch to walking • 1 person use local service.	• 2 people worse off financially, reduce expenditure on some items.	• 2 people consider using taxis more often • 1 person stay home more (may move to SI to be with family)	• 3 people consider themselves worse off. Elderly people lose independence
Work	18	• 12 people consider changing modes, majority to car, several ride with friends/family • 1 person work at home more, and 1 person examine job alternatives • 3 people consider moving residence	• 6 people indicated their travel costs would increase	• 3 people consider changing jobs or working at home/telecommuting.	• Overall long term impact was neutral: some people worse off, some better off, and some neutral

Table 15.7 Scenario 3: No public transport service - response/impact by motor vehicle ownership.

		SHORT TERM		LONG TERM	
No. of MotVeh.	No. of People	Response	Impact	Response	Impact
None	11	• 6 people would reduce their activities • New mode for trips: walk/bike-4; taxi/ride with friends/family-7 • 6 people do activity locally	• Several people financially worse off • 1 person- feelings of depression (housebound)	• 3 people try to buy/borrow car; 1 person use taxi • 4 people move residence • 2 people change jobs	• 6 people financially worse off • Majority of people consider they would be worse off overall: several people decreased quality of life
1	13	• 5 people reduce activities • 9 people use car; 2 people taxi/friends • 2 people consider moving residence • 2 people examine job alternatives	• 3 people- less disposable income • 5 people- less social contact, decreased 'quality of life' • 1 person-car cost more, but more independence	• 5 people move residence	• Some people consider themselves much worse off ('stranded', increased stress, less enjoyment of life, lose independence • Some people neutral.
2	10	• Only 1 person reduce activities • 4 people use car, 2 people walk, 3 taxi/get lift, 1 bicycle • 1 person change to local school • 3 people consider moving	• Journey time would decrease for 2 people; increase for 1 person • Comfort decrease for 1 person (bicycle) • Less social time/contact for 2 people; greater flexibility with car for 1 person; increased stress from driving for 1 person	• 2 people get lift short term, buy car in long term • 1 person consider telecommuting	• Some worse off, some better off
3+	2	• 1 person give up job-taxi too expensive • 1 person use car, walk if weather fine	• Loss of independence/interest for person giving up job; but hhd income still adequate	•	• Other person,-not worse off

Table 15.8 Scenario 3: No public transport - response/impact by trip purpose.

		SHORT TERM		LONG TERM	
Trip Purpose	**No. of People**	**Response**	**Impact**	**Response**	**Impact**
Education	5	• 1 person 'give up lecture' • 1 person change to car; others: walk, get lift, taxis • 1 person change to local school • 1 person move residence	• 2 people less social activities • 1 person-less independence	• 4 people consider moving	• Majority considered they would be worse off: 2 less disposable income; 1 more isolated (retired person)
Shpg/ Pers. Bus.	11	• 6 people reduce activities & travel • Change mode to: car-3 people, walk/bike-3; lift with friend/family-4; airport shuttle-1 person • 3 people shop locally	• 3 people-increased travel cost • 2 people-reduced social activities	• 2 people buy car (other mode in short term) • 3 people move closer to shops etc.	• 6 people worse off financially • Half people consider themselves worse off (financially, less flexibility/independence, less choice)
Soc/Rec.	5	• 4 people reduce soc/rec activities (1 person stay home) • 2 people use local services • Mode change: walk, lift with friends, taxi.	• 3 people noted strong impact- 'drastic effects', 'feelings of depression bec. horizons shrunk', 'life less enjoyable'	• 1 person definitely move to SI	• Nearly all would be much worse off
Work	18	• Only 1 person consider giving up job • 2 people change work hours • 12 people use car (1 person buy car); 1 person ride with friends, 1 person walk, 1 person bicycle • 4 people consider moving residence • 2 people examine job alternatives	• 1 person journey time increase, 1 person decrease • Bicycle user-comfort decrease	• 6 people strongly consider moving residence	• 5 people definitely worse off; remainder - neutral effect

16. CONCLUSIONS FROM PERSONAL INTERVIEW SURVEY

16.1 Overall Responses by User Groups

The analysis of the survey results found that the likely response to changes in service levels and fares differs markedly between different groups of public transport users:

- People in no-car owning households will generally reduce their activities and travel, or change their activity destination (note: household income was correlated closely with car ownership, with car ownership increasing as income increased).
- The scenarios make little difference to the activities of people in higher car-owning households, with a high proportion of them switching to car where necessary.
- People using public transport for commuting to work or education will almost all continue their activity on at the same level. A frequency change will merely result in them adjusting their schedule to accommodate this. A fares increase or no public transport service would cause most of them to switch to car.
- Elderly people, who live in low car-owning households, are very likely to reduce their activities (normally shopping/social/personal business) or conduct them locally.

16.2 Overall Impact on User Groups

The analysis of the survey results found that the likely impact of changes in service levels and fares differs markedly between different groups of public transport users:

- People in no-car owning households would suffer the greatest negative effect, with nearly all considering themselves much worse off (financially, socially, emotionally).
- A significant (but smaller) proportion of people in one-car owning households would experience similar negative effects to that experienced by the no-car owners.
- Most people in higher car-owning households are able to adjust to the changes without great impact, and the effects would be neutral over the whole group.
- The impact on different trip purposes is related to the financial/car owning status of the household, more than to the trip purpose.
- The elderly in no-car owning households consider they would experience 'drastic effects'.

16.3 Impact on Mobility & Access

The direct impact of the public transport scenarios on mobility and access differed depending primarily on car ownership and age. A significant proportion of people in no-car owning households would have reduced mobility under all of the scenarios, with no public transport service having the most effect. Although they would still have access to essential services/shops locally, their perceived standard of living would drop appreciably given their lack of access to 'better' services/shops in other areas. Within this group, elderly and single-parents would suffer the most disadvantage, having to reduce activities significantly, and to rely on friends/family for their mobility.

16.4 Short- & Long-term Effects

The long-term response to the public transport scenarios is similar to the short-term response, except that a greater degree of travel mode switching is likely to occur in the long term. The switch will be to car, in particular for people in car-owning households and people using public transport to travel to/from work. Other lifestyle changes will also be considered in the long term, with a higher proportion of people considering moving residence or changing jobs in the long term than the short term. In the long term, then, changes in public transport patterns will be evident which had not shown up in the short term (where the main effect will be a reduction in patronage levels).

The impact of the public transport scenarios appears to be greater (in a negative sense) in the short term, when many people are forced to adjust their lifestyle significantly to adjust to the new transport situation. In the longer term more people (mostly in the higher income/car owning groups) can envisage lifestyle changes they could make which would accommodate the new situation, and thereby lessen its impact on them.

16.5 Impact on Car Use

Each of the scenarios would have different impacts in terms of car use. Halving service frequency would have the least effect, with only 8% of respondents switching to car for their travel (workers would adjust their travel times, and other modes, e.g. walking, ride with friend, cycle, would be used for other trip purposes where travel mode changed). Doubling the fares would have a greater impact, particularly in the long term when 28% would switch to car. Removing the public transport service would result in most work trips and 20% of non-work trips being made by car.

16.6 Impacts on Most Public Transport-Dependent Group

Based on this survey, and previous work carried out for this project, people in no-car owning households are significantly more dependent on public transport than average. The effect of the three public transport scenarios on this group is summarised in Table 16.1. Broadly speaking, all three scenarios will elicit a similar response, and have similar effects on mobility, access and welfare. The No public transport scenario will have the greatest impact.

Table 16.1 Long-term response/effects of public transport service/fares changes.

Trip Type	Likely Response	Effect on Mobility/Access	Effect on Indiv. or Household Welfare
Scenario 1 - Halved Public Transport Service Level			
Work/Education trips	_ No reduction of activities or travel _ May move residence/employment	_ No change	_ Worse off: more travel time
Other trips	_ Reduce activities _ Reduce travel _ 30% shop & do business locally _ 30% use alternative transport	_ Mobility reduced, particularly for less able (elderly) _ Access to adequate shops & services retained	_ Worse off: financial, (increased travel costs) lower 'quality of life'
Scenario 3 - No Public Transport Service			
Work/Education trips	_ May buy car _ May change job		_ Worse off: financially
Other trips	_ Reduce activities _ Reduce travel _ Half shop & do business locally _ May move residence	_ Mobility reduced, particularly for less able (elderly)	_ Worse off: financial, (increased travel costs) lower 'quality of life'
Scenario 2 - Doubled Public Transport Fares			
Work/Education trips	_ May buy car		_ Worse off: financially
Other trips	_ Reduce activities _ Reduce travel _ Walk, taxi, bicycle, ride with friends _ Half shop & do business locally	_ Mobility reduced, particularly for less able (elderly) _ Access to adequate shops & services retained	_ Worse off: financial, (increased travel costs) lower 'quality of life'

16.7 Implied Elasticity of Frequency & Fares

Analysis of the indicated likely response to Scenario 1, halving service frequency, and to Scenario 2, doubling public transport fares, appears to indicate a service frequency elasticity of +0.42, and a fares elasticity of –0.46, over the survey group (50% decrease in frequency, 21% decrease in public transport trips; 100% increase in fares, 46% decrease in public transport trips). A fares elasticity of around –0.4 would normally be expected for Wellington and Hamilton. These indicative elasticities are close to what would be expected, and it appears, therefore, that the respondents have not over-stated their response.

PART 4

STUDY CONCLUSIONS

17. STUDY CONCLUSIONS

17.1 Public Transport Dependence

This project investigated the likely responses to, and impacts of, service reductions and fare increases on 'public transport-dependent people'. There is no standard definition of 'public transport-dependent people', and a working definition for the surveys was developed as follows:

> *Public Transport-Dependent people are people who meet all the following criteria:*
>
> - *Lack a ready alternative means of transport for a significant proportion of their desired trips, i.e. are unable to make these by another transport mode.*
> - *Lack an ability to acquire a transport alternative (e.g. this may be related to inadequate income to make use of other modes).*
> - *Make a substantial proportion of present trips by public transport.*

Analysis of the telephone and personal interview surveys found that people who met all three of these criteria were the most affected by changes in public transport service and fare levels. Around two-thirds of public transport trips are made by people with no alternative transport 'for that trip'. However, only a small proportion of these people could be classed as public transport dependent.

Household car ownership was found to be the most important single factor in determining level of public transport dependence, with the most public transport-dependent group being people who live in households without motor vehicles (covering around 10% of people in Wellington and Hamilton).

Age is the next most important factor, with people in the 15-19 years age group being the most public transport-dependent age group. Elderly people in no-car owning households are also very dependent on public transport for their mobility.

17.2 Effects of Changes in Service Levels and Fares

The main findings in regard to the expected effects of changes in public transport service levels and fares changes are set out below.

- The likely response to 'negative' changes in service levels and fares (reduced service, increased fares) differs markedly between different groups of public transport users:

- People in no-car owning households will generally reduce their activities and travel, or change their activity destination.
- Little difference will occur in the activities of people in higher car owning households, with a high proportion of them switching to car where necessary.

- The likely impact on personal welfare from 'negative' changes in service levels and fares varied on a similar basis:
  - The majority of respondents considered they would be worse off if there was no public transport service at all.
  - People in no-car owning households would suffer the greatest negative effect, with nearly all considering themselves much worse off (financially, socially, emotionally).
  - People in higher car-owning households would be able to adjust to the changes without great impact.
- Virtually all work trips, and most education trips, would continue to be made even if no public transport service was available. Only a third of workers considered themselves to be worse off under this scenario.
- The impact on mobility and access of 'negative' changes in service levels and fares varied depending primarily on car ownership and age.
  - A significant proportion of people in no-car owning households would have reduced mobility. Although they would still have access to essential local services and shops, their perceived standard of living would drop appreciably given their lack of access to 'better' services and shops in other areas.
  - Within this group, elderly and single-parents would suffer the most disadvantage, having to reduce activities significantly, and having to rely on friends and family for their mobility.
- Long-term impacts differ markedly from short-term impacts, with many respondents envisaging lifestyle changes which they could make to minimise the impact of the changes in public transport service and fare levels. However, these changes would come at a significant cost for many users, particularly those in no-car owning households.
- Many of the types of impacts from changes in service and fare levels are difficult to quantify in financial terms. Examples of these are: restricted social life, less choice in shopping centres, reduction in ability to visit friends and relatives.

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PART 1 APPENDICES

1. LITERATURE REVIEW - MARKET SEGMENTATION & TARGET MARKETS
2. WELLINGTON REGIONAL COUNCIL GATS SURVEY DATA: TRIP RATE ANALYSIS
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4. EVIDENCE ON URBAN PUBLIC TRANSPORT FARES & SERVICE LEVEL ELASTICITIES
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APPENDIX 1

LITERATURE REVIEW - MARKET SEGMENTATION & TARGET MARKETS

Travers Morgan (NZ) Ltd, Tony Francis & Associates. September 1993.
Passenger Services: Market Research Project Final Report.
For Canterbury Regional Council.

APPENDIX 1

LITERATURE REVIEW - MARKET SEGMENTATION & TARGET MARKETS

1 Introduction

This appendix covers Task D (part) and Task E of the project:

- Review of information and evidence from elsewhere on appropriate market segmentation and target markets.
- Examination of alternative bases for market segmentation in the Christchurch context.

The appendix comprises:

- Section 2: discussion of the purposes of market segmentation and possible principles and approaches to such segmentation.
- Section 3: review of literature (details given in an Annex).
- Section 4: discussion of the approach to market segmentation and the definition of target markets most appropriate in the Christchurch context.

2 Possible Principles and Approaches to Market Segmentation

Market segmentation is seen as an integral part of strategic planning for business development: it is relevant not only to the marketing function in the narrow sense (advertising etc), but also in the much wider sense of product development and pricing.

Market segmentation seeks to divide the total market for a product or service into groups (or submarkets) which have consistent features in terms of attitudes, buying patterns, or requirements. Some of these segments may offer better prospects than others for a company's products or services. The segments which are selected for attention represent the company's target markets.

Each product/market combination, which comprises a market segment, should be capable of quantification and evaluation in terms of its potential contribution to business development. Critical factors in this analysis are the growth prospects of the different sub-markets specified and the current and potential market share of the individual producer or service provider.

Public transport is a service in the market for transport. Travel needs which this service can satisfy can be classified in a variety of ways, for example by the time of day or by travel purpose. Understanding people's activity and travel patterns provides a dynamic basis for the development of a marketing strategy for public transport. Such a focus treats travel behaviour as subject to change and influence by different marketing strategies, in marked contrast to traditional approaches to travel demand.

The objective of segmentation and market targeting is to compare the potential return from different market segments and to concentrate attention on those which give the best "returns" for a given expenditure of resources. "Returns" in the public transport field does not always refer to pure financial ("bottom-line") returns: as in many contexts public transport is provided and funded for social as well as financial reasons, "returns" may refer to objectives such as maximising patronage as well as to financial objectives.

Prime criteria often adopted to guide the definition of market segments are:

i. Current or potential size - each segment should have a sufficient number of people to justify a distinctive marketing effort.

ii. Relevance - each segment should have distinct needs and attitudes, which are different in some key respects to those of other segments and which can form the basis for a differentiated marketing offer.

iii. Accessibility - ability to reach members of the segment reasonably efficiently using the advertising and information channels available.

iv. Measurability - it is necessary to be able to assess the size of the proposed segments.

There are numerous potentially useful ways of segmenting the market for public transport, each of which highlights one dimension along which people are likely to differ in their response to public transport initiatives. A list of possible dimensions would include the following:

i) Individual demographic and economic factors
- age group
- sex
- educational standard
- disposable income
- socio-economic grouping
- cultural background (eg. migrants)
- physical or mental handicaps
- car availability.

ii) Household factors:
- household size
- household composition (marital status, numbers of children, etc).

iii) Trip purposes:
- work/education
- shopping
- social/leisure
- tourism/recreation.

iv) Trip length and time period.

v) Trip O-D type:
- outer suburbs - CBD
- inner suburbs - CBD
- inter-suburb
- local.

vi) Transport use:
- frequency of trip making
- usage of public transport (regular, occasional, never).

vii) Attitudes:
- general attitudes to public transport
- attitudes to specific modes
- attitudes to specific system attributes
- orientation towards performance, economy or comfort.

viii) Life-style factors:
- attitudes towards use of time
- requirements for physical exercise
- mobility
- sociability.

Market segmentation could theoretically be carried out by all these dimensions simultaneously, but this would be useless for any practical marketing purposes. The preferred approach is to define segments using the most important of these dimensions, guided by the criteria given above. However it should be recognised that there is no single "correct" approach to market segmentation which will be appropriate to all aspects of the marketing of public transport: different divisions of the market are appropriate for different purposes.

3 The Literature Review

We have reviewed key references relating to public transport market segmentation and target market definition, principally from New Zealand and Australian sources and published over the last 20 years. This review makes no claim to be comprehensive but has covered the key references in the field. The review/summary of the individual references is attached as an Annex.

From this review it is apparent that:

- The literature in the field is not extensive. (While there have been numerous public transport market and product development projects undertaken in NZ/Australian in the last 20 years, few of them have adopted a comprehensive market segmentation/ targeting approach.)
- There is a considerable range of bases adopted for defining market segments and identifying target markets within these segments. This wide range appears to be partly a result of the different types of product/market development being addressed, but probably very largely reflects differences in outlook of the studies' authors. (Within two of the major studies, there appear to have been significant differences of opinion between the different authors of each study about the relative importance of different target markets.)
- None of the studies reviewed here has been followed by a systematic (and reported) 'marketing' campaign, to test out in practice the ideas put forward. (Indeed, in both NZ and Australia, there have been few instances of public transport 'marketing' campaigns, in the narrow sense, which have been undertaken and analysed.)

4 Implications for Marketing Strategy Development in Christchurch

In the light of the various purposes for which market segmentation is required, it is apparent that no single segmentation will be appropriate or adequate for all facets of a project such as this. This view is confirmed by the literature review.

The project is considering the "marketing" of public transport within a broad definition, encompassing not only advertising and information aspects but also system/vehicle improvements. The segments appropriate for design of information material (which would be defined in relation to experience with the public transport system) would generally be inappropriate in consideration of vehicle design improvements (where segmentation by age group/trip purpose might be appropriate). The segmentation desired depends on the way in which it is to be used.

It is clear that promotional/advertising campaigns should be closely targeted at well defined market segments: the market segmentation concept is most powerful and essential in such cases. However, in terms of product development and pricing policy, precise market targeting is probably rather less crucial (although still of considerable significance).

We conclude that it is not possible to define a unique segmentation of the total population appropriate for all marketing development work. However, we can give the more important dimensions which may be used to guide segmentation for specific purposes, as follows:

i) "Problem solving approach" (eg. refer Annex A4). This dimension is of most importance in considering the advertising and informational aspects of marketing.

ii) Attitudes to public transport (as used in most of the reviewed studies). This dimension is again of particular importance in relation to advertising aspects.

iii) Life-cycle situation (eg. refer Annex A1, A2). This dimension is given particular importance in some of the more recent UK research (Oxford TSU) and work undertaken for UTC. The targeting of people in the transition between life-cycle groups is highlighted. Life-cycle situations and attitudes to public transport are highly inter-related.

iv) Time period of travel and journey/purpose (eg. refer Annex A2, A4). Different trip purposes tend to be associated with different weightings of transport attributes (eg. time savings, comfort factors). The time period of travel is crucial to the extent that changes in patronage have very different cost implications at different time periods.

v) Car availability (eg. refer Annex A2, A3). This has a major impact on the chances of using public transport for a given trip, the perceived modal pool and the likelihood of success in marketing the system.

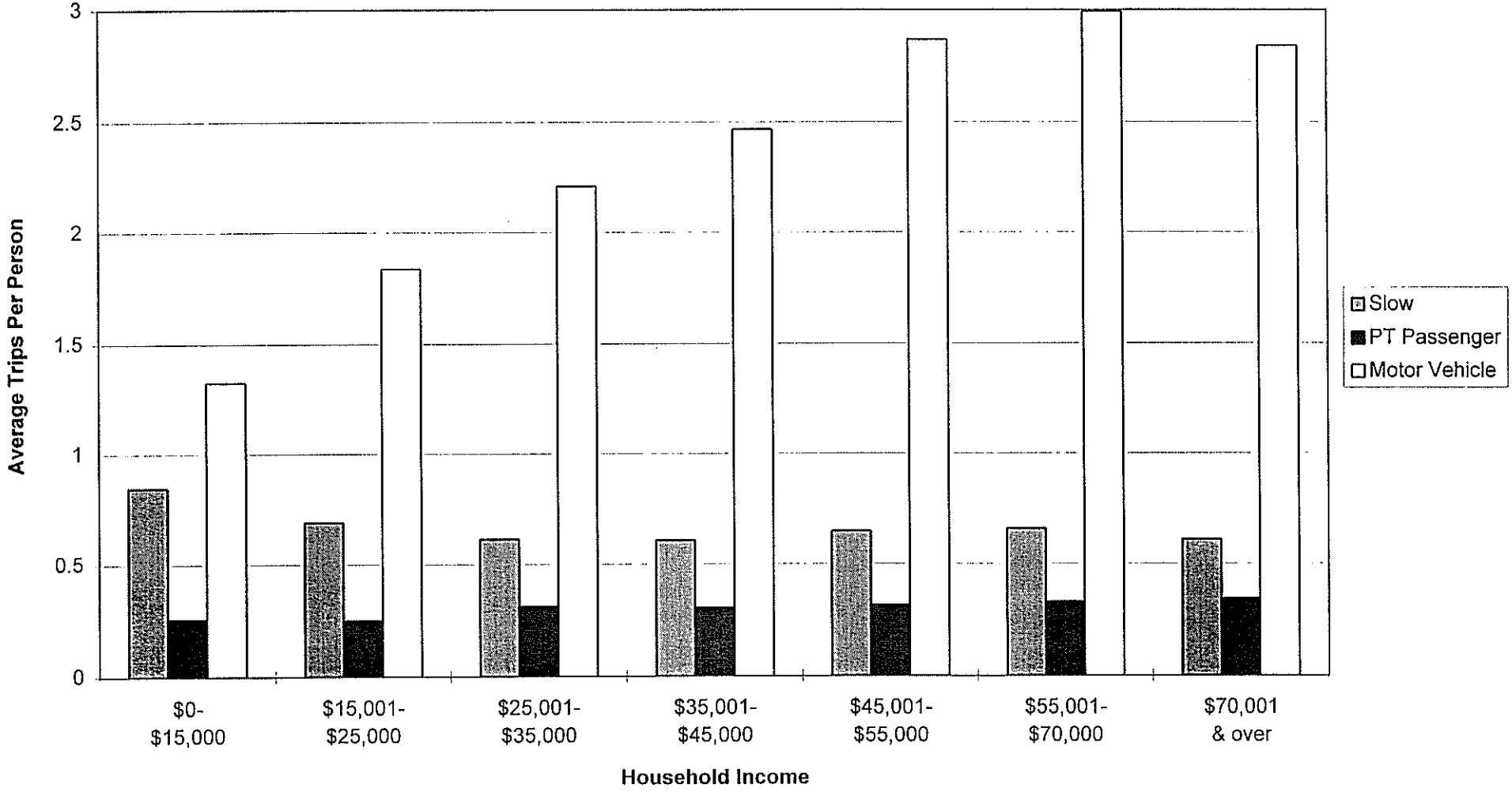
vi) O-D pattern. This is a major dimension for several reasons:
- for CBD trips, the difficulties of car parking as against the ease of public transport usage may be an appropriate marketing focus, although of course a large proportion of potential users already use public transport for such trips;
- for many cross-suburban trips, public transport provides such an inferior service compared with car travel that any marketing campaign is unlikely to be successful;
- in general, the attractions of the car in preference to public transport vary with the O-D category of the trip (eg. traffic congestion, parking difficulties, public transport directness).

