

**Personal security in  
public transport travel in  
New Zealand:  
problems, issues & solutions**

Land Transport New Zealand Research Report 344

# **Personal security in public transport travel in New Zealand: problems, issues & solutions**

D M Kennedy,  
Booz and Company (NZ) Ltd  
(formerly Booz Allen Hamilton Ltd)

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© 2008, Land Transport New Zealand  
PO Box 2840, Waterloo Quay, Wellington, New Zealand  
Telephone 64-4 931 8700; Facsimile 64-4 931 8701  
Email: [research@landtransport.govt.nz](mailto:research@landtransport.govt.nz)  
Website: [www.landtransport.govt.nz](http://www.landtransport.govt.nz)

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- formerly of Booz Allen Hamilton Ltd (now Booz and Company (NZ) Ltd  
PO Box 105413, Auckland, New Zealand

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# Executive summary

## Introduction

This research project explores perceived concerns about personal security on public transport (PT). The project draws on the findings of international literature and then explores users' concerns in three New Zealand cities with significant public transport patronage streams: Auckland, Wellington and Christchurch.

The objective of the project was *to investigate the extent to which perceived concerns about personal security are a deterrent to greater use of PT services in NZ, and the causes of these concerns; and to develop policy recommendations/guidelines to address these causes and hence increase personal accessibility and use of PT.*

[Project Proposal Report]

As noted in the objective above, the key focus of this project is on *perceived* concerns, rather than *actual* concerns. However, this report understands that there is evidence in the literature that concerns about personal security on public transport are exaggerated, and that, therefore, concerns may be ameliorated by more accurate information.

## Structure of this research project

The research project was structured in three general stages:

1. Literature review
2. Focus groups (i.e. qualitative research)
3. Online survey (i.e. quantitative research)

The literature review stage and the focus group stage produced useful findings, but their key purpose was to feed into the development of a questionnaire for the online survey stage.

## General policy implications

The survey findings showed that the target market for security measures crosses both genders and all age groups. The diversity of the target market should be kept in mind in the development and marketing of security measures.

The survey findings also implied that security measures are going to be more effective if they are targeted towards increasing the frequency of use of *existing patrons*. Security measures are going to be less effective at persuading *non-users of public transport* to become users.

Awareness of security measures is very low: only about 1 in 6 train users had observed security measures, despite large numbers of CCTV cameras throughout New Zealand's train systems. Furthermore, this is consistent with findings in the international literature. Therefore, the public transport (specifically train) industry should consider how it can make people more aware of security measures (especially CCTV) without unnecessarily alarming them.



The literature review noted that people dislike stop/station designs that make them feel enclosed or vulnerable. Therefore, stop/station design could draw on the insights provided by the Crime Prevention through Environmental Design (CPTED) crime prevention philosophy – this philosophy aims to reduce the incidence and fear of crime by changing the ‘built environment’ to reduce criminal opportunities and to foster positive social interaction.

The international literature showed that improved lighting is one of the most popular (and probably cost-effective) security measures. Therefore, any security package that is developed should ensure that lighting is satisfactory.

About 1 in 7 people said that darkness while travelling on buses made them feel very unsafe or uneasy. And about 1 in 6 people said that uncertainty about when the bus will arrive made them feel very unsafe or uneasy. Similar results were found for trains. These concerns may be relatively uncommon but they are worth noting because they can be quite easily addressed through improved on-board lighting or real-time information.

#### **Bus-specific policy implications**

The survey showed strong support for a ‘package’ of measures that address security concerns at bus stops:

- Lighting at bus stops
- Emergency alarms or ‘panic buttons’ at bus stops to alert guards
- Security cameras at bus stops

The presence of this ‘package’ is convenient because these measures are most effective when packaged together. For example, a camera picks up people playing pranks by pressing the ‘panic button’ when there is no emergency.

The survey also showed strong support for flexible buses/shuttles and improved street lighting. This report suggests that options relating to flexible buses/shuttles (e.g. introducing earlier services in Auckland or Christchurch) are worthy of further exploration because this report hypothesises that they may be more effective at increasing patronage – regression analysis could be used to test this hypothesis.