APPENDIX 2

WELLINGTON REGIONAL COUNCIL GATS SURVEY (Greater Wellington Area Transport Survey) DATA:

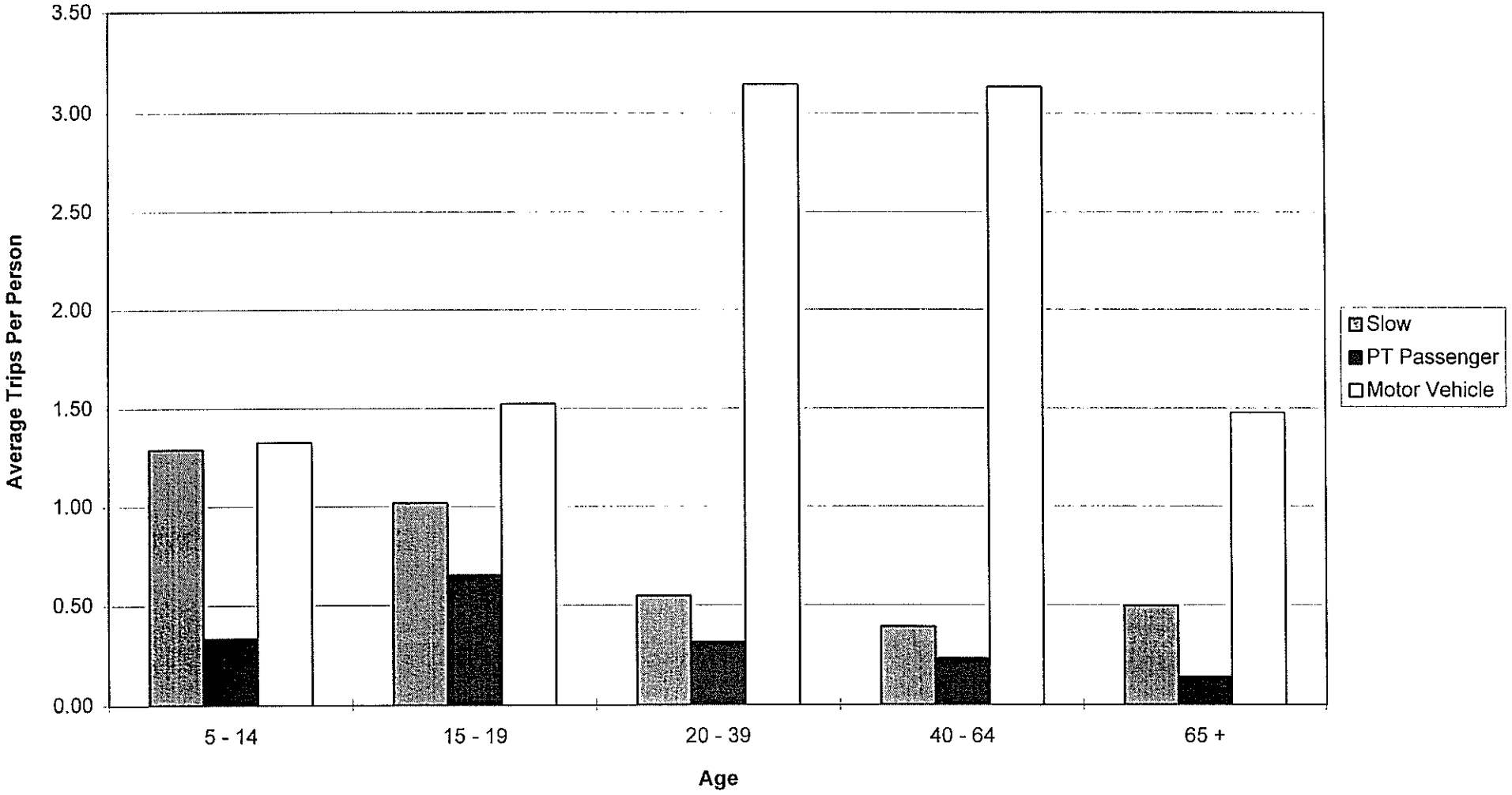
TRIP RATE ANALYSIS

Figure B.1 WRC:Income * Mode Trip Rate



APPENDIX 2 TRIP RATE ANALYSIS

Figure B.2 WRC:Age * Mode Trip Rate



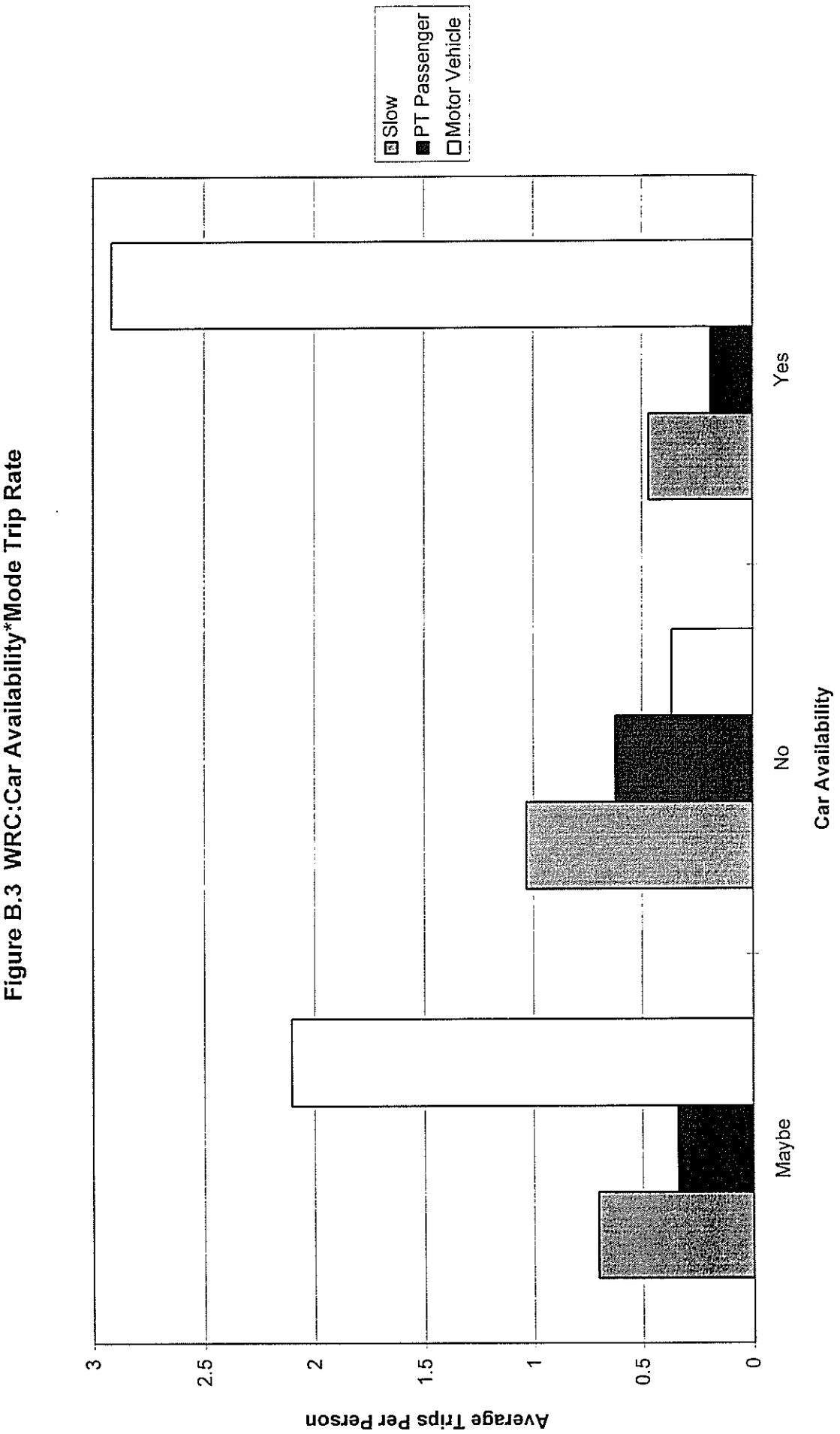


Figure B.3 WRC:Car Availability*Mode Trip Rate

Figure B.4 WRC:Sex*Mode Trip Rate

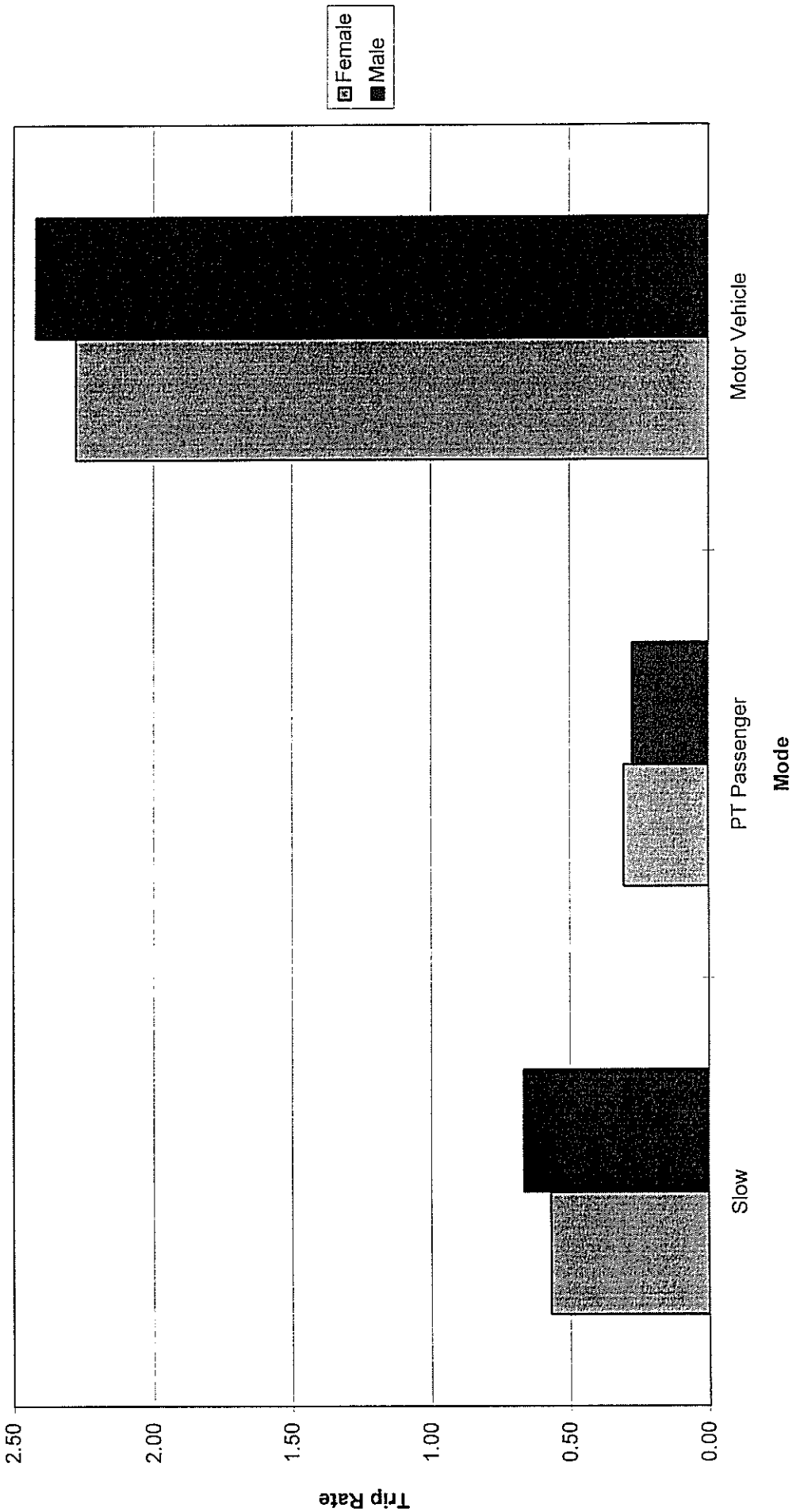


Figure B.5 WRC:Income * Age * Sex - Public Transport Trip Rate

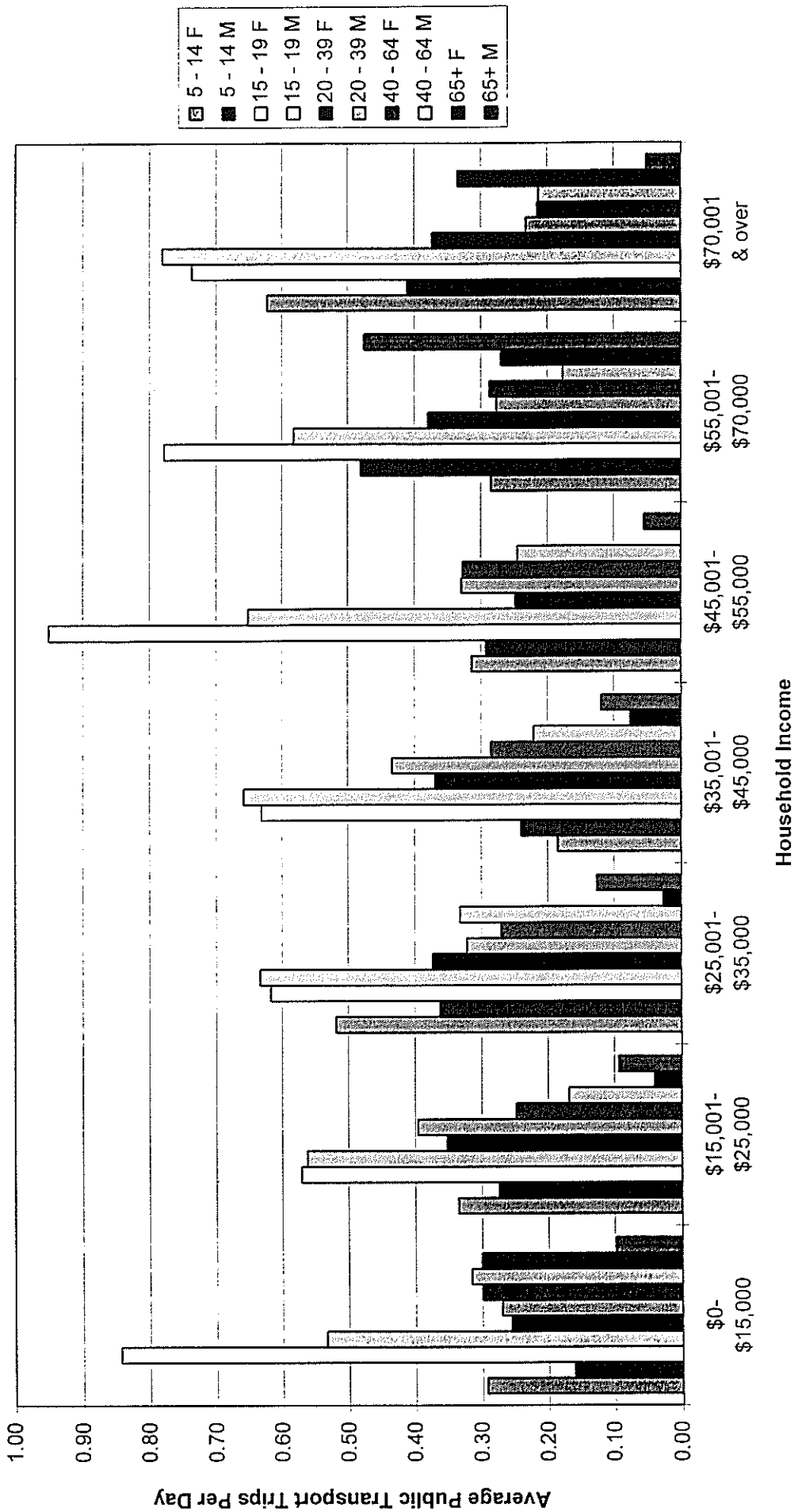


Figure B.6 WRC:Income * Sex * Car Availability - Public Transport Trip Rate

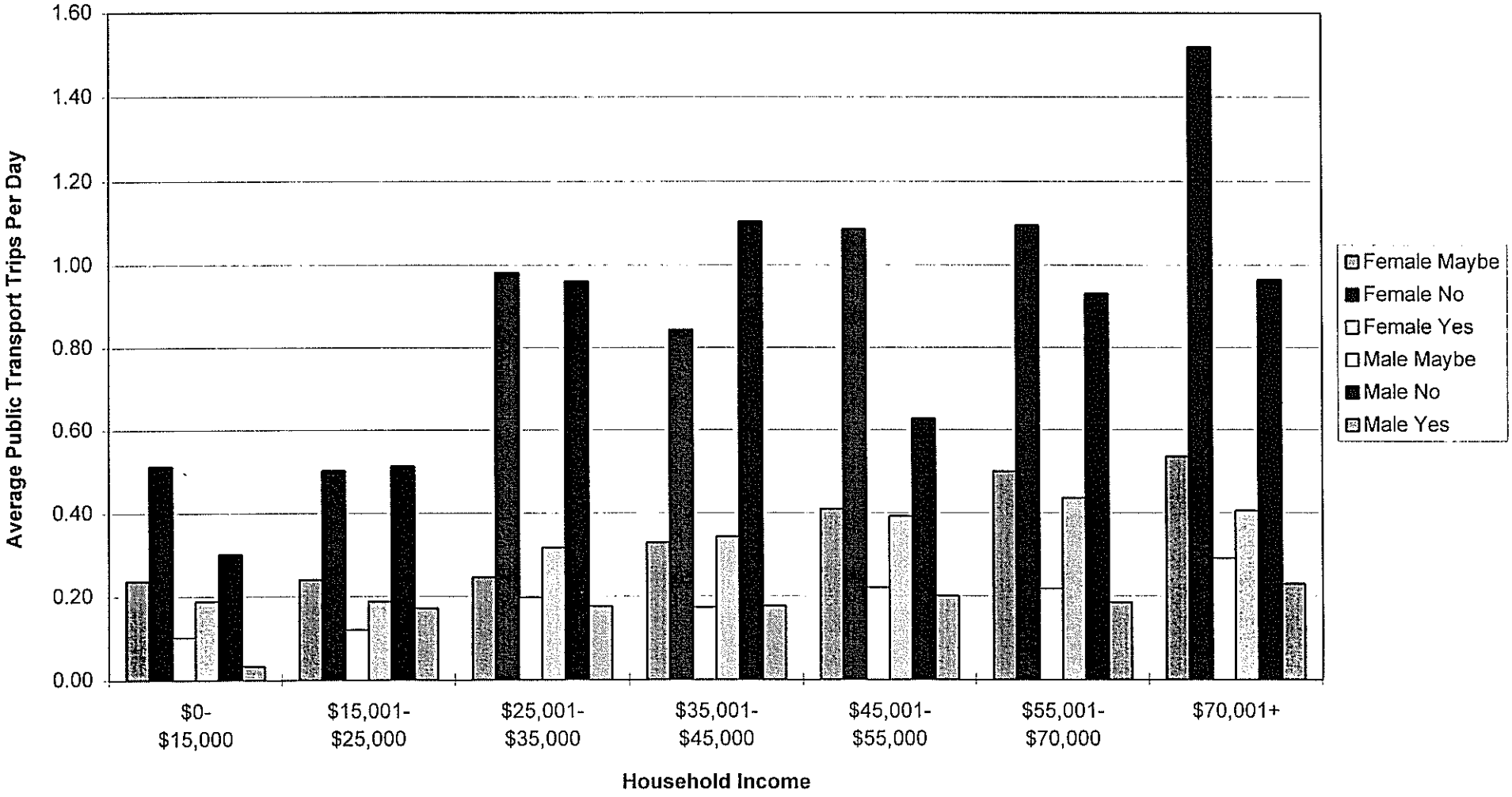


Figure B.7 WRC:Age * Sex * Car Availability - Public Transport Trip Rate

TABLE B.1 INCOME*AGE*SEX - NO OF PUBLIC TRANSPORT TRIPS								
	$0-$15,000	$15,001-$25,000	$25,001-$35,000	$35,001-$45,000	$45,001-$55,000	$55,001-$70,000	$70,000+	TOTAL
5 - 14 F	562	874	1669	780	1175	940	2755	8755
5 - 14 M	324	693	1404	1193	1019	1848	1809	8290
15 - 19 F	725	804	750	1408	2312	1656	2384	10039
15 - 19 M	257	449	1299	1299	1452	1667	2719	9142
20 - 39 F	919	1689	3117	3557	2212	3716	4859	20069
20 - 39 M	431	1855	2629	4214	3037	2616	3293	18075
40 - 64 F	926	1153	1486	1643	1626	1711	1764	10309
40 - 64 M	524	616	1834	1356	1404	1157	1983	8874
65+ F	2054	144	49	116	0	151	189	2703
65+ M	303	324	247	148	29	282	35	1368
TOTAL	7025	8601	14484	15714	14266	15744	21790	97624

TABLE B.2 INCOME*AGE*SEX - NO OF PEOPLE								
	$0-$15,000	$15,001-$25,000	$25,001-$35,000	$35,001-$45,000	$45,001-$55,000	$55,001-$70,000	$70,000+	TOTAL
5 - 14 F	1917.10	2606.80	3218.50	4227.60	3737.60	3298.80	4428.60	23435.00
5 - 14 M	2015.00	2526.10	3874.40	4986.90	3483.50	3846.80	4410.50	25143.20
15 - 19 F	859.91	1409.20	1216.20	2232.80	2433.70	2130.40	3239.10	13521.31
15 - 19 M	481.68	799.04	2051.60	1974.60	2231.00	2866.80	3485.70	13890.42
20 - 39 F	3594.50	4805.50	8359.80	9656.40	8931.70	9802.10	13020.00	58170.00
20 - 39 M	1596.40	4687.00	8169.40	9715.60	9224.50	9459.90	14212.00	57064.80
40 - 64 F	3090.30	4654.00	5498.80	5771.40	4964.10	5967.40	8220.00	38166.00
40 - 64 M	1659.60	3654.20	5523.40	6139.10	5730.80	6560.90	9330.30	38598.30
65+ F	6831.10	3635.20	1867.90	1547.60	489.04	560.10	563.78	15494.72
65+ M	3095.70	3483.40	1964.90	1247.90	535.80	593.84	690.33	11611.87
TOTAL	25141.29	32260.44	41744.90	47499.90	41761.74	45087.04	61600.31	295095.62

TABLE B.3 INCOME*AGE*SEX - PUBLIC TRANSPORT TRIP RATE								
	$0-$15,000	$15,001-$25,000	$25,001-$35,000	$35,001-$45,000	$45,001-$55,000	$55,001-$70,000	$70,000+	TOTAL
5 - 14 F	0.29	0.34	0.52	0.18	0.31	0.28	0.62	0.37
5 - 14 M	0.16	0.27	0.36	0.24	0.29	0.48	0.41	0.33
15 - 19 F	0.84	0.57	0.62	0.63	0.95	0.78	0.74	0.74
15 - 19 M	0.53	0.56	0.63	0.66	0.65	0.58	0.78	0.66
20 - 39 F	0.26	0.35	0.37	0.37	0.25	0.38	0.37	0.35
20 - 39 M	0.27	0.40	0.32	0.43	0.33	0.28	0.23	0.32
40 - 64 F	0.30	0.25	0.27	0.28	0.33	0.29	0.21	0.27
40 - 64 M	0.32	0.17	0.33	0.22	0.24	0.18	0.21	0.23
65+ F	0.30	0.04	0.03	0.07	0.00	0.27	0.34	0.17
65+ M	0.10	0.09	0.13	0.12	0.05	0.47	0.05	0.12
TOTAL	0.28	0.27	0.35	0.33	0.34	0.35	0.35	0.33

TABLE B.4 INCOME*SEX*CAR AVAILABILITY- NO OF PUBLIC TRANSPORT TRIPS								
	$0-$15,000	$15,001-	$25,001-	$35,001-	$45,001-	$55,001-	$70,000+	TOTAL
		$25,000	$35,000	$45,000	$55,000	$70,000		
Female Maybe	975	1987	2763	4343	4451	4677	6124	25320
Female No	3562	1958	2495	1216	446	560	320	10557
Female Yes	650	719	1813	1944	2427	2938	5505	15996
Male Maybe	718	1576	3475	4263	4260	4687	4618	23597
Male No	1023	1472	2034	1845	298	395	286	7353
Male Yes	100	887	1905	2101	2380	2487	4936	14796
TOTAL	7028	8599	14485	15712	14262	15744	21789	97619

TABLE B.5 INCOME*SEX*CAR AVAILABILITY- NO OF PEOPLE								
	$0-$15,000	$15,001-	$25,001-	$35,001-	$45,001-	$55,001-	$70,000+	TOTAL
		$25,000	$35,000	$45,000	$55,000	$70,000		
Female Maybe	4098	8263	11217	13194	10850	9374	11461	68457
Female No	6947	3902	2543	1443	410	511	211	15967
Female Yes	6403	6051	9237	11272	11040	13517	18948	76467
Male Maybe	3812	8430	10970	12444	10869	10760	11397	68682
Male No	3392	2872	2116	1671	476	424	296	11247
Male Yes	3030	5184	10858	11955	11880	13535	21552	77994
TOTAL	27682	34701	46941	51979	45525	48121	63865	318814

TABLE B.6 INCOME*SEX*CAR AVAILABILITY- TRIP RATE								
	$0-$15,000	$15,001-	$25,001-	$35,001-	$45,001-	$55,001-	$70,000+	TOTAL
		$25,000	$35,000	$45,000	$55,000	$70,000		
Female Maybe	0.24	0.24	0.25	0.33	0.41	0.50	0.53	0.37
Female No	0.51	0.50	0.98	0.84	1.09	1.10	1.52	0.66
Female Yes	0.10	0.12	0.20	0.17	0.22	0.22	0.29	0.21
Male Maybe	0.19	0.19	0.32	0.34	0.39	0.44	0.41	0.34
Male No	0.30	0.51	0.96	1.10	0.63	0.93	0.97	0.65
Male Yes	0.03	0.17	0.18	0.18	0.20	0.18	0.23	0.19
TOTAL	0.25	0.25	0.31	0.30	0.31	0.33	0.34	0.31

TABLE B.7 AGE*SEX*CAR AVAILABILITY - NO OF PUBLIC TRANSPORT TRIPS						
	5-14	15-19	20-39	40-64	65+	TOTAL
Female Maybe	3437	6328	9919	5148	489	25321
Female No	817	1383	4679	1805	1874	10558
Female Yes	4501	2330	5472	3356	340	15999
Male Maybe	3252	5303	9246	5253	543	23597
Male No	574	861	3827	1596	496	7354
Male Yes	4464	2978	5003	2023	329	14797
TOTAL	17045	19183	38146	19181	4071	97626
TABLE B.8 AGE*SEX*CAR AVAILABILITY - NO OF PEOPLE						
	5-14	15-19	20-39	40-64	65+	
Female Maybe	9770.3	8409.4	25446	18922	5264.8	67812.5
Female No	2007.3	1594.5	4755.5	2527.4	4892.7	15777.4
Female Yes	12925	4244	30469	19168	6357.6	73163.6
Male Maybe	10662	8526.3	23704	19121	5857.5	67870.8
Male No	1758	897.49	3653.3	2121.2	1730	10159.99
Male Yes	13733	5728.8	32118	19774	4784	76137.8
TOTAL	50855.6	29400.49	120145.8	81633.6	28886.6	310922.09
TABLE B.9 AGE*SEX*CAR AVAILABILITY - PUBLIC TRANSPORT TRIP RATE						
	5-14	15-19	20-39	40-64	65+	
Female Maybe	0.35	0.75	0.39	0.27	0.09	0.37
Female No	0.41	0.87	0.98	0.71	0.38	0.67
Female Yes	0.35	0.55	0.18	0.18	0.05	0.22
Male Maybe	0.31	0.62	0.39	0.27	0.09	0.35
Male No	0.33	0.96	1.05	0.75	0.29	0.72
Male Yes	0.33	0.52	0.16	0.10	0.07	0.19
TOTAL	0.34	0.65	0.32	0.23	0.14	0.31

APPENDIX 3

LITERATURE REVIEW - ATTITUDINAL EVIDENCE

Travers Morgan (NZ) Ltd, Tony Francis & Associates. September 1993.
Passenger Services: Market Research Project Final Report.
For Canterbury Regional Council.

APPENDIX 3

LITERATURE REVIEW - ATTITUDINAL EVIDENCE

B.1 Introduction

This appendix covers part of Task D of the project, ie:

- *Review of information and evidence from elsewhere on attitudes and likely responses to bus service improvements (both in Christchurch and in other centres that may be broadly comparable).*

The appendix summarises a literature review on attitudes of users and non-users to bus services and to potential improvements in the services. Its aim is to shed light on what types of improvements might be most successful in encouraging patronage in the Christchurch context.