#### **Train-specific policy implications**

The survey results showed strong support for measures relating to waiting at train stations:

- Random security guard patrols at stations during less busy times
- Emergency alarms or ‘panic buttons’ at stations to alert guards
- Open cafés/kiosks at stations
- Security cameras at stations

The support for open cafés/kiosks at stations is notable because this could potentially be a low-cost means of making people feel safer. Another advantage of cafés/kiosks is that they make people feel that there is a presence without the tensions associated with more authoritative figures.

The overwhelming support for a personal presence at stations (e.g. guards, attendant at cafés/kiosks) is also notable. This is consistent with the international literature, which also found that a personal presence is more popular than cameras. This has implications for policies like automatic ticketing that could potentially remove this personal presence.

### **Wider policy implications**

The walking and waiting stages of a public transport journey contribute more to people feeling unsafe than the travelling stage. Darkness, alleyways, secluded pathways, lonely isolated streets make a number of respondents feel unsafe or uneasy. But there is evidence that this reflects a wider issue relating to safety when walking in cities and neighbourhoods (especially at night-time). Therefore, there are policy implications for Police and/or City Councils.

This wider issue of safety could be addressed through a range of policy measures, but improved street lighting is an obvious option, especially as it had received broad support in the survey results.

Security or police patrols also received support but they were not quite as popular.

Designing neighbourhoods to minimise situations where people feel vulnerable (e.g. alleyways) may also be an option – this touches on the CPTED crime prevention philosophy discussed above.

### **Further research**

This report concludes that there are three key avenues for further research into personal security on public transport:

- Regression analysis and market segmentation analysis
- Further surveys of people identified in the online survey
- Further surveys using probability-based survey methods

*Regression analysis and market segmentation analysis* would draw further on the detailed information obtained via the online survey. This information could be used to identify target market segments for security measures (and the 'packages' of measures most appropriate to each market segment). This information could also be used to identify the types of security measures that are most effective at increasing patronage.

*Further surveys of people identified in the online survey* (as having security concerns) could be used to test peoples' attitudes to new security measures (e.g. flexible buses/shuttles with expanded hours).

*Further surveys using probability-based survey methods* could be used to obtain more accurate estimates. The survey methods adopted for this research project give an indication concerning perceptions of security measures, but these are only preliminary results and more comprehensive survey methods are needed for accurate estimates.

## **Abstract**

This research project explores concerns about personal security by users of public transport. The findings from an international literature review are used, and the concerns of public transport users in three New Zealand cities (Auckland, Wellington and Christchurch) that have significant public transport patronage streams are explored.

Personal security concerns were found to discourage existing patrons from using public transport, and more so after dark. A number of security measures preferred by patrons are outlined. However, the project also found that only a small proportion of patrons actually noticed the presence of security measures that had been installed.

## 1. Introduction

This research project explores perceived concerns about personal security when using public transport. The project draws on the findings of international literature and then explores perceptions in three New Zealand cities (Auckland, Wellington and Christchurch) that have significant public transport patronage levels.

The project was proposed by Booz Allen Hamilton (now Booz and Company (NZ) Ltd) and was commissioned by Land Transport NZ through the Land Transport NZ Research Programme 2006-07.

### 1.1 Objective

The objective of the project was *to investigate the extent to which perceived concerns about personal security are a deterrent to greater use of public transport services in New Zealand, and the causes of these concerns; and to develop policy recommendations and guidelines to address these causes and hence increase personal accessibility and use of public transport.* [Project Proposal Report]

As noted in the objective above, the key focus of this project is on *perceived* concerns, rather than on *actual* concerns. However, evidence in the literature indicates that concerns about personal security on public transport are exaggerated, and that, therefore, concerns may be ameliorated if more accurate information was available.

The project (and this report) has been designed to answer the following key questions:

- How important are personal security concerns?
- What factors influence personal security concerns?
- What security measures do people say they want?
- Do people notice security measures?
- What is the impact of security measures on public transport patronage?