The main emphasis of the review has been on research in New Zealand, as that is likely to be most relevant to the Christchurch context. However, research in Australia and elsewhere has also been reviewed (to the extent it was readily available), where it was regarded as potentially relevant.

The following sections provide an overview of the research findings, with a particular emphasis on the NZ findings, under the following headings:

- Patterns of bus usage
- Extent of modal captivity
- Factors influencing choice of mode
- Perceptions of existing services - important attributes and performance
- Desired service improvements
- Expected responses to service improvements.

B.2 Patterns of Bus Usage

Public transport is now used at all by only a minority of the New Zealand population, even in metropolitan areas, and frequent public transport users comprise only a small minority of the total population.

Table B1 sets out national New Zealand data on the frequency of public transport usage by proportion of the population. Notable points include:

- Even in metropolitan areas, only 20% of the population are reasonably frequent users (at least one day per week); while 20% are more occasional users; and 60% never use public transport.
- Younger people (age 18-24) have a greater proportion of frequent users, but still 60% never use public transport.
- Older people (age 60+) have only 11% of frequent users and 67% of non-users - contrary to the common assumption that they tend to use public transport more frequently than most groups.
- Only 6% of those people with a car normally available are regular users; while 46% of those with no car available are regular users (but 30% are non-users).

TABLE B1 FREQUENCY OF PT USAGE - NZ NATIONAL SURVEY (% of respondents)

Usage	All Respondents	Metro Areas	Age 18-24	Age 60+	Car Availability As Driver	Car Availability As Passenger	Car Availability No Car
5+ days/week	3	7	10	1	3	10	15
3-4 days/week	1	4	5	2	1	9	9
1-2 days/week	4	9	11	8	3	17	22
< 1 days/week	13	20	15	22	12	21	24
Never	79	60	60	67	82	42	30
Total	100	100	100	100	100	100	100

Source: Steer, Davies and Gleave, 1992

This national survey found that public transport was the main mode of travel to work/education for 12% of people in the metropolitan areas. Overall it was the main mode for work/education for 4% of those with a car available as driver, and for 32% of those with no car available.

The CRC North of the Waimakariri Study (Travers Morgan Ltd, 1988) found that:

- 3% of the population used the bus at least every weekday, 8% at least once per week, 16% at least occasionally and the remaining 84% never.
- Bus was the main weekday means of transport for 7% of the population.

A Wellington survey (Steer, Davies and Gleave, 1991) found that:

- 75% of people using car for their work trip rarely/never used public transport
- Over 90% of people using car for non-work trips rarely/never used public transport
- 95% of people using public transport for their work trips were daily users
- 35% of people using public transport for non-work trips were daily users.

Frequency of use differs by age/sex as well as car availability, although the two groups of factors are inter-related. An Auckland survey gave results for frequencies of public transport usage by age as shown in Table B2.

TABLE B2 FREQUENCY OF PUBLIC TRANSPORT USAGE BY AGE GROUP (% of respondents)

Age Group	Frequent Users (≥ 1/week)	Infrequent Users (≤ 1/week, within last 12 months)	Non-Users (not in last 12 months)
15-19	62	25	13
20-24	26	24	50
25-54	12	18	70
55-59	16	34	50
60+	20	32	48
Overall	19	23	58

Source: Section B1.18 (Auckland North Shore City).

These figures overall are very consistent with the national figures for metropolitan areas (Table B1). Notable features are:

- The high usage in the 15-19 age group
- The low usage in the 25-54 age group
- The relatively slight increases in usage in the older age group.

Data from Dunedin (Fink-Jensen, 1986) shows that the relative propensity to use buses (calculated as proportion of bus users in each age group divided by the proportion of population in the age group) varies by age as follows:

Age < 15	0.47 (excludes school special services)
Age 15-24	1.65
Age 25-59	0.95
Age 60+	0.83.

The relatively high usage in the 15-24 age group is again notable. The usage in the age 60+ group is below the average per head.

Further Dunedin data shows that propensity to use buses by sex is:

Male	0.71
Female	1.26.

Dunedin data was also used to derive the contribution to total public transport usage of different usage frequency groups. It was found that:

- 67% of the population never use public transport.
- The 7% of the population that are most frequency users (10+ trips/week) contribute 62% of all PT trips.
- The 15% of the population that are quite frequent users (at least 3 trips/week) contribute 93% of all public transport trips.

B.3 Extent of Modal Captivity

A substantial proportion of public transport users have no effective choice of mode for their public transport trip. Various NZ surveys indicate that around 60-70% of public transport users have no car available for their public transport trip; and that 45-60% of public transport users considered they had no real choice of mode. (eg Travers Morgan 1988, Fink-Jensen, 1986, Travers Morgan 1990b)

Various New Zealand and international studies indicate that many car users are effectively captive to car for particular trips, and that no feasible changes in the public transport system are likely to alter this. One Wellington research project (Steer, Davies and Gleave, 1993) found that around 70% of car drivers/passengers were not likely to switch modes in response to any improvements in public transport services.

A UK study (CIT, 1993) found that many car users did not regard the bus as a conscious option, and 55% would not switch to bus in any circumstances.

B.4 Factors Influencing Choice of Mode

The most important factors influencing mode choice are, in descending order of importance (Steer, Davies and Gleave, 1991) :

- Convenience
- Cost
- Safety
- Comfort
- Environment
- Information
- Image.

Rankings are similar between modes and between work/non-work trips.

Main reasons given in various surveys for choice of bus in preference to (principally) car are (eg Travers Morgan 1988, Otago Regional Council 1993):

- Convenience (dominant factor)
- Cost
- Parking difficulties
- Comfort/hassle.

Main reasons given for choice of car rather than bus are (Steer, Davies and Gleave, 1991):

- Convenience 62% (travel time, flexibility, access, general convenience)
- Comfort factors c.15%
- Cost factors c.12%.

B.5 Perceptions of Existing Services

The most **important** attributes of public transport services are generally seen to be, based on NZ surveys (eg Travers Morgan 1988, 1990b) and in broadly descending order of importance.

- Reliability (almost always first)
- Frequency, or convenient arrival/departure times
- Short access/egress distances
- Low/moderate fares
- Adequate timetables/information
- Availability of a seat
- Adequate evening/weekend services
- Avoidance of transfers
- Short travel/in-vehicle time
- Friendly/helpful drivers.

Performance ratings of public transport services against the various attributes were found to be as follows, in the NZ national survey (Steer, Davies and Gleave, 1992):

- Good
  - reliability
  - vehicle cleanliness
  - driver friendliness

- Moderate - fares
  - bus comfort
  - ease of access/egress
- Poor - frequency (especially off-peak)
  - vandalism.

Metropolitan area residents were particularly critical of evening and weekend frequencies.

Public transport users generally hold more favourable views than non-users; older people are more favourable than younger people.

A recent Auckland study (Travers Morgan 1992b) identified the following as the main perceived problems with public transport services:

- Infrequent service (44%)
- Not enough destinations (21%)
- Have to transfer (16%)
- Fares too high (16%)
- Travel time too long (13%)
- Not enough night/weekend services (11%).

Recent Wellington research rated car and bus against the most important factors influencing mode choice, as shown in Table B3.

TABLE B3 BUS AND CAR PERFORMANCE RATING AGAINST IMPORTANT MODE CHOICE FACTORS

Factor	Importance in Mode Choice[1]	Rating[2]		
		Car	Bus	Car-Bus
Convenience (travel time, access, frequency, flexibility etc)	6.1	4.5	3.4	1.1
Cost				
Safety	5.1	2.9	2.8	0.1
Comfort (seats, cleanliness, vehicle	4.8	3.6	3.8	-0.2
appearance)	4.5	4.6	3.7	0.9
Environment				
Information (timetables, publicity)	3.7	2.5	3.1	-0.6
Image (status, general impression)	2.2	N/a	3.1	N/a
	1.7	4.0	3.3	0.7

Source: Steer, Davies and Gleave, 1991

Notes: (1) Ranked on scale of 7 to 1.
(2) Rated on scale of 5 (very good) to 1 (very poor).

Key points from this table are:

- On the most important factor (convenience), car is rated substantially higher than bus
- There is little difference in rating on the next two most important factors
- Car has a substantially higher rating on comfort factors and on image factors
- The only factor on which bus has a substantial advantage over car is Environment, and this is regarded as of relatively low importance.

B.6 Desired Service Improvements

A number of NZ studies have included questions about which types of public transport improvements would encourage greater usage.

One Wellington market research project (Steer, Davies and Gleave, 1992) resulted in the following suggestions:

- Convenience factors (43% of total responses) - principally frequency improvements, better evening/weekend services, more direct services, better access to services.
- Comfort factors (32% of total) - principally improved reliability, friendlier staff, better driving, smaller vehicles.
- Cost factors (19% of total)
- Information factors (5% of total)
- Environmental factors (1% of total) - retain trolley buses
- Image factors (under 0.5%).

One-quarter of car users did not offer any improvements which would make them consider using public transport, indicating they are not likely to use public transport in any circumstances.

A second Wellington research project (Steer, Davies and Gleave, 1993) asked what factors would encourage them to travel by bus/train. The main responses relating to the public transport system were:

- Improved service features (routing, frequency, travel time) 14%
- Lower fares 13%.

It appeared that about 70% of those asked would not switch modes, or only switch in response to other factors (not related to the public transport services).

An Auckland survey (Travers Morgan 1992b) asked people if they were likely to use public transport more if specified improvements were made. Those improvements which indicated the greatest response were, in descending order:

- More destinations
- Quicker journeys
- More regular services
- More frequent services
- Easier transfers.

In general, `convenience' factors appear to be the most important attributes to be improved to increase use of public transport. These include service frequencies, more direct routes (minimising need to transfer), faster services, better

evening/weekend services. Comfort factors are second in importance: reliability is very important (but generally quite good), while smaller buses are often mentioned. Cost factors are third, of only moderate importance. Information factors are fourth, although the need for better and more readily available information does get mentioned as of importance in many surveys.

B.7 Expected Responses to Service Improvements

The best guide to how travellers would respond to any changes in the public transport system is actual behavioural evidence on responses to past changes in broadly comparable situations: this is known as `revealed preference' (RP) evidence. A second-best source of evidence is `stated preference' (SP) information on how people say they would respond if specified changes were undertaken: however, SP experiments need to be carefully designed and interpreted, and preferably `calibrated' against RP evidence.

In NZ, there is reasonable data on demand elasticities relating to changes in fares and service levels at an aggregate level (ie. annual, city-wide data). The outputs of such analyses represent medium-term elasticities. There is very little disaggregated data, eg. by age, sex, journey purpose etc. The service level elasticity data that is available does not distinguish between waiting time effects, walking time effects or service changes at different time periods. Also there is very limited data on the effects on patronage of improving passenger information or of promotional campaigns.

Internationally, there is rather more data on all these aspects of service provision, although the information/promotional aspects are still somewhat deficient in documented research. Table B4 provides our summary assessment, based on the NZ and international research, of the likely passenger responsiveness to changes in fares and service features in the Christchurch context.

The typical elasticity values given in the table are figures averaged over the whole market, and encompass a range of values for different market segments. Market segments that tend to be more responsive than average are:

- Off-peak trips, especially weekends
- Shorter trips
- Elderly passengers (more responsive to fares than service levels)
- Passengers with car available.

Often, the passenger response is not about a straight choice between car and public transport. For many passengers, the alternatives to a particular public transport trip are a walk or cycle trip (to the same or different destination), no trip (trip consolidation), part of a combined trip (trip chaining), a taxi, or getting a lift. While it is often assumed, in mode choice modelling etc, that public transport users may be divided into `captive' and `choice' groups, according to car availability for the trip, this terminology is perhaps misleading. The `captive' group may not have a car available for the particular trip at the intended trip time; but this does not mean they will make that trip by public transport independent of the fares, service levels, etc: they may follow one of the alternatives just mentioned. So it is likely in many

circumstances that `captive' groups are actually more responsive (eg. to fare changes) than `choice' groups.

The limited research evidence available on this subject does suggest that the already more frequent users of public transport (who would be commonly regarded as `captive') are indeed likely to be more responsive to service improvements than occasional or non-users.

- A survey on Auckland's North Shore (Travers Morgan 1992b) indicated that frequent users were likely to be about 50% more responsive than non-users.

- A number of research projects have indicated that a substantial proportion of car users would not consider transferring to public transport for specific trips, no matter how much the public transport system were improved; while other projects have shown that it is not practically possible to make public transport competitive with the car for many trips.

Service reliability is an important aspect to passengers and is often regarded as the most important aspect of a public transport service (Section B5). Although the quantified evidence on the effects of improving reliability is somewhat inadequate (internationally), there is every indication that patronage is relatively sensitive to reliability.

Evidence on the effects of promotional/advertising campaign internationally is not very comprehensive. There have both successes and failures in this area. Failures have generally occurred where the product has not lived up to the advertised claims: although a short-term boost in patronage may well occur in direct response to the advertising, there is no positive longer-term effect.

Evidence internationally on the effects of improving passenger information and its dissemination is generally more positive. There have been a number of monitored situations where the patronage and revenue benefits of improved information have substantially exceeded the incremental costs involved.

Research and monitoring of the `comfort' aspects of a bus trip has tended to be neglected. However, many surveys have suggested that significant factors affecting use of bus services include:

- Seat availability
- Driver behaviour (friendly, helpful).

TABLE B4 LIKELY PATRONAGE RESPONSIVENESS TO SERVICE CHANGES	
Variable	Responsiveness/Comments
Fares	• Typical elasticity -0.45 • Varies by market segment: lower for peak (-0.3), higher for off-peak (-0.6), approaching -1.0 for weekends; higher for short trips, lower for longer trips; higher for choice passengers/discretionary trip purposes
Service Frequency	• Typical elasticity 0.5 to 0.6 • Higher at low frequencies, particularly above ½ hour • Higher for off-peak periods: may be approaching 1.0 at weekends • Wait time generally valid at twice in-vehicle time • Frequency generally more important than walk distance, except for elderly
Walk Time or Distance	• Typical elasticity -0.5 with respect to distance/time at both ends of trip • Trip generation falls rapidly with walk distance between about 300 metres and 700 metres (both ends of trip), then settles to relatively low level above 700 metres • Walk time generally valued at 2* in-vehicle time
In-vehicle Time	• Typical elasticity c.0.4
Overall Trip Time	• Typical PT generalised cost elasticity is around -1.0 (or slightly larger) • PT generally only begins to be competitive with car when PT : car trip time ratio is less than 2.0
Reliability	• Important, but rarely properly quantified • Indications are that unplanned waiting time is valued at 2-3 times planned waiting time

Annex B1: Attitudinal Evidence - New Zealand

B1.1 URBAN TRANSPORT MARKET SEGMENTATION PROJECT

1. **Reference**: Dawson P L (1976). 'Research into Urban Transport Market Segmentation'. Paper to Marketing Urban Transport Seminar, Australian Department of Transport, March 1976.

2. **Introduction**

This research was part of a 1974 national transport demand study conducted throughout New Zealand, with the objectives of identifying market segments offering the greatest potential for increasing public transport patronage and of establishing the most promising components for a marketing programme.

The study interviewed some 3000 people, in order to establish market segments according to attitudes to public transport, rather than travel behaviour. 23 different aspects of PT were grouped (through factor analysis) into seven general factors. The three of greatest importance were:

- Comfort aspects (noise, cleanliness, ventilation, nuisance from other passengers etc)
- Speed, flexibility and frequency
- Reliability.

The four others of lesser importance related to fares, timetables, proximity of services and general quality of life. In particular, fare levels did not seem to be a major consideration in attitudes to PT, for either users or non-users.

3. **Attitudes**

Cluster analysis was undertaken on the attitudinal data, to derive three large groups of respondents with common attitudes within each group (these groups were largely consistent with the behavioural groups already defined for market segmentation purposes). The attitudes of the three groups were:

Group I: (predominantly pensioners and housewives): felt favourably about public transport on all the three most important factors - comfort, flexibility/speed and reliability.

Group II: (predominantly active mobile males): felt unfavourably towards transport as regards its speed and flexibility, but felt comparatively neutral as regards the comfort and reliability of public transport.

Group III: (predominantly young single people): felt rather neutral about public transport as regards speed and flexibility but felt unfavourably towards it as far as reliability and comfort were concerned.

B1.2 MARKET TARGETING IN PUBLIC TRANSPORT

1. **Reference**: Dialogue Consultants Ltd and McDermott Associates. 'Market Targeting in Public Transport'. Report to UTC, September 1987.

2. **Introduction**

The objective of this major study was "to define discrete markets whereby operators, planners and decision-makers in the urban transport sector can be assisted in targeting urban

transport services more effectively, both for existing users and potential users."

The study included in-depth interviews and discussion groups, including collection of activity diary data from 57 households and a 'calibration' survey of 500 interviews in Auckland, Wellington and Christchurch. Most of the detailed work related to Auckland.

Some data on attitudes was assembled during the study, although more of a qualitative nature than through quantitative surveys.

3. Attitudes to Bus Services

Availability

Buses seen as much more readily available for people living in inner areas near main routes: services are frequent, timetables are not necessary. In outer areas, frequencies are low and timetables are needed: people lose flexibility and control over their travel. The situation is worst in new fringe subdivisions.

Information

Buses are not in the 'mode choice pool' for many people. They know little about them or where to go for information, so it would be an effort to find out the information needed.

Popular Mythology

Buses generally regarded as a bad experience:

- indirect routes
- need to transfer for many trips
- long waits for services.

The 'flyer' services were seen as the exception to this general image.

'Public' Transport

One perceived disadvantage is that services are not tailored to the individual (unlike cars/taxis): they follow indirect routes, have lots of stops, don't go at the right times, etc. Individuals do not have control over the service: they use them if/when it suits them, but otherwise go by car.

Irrelevant Routes and Transfers

Routes are not useful for most trips, except to the CBD. They are indirect, often requiring transfers and/or long walks. They are particularly unsuited to recreational/leisure trips.

Many trips involve travelling to the CBD, transferring, then travelling out again. This results in extended travel/waiting times, payment of two fares and travelling in the wrong direction much of the time. People would only do it if they had no other choice.

Timing

What is important is that the bus goes at the time to suit the individual, not that the service is frequent.

Comfort Aspects

Bus travel tends to be uncomfortable even if you have a seat - swaying, jerking etc. If you have to stand, it is worse.

Bus stop facilities are also inadequate - no weather protection, too small shelters.

Walking
A necessary adjunct - particularly unpopular in bad weather or with a lot to carry.

Fares
Fares not seen as a major issue in mode choice. Most people considered use of buses was cheaper than running a car.

Tickets
People don't know where to buy off-vehicle tickets.

Drivers
Drivers seen as an important element of bus trips.
- affect ride comfort
- responsible for reliability etc
- potential source of information
- as potential friends, to chat with.

'Flyers'
Very positive image of 'flyers' - seen as emulating the service provided by the car: compared with other services, they are faster, more direct and flexible in routing. Flyers perceived as much more oriented to interests of users, in terms of getting them to/from work as directly as possible.

4. Suggested Improvements

Overview
Buses/trains are widely perceived as a system of routes/timetables that exist independently from the individual and his/her interests. As they have to serve everyone's interests, they end up suiting no one. Thus they are used only as a mode of last resort:

> *"The central problem in terms of enhancing services is that the car owner believes that the bus service isn't supposed to be for me. Consequently, any improvement will only attract those that feel they are forced to use the bus. For most people, the enhancements are nice for when you have to catch the bus (which is hopefully, rarely, never, or at least very much later on in life).*
>
> *In such a context, the only really meaningful enhancements are those which relate routes and times to the needs of the individual. Other enhancements like reduced fares, or more comfortable vehicles, are likely to have little impact on patronage. People will still believe that there is a strong probability that there will be no bus for them, they can't, it's not economic, can't just suit me.*
>
> *Objective improvements to the physical service are unlikely to change people's perceptions, which lie at the core of the issue. At best, any change will be marginal and very slow. What is needed is a radical shift in the image of transportation if market penetration is to be achieved by public transport services. The image of public transport must change from that of a system, designed by and for other people, to one which has me (the potential passenger) as the focus. Essentially, this implies a shift from supply-led selling, towards a market-led approach. In turn, it raises fundamental questions about the purpose of publicly provided transport and the current pattern of ownership and management of the various transport modes."*

Price
Price is not seen as a major factor influencing use of public transport. Even for people who perceive PT as cheap compared with the car, the routes/times are the major factors influencing use of the service, not the costs.

Comfort Aspects
Comfort rarely seen as a substantial factor in mode choice - except perhaps if it were a matter of having to stand regularly.

Reliability
Reliability generally seen as good and not a major factor in use of the services.

Travel Time
Faster, more direct services would be highly regarded: more flyers and bus priority lanes therefore popular. However, unlikely to result in substantial increase in usage.

Frequency/Timing
Increased frequency regarded very favourably. However, the real factor is seen as buses running at the times people require them. Regularity of services (clock-face timetables etc) are seen as important.

Direct Services
Direct services for cross-town trips, to replace indirect transfer trips< was seen as appealing. However in reality any such services are still likely to cater for only a small proportion of cross-suburban movements. Cross-town buses are unlikely to the competitive with the car, and therefore still only used by people who have no choice.

Jitneys
Jitneys defined as semi-demand responsive minibuses/maxi-taxis on semi-fixed routes. Perceived as a cheaper form of taxi service, but still inferior to use of own car.
Also concerns about reliability.

Deregulated Taxis
This idea was for a more flexible taxi service, without special driver licensing and with negotiation of fares for each trip. Generally regarded as a form of hitch-hiking, and gave major concerns on security aspects.

B1.3 SUBSIDISATION OF URBAN TRANSPORT STUDY

1. **Reference**: Travers Morgan. 'Subsidisation of Urban Transport Study - Working Paper 4: Mobility of the Transport Disadvantaged'. Report to UTC, June 1988.

2. **Introduction**
This major study included:
   - Review of NZ studies into the needs of the transport disadvantaged
   - Consultations with agencies/community groups about transport problems and transport disadvantage issues
   - Group discussions with groups thought to be transport disadvantaged, to investigate appropriate criteria of disadvantage
   - Consideration of a range of service delivery options to improve mobility of the transport disadvantaged.

3. **Consultations**

Specific issues raised relating to PT services for transport disadvantaged people were:

- Access to stops/stations for some groups
- Design of the vehicles, which made entry and exit difficult, and the lack of information on vehicles
- The poor facilities at bus stops
- The lack of transfer fares and standardised concession fares. There was some concern about income testing and the suggestion was made that a peak/off-peak fare system would obviate the need for concession fares
- The poor weekend and off-peak services.

4. **Group Discussions**

Main points to emerge relating to attitudes to/use of conventional PT services included:

- Services unsuitable for recreational travel (routes, hours of operation)
- Do not like to use services at night, for security reasons (general comment)
- Cost of PT was a factor restricting use, particularly if transfers were involved (most groups)
- Concerns re 'comfort' factors, such as ability to get a seat, smoothness of ride
- Females made more use of PT than males: males tended to have very negative attitudes to PT
- Very poor (or no) service in evenings and weekends
- Confusion/uncertainty about how/where to catch buses, interpretation of timetables etc
- Particular difficulties on using PT with shopping, young children
- PT routing inadequate for many trips, and transfers difficult/costly.

5. **Hamilton Survey**

Review of a survey of elderly people in Hamilton (Roberts, 1986), which noted the following difficulties associated with using buses:

- 17% experienced problems getting into vehicles (curbs, steps, narrow doors)
- 17% said that fares were too high: concession fares were not available to all respondents, and for those that they were, the reduction was not large
- 16% said the bus stop was too far to walk to
- 13% commented that timetables were unsuitable: more service would be preferred at weekends rather than evenings as many of the elderly would not travel by public transport at night
- 12% said that buses did not serve the places to which they wishes to travel .

B1.4 NZ PASSENGER TRANSPORT ATTITUDES SURVEY

1. **Reference:** Steer Davies Gleave. 'Monitoring changes in the Passenger Transport Industry: 1991 Public Attitudes Survey'. Report to MoT Land Transport Division, March 1992.

2. **Introduction**

National survey of public attitudes to a number of transport issues, as part of monitoring the new passenger transport regulatory regime. Involved postal questionnaire with 2700 responses nationally (69% response rate).

3. **PT Users and Usage**

* PT was the main means of travel to work/education for 9% of respondents (bus 6%, train 2%, taxi 1%).

* PT was the main mode of travel to work/education for:
  - 13% of those aged 18-24
  - 12% of people in metropolitan areas (5-6% in other urban areas, 3% in rural areas)
  - 4% of those with a car available to drive, 19% of those with car available as passenger, 32% of those with no car available.

* Frequency of usage of PT was as shown in the following table:

TABLE: FREQUENCY OF PT USAGE (% of respondents)

Usage	All Respondents	Metro Areas	Age		Car Availability		
			18-24	60+	As Driver	As Passenger	No Car
5+ days/week	3	7	10	1	3	10	15
3-4 days/week	1	4	5	2	1	9	9
1-2 days/week	4	9	11	8	3	17	22
< 1 days/week	13	20	15	22	12	21	24
Never	79	60	60	67	82	42	30
Total	100	100	100	100	100	100	100

4. **Attitudes**

* Services generally rated quite well on punctuality, moderately on fares and poorly on frequency of service (especially evenings and weekends). Females were more concerned than males about service frequencies.

* Services rated well on vehicle cleanliness and driver friendliness and moderately on bus comfort and ease of access. They rated poorly on vandalism. Females (particularly age 60+) rated ease of access more poorly.

* Older (60+) respondents tended to have more favourable views than younger groups.

* PT users generally had more favourable opinions than car users, especially in regard to convenience of routes.

* Metropolitan area residents were particularly critical of evening and weekend service levels.

B1.5 CHRISTCHURCH BUS TRANSPORT SURVEY

1. **Reference:** Massey University (Market Research Centre). 'Bus Transport Christchurch 1984'.

2. **Introduction**

Telephone survey of 500 people in the greater Christchurch area to examine usage and attitudes to bus services.

3. **Usage Patterns**

* 35% of people had used the bus within the previous week and 61% within the

previous two weeks

* 29% of males and 71% of females used buses 'regularly'.

* Regular users were biased heavily towards:
  - people age 15-24 (34%) and over 60 (31%)
  - students (17% of regular users).

4. **Attitudes and Desired Improvements**

* Main reasons for bus usage were:
  - do not own a car (24%): 40% of these were age 60+
  - convenience (22%)
* Main reason for **not** using the bus was:
  - prefer convenience of own car (61%)

* The major areas of dissatisfaction with the present services were:
  - Convenience of timetables (20%), of which those dissatisfied wanted:
    - more frequent services (15%)
    - more evening/weekend services (3%)
    - better on-time running (2%).
  - Routes (19%), of which those dissatisfied wanted:
    - more direct routes (9%)
    - additional routes (9%)
    - better bus signage (1%).
  - Level of fares (10%)
  - Service of staff (7%)
  - Cleanliness of buses (6%).

* In response to the question "what one thing would you like to see improved by the City bus system", 41% of people said 'Nothing'. Of the others, the main improvements were:
  - Smaller buses (5%)
  - Additional routes (5%)
  - More buses to suburbs (5%).

B1.6 NORTH OF THE WAIMAKARIRI STUDY

1. **Reference**: Travers Morgan. 'Public Transport Requirements North of the Waimakariri River'. Main Report and Technical Report to CUC, 1988.

2. **Introduction**

Study for CUC to develop more appropriate and efficient PT services for Rangiora/Kaiapoi area. Included bus user (on-board) survey, bus user attitude survey, household telephone survey and group discussions.

3. **Usage and Users**

Usage of bus services by study area adults was:

- At least every weekday 3%
- At least once per week 8% (including the 3%)
- At least occasionally 16%.

Usage was particularly concentrated in the 15-25 age group.

The random survey of households in the study area indicated that:
- bus is used as the main means of transport by 7% of the population on weekdays, 3% at weekends
- 3% of all trips are made by bus.

The bus user survey indicates the following characteristics of users:
- 60% are female
- 13% are under age 15, 45% are age 15-24 and only 9% are age 60 or over.

Approximately 30% of bus trips were to/from work, 18% were to/from school or college and 20% were visiting friends and relatives.

Principal reasons given for bus use were:
- 71% had no car available to drive (25% had no driver's licence)
- 14% said bus was cheaper than car
- 6% said car parking was difficult.

4. Attitudes - Bus Users

Bus users ranked the following features of bus services in descending order of importance:
- reliability (most important)
- frequency
- low fares
- evening/weekend services
- buses run close to home
- ability to get a seat
- avoid changing buses
- short journey times (least important).

Users generally agreed with the following statements about the present bus services:
- they could usually get a seat
- buses generally run on time
- bus drivers are courteous
- the buses are run efficiently
- the buses are comfortable
- bus fares are generally good value for money.

There was also general support for the statements that:
- there are not enough bus shelters
- there are not enough buses in evenings and at weekends.

5. Attitudes - General Population

The main reasons given for not using bus services more often were:
- car is more flexible, comfortable, convenient and faster
- bus is inconvenient and difficult to use, or people were unaware of the timetables.

Priorities of the general population for improving the bus services were (in descending order of importance):

- lower fares
- express services
- more buses down Papanui Road
- provision of a local service or buses running closer to homes.

General discussions with both users and non-users indicated the following perceptions and concerns:

- CTB is generally seen as the only route services operator in the area
- Buses are seen as relevant only for trips to/from the Christchurch city centre
- Bus travel is seen as very slow, particularly after including walking and waiting time
- The almost-empty buses seen in the study area are regarded as an indication that the services are inefficient
- More frequent services in the off-peak and at weekends were seen as desirable
- More services were desired down Papanui Road, instead of Cranford Street.

B1.7 AUCKLAND BUS PASSENGER SURVEYS

1. **Reference**: Auckland Authority. 'Bus Passenger Survey, 1985/86'.
Travers Morgan. 'Passenger Information Systems - Interim Report'. Report to ARA TPD, March 1989.

2. **Introduction**
ARA undertook a survey of bus passengers in December 1985/January 1986. TMNZ analysed this survey and undertook further market research as part of a 1989 project for ARA on passenger information needs. Relevant results from both these surveys are summarised as follows.

3. **Patterns of Bus Usage**
A random household telephone survey (320 responses) gave the following composition of the bus user market. 28% of the population are frequent bus users (once a week or more) and account for 93% of all bus trips.

Trip Frequency	% of sample	% of bus trips
5+ days/week	13	63
2-4 days/week	5	17
1-2 days/week	10	13
Few days/month	7	3
Occasionally	17	4
Never	48	-
Total	100	100

4. **Reasons for Bus Use**
Reasons for use of buses (from 1985/86 survey) were:

- No driving licence 3%
- No other means of transport available 49%
- More economical 9%

· More convenient	21%
· Combination of above	7%
· No reasons	11%
	100%

This indicates that only 30-40% of bus users had a real choice of mode for their trip.

Reasons for use of bus (1988 on-bus survey) were (in descending order):
- No car available
- Car parking
- No driving licence
- No other options.

5. **Impediments to Greater Bus Usage**
The household telephone survey found that the most important reasons against greater use of buses were (in descending order):
- Car more convenient
- Does not go where I want to go
- Don't travel often.

6. **Rating of Bus Services**
The 1985/86 survey asked bus users to rate the services on a 5-point scale (excellent to poor). The results were:

Excellent	15%
Good	48%
Satisfactory	31%
Unsatisfactory	2%
Poor	21%
	100%.

High frequency users tended to rate the services rather better than low frequency users.

B1.8 WELLINGTON MARKET RESEARCH ON QUALITY IMPROVEMENTS

1. **Reference**: Steer Davies & Gleave. ' The Effects of Quality Improvements in Public Transport: Part IIA - Exploratory Market Research Results'. Report to WRC, February 1991.

2. **Introduction**
This study (undertaken as part of the WRC GATS project) had the objectives of identifying:
- important determinants of travel mode choice, and particularly the importance of qualitative factors;
- current level of satisfaction with and priorities for improvement in public and private transport.

Interviews with 215 people were conducted, 137 on work trips and 78 on other trips. Quotas were set for trips by car, PT and slow modes (walk/cycle). Relevant findings are summarised as follows.

3. **Frequency of PT Use**
- Some 75% of people using car for the work trip and over 90% of those using car for non-work trips rarely or never used PT.

- 95% of people using PT for the work trip and 35% of those using it for non-work trips used PT daily.

4. **Reasons for Choice of Mode**

The main reasons (unprompted) determining choice of travel mode (all respondents) were:

* 'Convenience' factors (53% overall):
  - Car users (68% work trips, 56% other trips) - principally travel time, access, flexibility, general convenience.
  - PT users (52%/49%) - principally parking problems, general convenience, access problems
  - SM users (40%/34%) - principally quicker, shorter distance.

* 'Comfort' factors (21% overall):
  - Car users (8%/28%) - baggage handling (non-work trips)
  - PT users (9%/13%) - relaxing, reliability
  - SM users (39%/47%) - healthy, relaxing.

* 'Cost' factors (15% overall):
  - Car users (18%/4%)
  - PT users (22%/11%)
  - SM users (15%/15%).

* 'No alternative' (7% overall):
  - Car users (4%/ -)
  - PT users (15%/17%)
  - SM users (2%/4%).

All other factors (safety, image, information, environment) scored no more than 1% each.

It is apparent that the main factors determining car users' choice of mode were:

- Work trips - travel time, access, flexibility, general convenience, cost
- Non-work trips - travel time, flexibility, frequency, access, general convenience, baggage handling.

5. **Important Factors in Mode Choice**

Respondents were asked to rank seven generic factors in order of importance to their choice of travel mode. Overall ratings were (on a scale of 7 to 1):

- Convenience 6.1
- Cost 5.1
- Safety 4.8
- Comfort 4.5
- Environment 3.7
- Information 2.2
- Image 1.7.

These rankings did not differ substantially by mode used or between work and non-work trips.

6. **Performance of Existing Services**

Respondents were requested to rate bus, rail and car services in Wellington for travelling to work or for leisure trips (according to the interview) in terms of seven factors:

- Comfort: comfort/availability of seats; cleanliness in/outside and vehicular appearance
- Convenience: frequency; how close station/stop; speed etc
- Safety
- Cost
- Image: general impression; status
- Environmental effects
- Information: timetables; publicity about services.

Ratings were done on a 5-point scale, with very good scoring 5 and very poor 1. The overall results are shown in the following table.

TABLE: OVERALL RATING OF EXISTING SERVICES

	Mode		
Factor	Car	Train	Bus
Convenience	4.5	3.4	3.4
Cost	2.9	2.8	2.8
Safety	3.6	4.0	3.8
Comfort	4.6	3.5	3.7
Environment	2.5	4.0	3.1
Information	-	3.4	3.1
Image	4.0	3.0	3.3

These ratings do not differ very much between work and non-work trips, nor by modes used. However there is a tendency for users of any mode to rate it more highly than non-users of that mode.

Key conclusions from the table are:

- On the most important factor (convenience), car is rated substantially higher than bus or train.
- There is little difference in rating on the second-most important factor (cost) and modest differences in the next factor (safety).
- Car has a substantially higher rating on the next factor (comfort).
- The only factor on which PT (especially train) has a substantial advantage over car is Environment, and this is regarded as of relatively low importance.
- Bus and train general rate quite closely together, except on the Environment Factor.

7. Desired Public Transport Improvements

An open question was posed on "What changes would need to be made to PT so that you would consider using it" (or, for existing PT users, on "what changes you would like to see made to PT").

The main suggestions made were:

* 'Convenience factors (43% of total responses) - principally frequency improvements, better evening/weekend services, more direct services, better access to services.
* Comfort factors (32% of total) - principally improved reliability, friendlier staff, better driving, smaller vehicles.
* Cost factors (19% of total)
* Information factors (5% of total)

* Environmental factors (1% of total) - retain trolley buses
* Image factors (under 0.5%).

One-quarter of car users did not offer any improvements which would make them consider using PT, indicating they are not likely to use PT in any circumstances.

B1.9 WELLINGTON PASSENGER ATTITUDE SURVEY

1. **Reference**: Travers Morgan (NZ) Ltd. 'Passenger Attitudinal Survey'. Report to Newlands Coach Service, April 1992.

2. **Introduction**
Survey of NCS passengers to investigate perceived importance of different service attributes and performance against these attributes. Some 940 survey forms returned, which was close to 100% of passengers on the surveyed trips.

3. **Importance of Attributes**
Most important features were (descending order):
- Keeping to timetable
- Convenient arrival/departure times
- Friendly/helpful drivers
- Availability of a seat
- Short walk at home end
- Easy to read destination signs
- Trip does not take too long
- Short walk at work/school etc end
- Timetables readily available
- Timetable displays at bus stops
- Modern vehicles
- Buses run throughout the day
- Buses run in evenings
- Buses run at weekends.

4. **Performance against Importance**
Aspects with most significant shortfall between perceived performance and importance were:
- Keeping to timetable
- Convenient arrival/departure times
- Timetable displays at bus stops.

B1.10 WELLINGTON BUSDATA PROJECT

1. **Reference**: Wellington City Council. Busdata Project: Stage 1 (July 1991) and Stage 2 (November 1992).

2. **Introduction**
A 'before and after' survey to assess the impacts of 'deregulation' of the bus services in Wellington City. 200 responses were obtained for the 'before' survey, 400 for the 'after' survey. A telephone survey method was used.

3. **Difficulties in Bus Use**
- 22% of 'after' respondents (34% of 'before' respondents) stated they had difficulties in using the buses. The most common complaint was infrequent service in the 'after'

survey (infrequent service/step height in the before 'survey').

- Of those reporting difficulties, 10% (of the total sample) stated this prevented them making some trips (8% in before survey).

4. **General Comments**

Comments on the bus services were made by about half the 'after' sample. The main comments related to:

- Positive comments (39% of all comments)
- Comments on drivers: complaints (7%) and positive remarks (5%)
- Fares too high (6%).

B1.11 ACCESSIBILITY FOR THE TRANSPORT DISADVANTAGED

1. **Reference:** Environmental and Planning Associates and Murray-North Ltd. 'Mobility/Convenience and Accessibility Related to the Transport Disadvantaged'. Working Paper 2, GATS Evaluation. Report to WRC, July 1991.

2. **Introduction**

This work involved investigating the concept of transport disadvantage and the mobility/accessibility needs and problems of people who could be described as transport disadvantaged. It included:

- interviews with representatives of community and similar groups
- in-depth 'case study' interviews with selected individuals who were regarded as transport disadvantaged.

The following summarises the main issues/problems arising from the community group interviews.

3. **Costs**

Fares were seen as a major concern for many transport disadvantaged people. Particular points:

- Students - transport costs influence residential location
- Transfer trips - fares a particular problem
- Access to employment - limited by travel costs
- Need for cheap day tickets, transfer tickets, off-peak fares etc.

4. **Physical Difficulties**

- Vehicle difficulties - bus access/egress: need for low floor buses, flip-out ramps.
- More shelters needed.
- Walking uphill is a frequent problem in Wellington, for elderly, those with shopping, small children etc.

5. **Location Difficulties**

- General lack of services in outer residential areas. Transfers a particular problem in some areas and for some groups.
- Important locations (Zoo, Aquatic Centre, some hospitals, recreational areas) difficult to get to.

6. **Information Problems**

Need for timetables at bus stops. Route/timetable changes confused people and needed to be well notified.

7. **Service Problems**
   - Need for more routing flexibility for off-peak users. Need smaller vehicles for Wellington's suburban streets.
   - Need for improved off-peak service frequencies.
   - Need for cross-town routes.

8. **Driver Attitudes**
   Driver courtesy important: need to assist passengers boarding/alighting, and to not start bus before passengers seated.

B1.12 WELLINGTON RESEARCH ON TRAFFIC RESTRAINT ISSUES

1. **Reference**: Steer Davies Gleave. 'Assessment of Methods for Funding Public Transport and Restraining Traffic in Wellington. Final Report'. Report to WRC, May 1993.

2. **Introduction**
   This project involved an interview survey of some 650 people in Wellington City, Lower Hutt, Porirua and Upper Hutt central areas. A series of Executive Interviews was also undertaken on transport funding and traffic restraint issues. A summary of relevant results follows.

3. **Factors encouraging PT Use by Car Users**
   All car drivers/passengers were asked what factors would encourage them to travel by bus/train. 465 people responded. The main responses of these were as follows:

	%
No factors	52
Lower fares	13
No car available	12
Closer match of route to O-D	5
Improved frequency	5
Bad weather	3
Better service	2
Faster travel time	2
Lack of parking	1
All other	<1.

   The results indicate that only about 30% of car users **might** be persuaded to switch to PT by changes to the PT services etc; and the remaining 70% would not switch or might only switch due to other considerations (not related to the PT system). The principal PT factors which would encourage a switch were:
   - Service features (routing, frequency, travel time etc) - 14%
   - Lower fares - 13%.

4. **Executive Attitudes**
   All executives interviewed who were non-users of PT held unfavourable attitudes towards bus services: they were seen to be poorly marketed, inefficient and poorly managed. Rail services were also similarly criticised.

   However, bus users surveyed tended to have favourable views of the bus system. There was also considerable support for retention of rail services.

B1.13 HAMILTON BUS PASSENGER SURVEY

1. **Reference**: Hamilton City Council. 'Hamilton Public Transport Studies' - Volume 1: Bus Passenger Survey'. November 1983.

2. **Introduction**
Survey of some 6300 bus users in Hamilton area (including rural routes) over period July-October 1982.

3. **Attitudes**
The survey asked people's attitudes to the following aspects of the service on which they were surveyed, giving a choice of two responses in each case:
- Timetables (convenient/inconvenient): 15% responded inconvenient.
- Service (reliable/unreliable): 8% responded unreliable.
- Suitability of routes (serves/doesn't serve my needs): 21% of responded that did not serve their needs.
- Fares (reasonable/unreasonable): 25% responded unreasonable.

B1.14 HAMILTON COMMUTER SURVEY

1. **Reference**: R G Drury. 'Profiles of Commuter Groups Using Public and Private Transport in Hamilton'.

2. **Introduction**
Report of a survey of commuters in Hamilton.
Found a large degree of captivity among PT users: two-thirds had no regular access to a car as driver and over half no regular access as a passenger.

3. **Reason for Not Using Bus**
266 people surveyed did not use the bus for their work trip. Of these:
- 89 found the bus suitable but did not use it
- 162 found the bus was not suitable
- 15 people did not know.

Of the 162 who found the bus unsuitable, the main reasons given were as follows:

Does not fit in with work hours	28%
Walk distance to/from bus	17%
Travel time	12%
Need use of car	11%
Convenience (general)	6%
Service frequency/regularity	5%
Comfort/amenity factors	5%
Too long journey	4%
Walking	3%
Cost	3%
Bus reliability	3%
All other	<2%
(Total	100%).

Notable features of these results are:
- Cost (3%) is a relatively unimportant reason.

Service-related factors (walk distance, work hours, frequency etc) comprise the major group of reasons.

B1.15 DUNEDIN 'FREE BUS' DAY

1. **Reference:** Otago Regional Council. 'Public Transport Survey - March 93: Overview of Results'. Report to ORC Passenger Transport Committee.

2. **Introduction**

Dunedin 'Free Bus' Day was held on 16 March 1993. Two surveys were undertaken:

- Householder survey: 43,000 forms distributed with free newspaper, c.5400 useable replies received
- Bus user survey: 27,000 forms distributed on buses, c.4400 useable replies received.

3. **Attitudes**

* Older people had more positive attitudes and higher levels of satisfaction with bus services.

* Main reasons for bus use (household survey)

· Parking	340
· Cost	125
· Environmental concerns	110
· Convenience	103.

* Most common reason against greater use of bus (bus user survey):

· Not as convenient as car.

Other reasons:

· Fares too dear
· Buses too uncomfortable or crowded.

4. **Desired PT Improvements**

* Household survey:

- Smaller buses	8.2%
- Lower fares	7.8%
- Higher frequencies	6.9%
- Better weekend/holiday services	4.6%
- Improved driver behaviour	3.7%
- Improved timetables	3.0%
- All others	< 2%.

* Bus user survey (descending order)

- Smaller buses
- Higher frequencies
- Lower fares
- Improved timetables
- Improved driver behaviour
- Better weekend/holiday services
- Better evening services.

B1.16 DUNEDIN BUS USER SURVEY

1. **Reference:** Fink-Jensen, K. 'The Bus User - A Survey'. Report to Dunedin City Transport,

November 1986.

Travers Morgan. 'Urban Bus Study - Dunedin City Transport: Volume 2. Report to UTC, February 1988.

2. **Introduction**

The Fink-Jensen survey of bus users in Dunedin involved:

- On-bus interviews of a random sample of 1935 bus passengers
- Completion (at home) of a more detailed questionnaire by these respondents: 1219 questionnaires were returned.

The survey results were reviewed and reinterpreted by Travers Morgan in the UTC Urban Bus Study. Attached (at the end of this Annex) is the Appendix from this study giving the findings of this work.

B1.17 PALMERSTON NORTH PUBLIC TRANSPORT STUDY

1. **Reference:** Travers Morgan. 'Palmerston North Public Transport Study: Stage 1.' Report to Palmerston North City Corporation, January 1990.

2. **Introduction**

This study included:

- Telephone survey of transport disadvantaged people (500)
- Consultations with community groups (53)
- Public submissions (38)
- On-bus survey (2700 responses)
- Bus user attitude survey (230 responses).

3. **Bus User Attitudes**

* Main reasons for use of buses were (in descending order):
  - No car
  - Other
  - Cheaper than car
  - No parking
  - Did not state
  - Quicker than car.

* 63% of bus users appeared to have no choice of mode for their bus trip.

* The main areas of concern about services were:
  - Poor evening services
  - Poor weekend services
  - Routing complaints
  - Timetable complaints.

* Users overall considered the following to be the most **important** aspects of service provision (in descending order):
  - Reliable service
  - More information about services
  - Services should be frequent
  - There should be services on Saturday mornings
  - Fares should be lower.

* User views and priorities on the **performance** of the service they used most frequently were (in descending order):
  - Bus stops should have timetables posted
  - There are not enough bus shelters
  - Buses normally run on time
  - There are not enough buses at weekends.

* Results indicated that passengers considered that fares should be low (about 87% considered this important or very important). However, 64% considered current fares to be good value, and more passengers placed higher priority on:
  - Service information
  - Weekend services, notably Saturday mornings.

* Results also indicate that the highest service priority noted by users, service reliability, was generally well catered for by the existing system.

4. **Transport Disadvantaged People - Attitudes**

* Transport disadvantaged' people were those who said they had difficulty getting use of a car (they comprised 26% of people called).

* About 60% of this group used buses at least occasionally (30% more than once per week, as compared with 7% of the total population who use buses at least occasionally.

* Occasional and non-users stated they did not use buses more often for the following reasons (in descending order):

- prefer to walk or bike	25%
- can borrow car/get a lift	11%
- too expensive	10%
- inconvenient	6%
- don't know timetable	5%
- wrong times	4%.

* All survey respondents (including users) were asked how the service could be improved. Options suggested were, in order:

- more frequent buses	11%
- more buses at weekends	6%
- cheaper fares	5%
- better timetables	5%
- advertise timetables in the paper	5%
- more direct bus routes	4%
- use smaller buses	4%.

B1.18 NORTH SHORE PASSENGER TRANSPORT MARKET RESEARCH

1. **Reference:** Travers Morgan. 'North Shore Passenger Transport Strategy: Report on Survey Results.' Report to North Shore City Council. September 1992.

2. **Introduction**

As part of project to develop a passenger transport strategy for North Shore City, two surveys were undertaken of residents of the area.

- Five group discussions on user/non-user attitudes (Section 3 below)

- Telephone survey a 600 residents (remaining sections).

3. **Group Discussion Findings**

In general, the bus services are considered to be complicated, difficult to obtain information about and the information, once obtained, is difficult to understand. In turn this leads to perceptions that the bus service will not meet a potential passenger's needs, (when in fact that may not be correct).

In addition for peak period travellers:

- The range of destinations is considered limited.
- Internal North Shore travel is difficult, particularly from east to west or west to east.
- Services are sufficiently frequent, but frequency drops off too steeply too soon towards the end of the peak period. This is seen as a particular problem in the early evening.
- Express and Flyer buses, plus the bus priority measures for city bound passengers, help reduce the increased bus travel time.

For off-peak travellers:

- The range of destinations is considered limited, particularly for travel within the North Shore.
- Other destinations may be accessible by transferring, but timetables are uncoordinated and transfers are considered unreliable; either the connection is too tight or the delay too long.
- Services are too infrequent, meaning that passengers have to leave home (office, etc) too early in order to reach their destination on time.
- Bus departure times are irregular and difficult to memorise.
- Routes are too circuitous, meaning that the actual time spent in-bus is excessive (compared with private cars).
- Transferring between buses was considered acceptable, in order to open up a range of additional destinations, provided that services and connections were properly integrated and controlled.

4. **Frequency of Usage**

The following table gives frequency of PT usage by age group.

Except in the youngest (15-19) and oldest (55+) age groups, the majority of people had not used PT in the last 12 months. Less than 20% overall could be classified as frequent users.

5. **Perceived Problems**

The main problems relating to PT services identified (unprompted) by respondents were:

· Infrequent service	44%
· Not enough destinations	21%
· Have to transfer	16%
· Fares too high	16%
· Travel time too long	13%
· Not enough night/weekend services	11%
· All other	<10%.

Generally this order of ranking was similar for frequent, infrequent and non-users. However for regular users, not enough night/weekend services took second place after infrequent services. There were also some significant differences in priorities between age groups.

TABLE: FREQUENCY OF PUBLIC TRANSPORT USAGE BY AGE GROUP (% of all respondents)

Age Group	Frequent Users (> once per week)	Infrequent Users (in the last 12 months, (once per week)	Non-users (not in last 12 months)
15-19	62	25	13
20-24	26	24	50
25-29	15	18	67
30-34	8	20	72
35-39	12	25	63
40-44	14	17	69
45-49	13	16	71
50-54	10	12	78
55-59	16	34	50
60+	20	32	48
All	19	23	58

- Infrequent services - greater problem than average for 30-44 age, lesser problem for 60+.
- Not enough distinctions - greater problem than average for 30-44 age, lesser problem for 60+.
- Have to transfer - much lesser problem for age 15-29 age and 60+.
- Fares too high - greater problem for age 15-29.
- Travel time too long - much lesser problem for age 60+.
- Not enough night/weekend services - greater problem for age 15-29.

6. **Responses to Potential Improvements**

Respondents were asked about whether they were likely to use PT more if specified improvements were made. These improvements were, in descending order of the likelihood of response.

- More destinations
- Quicker journeys
- More regular services
- More frequent services
- Transfers easier
- More night/weekend services
- System easier to understand
- Better information
- Fares lower
- Bus stop closer
- Drivers more friendly.

The rankings of these improvements were generally similar for all trip purposes.

For all improvements, frequent users were significantly more likely to respond by increasing usage than infrequent users, who were in town more likely to respond than non-users. typically the stated response rating of frequent users was about 50% greater than for non-users.

Annex B2: Attitudinal Evidence - Overseas

TABLE B2.1 ATTITUDINAL EVIDENCE - AUSTRALIA

Author/Date	Summary of Evidence
DJA (1992)	Survey of Canberra residents found the following were the most important PT attributes influencing mode choice: · adherence to timetable · personal safety on PT · waiting time (especially for car users) · door-to-door time (especially for car users) · need to interchange (especially for car users) · seat availability (especially non-work trips)
John Paterson Urban Systems (1977)	Users of Sydney CBD parking stations were asked the reasons for use of car rather than PT. Main reasons given were: car more flexible/convenient 49%, quicker 17%, PT unreliable 13%, too crowded 10%, no service 7%, car cheaper 2%, other 1%.
Ampt (1990)	· Involved group discussions with people in Adelaide on attitudes to existing services · Most important attributes of a desirable system were seen as frequency and reliability, followed by safety. Other more important attributes were seat availability, direct route and no need to transfer (particularly for non-users).
	PT user groups identified following needs for PT improvements: · Priority to reduce journey times - more direct services, higher off-peak frequencies, improved bus/train coordination. · Increased bus/tram priority, through separated rights-of-way, signal priority. · Improved passenger information, better security measures and improved vehicle comfort.
Travers Morgan (1991)	Study included review of needs/problems relating to PT in Noarlunga area (Adelaide). Identified four groups of problems relating to conventional PT services: · Route structure (principal concern), including: - lack of services - location of stops in relation to residences - undue CBD orientation - lack of cross-suburban services, especially off-peak - difficulties of transfers and resultant long travel times · Service frequency, particularly relating to evening and weekend services · Vehicle design, particularly step heights for the elderly · Other issues, including - safety/security - provision of PT to new developments - private bus services/fares
STA SA (1992b?)	STA Adelaide Performance Tracking Study found people gave following main reasons for not considering use of the bus (figures add to over 100%) - inconvenient 46% - bus not available/accessible locally 40% - need car during the day 14% - don't like using PT 4% - like independence of own car 3% - all others <1%.