### 1.2 Structure of this report

Chapter 2 – **Existing strategies in New Zealand’s public transport industry** – provides the context of the research by describing how security is currently being addressed in the New Zealand public transport industry.

Chapter 3 – **Literature review** – reviews the literature (international and New Zealand) relating to concerns for personal security on public transport.

Chapter 4 – **Qualitative market research – focus group design** – explores how the focus groups were recruited and interviewed.

Chapter 5 – **Qualitative market research – focus group findings** – presents the findings of the focus group sessions.

Chapter 6 – **Quantitative market research – online survey design** – describes the survey methodology.

Chapter 7 – **Quantitative market research – online survey findings** – presents the findings drawn from the survey.

Chapter 8 – **Conclusions and policy implications** – discusses the conclusions obtained from the surveys and the literature, the implications for policies to improve public transport patronage, and the directions for future research on this topic.

**Appendices** – these are not included in hard copies of this report, but they are available online through the Land Transport NZ website [www.landtransport.govt.nz](http://www.landtransport.govt.nz).

Appendix A – **Key papers relating to personal security concerns about public transport** – consists of reviews and summaries of the key papers used for the literature review.

Appendix B – **Screen shots of questionnaire** – gives the full questionnaire for bus users, and the sub-sections for train users and for people who do not use public transport.

## **2. Existing strategies in New Zealand's public transport industry**

### **2.1 Introduction**

This chapter describes how personal security is currently being addressed by the New Zealand public transport industry. As it draws on informal discussion with some people who work in the bus and rail industry, it should not be regarded as a definitive source of information. It is intended only to provide context for this research report.

The chapter is structured as follows:

- Section 2.2 discusses security issues in the bus industry.
- Section 2.3 discusses security issues in the train industry.

When reading the following sections, the relatively small size of the New Zealand train industry should be taken into account, as about 2.2% of trips in New Zealand are made by bus and only 0.25% of trips are made by train (Ministry of Transport 2005). Therefore, personal security on the train is not as much of an issue in New Zealand as it is in countries like Australia, where rail commuting is more common and disorderly or criminal behaviour on trains and at train stations dominates concerns about public transport.

### **2.2 Security issues in the bus industry**

#### **2.2.1 How important are personal security concerns?**

In Auckland and Wellington, bus operators have had to address two key issues relating to personal security and social disorder on public transport: the safety of bus drivers, and vandalism on buses.

The safety of bus drivers is a prominent issue, especially in Auckland where bus drivers have been victims of robbery and assault. In response, one Auckland bus company is planning to introduce protective screens on some of their buses to protect drivers from assault. In addition, one bus company is trialling CCTV (closed-circuit TV) on buses in Auckland.

Robbery and assault of bus drivers is less common in Wellington. Consequently, bus operators have not introduced protective screens or CCTV on their buses. However, one person has observed a tendency for young people to congregate around some bus stops in Wellington, especially in Lower Hutt and Porirua, and this may accentuate personal security concerns.

Vandalism is always an issue on buses in Auckland and Wellington. The most prominent problem is graffiti, though etching on windows is also a huge problem and a very costly one. School children are the main culprits.

In Christchurch, safety of bus drivers and vandalism are also key issues. However, Christchurch authorities are developing strategies to address social disorder on buses.

The presence of tagging on buses (primarily etching of windows) has been identified as a problem because it makes patrons feel uncomfortable and less proud of their public transport system.

In Christchurch a series of attacks on drivers have been the catalyst for initiatives to address disorder on buses. The initiatives focus on the behaviour of disorderly youth. In particular, authorities are using CCTV on buses to target vandalism, as a means of removing youth who are more likely to become disruptive, abusive or violent.

Christchurch has recently introduced a Code of Conduct for bus users, which will be used to establish standards for the behaviour of patrons. In addition, Christchurch authorities are developing media campaigns that encourage patrons to take ownership of the public transport system, and to stand up against disruptive behaviour.