TABLE B2.1/cont'd ATTITUDINAL EVIDENCE - AUSTRALIA

Author/Date	Summary of Evidence
STA SA (1992a)	· Survey of people at 1992 Royal Adelaide Show investigated reasons for non-use of STA services. Main reasons were: - prefer to drive/need car for work 45% - routes not convenient to O-D 16% - takes too long 7% - impractical (eg. small children, shift work 6% - services inconvenient) 4% - too expensive 3% - prefer to walk 3%. · Non-users suggested priority be given to the following measures to encourage usage: - increased frequency 16% - reroute services 16% - reduce fares 10% - upgrade vehicle facilities 7% - better service coverage 6% - better information 5%. · Non-users were offered a free 10 trip ticket and then subject to a follow-up survey 2 months later. 57% of those re-surveyed found the services were better than expected, 5% said they were worse. 51% of those surveyed said they would continue to use the services occasionally and 16% regularly. · A further follow-up survey of the 16% intended regular users was undertaken after a further 2 months. About half of these remained regular users.
MTA Vic (1988)	· Survey of PT users in the Upfield corridor found the following main reasons for choice of PT: - takes me close to destination 31/38% - no car/licence available 23/25% - PT more economical 15/9% - PT more convenient 5/8%. · Random household survey in the corridor found that main reasons for use of PT were convenience (46% of users) or lack of alternatives (37%). Main reason for non-use of PT was needing a car for other purposes (51%) · Most desired PT improvements by users and non-users were: - more frequent services (44% users, 34% non-users) - more reliable services (24%, 22%).
Ampt et al (1988)	· Survey of bus passenger attitudes in NSW, involving some 2600 completed responses · Found aspects of dissatisfaction and order of priority for improvements was: - on-time running - bus shelters and seats - improvements of interior cleanliness and more modern buses - more express services - improving chances of getting a seat - reducing boarding times - introduction of memory timetables, including timetables at bus stops - improving ride smoothness · Other factors investigated which were of lesser importance included fares and step heights

TABLE B2.2 ATTITUDINAL EVIDENCE - UNITED KINGDOM

Author/Date	Summary of Evidence
Stokes et al (1988)	(Cross sectional analysis of UK examples). Elasticity for service levels (walking and waiting time) of 0.5 - 0.6. Frequency more important than walk distance except for elderly. Walk elasticities were higher where frequencies low. Waiting time elasticities were highest for Sundays, lowest for peak periods. Highest for "choice" passengers. "Long term" elasticities higher than "short term". Service elasticities generally higher than fare elasticities, but show similar variation by time and market segment. Increased patronage came from more bus users rather than more trips per user.
Harris (1987)	(Survey results, Redcar, UK). Convenience most frequent cited reason for car users; no choice for bus users, speed for rail users.
Jones (1992)	(UK review of surveys) Willingness to switch to PT highest in London; has increased between 1988 and 1991. Service quality likely to have greater effect than fare levels.
Ampt et al (?)	(home interviews, Bristol UK) Reliability and cost most common reasons for not using service, also restriction on freedom of movement, frequency.
Kroes et al (1988)	Frequency most important, then timetable info, staff training.
TAS (1991)	Four key reasons why bus is failing to attract passengers: Cost, advantages of the car, poor information, poor reliability.
Jones (1984)	Found correlation between accessibility and travel behaviour. Public transport trip rate for households without car varied by up to 20% depending on accessibility
E Sussex CC (1986)	(Experimental results) Revenue increased and costs reduced by replacing several traditional routes by a frequent service on one route. Most users had a perceived improvement in frequency, even though fewer buses were used. Some walk trips were longer. The services also had simpler fares, off-vehicle ticketing options, and avoided cross-town routing in order to improve reliability.

TABLE B2.2/contd.. ATTITUDINAL EVIDENCE - UNITED KINGDOM

Author/Date	Summary of Evidence
CIT (1993)	· Contains a summary of UK market research evidence on bus users and user attitudes · Reasons for use of car: main reasons given were convenience and ease of use. Many car users did not regard buses as a conscious option. 55% of car users in one study said they would not use the bus in any circumstances. · Important features of bus services. Four most important features are: - availability of direct service at convenient time - frequency and punctuality - comfort and safety - staff attitudes. · Other features were: - cleanliness - time keeping - service frequency - vehicle step heights - bus station facilities. · Concerns about the image of buses in a large urban area were: - difficulty in getting information, which deters the casual user - vehicle cleanliness - difficulties with 'exact fare' systems - reliability/time-keeping - lower class/poor image · Most desired service imrovements were: - more/better bus shelters - reintroduction of conductors - improved bus station facilities - better information about services - better staff attitudes - better 'customer care'.
Travers Morgan	Decrease from 2> 1 bus/hr regarded by many people as significant drop in quality of service Reliability particularly important as service frequency falls. Typical service frequency elasticities 0.6 - higher at weekends, possibly >1. Typical walk elasticity -0.5 and 0.8 for distances < 700m. Percentage of trips by bus decreases rapidly between c.300m and 700m "both ends" walk distance, after which it settles to a relatively low level.

TABLE B2.3 ATTITUDINAL DATA - EUROPE (excluding UK)

Author/Date	Summary of Evidence
Bovy et al (1991)	· Cross elasticities between car and PT are very low. PT only competitive if ratio of public/private journey time is less than 2.0 (less than 20% of trips) · Increased service, reduced fares increases patronage, but not at expense of car travel. · Most quoted elasticities very low - highest for "non-captive" but these are only small percentage of patrons.
Onnen et al ( )	(Stated Preferences) Perceived solutions to the "bad" functioning of public transport were: public transport should be cheaper, improve/expand public transport system.
CIT (1993)	· Contains a summary of UITP/EEC report on opinions on urban transport issues. Involved a survey of 13,000 people in the 12 EEC member states. · Main reasons given for non-use of PT were (in descending order): - lack of convenient, direct service (particularly strong among workers) - too slow - restricts travel options - other (cost, frequency, reliability). · Changes in petrol prices have not affected car usage for 60% of those surveyed.

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APPENDIX 4

EVIDENCE ON URBAN PUBLIC TRANSPORT FARES & SERVICE LEVEL ELASTICITIES

Travers Morgan (NZ) Ltd. August 1990. *Urban Bus Study Stage 3: Analysis of Public Transport Patronage Trends.*

EVIDENCE ON URBAN PUBLIC TRANSPORT FARES & SERVICE LEVEL ELASTICITIES

PUBLIC TRANSPORT SERVICE VARIABLES

The principal public transport variables affecting patronage are

- Fare levels
- Service levels.

Numerous studies have been undertaken to determine the relationship between these two variables and public transport patronage. The studies have had two main aims:-

- To assist operators developing short and long term business strategies; and
- To assist transport planners at local and national level consider the overall effect of transportation policies, particularly public transport subsidy.

The analysis of fares and service effects are reviewed separately

2.1. Fares Levels

All analyses of fares elasticities relate to real fares (i.e. with the effect of inflation removed).

Analysis of Christchurch Transport Board Patronage and Revenue Trends, Travers Morgan for Christchurch Transport Board, June 1989.

This study analysed operator patronage and revenue data for the period 1975 to 1989 and estimated a fares elasticity of -0.45. Other variables were isolated in the analysis and are discussed later in this review.

A 'standard' fares elasticity of -0.3 is normally applied, in the absence of any local data, to assess the effect of fares changes on patronage and revenue. The larger absolute value of the elasticity derived from this study is attributed to the topography of Christchurch which, being relatively flat, means that bicycle use is a particularly attractive alternative to bus travel. The study also considered that the relative ease of parking for most trips was another factor leading to a higher than average fares elasticity.

Subsidisation of Urban Transport Working Paper 2: Road Congestion and Frequency Benefits. Travers Morgan for Urban Transport Council, June 1988.

This paper reported evidence from an earlier UTC study into elasticities *(Galt and Eyre, 1987, see below)* and noted the finding that the fares elasticity estimate of -0.6 for Greyhound Buses Ltd in Wanganui was quite high (in absolute terms). The elasticity was calculated using lagged data, ie. patronage was considered three months behind fares to allow for the initial adjustment period. However, the high absolute value is consistent with other analyses of small towns where the effects of relatively short walking distances and low levels of service also come into play.

Anecdotal evidence was collected from the operators in the four major urban areas presenting the following elasticities:-

•	Auckland:	peak fares -0.10 to -0.15 off-peak fares -0.25 to -0.50
•	Wellington:	low absolute value (excluding NZR services) -0.15
•	Christchurch:	-0.3, falling recently to -0.2
•	Dunedin:	-0.3 for 10% fares increase, higher absolute value for 20% fares increase (NZR service).

The anecdotal evidence for Auckland supports studies elsewhere in respect of peak and off-peak fare elasticities. The low elasticities in Wellington may reflect the effects of a congested central area with high service levels and also the higher population densities in and around the city. The Christchurch anecdotal evidence is not supported by the later analysis *(see first reference)* which isolated other variables affecting patronage levels.

Funding Guidelines for Shared Transport, W D Pringle, Auckland Regional Authority.

This paper developed new approaches to public transport planning to reverse the drift from public to private modes. Five variables were used in a linear regression equation to describe the change in public transport patronage in Auckland (service levels, car operating costs, fares, petrol prices and income). The coefficients in respect of petrol price and income were negligible; while for fares the overall value obtained was -0.244, within the expected range.

The author also referred to evidence from a 1978 fares structure change in the city which indicated that elasticity is higher for fares increases than decreases. The paper also suggests that the difference between peak and off-peak elasticities has reduced as passenger numbers have declined leaving predominantly 'captive' users (i.e. passengers who have little alternative to making their trip by public transport).

Urban Rail Review, Working Paper No. 3, Economic Evaluation Methodology, Travers Morgan for Urban Rail Review Committee, November 1985.

An analysis of urban rail fares and patronage in the Wellington area over a 15 year period led to the estimation of fares elasticity values of -0.3 to -0.4, much in line with expectation but higher (in absolute terms) than indicated by the anecdotal evidence *(see earlier reference)*.

Demand Elasticities in New Zealand Public Transport: An Introduction , Galt M N and Eyre A J for Urban Transport Council, February 1987.

This study considered national and international evidence and then related this to the particular circumstances prevailing in New Zealand. A major source of evidence quoted in the study is *The Demand for Public Transport (13)* also considered later in this review.

Three factors were identified which influence fares elasticity:-

* The degree to which travel is necessary,
* The accessibility of alternative forms of transport, and
* The transport mode.

Peak journeys tend to be more captive than off-peak journeys and, accordingly, peak passengers are less responsive to fares changes (ie. peak fares elasticity is lower in absolute terms). Charging higher fares in the peak period can encourage some travellers to switch to off-peak travel periods (for example, workers in Wellington who are able to use the flexibility of "glide" time to start after the morning peak). Where this option is not available, increased peak fares will encourage a transfer to private transport and may result in increased congestion at peak hours.

For many short-distance journeys, high fares elasticity values are found because the option of walking is available as an alternative to bus travel. Galt and Eyre cite the example of the "Downtowner" low fare in central Wellington as a fare specifically designed to exploit the potential of attracting short-distance passengers in an area where many walk trips are made.

Using data from 26 urban areas in New Zealand for the 1981 census year, Galt and Eyre analysed the effect of fares, service levels, household car ownership, population density and income on:-

i. Passenger kilometres per capita,
ii. Passenger trips per capita, and
iii. Peak and off-peak passenger trips per capita.

Comparing data between cities, the study did not isolate a causal relationship between fare levels and passenger demand, i.e. the fare elasticity was not established as significantly different from zero (although the best estimate was for a fares elasticity of -0.13 with respect to passenger trips).

A time series analysis of quarterly data for Greyhound Buses Ltd, Wanganui, covering the period 1978 to 1985. A fares elasticity of -0.6 against passenger kilometres was derived in this study using lagged data (ie. considering the effect of fares increases in one quarter on passenger kilometres in the following quarter). The authors considered that this value was consistent with overseas studies.

Market Targeting in Public Transport, Dialogue Consultants Ltd. and McDermott Associates for Urban Transport Council, September 1987.

This study considered factors influencing individuals' decisions to use, or not to use, public transport. The study found that for most people, fares were not a major issue in modal choice. In particular, although individuals recognised that bus travel was less expensive than private car travel their modal choice was determined by other factors (service frequency, lack of information and reliability).

Fares levels - Overseas references

In 1980 the United Kingdom Transport and Road Research Laboratory published a report of the international collaborative study of the factors affecting public transport patronage *(13)*. This work is quoted in many other studies (*Galt and Eyre (5)*, for example). The principal findings of the collaborative study are best illustrated by Figure 1 of the report which we have reproduced for this review.

Overseas studies have generally found fares elasticity in the range -0.1 to -0.6, with factors such as peak/off-peak travel and service levels influencing the actual value. *Tyson (7)* in his review of deregulation in the United Kingdom used the traditional overall fares elasticity value of -0.3 to remove the effect of fare increases from patronage changes.

Fisher, Grimshaw and Tebb (9), analysing public transport patronage trends in West Yorkshire, obtained a fares elasticity value of -0.36 in a model that also included service level, income, unemployment and trend factors.

2.2. Service Levels

Most studies analysing the affect of service levels on patronage have encountered the difficulty of expressing level of service statistically. A proxy measure tends to be used (vehicle kilometres or miles). This statistic cannot adequately reflect the impact of express services, high frequency minibuses, etc.

Also for service levels in particular there is a 'cause and effect' relationship with patronage and this effect is difficult to exclude from the calculations.

Analysis of Christchurch Transport Board Patronage and Revenue Trends, Travers Morgan for Christchurch Transport Board, June 1989.

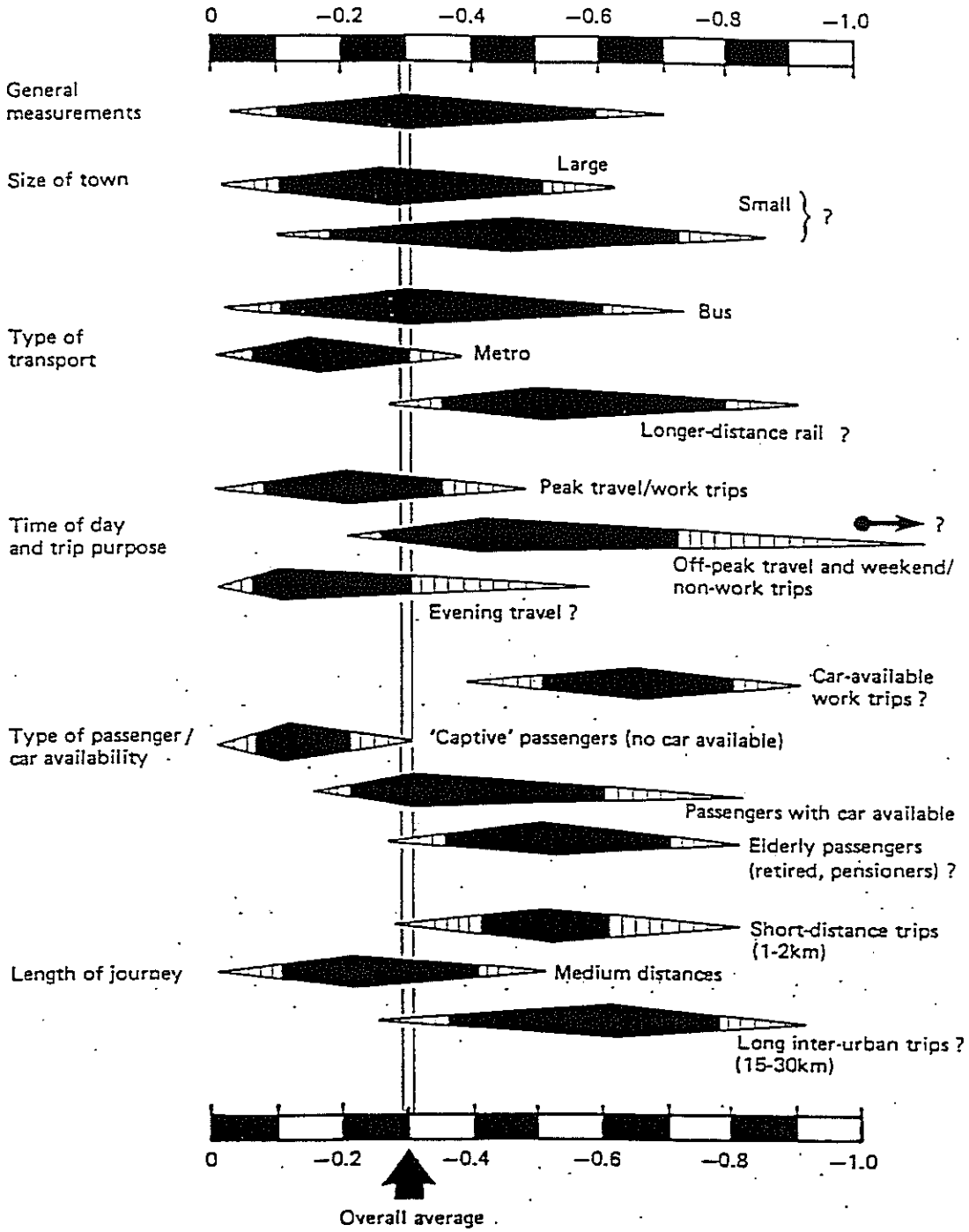
Analysing the operator's revenue and patronage data over the period from 1975 to 1989, this study developed an elasticity in respect of service kilometres of 0.4 to 0.5, within the range of values found elsewhere. The authors suggest caution in the application of this figure because of the potentially unrepresentative nature of service changes over the period.

Subsidisation of Urban Transport Study Working Paper 2: Road Congestion and Frequency Benefits, Travers Morgan for Urban Transport Council, June 1988.

Discussions with the operators in the main urban areas obtained the following elasticity values:-

- Auckland 0.5 to 0.6 on vehicle kilometres
- Wellington high response when moving from 3 to 4 or more buses per hour
- Christchurch -0.88 on headways (70 minute to 30 minute change)
  0.94 on vehicle kilometres.

These values are largely anecdotal.



Note: In view of the wide variability of measured elasticities, this representation in different categories is necessarily very approximate. The solid black areas indicate the most likely range of values, while the shading on the ends indicates that values may exist well outside this range. A question mark indicates that the conclusions are somewhat speculative.

Fig. 1 FARES ELASTICITIES FOR DIFFERENT TRAVEL CHARACTERISTICS

The Wellington response implies that moving from a low frequency service for which passengers needed to consult a timetable to a high frequency service produced a better response than improving the frequency on a service where headways are already less than 15 minutes.

The importance of frequency and the need to consult timetables supports the view that service elasticities are higher in small towns where, generally, frequencies are lower.

Funding Guidelines for Shared Transport, W D Pringle, Auckland Regional Authority.

Using Auckland data for the period 1967 to 1978 Pringle developed an elasticity of 0.666 for patronage against service level expressed in vehicle kilometres. We would again advise caution in using this value because of the potentially unrepresentative nature of the marginal kilometres included in service changes over this period.

Urban Rail Review, Working Paper No. 3, Economic Evaluation Methodology, Travers Morgan for Urban Rail Review Committee, November 1985.

The elasticity value range derived in this study must also be treated with caution. Against train kilometres the elasticity value was found to be in the range of 0 to 0.5 , a somewhat wider range than was expected, although the authors do point out that the nature of service changes over the period (including the extension of West Coast commuter services north of Wellington) could have affected the validity of the elasticity values obtained.

Demand Elasticities in New Zealand Public Transport: An Introduction, Galt M N and Eyre A J, Urban Transport Council, February 1987.

As discussed in the previous section on fares elasticities, the authors draw attention to the effect of the captive nature of passengers' journeys. Peak passengers are generally more captive than off-peak passengers and are likely to be less responsive to service changes. (*Pringle (3)* feels that patronage has declined to such a level that even off-peak passengers are now predominantly captive).

Galt and Eyre note that there is no particular pattern to the elasticities in respect of headway or wait time derived in overseas studies. They feel that this could reflect the problems encountered measuring the exact reduction in service headway and passenger wait time. The indication is that reductions in headway and therefore passenger waiting time will attract passengers, although the variability is the overseas results might reflect a failure to analyse separately changes to high and low frequency services as referred to in the *Road Congestion and Frequency Benefits* paper above.

Using bus kilometres per capita as a measure of service levels in a study of public transport patronage in 26 New Zealand urban areas for the year 1981, this variable was found to be a significant influence on the volume of public transport usage measured in terms of passenger kilometres per capita, passenger trips per capita and peak and off-peak trips per capita. The service elasticity (relating to bus kilometres) was 1.00 in relation to passenger trips.

The study also analysed quarterly data for Greyhound Buses Ltd. of Wanganui over a seven year period ending in 1985. In this analysis passenger kilometres were found to have an elasticity of 0.7 against variations in bus kilometres.

Market Targeting in Public Transport, Dialogue Consultants Ltd and McDermott Associates for Urban Transport Council, September 1987.

Looking at the factors influencing demand from an individual's perspective, this study also stressed the importance of service frequency. In particular potential passengers are dissuaded from bus use if they feel the frequency is so low as to require them to consult a timetable.

Service levels - Overseas References

The *TRRL Report (13)* analysing data from studies across the world, also referred to in New Zealand references *(2) and (5)*, concludes that demand is slightly more responsive to changes in service levels (measured in terms of headways or vehicle kilometres) than to changes in fares. The report notes the difficulty of separating cause and effect in time-series analysis but concludes that elasticities in the range 0.2 to 0.5 found in "before and after" studies are probably more reliable. The report also suggests different elasticity values at low and high service frequencies at 0.55 and 0.35 respectively.

Many analyses as reported by *Travers Morgan (2)* have led to service elasticities in the range 0 to 0.8. Experience in Holland supports the proposition that 'captive' passengers are less responsive to service changes. An elasticity for work trips against changes in vehicle kilometres was found to be 0.58 compared with 0.76 for non-work trips.

The same *Travers Morgan (2)* report also referred to the London Transport evidence of elasticities for passenger journeys against changes in vehicle kilometres on high frequency and low frequency services. The elasticities derived (0.35 on ten minute headways and 0.55 on 30 minute headways) support the view, expressed by Wellington City Transport, that patronage is more likely to be increased by changing from a low to high frequency service (i.e. to a service headway of 15 minutes or less) than by improving an already relatively high frequency service.

2.3. Other Service Features

Little work has been undertaken in New Zealand to establish the effects of changes in other service attributes. *Dialogue Consultants Limited and McDermott Associates (6)* reported a detailed analysis of the factors affecting individuals' decisions to use public transport. This study would imply that the availability of information, service reliability and the expectations of circuitous journeys are important factors.

Measuring these variables to develop elasticities is difficult and, not surprisingly, there is very little information available to assist in determining their effect in a study of patronage trends.

APPENDIX 5

ANALYSIS OF RESULTS OF WITHDRAWAL OF BUS SERVICE IN TAURANGA

Perrins, C. 1988. The withdrawal of urban bus services in Tauranga. *Proceedings of the Australasian Transport Research Forum (ATRF):* 363-381.

APPENDIX 5

THE WITHDRAWAL OF URBAN BUS SERVICES IN TAURANGA

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ABSTRACT: *On 3 October 1986, the major part of the urban public transport services operating in the Tauranga - Mount Maunganui area was withdrawn. The Tauranga urban area has a population of approximately 59,000, is the seventh largest urban centre in New Zealand, and has a high proportion of elderly residents.*

The withdrawal of services, which were operated by Bayline Buses, came after several years of decline in patronage and in the level of services provided. A major factor in the withdrawal was the lack of financial support from the local authorities in the area. Without this local input, the bus services were not eligible for all of the central government subsidy provided through the Urban Transport Council (UTC).

Once the decision was made to discontinue the services, the UTC decided to carry out a study to assess the impact of the withdrawal upon users. A survey of passengers was undertaken in September 1986, prior to the withdrawal, to find out who was using the bus services and for what purpose. A number of respondents were approached again in May 1987 to see how they had changed their travel patterns, and to find out the ways in which they had been affected by the withdrawal of the buses.

The surveys showed that many former users had suffered inconvenience as a result of the withdrawal of the bus services and that a majority considered themselves to be worse off both financially and in general terms. A small number of users had experienced what they considered to be severe hardship as a result of being unable to make the journeys which they had previously made by bus. New services have since been introduced into the area but the future of these services is not guaranteed.

THE WITHDRAWAL OF URBAN BUS SERVICES IN TAURANGA

The impact of the withdrawal of the bus services suggests that the UTC's current policy of providing subsidy only where a local contribution is forthcoming may need to be reviewed.

1. INTRODUCTION

1.1 On 3 October 1986, the major part of urban public transport services operating in the Tauranga - Mount Maunganui area of New Zealand was withdrawn. The withdrawal of the bus services, which were operated by the Bayline Group of Tauranga, came after several years of decline in patronage and in the level of services provided. A major cause of the withdrawal was the lack of financial support from the local authorities in the area. Without this local input, the bus company was not eligible for all of the central government subsidy available through the Urban Transport Council (UTC).

1.2 Once the decision was made by the Bayline Group to discontinue the bus services, the UTC decided to carry out a study to assess the impact of the withdrawal upon users. A survey of passengers was undertaken in September 1986, prior to the withdrawal, to find out who was using the buses and for what purposes. Respondents to this initial passenger survey, who said that they were willing to take part in further research, were approached again in May 1987 to find out how they had changed their travel patterns and to what extent they had adapted to the withdrawal of the bus services.

1.3 This paper provides a background to the withdrawal of public transport services in the Tauranga - Mount Maunganui area, and attempts to assess how and to what extent former public transport users have been affected by the discontinuation of bus services. The paper also documents subsequent developments in the provision of public transport in the area and discusses the implications of events in Tauranga for the design of future urban transport subsidy policy.