In Christchurch, concerns about personal security are exacerbated by a perception that the city is unsafe at night. In particular, a negative perception is associated with the bus exchange which is known to attract 'certain people'; in particular, the presence of some types of adolescents frightens elderly people. Damage to bus shelters has made them less appealing.

### **2.2.2 What factors influence personal security concerns?**

None of these three cities have implemented any specific research into personal security concerns on buses or at bus stops.

In Christchurch the Bus Exchange is understood to contribute to security concerns. As well, there is awareness that patrons dislike the disorderliness created by youth on the bus services.

### **2.2.3 What is the impact of security measures?**

Focus group research carried out in Christchurch (before this research project) identified reliability and frequency as important issues, but personal security did not come through as a key issue. However, authorities are developing and implementing strategies to prevent vandalism such as etching, because these acts make patrons feel like 'second class' citizens.

Christchurch has introduced other services that would be expected to alleviate security concerns. The first service is after-midnight buses, which deviate off main routes and are willing to wait until people are safely in their homes. Research indicates that this service has been well received. The second service is real-time information, which is likely to reduce feelings of uncertainty associated with waiting at night-time.

## **2.3 Security issues in the train industry**

### **2.3.1 How important are personal security concerns?**

Persons familiar with rail transport identified personal security as an important issue, both in Auckland and in Wellington. Many of these persons considered that personal security concerns were detrimental to patronage growth in the rail industry.

Stations and trains were identified as sources of concern by many persons. However, one person identified a number of security concerns associated with car parks at rail stations: this person claimed that "car crime is 'rife' in the Wellington district". Also, people have to walk a long distance to get to their car (especially if they are the last to park their car in the morning and the last to walk to their car in the evening).

The importance of personal security is reflected in the range of security measures being introduced on trains and at train stations.

In Wellington, Toll has introduced a security package consisting of security guards on trains, and CCTV on trains and at stations. A number of cameras have been sited across nine stations, and a number of train units have CCTV. Other measures introduced by Toll include patrols by Maori Wardens<sup>1</sup>, improved lighting, signage, urban design improvements, and school murals on subways to encourage community 'ownership' of stations. Toll has also encouraged small businesses to locate at stations by charging them cheap rent.

In Auckland, Veolia Transport Auckland has supported random security checks after 5pm and patrols by Maori Wardens, who provide a presence on trains and stations from 3pm onwards (to deal with school children). On-board CCTV is an option for the future. The Auckland Regional Transport Authority (ARTA) is responsible for station security and they are working towards full CCTV coverage across stations, including Britomart<sup>2</sup>.

### **2.3.2 What factors influence personal security concerns?**

Personal security concerns were generally considered to be most serious after dark and, to a lesser extent, during off-peak times. Most incidents occur on Fridays, Saturdays and Sundays.

Personal security concerns are exacerbated by vandalism or rubbish associated with 'undesirable' cultures (e.g. a bag of glue left by glue-sniffers, tagging left by gangs). These cultures frighten people from different backgrounds.

One person noted that railway stations tend to be a 'mecca' for strange people (e.g. people who talk to themselves) and this tends to exacerbate security concerns. Railway stations also attract groups of young people and graffiti.

Personal security concerns are also created by the physical characteristics of New Zealand railway stations:

- the stations are often geographically isolated;
- the stations are often enclosed;

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<sup>1</sup> The NZ Maori Warden Association is a voluntary service set up by Maori to reduce crime and to promote the welfare of Maori. In addition to other activities, the Association volunteers the services of its members, i.e. 'Maori Wardens', on trains as a presence to prevent disruptive behaviour, to manage drunkenness and to control crowd behaviour.

<sup>2</sup> Before 1 July 2006, Auckland Regional Transport Network Limited (ARTNL) was responsible for rail infrastructure in Auckland, but this responsibility has since been transferred to Auckland Regional Transport Authority (ARTA).



- the limited number of predetermined exit routes available to passengers if they are threatened.

### **2.3.3 What is the impact of security measures?**

The persons contacted were not aware of any research examining the impact of security measures on concerns about personal security.

However, security measures did have a noticeable impact on crime and disruption. In Auckland, there was a 'good drop off in incidents' at stations that have CCTV. In Wellington, reported crime was reduced after CCTV and security guards were introduced.

## 3. Literature review

### 3.1 Introduction

The main purpose of this literature review was to review evidence (both international and New Zealand) concerning the nature and extent of personal security concerns on public transport. It also looked at survey methods employed elsewhere. It was carried out in order to design and develop the survey methods to use for this research.

This chapter is structured as follows:

- Section 3.2 discusses evidence relating to the importance of personal security concerns:
  - the incidence of personal security concerns;
  - the relative importance of personal security in relation to mode choice.
- Section 3.3 discusses and documents factors influencing personal security concerns, including:
  - external factors such as darkness and the stage of journey;
  - personal factors such as demographic characteristics and psychological influences.
- Section 3.4 discusses surveys concerning stated preferences for security measures:
  - survey methods used to elicit preferences;
  - survey findings concerning stated preferences for security measures.
- Section 3.5 looks at people's ratings of security measures after they have been introduced:
  - the effectiveness of security measures;
  - visibility and awareness of security measures;
  - confidence in the effectiveness of security measures.
- Section 3.6 looks at the limited evidence relating to the impact of security measures on patronage:
  - as suggested by surveys;
  - as suggested by actual data.

As noted in Chapter 1 *Introduction*, the focus of this research project (and hence this literature review chapter) is on *perceived concerns* about personal security and the impact of security measures on these *concerns*. The *actual* risks associated with public transport could differ significantly from the perceived risks.

Individual reviews of the key papers used in the literature review are given in Appendix A – *Key papers relating to personal security concerns about public transport*. It is available from the Land Transport NZ website [www.landtransport.govt.nz](http://www.landtransport.govt.nz).

## **3.2 How important are personal security concerns?**

This section explores the incidence of personal security concerns (section 3.2.1) and then the relative importance of personal security concerns on mode-choice (section 3.2.2).

### **3.2.1 The incidence of personal security concerns**

#### ***3.2.1.1 International evidence***

The international evidence from the UK and Australia suggests that a small proportion of people (usually less than 10%) feel unsafe on public transport during the day. But this proportion increases during night-time to around 30-50%.

For example, in the UK, Stafford & Pettersson (2004) found the following:

- About 5-10% of women felt unsafe travelling to stops/stations, waiting for public transport, or travelling on public transport. This increased to about 50% after dark;
- Less than 10% of young people (12-16 years) felt unsafe during the day, but this increased to 40-50% after dark;
- A negligible proportion of men felt unsafe during the day, but this increased to 20% after dark.

In Australia, people also expressed personal security concerns, and these concerns also grew after dark, as recorded in:

- A survey by Symonds Travers Morgan (1996) which found that a large proportion of people avoided taking certain Sydney trains after dark on weekdays (about 50%) and on weekends (about 55%). However, less than 10% avoided those trains during daytime.
- A survey by Booz Allen Hamilton (2003) which found that 40% of respondents felt insecure using a Melbourne tram or bus service at night. Furthermore, only 31% of respondents would use a Melbourne tram or bus service after 9pm.

Other international literature also finds that personal security concerns are accentuated after dark. Smith & Clarke (2000) identify literature showing that people avoid using public transport after dark, especially the underground.

This evidence suggests that most people feel unsafe on public transport only after dark. However, the fears of the small proportion of people who feel unsafe during the day should not be dismissed, especially since their fears may be easier to resolve through minor improvements such as security measures at stations.

#### ***3.2.1.2 New Zealand evidence***

New Zealand evidence suggests that a small proportion of New Zealanders avoid using public transport at night. However, this proportion does not appear to be as large as in the UK or Australia.

The NZ National Survey of Crime Victims 2001 by Morris et al. (2003) found that 26% of people 'always' or 'mostly' avoided buses or trains at night. In contrast, recall that

Symonds Travers Morgan (1996) found that up to 55% of people avoided taking certain Sydney trains after dark.

Morris et al. (2003) also found that women were more resistant towards using public transport at night in that 32% of women 'always' or 'mostly' avoided buses or trains.