2. BACKGROUND

2.1 The Tauranga - Mount Maunganui Area

2.1.1 The Tauranga - Mount Maunganui area is situated on the east coast of New Zealand approximately 220 kilometres south-east of Auckland. The Tauranga Urban area, which comprises Tauranga City, Mount Maunganui Borough and the adjoining urban areas of Tauranga County, is the seventh largest urban area in New Zealand and, at March 1986, had a population of 59,435. The map in Figure 1 illustrates the layout and major suburbs of Tauranga and Mount Maunganui. While the two centres are physically close they are separated by Tauranga Harbour. At the time of the withdrawal of the Bayline bus services, the road distance between Tauranga and Mount Maunganui was approximately 18 kilometres. However on 13 March 1988 a bridge across the Tauranga Harbour was opened, cutting the road distance between Tauranga and Mount Maunganui to approximately 5 kilometres.

2.1.2 Urban development in Tauranga is typical of New Zealand with low density residential areas and a well developed road network. Vehicle ownership is high with only 9.8 percent of households being without a car in Tauranga City and 11.5 percent in Mount Maunganui. This compares with 13 percent for New Zealand as a whole. The area has experienced considerable growth in recent years, much of it associated with the production and export of kiwifruit, and the population of the Tauranga Urban area increased by approximately 300 percent over the period 1951 - 1986. Tauranga - Mount Maunganui is also a popular retirement area for people from all parts of New Zealand. At the March 1986 Census, 21.8 percent of the population of Tauranga City was 60 years of age or older while in Mount Maunganui Borough the figure was 21.4 percent. The equivalent figure for New Zealand as a whole was 15 percent.

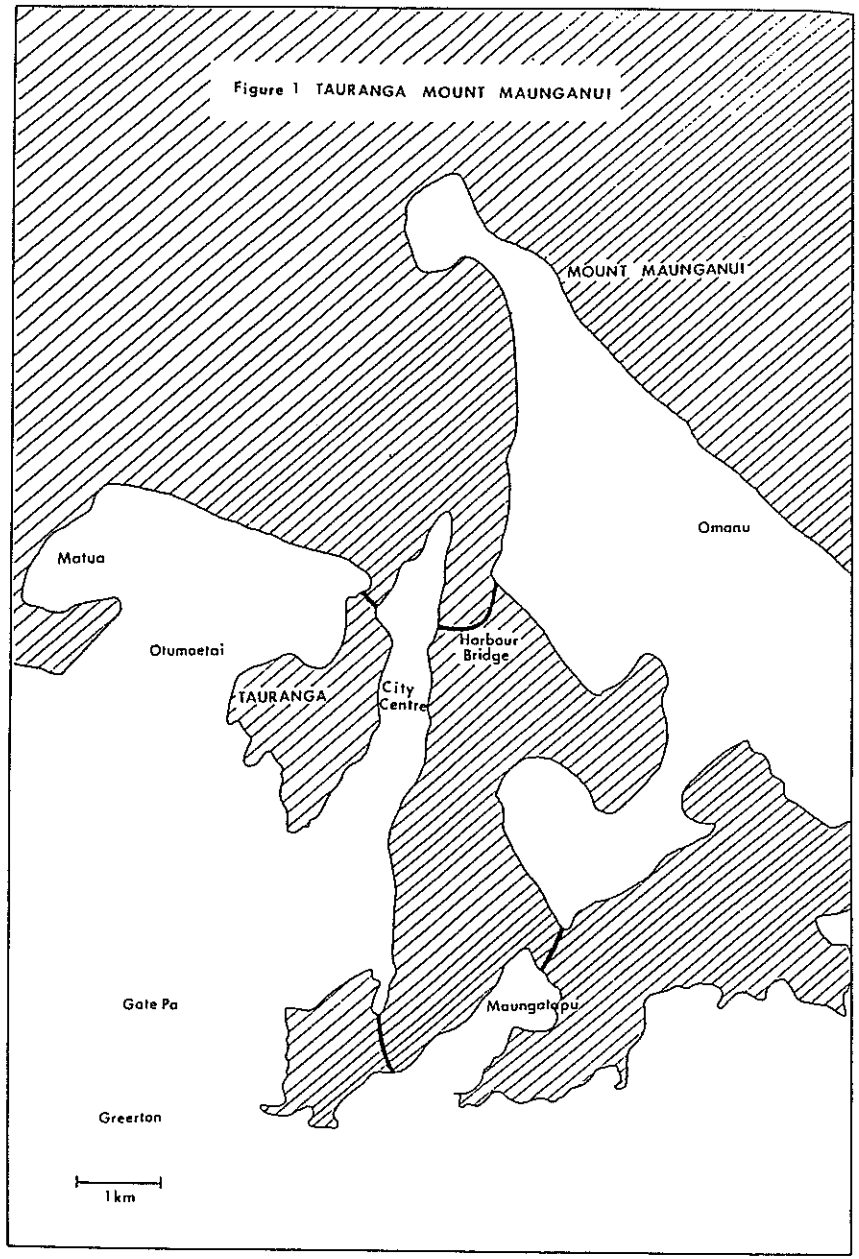


Figure 1 TAURANGA MOUNT MAUNGANUI

2.2 Public Transport in the Tauranga - Mount Maunganui Area

2.2.1 The first recorded public transport in Tauranga started in 1867 when a coach service began operating between Gate Pa and the beach every Sunday. The year 1919 saw the commencement of the first motor bus service between Tauranga and Gate Pa, and in 1946 the Tauranga Bus Company was established with a timetabled service to Maungatapu. By 1972 this company had taken over a number of other firms and was operating a comprehensive network of services as the Tauranga - Mount Maunganui Bus Company. In 1985, this company became the Bayline Group Ltd.

2.2.2 In 1976, the Tauranga - Mount Maunganui Bus Company was operating eight main routes in the area. Frequencies on some routes were hourly or more frequent and a limited Saturday service was also provided. By 1982, however, as a result of rising costs and falling patronage, the company had been forced to reduce service levels and to cease operating Saturday services. By September 1986 the company was operating four routes, one of these running on only two days per week. The areas served by these four routes were Greerton, Otumoetai and Mount Maunganui, with Matua served only on Tuesdays and Fridays. The routes operated by the Bayline Group as at September 1986 are shown in Figure 2. On 3 October 1986, three of the four routes operated by the Bayline Group were withdrawn. The routes which ceased to operate were those which served Otumoetai, Matua and Mount Maunganui, while the route which served Greerton continued to operate.

2.2.3 The level of decline in bus services in the Tauranga-Mount Maunganui area is illustrated by records of bus kilometres operated and passengers carried. These records show that, from March 1981 to December 1986, bus kilometres operated fell from 124,600 per quarter to 11,200, while passenger numbers dropped from 139,000 per quarter to 20,700 per quarter, falls of 91 percent and 85 percent respectively.

2.2.4 The decision to withdraw the major part of the services was made by the Bayline Group in the face of increasing costs and declining patronage, factors

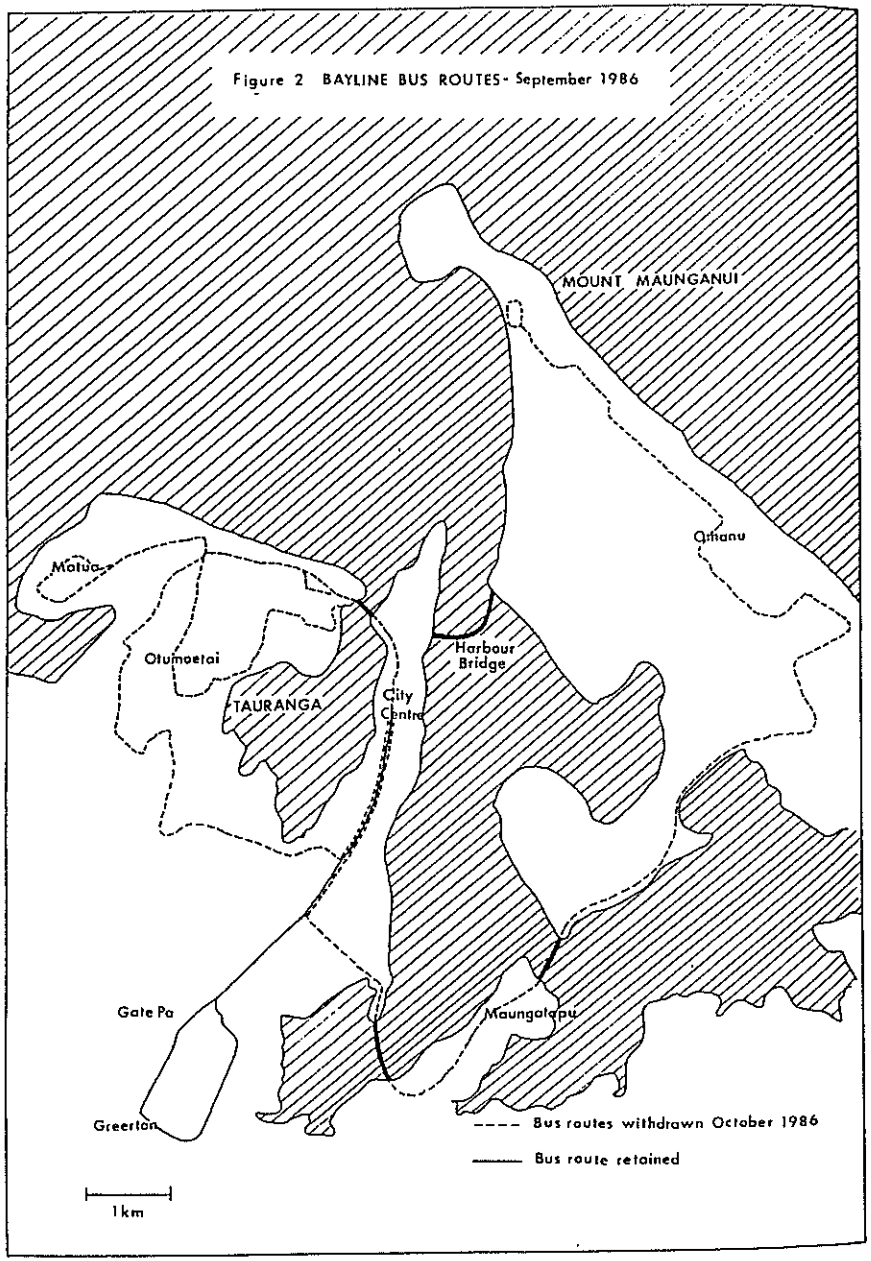


Figure 2 BAYLINE BUS ROUTES - September 1986

which had caused the earlier reductions in services. During the 1970's and 1980's the company had met losses incurred on urban services by cross-subsidy from charter work, and from urban passenger grants, which were unmatched subsidy payments from central government based on the level of service provided and passengers carried. However, by mid-1986, losses on urban services were estimated to be approximately $100,000 per annum, a level which the company found to be unsustainable.

2.2.5 The payment of urban passenger grant subsidy was also being phased out and replaced with central government subsidy channelled through the UTC, the payment of which depended upon the relevant local authority sharing losses equally with government. Without this local contribution no UTC subsidy was available. This policy was introduced by the UTC because it considered that equal sharing of losses by central and local government fairly reflected the benefits enjoyed by each party, and because the Council believed that, if local authorities had to use rate payer money to support public transport, they would be more realistic about the type and level of services provided.

2.2.6 During the late 1970's and early 1980's, Bayline (then the Tauranga - Mount Maunganui Bus Company) made a number of approaches to the relevant local authorities, Tauranga City Council and Mount Maunganui Borough Council for financial assistance for the services. However, both authorities declined to assist and, without their contribution, matching subsidies were not available from the UTC. The Tauranga City Council indicated that although it considered that public transport was needed, it believed that the market should be left to provide the necessary services. Urban passenger grant subsidies continued but were progressively reduced, being withdrawn completely on 31 March 1988. Urban passenger grants totalling approximately $50,000 were paid to Bayline in the 1982/83 financial year to support urban services but this had fallen to approximately $12,200 by 1985/86, the financial year prior to the withdrawal of the bus services.

2.2.7 Other public transport in the Tauranga - Mount Maunganui area was, at the time of the withdrawal of Bayline bus services, limited. The other services comprised a ferry between Tauranga and Mount Maunganui, operated by Tauranga - Mount Maunganui Ferries, and a New Zealand Railways Corporation (NZRC) bus service between Tauranga and Te Puke. However, few of the trips being made on Bayline bus services could have been made using these services. Tauranga City also has a Total Mobility scheme under which disabled persons receive discount vouchers for taxi use. However, these vouchers are only available to people who, because of their disability, are unable to use public transport. This scheme was not therefore able to cater for former bus users.

3. SURVEYS

3.1 Introduction

3.1.1 The decision by the Bayline Group to withdraw the major part of its urban bus services was the first example in New Zealand's recent history of a major centre being left almost entirely without public transport. For this reason, the UTC decided to carry out a survey of passengers using the buses. The survey was intended to obtain information on the travel patterns and characteristics of existing passengers and, through a follow-up survey, to see how these passengers adapted to the withdrawal of services. The work was also intended to provide an opportunity for the UTC to assess its policy of requiring local authorities to contribute to public transport losses before matching UTC subsidy was provided.

3.2 Initial Survey of Bus Passengers

3.2.1 The first survey was undertaken on Friday 19 September 1986, just over one week before the bus services were to be withdrawn. Passengers on all inbound services, on routes which were to be withdrawn, were asked to complete a questionnaire while they were on the bus, and hand it to a survey operator as they got off. Young children travelling with adults were not surveyed but all other passengers, including

older school children and students, were asked to complete a survey form. The survey questionnaire contained seven questions seeking information concerning, among other things, the age group, sex and occupation of the respondent, and the origin, destination, and purpose of their bus trip. It also asked how often the respondent used Bayline bus services, how he or she expected to travel when the services were withdrawn, and whether he/she would be willing to take part in further research. Respondents were also invited to comment upon public transport in their area and on their reaction to the withdrawal of the Bayline bus services. Some publicity had been given to the survey through the press and radio and passengers were generally happy to participate. A total of 196 questionnaires were returned and only three passengers refused to complete a survey form.

3.2.2 Analysis of the results of the initial survey show that the majority of passengers using Bayline buses on the routes which were to be withdrawn were 'captive' users who had no readily accessible alternative means of transport. The majority of users were female (73 percent), and most were in the 15-29 year age group (35 percent) or 60 years and over (28 percent). Forty one percent were in full or part-time employment, with the other major occupational groups being the retired (22 percent) and housewives/homemakers (21 percent). Shopping/ personal business (43 percent) and work (34 percent) were the main journey purposes with trips to the doctor or hospital also being of significance (11 percent).

3.2.3 Off-peak services were just as heavily utilized as peak services and the destination of most passengers was the centre of Tauranga. The majority of the passengers were frequent users of the service, 41 percent travelling every day and 37 percent making 2-3 trips per week. (The figures on frequency of use relate only to the bus services which operated every weekday - the Matua service, which ran only on Tuesdays and Friday, was excluded from this analysis). When asked whether they would continue to make the same trips after the bus services were

withdrawn, 65 percent of passengers said that they would. However, the majority of these respondents did not know how they would travel although a number of other modes were mentioned, for example taxi (13 percent), walk (17 percent), bicycle (11 percent), and car passenger (8 percent).

3.2.4 Respondents were also given an opportunity to make comments or suggestions about urban transport in Tauranga. A total of 150 of the 196 respondents took the opportunity to do so. As would be expected, all were negative. The comments included a number of suggestions for alternatives to the present system, for example minibuses, and a wide range of reasons for retaining the bus services. The expected effects upon individuals ranged from minor inconvenience to serious hardship, depending largely upon the age of the respondent and the availability of alternative transport.

3.2.5 Respondents were asked at the end of the initial survey whether they would be willing to take part in further research. Of the 196 passengers who completed questionnaires in the initial survey, 96 indicated that they would be willing to take part in further work. These respondents provided the sample for the follow-up survey.

3.3 Follow-up survey of bus passengers

3.3.1 The next stage of the work in Tauranga was a follow-up survey of bus passengers who participated in the initial survey. The follow up survey was undertaken approximately six months after the withdrawal of Bayline bus services and was intended to obtain information on how passengers had adapted to their new situation. Six months was thought to be sufficient for bus passengers to adapt their activities and travel patterns to the withdrawal of services.

3.3.2 The follow-up survey was conducted by mail in May 1987. Ninety six survey questionnaires were distributed, and a total of 73 replies were received, giving a response rate of 76 percent. Analysis of the results of the follow-up survey indicated that

those who took part in the follow-up survey were generally representative of those participating in the initial survey. While it is possible that those who had been particularly affected by the withdrawal of the bus services were more likely to participate in the follow-up survey, the results are still considered to be valid and to fairly represent the impact of the withdrawal of services upon some sections of the Tauranga - Mount Maunganui community.

3.3.3 In the follow-up survey respondents were asked a number of questions relating to changes in their travel behaviour and activity patterns which resulted directly from the withdrawal of the bus services. The results indicated that 79 percent of respondents were still travelling to the same places that they used to visit using Bayline bus services, and that the majority of these people were making these trips at the same frequency as they had when using the buses. Table 1 below illustrates the ways in which trips were being made. The table shows that travelling as a car passenger was the most common way of replacing former bus trips, along with taxis and other bus services. The table also contains results from the initial survey which allow a comparison of the way in which individuals expected to make their trips, and how they actually travelled. The comparison reveals quite significant differences between their expectations and actual behaviour.

TABLE 1

MODE OF TRAVEL USED AFTER THE WITHDRAWAL OF BAYLINE BUS SERVICES - COMPARISON OF EXPECTED AND ACTUAL (%)

Mode of Travel	Expected	Actual
Car driver	4	9
Car passenger	8	26
Taxi	13	14
Other Bus	0	12
Ferry	0	3
Walk	17	7
Motorbike	2	5
Bicycle	11	7
Combination of modes	17	12

3.3.4 Taxis appeared to be used to the extent expected but trips made as a car driver and, more particularly, as a car passenger, were higher than anticipated. Trips made by motorbike and bicycle were lower than expected. The follow-up survey also revealed that some respondents were able to make trips using other bus services. These trips were made on a service which began operating after the withdrawal of the Bayline services in an area which Bayline had originally served. The introduction of this service was not anticipated when the initial survey was carried out. Respondents were also asked whether they travelled to any different places once the bus services had ceased, 33 percent said that they did make trips to other destinations to replace their bus trips. Of these, the majority were making these trips by taxi or as car passengers.

3.3.5 Several questions in the survey sought information about changes in activities as a result of the withdrawal of the bus services, and whether there were things which respondents could not now do. Even though the survey results indicated that most people were still making the same trips as they had done by bus, the majority of respondents (63 percent) considered that they had changed their activities as a result of the withdrawal of the services, and 64 percent said that there were things which they could not now do. Respondents indicated, for example, that they now did more shopping and personal business locally (32 percent), had given up their jobs or changed their hours of work (10 percent), or made less visits to the doctor or hospital (15 percent). A number of respondents indicated that they were not now able to visit friends and relatives (29 percent), go shopping (29 percent), or visit the doctor or hospital (21 percent).

3.3.6 The results from these questions should, however, be treated with caution. In most cases, it is more likely that most respondents were not able to shop or visit friends or do other things quite as often or as easily as they could when the buses were operating, rather than not being able to undertake these trips at all. The results also indicate that some respondents may have perceived that they were worse

off than their actual travel behaviour suggested, perhaps because of the extra difficulty in arranging trips. Certainly 77 percent of respondents stated that they were worse off as a result of the withdrawal of the bus services, although the majority of respondents seemed to be making almost as many trips.

3.3.7 The follow-up survey also showed that few respondents had made major changes to their lives as a direct result of the removal of the bus services. For example, only 4 percent of respondents had learned to drive, 7 percent had bought cars, while 4 percent had obtained a motorbike and 14 percent a bicycle since the cessation of services. However, comment from one respondent indicated that the withdrawal of the buses had been a major factor in her decision to move house, and a number of respondents stated that their original choice of home had been influenced by the presence of public transport services. Other results from the follow up survey indicated that a majority of respondents (57 percent) used taxis more, while 63 percent were spending more money on travel since Bayline services had ceased to run. Ninety percent said that they would use a bus service if a new one was started and just over half of these people said that they were willing to pay twice the original fare for the service.

3.3.8 The comments which were received indicated that respondents were experiencing varying degrees of difficulty as a result of the withdrawal of services, ranging from moderate inconvenience to severe hardship. A small number of respondents commented that they were experiencing a dramatic change in lifestyle, unable to make even a small number of trips. This applied particularly to elderly people who did not have families or friends close by to assist them. Several elderly people commented that the withdrawal of the bus services had left them 'marooned' in their own homes. Many respondents commented that they now had to rely heavily upon family and friends for lifts and, while this allowed them to remain mobile, it caused inconvenience for both parties and a considerable loss of independence for the respondents. Many people also commented that, although taxis were available; they could not afford to use them regularly, if at all.

3.4 Summary of Survey Results

3.4.1 The impacts of the withdrawal of Bayline bus services from the Tauranga - Mount Maunganui area are summarised below:

- a significant number of former bus users have suffered some degree of inconvenience or hardship as a result of the withdrawal of Bayline bus services, generally in the form of reduced mobility or loss of independence.

- the majority of respondents in the follow up survey indicated that they had changed their activities as a result of the withdrawal of the buses. For example, some were doing more shopping locally, while others had had to reduce or give up social and recreational activities or change jobs or hours of work. Few respondents had bought cars or bikes indicating that these may not be viable options for many of them.

- most respondents to the follow-up survey considered themselves to be worse off both financially and in general terms as a result of the withdrawal of the bus services.

- a small number of former bus users appear to have experienced serious inconvenience or hardship as a result of the buses ceasing to operate. This group are primarily the elderly who are unable to drive, who cannot afford to use taxis regularly, and who do not have families and friends nearby to assist them.

4. RECENT DEVELOPMENTS IN TAURANGA

4.1 As discussed earlier in this paper, public transport in the Tauranga - Mount Maunganui area in September 1986, other than that provided by Bayline, was limited and provided little opportunity for bus users to replace their trips. However, other transport services have developed in the Tauranga area since the withdrawal of the Bayline services which have, to some extent, met some of the transport needs of residents.

4.2 The first development was a bus service to Matua and Otumoetai, areas with a high proportion of elderly residents. This service was introduced by the Bayline Group and was available to Bayline Travel Club members. It ran on Tuesdays only and provided an off-peak return trip into central Tauranga for shopping and other purposes. To use the service, passengers had to pay a small annual fee and fares on the bus were higher than on the previous services. The bus service appears to have been quite well patronised and it continued to operate until June 1987.

4.3 In June 1987, a new bus service run by G.W. Taylor Industries Ltd, commenced operation. The service was introduced by a local businessman and city councillor, Mr G.W. Taylor, who stated that he would provide financial support to get the service going but that, after a trial period, it would have to become self supporting. The service operated on a loop route through Otumoetai and Matua and into the centre of Tauranga. It was to operate on weekdays from 7 am to 6 pm at approximately an hourly frequency. No services were planned for other areas of Tauranga or Mount Maunganui. Approval for the services was given by the Licensing Authority and the service began on Tuesday 2 June 1987. Some minor changes were made to the timing of early morning services but apart from these amendments, the service operated as proposed. Information received from the operator in November 1987, five months after the commencement of the service, indicated that, after a slow start, patronage was increasing and was expected to continue to do so. However, although retailers had sponsored a free shoppers bus for some months and advertising space in the vehicle had been sold, the service continued to make a financial loss. The local authority, Tauranga City Council, had not made a financial contribution to the upkeep of the service although the operator believed that this would be essential if the service was to continue. At the time of writing this service is still operating.

4.4 A further development has been the construction of a bridge across the Tauranga Harbour, from Tauranga to Mount Maunganui. The bridge opened on 13 March 1988 and reduced the road distance between the two centres from approximately 18 kilometres to about 5 kilometres. The opening of the bridge will obviously allow improved access to Tauranga for residents of Mount Maunganui, and vice versa. Since the bridge has been opened the Bayline Group has introduced a bus service between Mount Maunganui and central Tauranga.

4.5 These developments will go some way towards meeting the needs of former bus users. However, early developments have been limited to the Otumoetai and Matua suburbs of Tauranga. Mount Maunganui residents have only recently been provided with new services. The future of the services to Otumoetai and Matua also seem uncertain as the current operator has indicated that he will not continue in the long term if the services do not become financially self supporting. With the current attitude of the local authorities in the area, that subsidies should not be provided and that the market should determine the provision of services, the future of public transport in Tauranga cannot be guaranteed.

5. SUMMARY AND CONCLUSIONS

5.1 The major part of the public transport network in the Tauranga - Mount Maunganui area was withdrawn in October 1986. The bus services, operated by the Bayline Group of Tauranga, were withdrawn because of falling patronage and increasing costs which resulted in financial losses the company could not support. The local authorities in the area did not provide subsidy to support the services and this lack of a local contribution meant that no matching subsidy was available from the UTC.

5.2 As a result of the withdrawal, the UTC decided to undertake a study of Bayline bus passengers to try to gauge the impact of the withdrawal upon their travel patterns and activities. The study showed that many users had suffered inconvenience as a result of the withdrawal of the services and that the majority considered themselves to be worse off both financially and in general terms. A small number of former users had experienced what they considered to be severe hardship as a result of being unable to make the journeys they had previously made by bus. Many of these people were elderly and generally did not have family or friends nearby who were able to provide alternative transport. The findings of the UTC's work in Tauranga are similar to those from work carried out in the UK (Oxley, 1982) where the effects of the withdrawal and reduction of rural bus services was examined. This study concluded that 'the majority of former bus users considered themselves adversely affected by the service cuts, many experienced inconvenience and a very few, mainly elderly people without cars, lost their only means of individual mobility.'

5.3 New bus services have been introduced, in June 1987 in Otumoetai and Matua and more recently in Mount Maunganui. It is too soon to judge whether the Mount Maunganui service will be successful but the last information received concerning the route through Otumoetai and Matua suggests that this service is continuing to make a loss. Without financial support from the local authorities in the area the future of these services cannot be guaranteed.