The remaining New Zealand evidence does not distinguish between daytime and after dark, hence making comparisons with international research difficult. The evidence below perhaps suggests most people do not have security concerns on public transport, at least during the day:

- Gravitas Research & Strategy Limited (2005) carried out the 2004 *Quality of Life* survey on behalf of central and local government agencies. This survey found that 77% of New Zealand residents agreed or strongly agreed that public transport was safe. Unfortunately, this survey did not distinguish between daytime and after dark.
- TNS (2007) carried out a further 2006 *Quality of Life* survey. This survey found that 73% of New Zealand residents agreed or strongly agreed that public transport was safe. Again, the survey did not distinguish between daytime and after dark.
- Pinnacle Research & Capital Research (2001) surveyed car commuters and found that 86% of commuters felt safe waiting at a bus stop, train station or ferry station during the day.
- Pinnacle Research & Capital Research (2001) also found that 86% of commuters felt safe riding on public transport.

### **3.2.2 The relative importance of personal security concerns**

This section explores any evidence of the relative importance of personal security perceptions and their impact on mode-choice, both internationally and in New Zealand.

#### **3.2.2.1 International evidence**

The following international evidence indicates a wide variation in the importance of security, apparently because the importance of security depends on the level of safety currently associated with public transport:

- In Melbourne, Yan Campbell Hoare Wheeler (1999; cited in Booz Allen Hamilton 2002) asked bus users to rank improvements to bus services, and safety initiatives (such as lighting and video surveillance at bus stops, and bus services operating closer to home) received relatively low rankings.
- In Sydney, Sweeney Research (2006) asked train users to rank a range of factors and safety was rated as the most important factor, above frequency, punctuality, cancellations, and information about delays.
- The Sweeney Research project was carried out on stations where security was of major concern to patrons. This may explain the high level of importance attributed to security.

There is even less international evidence concerning the impact of personal security concerns on the mode-choice behaviour of non-users of public transport. In the UK,

Stafford & Pettersson (2002) found that about 5-13% (across all demographic groups) stated that they might use public transport if they were happy about their personal security.

However, a survey by Transport & Travel Research (2001; cited in Stafford & Pettersson 2002) found that personal security did not affect modal choice, in that personal security was the seventh most important option for deciding modal choice, out of a total of eight options.

### **3.2.2.2 New Zealand evidence**

The New Zealand evidence (taken at face value) indicates that personal security very rarely impacts on general mode-choice.

- Booz Allen Hamilton (2005) research found that non-use of bus services in Dunedin was very rarely influenced by security-related reasons. The research allowed respondents to choose from a list of reasons including two personal security-related reasons:
  - I don't feel safe waiting for a bus;
  - I don't feel safe walking to/from the bus.

But none of the respondents chose either of these reasons as one of their main reasons for not using the bus. Only a negligible proportion chose either of these as secondary reasons. The highest incidence was on education-based journeys and, even there, only 3% listed "I don't feel safe waiting for a bus" as a reason for not using the bus.

- The Pinnacle Research & Capital Research (2001) survey also found that personal security concerns did not appear to be a driver of mode-choice decisions across Auckland, Wellington and Christchurch. The survey asked respondents open-ended questions about their reasons for not choosing passenger transport, and their responses were then categorised. Less than 1% of these responses fitted into the 'too crowded / not safe / too uncomfortable' category.

The evidence above seems to contradict the research by Morris et al. (2003) (see section 3.2.1.2), which found that 26% of people avoided using buses or trains at night. One possible reconciliation to this contradiction is as follows: it is possible that personal security concerns discourage regular users of public transport from using public transport after dark, even though personal security concerns have no impact on the mode-choice uses of people who rarely or never use public transport.

## **3.3 What factors influence personal security concerns?**

The external factors that have an influence on personal security concerns and are discussed are:

- the presence of darkness;
- the stage of the journey;

- the mode of the journey;
- the design of stops and stations;
- the presence of undesirable people;
- uncertain situations and the lack of information.