5.4 There were several reasons for the withdrawal of the bus services; the Bayline Group had reduced service levels on a number of occasions during the late 1970's and early 1980's and, inevitably, patronage declined also. At the same time, grants from central government were being phased out and replaced by a scheme under which subsidy was provided on a matching basis - that is, the UTC would match the contribution made by a local authority. Where a local authority did not make a contribution, the UTC would not provide subsidy. The decision to phase out central government operating grant and replace it by the matching subsidy scheme was made by the UTC on the

grounds that this sharing reflected the relative benefits received and, that if ratepayer money was being used, local authorities would ensure that cost-effective services were provided.

5.5 However, many authorities have chosen, for a number of reasons, not to share this funding responsibility with the UTC. This is because a number of authorities believe that funding public transport is a central government responsibility, while others have indicated that they cannot afford to support public transport. Others, like Tauranga City, believe that the market should provide the necessary services and that no intervention is necessary.

5.6 Work by the UTC concerning private bus and ferry operations outside New Zealand's four main centres, suggests that service levels and passenger numbers have generally been declining over the past six years. The decline has become more marked since 1986 but events in Tauranga have perhaps been the most dramatic to date. A number of factors have contributed to the decline in the level of private bus and ferry operations in New Zealand's smaller centres, for example, increasing car use and the general downturn in the economy. The phasing out of urban passenger grants and the refusal of a number of authorities to take over responsibility for funding has obviously played a part in this decline.

5.7 The UTC is currently reviewing its subsidy policies with the intention of completely revising the present system. The effects of the policy of phasing in the sharing of subsidy responsibility upon the level of public transport services provided in New Zealand's smaller centres must be taken into consideration when this review is carried out. The question of whether it is equitable for the UTC to withhold subsidy funds from a public transport operator when a local authority refuses to comtribute its share, needs to be addressed before any new subsidy scheme is designed.

ACKNOWLEDGEMENTS

I wish to thank the Bayline Group Ltd without whose assistance the survey of bus passengers could not have been undertaken, and G.W. Taylor Industries for detailed information on its bus service. I would also like to thank Mr A.C. Bellamy of Tauranga who has provided the UTC with much useful information about Tauranga - Mount Maunganui and its transport system.

REFERENCES

1. Oxley P.R. - 'The Effects of the Withdrawal and Reduction of Rural Bus Services' Supplementary Report 719, (1982) Transport and Road Research Laboratory, Crowthorne, Berkshire, England.

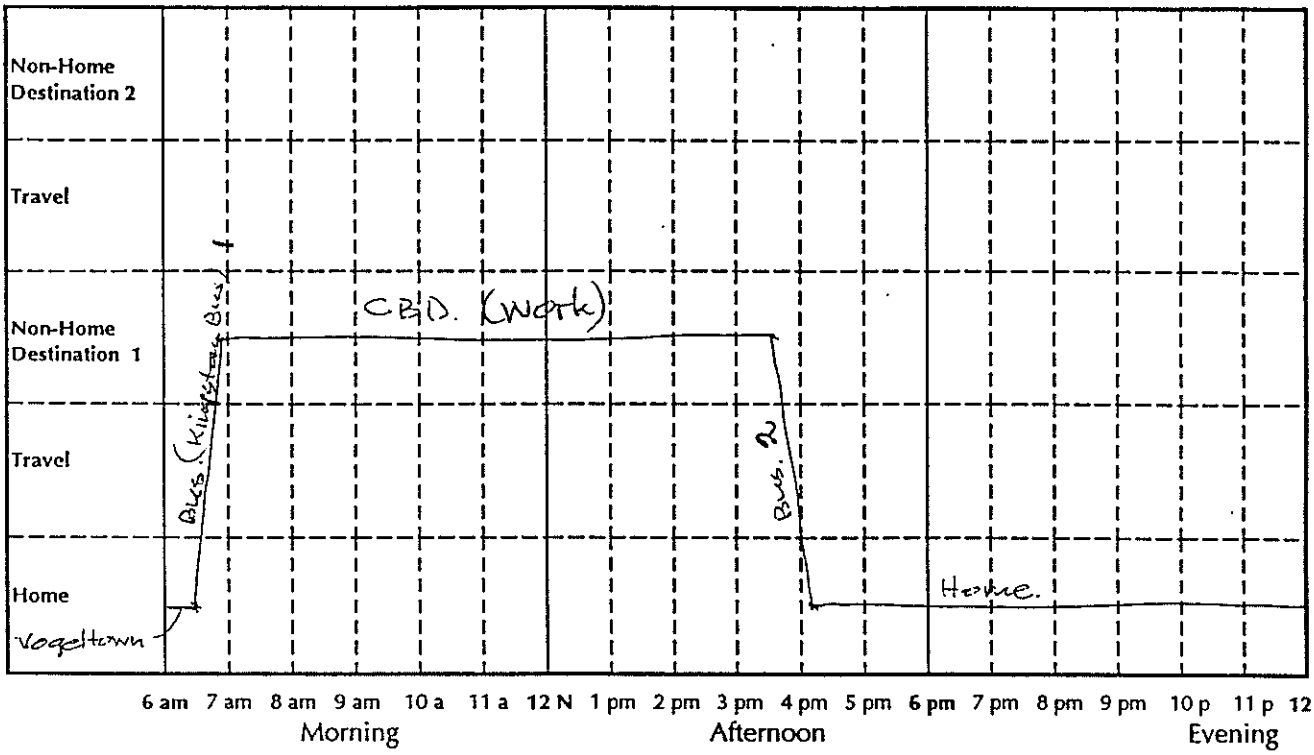
APPENDIX 6

ACTIVITY - TRAVEL DIARY

APPENDIX 6

ACTIVITY - TRAVEL DIARY

Date of Activity 11. 7. 96 - Interviewee Code 9A.



Notes to help you fill out this table and the next:

I. Don't include trips on business purposes, while you are at paid work
II. Do include trips while on voluntary work if you personally bear the cost of the trip
III. Please choose, from the list of activities below, the terms that best decribe your activities in each hour, and use these to label the horizontal sections of Diary Diagram.
IV. Please write in the suburbs/areas of locations you travel to - no need to indicate where your home is
V. For each trip, choose the travel mode in the list below the one that best describes how you made the trip. Use these to label the diagonal sections fo the Diary Diagram. If a trip by public transport involves a change from one public transport mode to another, eg a change from bus to train, record this as two trips - one by bus & one by train.

Activities	**Travel Modes**
Sleep	Walk
Get Ready	Bus
Paid Work	Train
Eat	Private Car Driver
Shopping	Private Car Passenger
Education	Drive Work Car/Van/Truck
Recreation	Passenger in Work Car/Van/Truck
Social	Taxi
Personal Business	Bicycle
Voluntary Work	Motorcycle
at Home	

Interviewee Code 9A.

Details on Trips Made by Public Transport (PT)

Trip No.	PT Type	Travelled to PT by:	Time spent travelling to PT	Time waiting for PT (mins)	Time travelling on PT (min)	Cost / Fare $	Travelled from PT to destination by:	Time spent travelling From PT (min)	Was a car available for this PT Trip (Y/N)	If yes, why was Car not used?
1	Bus	walk	-5	5	10	2.30	walk	2-3	No	—
2	Bus	walk	2-3	5	20	2.30	walk	less than 5	No	—

If more space is needed, use the following for additional notes:

Trip No	Notes
	The only time respondee catches bus to work is when the weather is wet. He does catch a bus home regularly.

APPENDIX 7

CHARACTERISTICS OF RESPONDENTS

Ps Intv		Hhd			Driver			Househol	Household		Car Normally
Code	Hhd Inco	Motor Ve	City	Age	Licence	Gender	Occupation	No peopl	No chdn <15	Hhd Type	Available to Driv
10A	4	2	Wgtn	38	Yes	Female	Civil Servant	2	0	Couple	Yes
11A	2	1	Wgtn	60	No	Female	Retired	2	0	2 adults; relatives	No
13A	8	1	Wgtn	30	Yes	Female	Self-employed	2	0	Couple	Yes
15A	4	1	Wgtn	51	Yes	Male	Plumbing Inspector	4	0	Couple & 2 adult chdn (o	Yes
15B	4	1	Wgtn	18	Yes	Female	Student	4	0	Couple & 2 adult chdn (o	Yes
17A	8	2	Wgtn	17	No	Female	College student	3	0	Couple & adult child	No
19A	4	1	Wgtn	56	Yes	Female	Exec Sec	2	0	Couple (hus retired)	Yes
1A	8	1	Wgtn	36	Yes	Female	Journalist	4	2	2 Income Family	Yes
20A	7	2	Wgtn	60	Yes	Female	Retired	2	0	Couple	Yes
21A	4	2	Wgtn	60	Yes	Female	Exec Officer	2	0	Couple	Yes
22A	8	1	Wgtn	42	Yes	Female	Bank Officer	2	0	Couple	Yes
23A	3	0	Wgtn	26	Yes	Male	Kitchenhand	3	0	Couple & adult grandchil	No
24A	4	1	Wgtn	27	Yes	Female	Exec Asst	1	0	One person	Yes
2A	8	2	Wgtn	52	Yes	Male	Systems Analayst	3	0	Married couple + boarder	No
3A		0	Wgtn	80	No	Female	Retired	1	0	One person	No
4A		0	Wgtn	50	No	Female	Sculptor	2	0	Mother & adult daughter	Yes
5A	3	0	Wgtn	35	Yes	Male	Teacher	3	1	Couple & child	No
6A	8	2	Wgtn	25	Yes	Male	Banker	4	0	Couple & 2 adult children	No
7A	3	0	Wgtn	26	No	Female	Home Executive	2	1	Mother & child	No
7B		0	Wgtn	8	No	Female	Pupil	2	1	Mother & child	No
8A	8	6	Wgtn	52	Yes	Male	Project Manager	4	0	Couple & 2 adult chdn (o	Yes
9A	6	0	Wgtn	45	No	Male	Civil Servant	2	0	Couple	No
H1A	5	1	Ham	32	Yes	Female	Music Teacher/Lab Tec	4	2	Couple & 2 chdn	Yes
H2A		0	Ham	32	No	Female	Home Exec & Ptime Tc	2	1	Mother & child	No
H3A	2	0	Ham	72	No	Female	Retired	1	0	One person	No
H4A	2	0	Ham	30	Yes	Female	Homemaker	3	2	Mother & 2 children	No
H5A	2	0	Ham	21	Yes	Female	Tertiary student	2	0	2 person flat	Yes
H6A	1	0	Ham	38	No	Female	Unemployed (starting te	1	0	One person	No
H7A	5	3	Ham	52	No	Female	Customer Assistant	2	0	Couple	No
H8A		2	Ham	25	Yes	Female	Customer Services Ad	3	0	Mother & 2 children (> 1	No
W1A	5	1	Wgtn	72	Yes	Female	Retired	1	0	One person	Yes
W22A	4	2	Wgtn	57	Yes	Male	Security Manager	2	0	Couple	Yes
W22B			Wgtn	56	Yes	Female	Records Manager	2	0	Couple	Yes
W2A	2	2	Wgtn	20	Yes	Female	Tertiary student	6	0	Couple & 4 chdn (all abo	No
W3A	5	2	Wgtn	16	No	Female	College student	4	0	Couple & 2 chdn (all abo	No
W5A	2	1	Wgtn	78	Yes	Female	Retired	2	0	2 adults	Yes
W6A		1	Wgtn	17	No	Male	College student	5	2	Couple & 3 chdn (2 < 15)	No

APPENDIX 7

CHARACTERISTICS OF RESPONDENTS

APPENDIX 8

PUBLIC TRANSPORT TRIPS MADE BY RESPONDENTS

APPENDIX 8

PUBLIC TRANSPORT TRIPS MADE BY RESPONDENTS

City	Intv Code	Trip No	Mode	Time	Purpose	Purpose1	Access Access M	Access Access Ti	Wait Wait Time	Journey Jny Time	Egress Egress M	Egress Egress Ti	Cost/trip (	Car Car Avail
Wgtn	1A	1	Bus	7.40am	Work	Hm to Wk	Walk	2	3	25	Walk	3.0	1.90	Yes
Wgtn	1A	2	Bus	5.10pm	Work	Wk to Hm	Walk	3	10	25	Walk	2.5	1.90	Yes
Wgtn	2A	1	Bus	7:30am	Work	Hm to Wk	Walk	1	1	28	Walk	5.0	2.35	No
Wgtn	2A	2	Bus	5pm	Work	Wk to Hm	Walk	1	5	33	Walk	1.0	2.35	No
Wgtn	3A	1	Bus	9.30am	Shpg	Hm to Shpg	Walk	15	15	10			0.60	No
Wgtn	3A	2	Bus	9.45Am	Shpg	Hm to Shpg	Walk	1	15	5	Walk	5.0	0.60	No
Wgtn	4A	1	Bus	11.45am	Shpg	Hm to Shpg	Walk	10	4	11			1.00	Yes
Wgtn	4A	2	Cable Car	12.10pm	Work	Shp to Wk/Visit	Walk	2	0	8	Walk	3.0	1.50	
Wgtn	4A	3	Cable Car	4.30pm	Work	Wk/Visit to Hm	Walk	3		8			1.50	
Wgtn	4A	4	Bus	4.45pm	Work	Wk/Visit to Hm	Walk	2	0	11	Walk	10.0	1.00	
Wgtn	5A	1	Bus	12.30pm	Shpg	Hm to Shpg	Walk	2	5	30	Walk	1.5	2.50	No
Wgtn	5A	2	Bus	3pm	Shpg	Shp to Hm	Walk			30	Walk	2.0	2.50	No
Wgtn	6A	1	Bus	1pm	Soc/Rec	Wk to Social	Walk	1	1	5	Walk	1.0	1.00	No
Wgtn	6A	2	Bus	1.30pm	Work	Soc to Wk	Walk	1	0	5	Walk	1.0	1.00	No
Wgtn	6A	3	Bus	5.45pm	Work	Wk to Hm	Walk	3	15	45	Walk	2.0	2.40	No
Wgtn	7A	1	Bus	8.45am	Work	Hm to Wk	Walk	0.5	10	10	Walk	0.5	2.30	No
Wgtn	7A	2	Bus	12.15pm	Work	Wk to Hm	Walk	7.5	15	25	Walk	0.5	2.30	No
Wgtn	7A	3	Bus	3.50pm	Shpg	Pick child up/shpg to Hm	Walk	10	2.5	5	Walk	0.5	1.10	No
Wgtn	7B	1	Bus	8.15am	Soc/Rec	Hm to Sch	Walk	10	2.5	8	Walk	0.5	0.50	No
Wgtn	7B	2	Bus	3.50pm	Soc/Rec	Library to Hm	Walk	12.5	5	5	Walk	0.5	0.50	No
Wgtn	8A	1	Bus	7.30am	Work	Hm to Wk	Walk	5	10	15	Walk	2.5	2.10	Yes
Wgtn	8A	2	Bus	5pm	Work	Wk to Hm	Walk	2.5	7.5	17.5	Walk	5.0	2.10	Yes
Wgtn	9A	1	Bus	6.30am	Work	Hm to Wk	Walk	5	5	10	Walk	2.5	2.30	No
Wgtn	9A	2	Bus	3.30pm	Work	Wk to Hm	Walk	2.5	5	20	Walk	4.0	2.30	No
Wgtn	10A	1	Bus	8.50am	Work	Hm to Wk	Walk	5	7.5	17.5	Walk	5.0	1.70	Yes
Wgtn	10A	2	Bus	6.30pm	Work	Wk to Hm	Walk	5	7.5	17.5	Walk	5.0	1.70	Yes
Wgtn	11A	1	Bus	9.30am	Soc/Rec	Hm to Social	Walk	6	4	20	Walk	0.0	2.00	No
Wgtn	11A	2	Bus	10am	Soc/Rec	Hm to Social	Walk	0	0	10	Walk	13.5	1.60	No
Wgtn	11A	3	Bus	3pm	Soc/Rec	Hm to Social	Walk	8.5	5.5	10	Walk	0.0	1.60	No
Wgtn	11A	4	Bus	3.50pm	Soc/Rec	Hm to Social	Walk	0	10	20	Walk	6.0	2.00	No
Wgtn	13A	1	Bus	7.50am	Work	Hm to Wk	Walk	1	2	50	Walk	5.0	2.55	Yes
Wgtn	13A	2	Bus	4.50pm	Work	Wk to Hm	Walk	5	12.5	30	Walk	3.0	2.55	Yes
Wgtn	13B	1	Bus	8am	Work	Hm to Wk	Walk	3	2	15	Walk	1.0	1.70	Yes
Wgtn	13B	2	Bus	4.15pm	Work	Wk to Hm	Walk	1	1.5	15	Walk	1.0	1.70	Yes
Wgtn	15A	1	Train	6.45am	Work	Hm to Wk	Walk	10	0.5	17	Walk	10.0	1.70	No
Wgtn	15A	2	Train	4pm	Work	Wk to Hm	Walk	10	0.5	17	Walk	10.0	1.70	No
Wgtn	15B	1	Train	9.30am	Educ	Hm to Univ	Walk	10	2.5	22.5	Walk	10	2.50	No
Wgtn	15B	2	Bus	10.45am	Educ	Hm to Univ	Walk	10	7.5	12.5	Walk	1.5		No
Wgtn	15B	3	Bus	5.30pm	Educ	Univ to Hm	Walk	1.5	10	12.5	Walk	2.5		No
Wgtn	15B	4	Train	6pm	Educ	Univ to Hm	Walk	2.5	5	22.5	Walk	10.0	2.50	No
Wgtn	17A	1	Train	7.50am	Educ	Hm to Sch	Walk	2	5	20	Walk	10.0	1.90	No
Wgtn	17A	2	Train	3.30pm	Educ	Sch to Hm	Walk	5	2	20	Walk	2.0	1.90	No

Wgtn	19A	1	Train	8.30am	Work	Hm to Wk	Car	10	2	16.5	Walk	3.0	1.70	Yes
Wgtn	19A	2	Train	5.30pm	Work	Wk to Hm	Walk	3	4	16.5	Car	10.0	1.70	Yes
Wgtn	20A	1	Train	9.10am	Shpg	Hm to Shp/Pers Bus	Car	10	0	55			4.70	Yes
Wgtn	20A	2	Bus	10am	Shpg	Hm to Shp/Pers Bus				2.5			1.00	Yes
Wgtn	20A	3	Train	2pm	Shpg	Shp/Pers Bus to Hm	Walk	10	27.5	55	Car	10.0	4.70	Yes
Wgtn	21A	1	Train	7.40am	Work	Hm to Wk	Car	8.5	2.5	50	Walk	5.0	4.05	No
Wgtn	21A	2	Train	5.20pm	Work	Wk to Hm	Walk	5	0	50	Car	8.5	4.05	No
Wgtn	24A	1	Train	7.20am	Work	Hm to Wk	Walk	10	4	17	Walk	4.0	2.1	Yes
Wgtn	24A	2	Taxi	5pm	Work	Wk to Wk	Walk							Yes
Wgtn	24A	3	Bus	7.15pm	Work	Wk to Hm	Walk	1	2.5	10	Walk	1.5		Yes
Wgtn	24A	4	Train	7.30pm	Work	Wk to Hm	Walk	1.5	10	23	Car	5.0	2.10	Yes
Wgtn	22A	1	Train	7.35am	Work	Hm to Wk	Car	5	10	27	Walk	10.0	2.50	Yes
Wgtn	22A	2	Train	5.30pm	Work	Wk to Wk	Walk	10	5.5	25	Walk	15.0	2.50	No
Wgtn	23A	1	Train	9.40am	Work	Hm to Wk	Walk	10	4	45	Walk	15.0	5.50	No
Wgtn	W6A	1	Bus	11am	Educ	Hm to Sch	Walk	1	12.5	20	Walk	5.0	0.80	No
Wgtn	W6A	2	Bus	4.30pm	Soc/Rec	Social to Hm	Walk	5	15	20	Walk	1.0	0.80	No
Wgtn	W5A	1	Bus	12.40pm	Soc/Rec	Hm to Social	Walk	10	1	10	Walk	20.0	1.20	No
Wgtn	W2A	1	Bus	3.15pm	Shpg	Shpg to Hm	Walk	5	10	15	Walk	5.0	1.70	No
Wgtn	W3A	1	Train	3.15pm	Educ	Sch to Hm	Walk	5	1	21	Walk	15.0	1.00	No
Wgtn	W1A	1	Bus	10am	Educ	Hm to Educ, Soc, Shp	Walk	1	5	15	Walk	20.0	1.20	Yes
Wgtn	W1A	2	Bus	4.30pm	Educ	Educ, Soc, Shp to Hm	Walk	3	5	25	Walk	1.0	2.30	Yes
Wgtn	W22A	1	Train	8.30am	Work	Hm to Wk	Car	5	3	35	Walk	5.0	2.70	Yes
Wgtn	W22A	2	Train	5.30pm	Work	Wk to Wk	Walk	3	5	40	Car	5.0	2.70	Yes
Ham	H1A	1	Bus	9.45am	Shpg	Hm to Shpg	Walk	5	5	30	Walk	2.0	3.75	No
Ham	H1A	2	Bus	12.40pm	Shpg	Shpg to Hm	Walk	5	5	30	Walk	5.0	3.75	No
Ham	H2A	1	Bus	11.30am	PerBus	Shpg to Per Bus	Walk	10	5	15	Walk	2.0	0.90	No
Ham	H2A	2	Bus	1.30pm	PerBus	Per Bus to Hosp/Per Bus	Walk	5	0	20	Walk	5.0	0.90	No
Ham	H2A	3	Bus	3pm	Shpg	Hosp to Shpg	Walk	5	10	20	At Depot	0.0	0.90	No
Ham	H2A	4	Bus	3.30pm	Shpg	Hosp to Shpg	At Depot	0		10	Walk	8.0	0.90	No
Ham	H2A	5	Taxi	4.50pm	Shpg	Shpg to Hm								
Ham	H3A	1	Bus	10am	Shpg	Hm to Shpg	Walk	1	1	10	Walk	3.0	0.90	No
Ham	H3A	2	Bus	11.25am	Shpg	Shpg to Hm	Walk	1	3	10	Walk	1.0	0.90	No
Ham	H3A	3	Bus	12pm	Soc/Rec	Hm to Rec	Walk	1	0	10	Walk	1.0	0.90	No
Ham	H3A	4	Bus	1.15pm	Soc/Rec	Rec to Hm	Walk	1	5	10	Walk	1.0	0.90	No
Ham	H4A	1	Bus	12.50pm	PerBus	Per Bus to Per Bus	Walk	5	5	10	Walk	20.0	0.90	No
Ham	H4A	2	Bus	2.30pm	PerBus	Per Bus to Per Bus	Walk	0	20	10	Walk	5.0	0.90	No
Ham	H4A	3	Bus	4.15pm	PerBus	Per Bus to Home	Walk	5	20	10	At Depot	0.0	0.90	No
Ham	H4A	4	Bus	4.50pm	PerBus	Per Bus to Home	Walk	At Depot	5	10	Walk	2.0	0.90	No
Ham	H5A	1	Bus	9.40am	Shpg	Hm to Shpg	Walk	1.5	2	15	Walk	1.0	1.75	Yes
Ham	H5A	2	Bus	1.20pm	Shpg	Hm to Shpg	Walk	3	5	15	Walk	1.5	1.75	Yes
Ham	H6A	1	Bus	9.40am	PerBus	Hm to Per Bus	Walk	1	5	10	Walk	5.0	0.90	No
Ham	H6A	2	Bus	12.30pm	Shpg	Per Bus to Shpg	Walk	5	10	20	Walk	0.5	0.90	No
Ham	H6A	3	Bus	3.15pm	Shpg	Shpg to SocShpg	Walk	0.5	3	20	Walk	5.0	0.90	No
Ham	H6A	4	Bus	5.45pm	Shpg	Soc/Shpg to Hm	Walk	5	10	10	Walk	1.0	0.90	No
Ham	H7A	1	Bus	7.50am	Work	Hm to Wk	Walk	3	5	15	Walk	5.0	1.40	No
Ham	H8A	1	Bus	7.45am	Work	Hm to Wk	Walk	0.2	2	20	Walk	3.0	1.40	No
Ham	H8A	2	Bus	5.15pm	Work	Wk to Hm	Walk	8	6	6	Walk	0.2	1.40	No

APPENDIX 9

RESPONDENT RESPONSES TO & IMPACT OF PUBLIC TRANSPORT SCENARIOS

				SHORT TERM RESPONSE (entry only if change will occur)							SHORT TERM IMPACTS					
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Journey Time	Waiting Time	Comfort	Other Hhd Members	Other
					Mode	Time of Travel	Frequency									
1A	1 & 2	Hm : Wk	1		Take car						Increased cost-parking charges: $10/wk ?					More convenient
1A	1 & 2	Hm : Wk	2		Take car						May cost more					More convenient
1A	1 & 2	Hm : Wk	3		Take car						May cost more					More convenient
2A	1 & 2	Hm : Wk	1	Start work earlier to avoid congestion		Earlier bus						If had to catch later bus, increased journey time				Inconvenience of having to alter work times
2A	1 & 2	Hm : Wk	2								Increase from $2.70/trip to $4.70/trip					
2A	1 & 2	Hm : Wk	3		Switch to bicycle	Leave earlier am trip						Increase journey time to 40min am, 50 min pm		Decrease inclement weather		
3A	1 & 2	Hm to Shpg	1										Increase			
3A	1 & 2	Hm to Shpg	2								Increased cost.					
3A	1 & 2	Hm to Shpg	3		Use airport shuttle						Increased cost.					
4A	1 -4	Hm:Wk/Spg	1	May not visit relative			May not make second trip									More organisation required to travel; less time for work
4A	1 -4	Hm:Wk/Spg	2		Use taxi more, less by bus											Decreased flexibility

APPENDIX 9

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
4A	1 -4	Hm:Wk/Shp	3		Walk, or find alternative bus routes											
5A	1 & 2	Hm : Shpg	1	Reduce discretionary activities	Cycle more to work		Travel less often				Need to use taxi at times, thus travel cost increase		Increase			
5A	1 & 2	Hm : Shpg	2	No change for 'appointments'									Increase			
5A	1 & 2	Hm : Shpg	3	Cancel outing/shopping	Walk; or get ride with friend											
6A	1 & 2	Wk :Social	1													Make sure of travel time
6A	1 & 2	Wk :Social	2		Walk											
6A	1 & 2	Wk :Social	3		Walk											
6A	3	Wk: Home	1			Catch express bus										
6A	3	Wk: Home	2		Consider taxi				Consider moving		Poorer					
6A	3	Wk: Home	3		Take taxi				Move closer to work							
7A	1 & 2	Hm:Vol Work	1	Daughter unble to do after-school activities; decrease work hours	Walk											Less time for living, recreation etc
7A	1 & 2	Hm:Vol Work	2	Fewer leisure activities							Hve to reduce expenditure on other necessary items					

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
7A	1 & 2	Hm:Vol Work	3	Limit outings to those within walking distance for child; stay home	Rely on friends for ride; use taxi											Feelings of depression bec horizons ahrunk
8A	1 & 2	Hm : Wk	1		Use car											Spend more time at work be more flexible departure time: less family time
8A	1 & 2	Hm : Wk	2		Use car											As for Sc 1
8A	1 & 2	Hm : Wk	3		Use car; walk if weather fine											
9A	1 & 2	Hm to Wk	1			Organise to catch first available bus										
9A	1 & 2	Hm to Wk	2													
9A	1 & 2	Hm to Wk	3		Taxi or walk (depending on weather)											
10A	1 & 2	Hm : Wk	1		Car if short on time; otherwise bus											Less flexibility; more time for travel
10A	1 & 2	Hm : Wk	2		Consider using car						Increased cost: pkg charges					
10A	1 & 2	Hm : Wk	3	Reduce activities: dislikes driving in congested situation	Use the car; taxis for shpg		Less travel									
11A	1 - 4	Hm : Social	1	Reduce number of outings	May use trains; walk		Less travel		Consider moving				Increase			Loss of time out
11A	1 - 4	Hm : Social	2	Reduce number of outings			Less travel									
11A	1 - 4	Hm : Social	3	Stay home: no family related activities												Drastic effects: decreased social contact
13A	1 & 2	Hm :Wk	1	Adjust work hours: flexitime									Increase			Less productive time

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
13A	1 & 2	Hm :Wk	2	Work at home more			Less travel			Work at home more						
13A	1 & 2	Hm :Wk	3	Work at home more; more flexitime	Take car		Less travel			Change area of work (clients)						
13B	1 & 2	Hm :Wk	1													Decreased fexibility in type/timing of recreation activities
13B	1 & 2	Hm :Wk	2													
13B	1 & 2	Hm :Wk	3		Use car											
15A	1 & 2	Hm :Wk	1	Adjust work hours		Adjust			Consider moving							
15A	1 & 2	Hm :Wk	2		Use work vehicle				Consider moving	Examine alternatives						More at 'beck and call' of employer
15A	1 & 2	Hm :Wk	3		Take car				Consider moving	Examine alternatives						
15B	1 & 4	Hm: Univ	1	Adjust personal timetable to suit PT		Adjust			Consider moving							Reduce flexibility
15B	1 & 4	Hm: Univ	2						Consider moving							
15B	1 & 4	Hm: Univ	3		Go by car				Move							
17A	1 & 2	Hm : Sch	1		Walk			Change to local school (only 1 suitable train trip)				Decrease				Disrupt social/friendship group
17A	1 & 2	Hm : Sch	2		Use term ticket											
17A	1 & 2	Hm : Sch	3		Walk			Change to local school				Decrease				Disrupt social/friendship group
19A	1 & 2	Hm : Wk	1	Adjust work hours; flexitime		Am leave home earlier										
19A	1 & 2	Hm : Wk	2													

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
19A	1 & 2	Hm : Wk	3	Breakfast at work	Take car	Leave earlier am					Increased cost: buying breakfast					Big stress' from driving in congestion; decreased famiy time
20A	1 & 2	Hm : Shp/PBus	1													
20A	1 & 2	Hm : Shp/PBus	2		Take car											Moer convenient eg carrying shopping
20A	1 & 2	Hm : Shp/PBus	3		Take car											
21A	1 & 2	Hm: Wk	1	Adjust work hrs	May use bus or car depending on new timetable											
21A	1 & 2	Hm: Wk	2		Use car											
21A	1 & 2	Hm: Wk	3		Use car				Consider moving							Greater flexibility
24A	1 & 4	Hm: Wk	1	Adjust personal timetable		Adjust										
24A	1 & 4	Hm: Wk	2	Adjust personal timetable to allow for new peak hr traffic flows	Use car				Consider moving							
24A	1 & 4	Hm: Wk	3		Use car											
22A	1 & 2	Hm: Wk	1	Start and finish work later		Go later										

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
22A	1 & 2	Hm: Wk	2		Take car or carpool							Decrease				More time for leisure by using car
22A	1 & 2	Hm: Wk	3		Take car or carpool											Carpooling may be inflexible
23A	1	Hm to Wk	1	More organising reqd		Leave earlier				Might change-find job locally						Less flexibility; less personal time
23A	1	Hm to Wk	2	Adjust schedule	Catch bus						$1 more per day		Long wait between buses			
23A	1	Hm to Wk	3	May not go to work	Get ride with friends											
W6A	1 & 2	Hm:Sch:Hm	1	Get up earlier	If long wait, taxi											Less time with friends
W6A	1 & 2	Hm:Sch:Hm	2				Decrease									
W6A	1 & 2	Hm:Sch:Hm	3	Less social activities/work	Taxi; friends; walk home from school											Life more busy
W5A	1	Hm : Social	1	Arrive earlier		Leave earlier										
W5A	1	Hm : Social	2	Reduce some activities eg eating out	Make trips shorter; or less trips											Cut down on some luxuries
W5A	1	Hm : Social	3	Reduce rec/social activities	Use taxi; try to get lift		Decrease to 1/4 present level									Life less enjoyable

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
W2A	1	Shp to Hm	1	Stay at Univ longer	If wait too long may catch taxi, otherwise bus	Adjust										
W2A	1	Shp to Hm	2	Reschedule around bus	Walk closer, shorter bus trip; or, ride with family/friends 2-3 times/wk				Possibly move	Possibly part time work to pay for flatting	Probably more cost for PT					
W2A	1	Shp to Hm	3		Get lifts; bike	Less trips										
W3A	1	Sch to Hm	1										Increase			
W3A	1	Sch to Hm	2		Get lift or bus								Increase			
W3A	1	Sch to Hm	3		Get lift or bus											
W1A	1 & 2	Hm to Educ/Shp	1		Walk if neccessary	Adjust							Increase			
W1A	1 & 2	Hm to Educ/Shp	2	Travel one day to town			Fewer trips to town; 1/2 or 1/3				Cut out some items					Narrow horizons, more housebound
W1A	1 & 2	Hm to Educ/Shp	3	Give up lecture; use taxi for necessary			Fewer trips									Less independence
W22A	1 & 2	Hm : Wk	1		Take car											
W22A	1 & 2	Hm : Wk	2		Take car											

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
W22A	1 & 2	Hm : Wk	3	May change work hours	Take car											Less leisure time
H1A	1 & 2	Hm : Shpg	1	Not go as often: car availability & increased cost	Take car; or, walk one way if by self						Extra cost of running car					More stressful to organise schedule
H1A	1 & 2	Hm : Shpg	2	Shop less frequently; organise to travel when car avail	Take car, or walk if car not avail						Less disposable income					Lose fun activity (shopping)
H1A	1 & 2	Hm : Shpg	3	Shop less frequently; organise to travel when car avail	Take car, or walk if car not avail						Less disposable income					Lose fun activity (shopping); less freedom
H2A	2	Shpg: Per Bus	1		Taxi, but only if have money		Travel less frequently	More per bus at local shpg centre								Less choice; more things on in city: meets friends in city
H2A	2	Shpg: Per Bus	2				Do business in city on one day: less frequent	More per bus at local shpg centre								Reducd social activities
H2A	2	Shpg: Per Bus	3					All business locally								
H2A	3 & 4	Shpg: Hosp	1		Get ride with friend; taxi only if nec						Worse off financially					
H2A	3 & 4	Shpg: Hosp	2								Worse off financially					
H2A	3 & 4	Shpg: Hosp	3		Get ride with friend; or taxi											
H2A	5	Hosp to Shpg	1				No travel	Shop locally								

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
H2A	5	Hosp to Shpg	2													
H2A	5	Hosp to Shpg	3		Taxi or ride with friend											
H3A	1 & 2	Hm : Shpg	1	Not go to shpg centre				Use local Supermarket								Less independence: rely on friends/family: shpg not as good at local Supermarket; no bank
H3A	1 & 2	Hm : Shpg	2	Not go to shpg centre; shop in city once/wk instead of one/ftnt			Travel 50% less	Use local Supermarket								Longer in city: don't like it, dangerous
H3A	1 & 2	Hm : Shpg	3	Not go to shpg centre; very infrequent shpg in city	Rely on friends/family for shpg in city											
H3A	3 & 4	Hm : Rec	1		bus/taxi home			Use city Library								Disrupts whole routine: requires taxi to carry books home
H3A	3 & 4	Hm : Rec	2					Use mobile library; city library								
H3A	3 & 4	Hm : Rec	3	Visit library less often				Use mobile library								
H4A	1 - 4	Hm : Per Bus	1	Some activities may not go to	Bicycle; lift from friends/family if nec											Difficult to get to some things
H4A	1 - 4	Hm : Per Bus	2	Some activities may not go to	Bicycle; lift from friends/family if nec											Have to arrange all activities ahead of time
H4A	1 - 4	Hm : Per Bus	3	Some activities may not go to	Walk, bike, get lift											
H5A	1 & 2	Hm : Shpg	1	Go less; change schedule	Take taxi home; or, use car		Travel less									Stressful to get somewhere quickly by PT; may use car

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
H5A	1 & 2	Hm : Shpg	2		Use car											
H5A	1 & 2	Hm : Shpg	3		Use car						May cost more					
H6A	1 & 4	Hm:PBus/Shp	1	Go to city less.	Bus & walk sometimes		Travel less									Limit options; reorganise activities-less convenient; less time in town
H6A	1 & 4	Hm:PBus/Shp	2	Go to city less	Walk if fine, bus/taxi if wet											Less social activities eg movies
H6A	1 & 4	Hm:PBus/Shp	3				Less travel	Shop less in city, more at local shpg centre			More money for other things (reduced transport costs)					Reduced social activities
H6A	2 & 3	PBus: Shpg	1	Probably wouldn't make trip												Life less enjoyable: trip was for enjoyment
H6A	2 & 3	PBus: Shpg	2	Probably wouldn't make trip; only make nec trips eg doctor												Life less enjoyable: trip was for enjoyment
H6A	2 & 3	PBus: Shpg	3	Shop closer to home	Ride with family/friends		Less travel; many trips not made									
H7A	1	Hm to Wk	1		Still bus, but use taxi if miss bus	Adjust if nec							Increase			
H7A	1	Hm to Wk	2													
H7A	1	Hm to Wk	3	Give up job: taxi too expensive												Loss of independence; boring, life less enjoyable
H8A	1 & 2	Hm : Wk	1			Adjust travel times				Change to area easier to use PT						
H8A	1 & 2	Hm : Wk	2		Buy and use car						Less disposable income	Decrease				

				SHORT TERM							SHORT TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey	Waiting		Other Hhd	
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destination	Residence	Employment	Financial	Time	Time	Comfort	Members	Other
					Mode	Time of Travel	Frequency									
H8A	1 & 2	Hm : Wk	3		Buy car					Change to area easier to use PT; or out of city where less congested		Decrease				Bit of stress driving

				LONG TERM								LONG TERM					
				RESPONSE (entry only if change will occur)								IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme		Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency										
1A	1 & 2	Hm : Wk	1														
1A	1 & 2	Hm : Wk	2														
1A	1 & 2	Hm : Wk	3														
2A	1 & 2	Hm : Wk	1														
2A	1 & 2	Hm : Wk	2		Switch to train (Jville), walk or wife drop off in car				Consider early retirement; move from Wgtn	Consider move jobs out of Wgtn to lower cost area		Worse off	Increased hm to wk time if use rail				
2A	1 & 2	Hm : Wk	3	Consider Telecommuting half time					Consider early retirement; move from Wgtn								
3A	1 & 2	Hm to Shpg	1	May have to give up some social activities	Get a lift by car								Less time for other activities (apart from shpg)				Worse off
3A	1 & 2	Hm to Shpg	2						Move closer to shops etc								Considering moving anyway; this may be final impetus. Overall welfare improve.
3A	1 & 2	Hm to Shpg	3						Move closer to shops etc								As for Scenario 2
4A	1 -4	Hm:Wk/Spg	1	Visit relative less often	Organise alternative transport; community shuttle bus											Community disrupted (takes elderly people on group bus trips)	Worse off - more time required to plan getting about, and actually getting about. Less time for work
4A	1 -4	Hm:Wk/Spg	2		Forego use of bus											Difficult to organise PT trips for elderly	Worse off - as for Sc 1

				LONG TERM							LONG TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme	Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency									
4A	1 -4	Hm:Wk/Shp	3		Borrow car; try to organise something within local communit y										Less time for work	
5A	1 & 2	Hm : Shpg	1													Worse off - no choice but to use buses: increased waiting time & increased travel cost
5A	1 & 2	Hm : Shpg	2		If time may walk, for appointme nts still use PT		Use bus less often				Consider buying car				More time to get to places	Worese off - loss in personal/family/recre ational time
5A	1 & 2	Hm : Shpg	3		Buy car						Worse off					Financially worse off, but having car has benefits:flexibility, not rely on PT & friends, weather
6A	1 & 2	Wk :Social	1													
6A	1 & 2	Wk :Social	2													
6A	1 & 2	Wk :Social	3													
6A	3	Wk: Home	1						Consider moving						Have PT timetable handy (missed express)	
6A	3	Wk: Home	2													
6A	3	Wk: Home	3													If move closer, will be more convenient in terms of travel to
7A	1 & 2	Hm:Vol Work	1		Can't afford car									Daughter is asthmatic, more walking expose her to weather	More illness, doctors bills	Worse off
7A	1 & 2	Hm:Vol Work	2		Consider using taxi more often; or walk one way, bus back											Worse off

				LONG TERM								LONG TERM					
				RESPONSE (entry only if change will occur)								IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme		Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency										
7A	1 & 2	Hm:Vol Work	3	Do all needed business in town on one day	Use taxi		Only travel once/week or fortnight			Get something locally							Decreased quality of life; child's extra-curricular education curtailed
8A	1 & 2	Hm : Wk	1														Worse off: less time with family
8A	1 & 2	Hm : Wk	2														As for Sc 1
8A	1 & 2	Hm : Wk	3														Not worse off than now
9A	1 & 2	Hm to Wk	1														
9A	1 & 2	Hm to Wk	2														
9A	1 & 2	Hm to Wk	3						Change residence if no PT								
10A	1 & 2	Hm : Wk	1		Use car; walk occasionally				Consider moving								Worse off: likes living within easy PT/walking distance of wk/rec
10A	1 & 2	Hm : Wk	2		Use car & other alternatives eg bike							Less spending money					Worse off - financially & decreased choice of transport
10A	1 & 2	Hm : Wk	3														Worse off: less choice
11A	1 - 4	Hm : Social	1													Less time to do things do now	Much worse off: unable to do activities/travel do now
11A	1 - 4	Hm : Social	2													Decreased social life	Much worse off
11A	1 - 4	Hm : Social	3														Much worse off: 'stranded' - lose contact with friends/family
13A	1 & 2	Hm :Wk	1		Consider use car					Change work location							Worse off: incerased depreciation on car; lost income through reduced work time

				LONG TERM							LONG TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme	Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency									
13A	1 & 2	Hm :Wk	2													Make less profit (ie available for clients in town less)
13A	1 & 2	Hm :Wk	3		Join carpool						Decreased income					As for Scenario 2
13B	1 & 2	Hm :Wk	1		Use car more						Worse off: increased depreciation					
13B	1 & 2	Hm :Wk	2		Probably use car										Greater flexibility from using car	Decreased income but increased flexibility
13B	1 & 2	Hm :Wk	3		Car or carpool											As for Scenario 2
15A	1 & 2	Hm :Wk	1													Uncertain: too many unknowns
15A	1 & 2	Hm :Wk	2						Probably move	Work from home						As for Scenario 1
15A	1 & 2	Hm :Wk	3		Use work vehicle											As for Scenario 1
15B	1 & 4	Hm: Univ	1												Less time to do things want to do	Neutral
15B	1 & 4	Hm: Univ	2		Arrange alternative travel				Move: go flatting		Bec paying rent, less disposable income	Less time travelling			More time for study/rec	Difficult to assess: more time but less disposable income
15B	1 & 4	Hm: Univ	3		Arrange alternative travel				Move: go flatting		As for Sc 2	As for Sc 2				As for Scenario 2
17A	1 & 2	Hm : Sch	1					Change to local school								Could be worse off ie effects of change during year on study habits
17A	1 & 2	Hm : Sch	2		Look for alternative mode eg ride			Might change to local school								
17A	1 & 2	Hm : Sch	3					Change to local school								As for Scenario 1
19A	1 & 2	Hm : Wk	1													Neutral: use flexitime provision to absorb impact
19A	1 & 2	Hm : Wk	2		Use car occasionally						Reduction in disposable income					Slightly worse off

				LONG TERM								LONG TERM					
				RESPONSE (entry only if change will occur)								IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme		Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency										
19A	1 & 2	Hm : Wk	3													Negative effect on health: stress/fatigue	Worse overall: increased stress, wear on car
20A	1 & 2	Hm : Shp/PBus	1		Continue to use train if time suitable												Not worse off
20A	1 & 2	Hm : Shp/PBus	2														Better off: more flexibility & reltive cost of car not as great
20A	1 & 2	Hm : Shp/PBus	3														Not worse off
21A	1 & 2	Hm: Wk	1		Probably use car; but depends on new timetable												Probably worse off: longer day bec of new timetable
21A	1 & 2	Hm: Wk	2		Use own car												Increased car maintenance & capital costs, but overall not worse off
21A	1 & 2	Hm: Wk	3		Use car				Probably move								Worse off: have to move to Wgtn & would probably sell at loss
24A	1 & 4	Hm: Wk	1		Aim to use PT wherever possible												Difficult to assess
24A	1 & 4	Hm: Wk	2		Use car				May change	Telecommuting possible							Difficult to assess
24A	1 & 4	Hm: Wk	3						Move (expeecting to anyway)	Telecommuting possible							Most likely would work at home some days each week: this balance negative effect of no PT
22A	1 & 2	Hm: Wk	1	Adjust schedule												More tired, higher stress levels, eat later at night, less leisure time	Worse off

				LONG TERM								LONG TERM					
				RESPONSE (entry only if change will occur)								IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme		Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency										
22A	1 & 2	Hm: Wk	2													Less open to infections from fellow passengers	Worse off re car maintenance, but better off in other respects
22A	1 & 2	Hm: Wk	3														Better off overall if in carpool: car costs shared, more flexibility & comfort
23A	1	Hm to Wk	1						Might move to Wgtn	Might change-find job locally							Worse off: increased costs. Difficult to find job locally; long periods without job
23A	1	Hm to Wk	2		Buy a car							Less disposable income					If buy car, more flexibility but worse off financially. If use buses, less flexibility
23A	1	Hm to Wk	3		Buy a car				Definitely move	Definitely look at changing job		Less disposable income					If can get job locally then better off; otherwise worse off in every respect
W6A	1 & 2	Hm:Sch:Hm	1		If at Univ, buy car							Less disposable income					Worse off: less social time, les money
W6A	1 & 2	Hm:Sch:Hm	2		Buy car				Move near Univ								Worse off: less money for social activites
W6A	1 & 2	Hm:Sch:Hm	3		Buy car				Move near Univ								Worse off: less money for social activites
W5A	1	Hm : Social	1		Get ride for some trips; taxi		If taxi, fewer trips		May move to SI, family moving			If use taxi, more expensive					Car at present no warrant: badly inconvenienced by this scenario
W5A	1	Hm : Social	2	Stay home more	Take taxis if necessary		Cut down on evening trips		May move to SI			Less money					Unable to make as many trips as now: have to rely on others which don't want to do
W5A	1	Hm : Social	3		Use own car if still have it, but unlikely to in a few years. Need to use taxi		Far fewer trips		Definitely move SI			Strict budgeting; no luuxuries					If forced to move to SI lose independence; not financially worse off

				LONG TERM								LONG TERM					
				RESPONSE (entry only if change will occur)								IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme		Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency										
W2A	1	Shp to Hm	1		Buy car							Increased cost					When working will get car: budget for it
W2A	1	Shp to Hm	2		Buy car	Leave earlier to get park										Increased independenc e with car	When working will get car: budget for it
W2A	1	Shp to Hm	3		Buy car			May move									As for Scenario 2
W3A	1	Sch to Hm	1														Get home later, less time to do things eg homework
W3A	1	Sch to Hm	2		Lift from friends/fa mily		Less travel by PT										Get home later, less time to do things eg homework
W3A	1	Sch to Hm	3		Consider buying car				In future: consider moving								As for Scenario 2
W1A	1 & 2	Hm to Educ/Shp	1														Inconvenienced, forced to hang around buses
W1A	1 & 2	Hm to Educ/Shp	2		Consider uing car; more likely try to get ride with friends												More isolated, unable to go out with friends; cut down on some activities
W1A	1 & 2	Hm to Educ/Shp	3		Walk if can; taxi		Fewer trips		May move to live near family								As for Scenario 2
W22A	1 & 2	Hm : Wk	1	Explore telecomm uting	Use car											Telecommuti ng would give more time (but couldn't do it evry day)	Worse off: extra 1 hr to travel each day, increased cost, later trains more dangerous; less leisure time. (Time saving benefits if could telecommute)
W22A	1 & 2	Hm : Wk	2		Use car												Worse off: as for Scenario 1

				LONG TERM							LONG TERM					
				RESPONSE (entry only if change will occur)							IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme	Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency									
W22A	1 & 2	Hm : Wk	3		Use car; purchase second car as backup				Consider moving		Increased costs of having two vehicles (needed bec don't have PT as backup)					
H1A	1 & 2	Hm : Shpg	1		Car: may buy another car (husband often ses car for work)											Inconvenient; less freedom: at present can't afford another car
H1A	1 & 2	Hm : Shpg	2		Save up to buy car						Less disposable income					Financially worse off; and inconvenient to have two cars
H1A	1 & 2	Hm : Shpg	3		Save up to buy car; husband bike more						Less disposable income: less luxurires eg movies					Financially worse off; no PT a backup (car unreliable); less enjoyment of life; loss of independence
H2A	2	Shpg: Per Bus	1													Financially worse off ie clothes etc more expensive locally; socially worse off eg no movies
H2A	2	Shpg: Per Bus	2												More time at home: not good for chdn	Financially worse off ie clothes etc more expensive locally; socially worse off eg no movies
H2A	2	Shpg: Per Bus	3						Move closer to city: walking dist from destinatio ns		Buying car costs more than PT					Moving would make her better off financially and socially
H2A	3 & 4	Shpg: Hosp	1													Worse off: has to take daughter to hospital appointment
H2A	3 & 4	Shpg: Hosp	2													Same as for Scenario 1
H2A	3 & 4	Shpg: Hosp	3													Same as for Scenario 1
H2A	5	Hosp to Shpg	1													

				LONG TERM								LONG TERM					
				RESPONSE (entry only if change will occur)								IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme		Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency										
H2A	5	Hosp to Shpg	2														Can do trips want to do on All Day Saver
H2A	5	Hosp to Shpg	3									Increased cost					
H3A	1 & 2	Hm : Shpg	1		Walk more often							Extra money: not spent on bus fare					
H3A	1 & 2	Hm : Shpg	2														
H3A	1 & 2	Hm : Shpg	3														Unable to go in wet weather, diff to walk long distances; unble to go anywhere - taxis too expensive
H3A	3 & 4	Hm : Rec	1									Worse off: cost of taxi				Effect on health, stress: lost without books to read.	
H3A	3 & 4	Hm : Rec	2													As for Scenario 1	
H3A	3 & 4	Hm : Rec	3													As for Scenario 1	
H4A	1 - 4	Hm : Per Bus	1														Don't like relying on other people
H4A	1 - 4	Hm : Per Bus	2									Worse off: have to save up to buy car					Worse off: miss out on extras eg going out, treats for kids, food, clothe
H4A	1 - 4	Hm : Per Bus	3									Worse off: have to save up to buy car					
H5A	1 & 2	Hm : Shpg	1		Have to change schedule to fit bus; may use car				Consider moving (may have to anyway for work)								Stress of changing schedules to meet bus; financial burden extra use of car or if use taxi

				LONG TERM								LONG TERM					
				RESPONSE (entry only if change will occur)								IMPACTS	Journey		Other Hhd		OVERALL
Intv Code	Trip No	Purpose	Scenario	Activity	Travel Behaviour			Destinatio	Residenc	Employme		Financial	Time	Comfort	Members	Other	WELFARE
					Mode	Time	Frequency										
H5A	1 & 2	Hm : Shpg	2														Neutral: only uses car now bec cheaper
H5A	1 & 2	Hm : Shpg	3									Worse off					Not big problem bec expect bigger income
H6A	1 & 4	Hm:PBus/Shp	1									More money for bills					Less convenient
H6A	1 & 4	Hm:PBus/Shp	2									Less money					Can't enjoy things in town as frequently; less money-cut back on some things
H6A	1 & 4	Hm:PBus/Shp	3														Less options; have to buy things locally which are dearer than in city
H6A	2 & 3	PBus: Shpg	1														Less flexibility in way of doing things, less enjoyment
H6A	2 & 3	PBus: Shpg	2														As for Scenario 1
H6A	2 & 3	PBus: Shpg	3														As for Scenario 1
H7A	1	Hm to Wk	1	Try to adjust work hours													Not too difficult to adjust to changes
H7A	1	Hm to Wk	2														Little effect on hhd income
H7A	1	Hm to Wk	3														Bored stiff; loss of financial independence; hhd inome still adequate
H8A	1 & 2	Hm : Wk	1		Get a car, depending on bus timetable												Not major effect; only uses PT to get to/from work
H8A	1 & 2	Hm : Wk	2									Worse off					

				LONG TERM								LONG TERM					
				RESPONSE (entry only if change will occur)								IMPACTS	Journey		Other Hhd		OVERALL
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					Mode	Time	Frequency										
H8A	1 & 2	Hm : Wk	3								Worse off					Not major effect; would get used to change