Personal factors that have an influence on personal security concerns are discussed, based on:

- demographic and social factors;
- psychological factors.

### **3.3.1 Darkness**

#### ***3.3.1.1 International evidence***

As section 3.2.1.1 notes, the evidence from UK and Australia suggests that the proportion of public transport users with concerns about public transport increases after dark.

A minority (less than 10%) of public transport users in the UK and Australia have security concerns even during daylight.

Interestingly, security concerns during daylight are more likely to be associated with train travel rather than bus travel. This is discussed in more detail in section 3.3.3.1.

#### ***3.3.1.2 New Zealand evidence***

There are no New Zealand studies that ask respondents about security concerns during both daylight and darkness. Hence, comparisons between the two situations were not possible at the time of this literature review.

### **3.3.2 Stage of journey**

#### ***3.3.2.1 International evidence***

In general, the international literature suggests that waiting is the stage of the journey in which patrons are most likely to feel unsafe, followed closely by walking to and from the stop/station. However, the differences in safety between each stage are rarely ever dramatic – people who feel unsafe at one stage of the journey usually feel unsafe at all the other stages.

In the UK, the Stafford & Pettersson (2004) findings distinguished the following stages for bus and rail travel (and underground but these results are not discussed in this report):

- walking from home;
- walking to home;
- waiting at stop/station for public transport;
- travelling on public transport;
- whole of journey.

The findings indicated that people most fear waiting at the stop/station after dark and walking home after dark, with about 60% of women and 20% of men feeling unsafe at these stages.

However fears are remarkably similar at other stages, suggesting that some people have a tendency to be fearful, regardless of the stage involved.

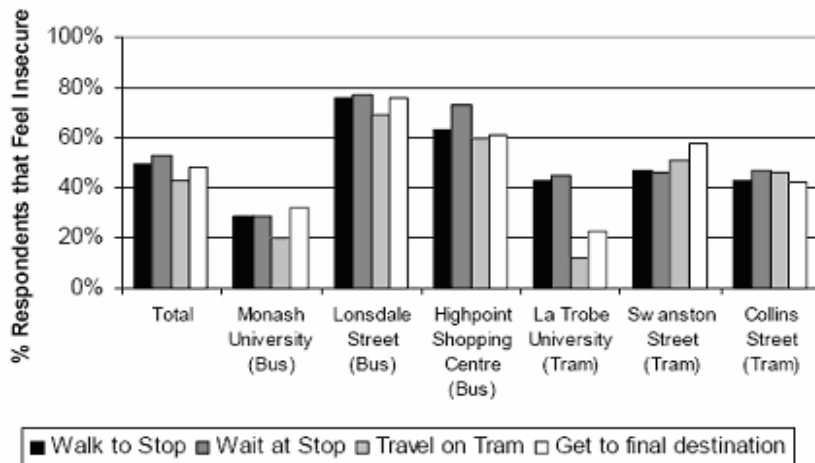
- About 50% of women and 20% of men feel unsafe travelling on the train after dark.
- About 40% of women and under 20% of men feel unsafe travelling on the bus after dark.
- About 45% of women and 20% of men feel unsafe walking from home after dark.

In Australia, Booz Allen Hamilton (2003) distinguished the following stages for bus and tram travel:

- walk to stop;
- wait at stop;
- travel on bus or tram;
- get to final destination.

The findings indicated that waiting was the trip element in which survey respondents generally felt most insecure. However, the other stages had exhibited similar incidences of insecurity. For example, Figure 3.1 shows incidences of fear across various stages for respondents at different locations.

The constant level of insecurity across all stages, observed in both the Booz Allen Hamilton (2003) and the Stafford & Pettersson (2004) research, suggests that some people are relatively 'fearful' and that they are 'fearful' across all stages of the journey.



Note:

1. Response to question "How safe and secure do you feel at night when (i) walking to the stop (ii) waiting at the stop (iii) travelling on the tram (iv) getting to final destination?"
2. A sampling bias was introduced – refer to Appendix A.

Figure 3.1 Insecurity by journey stages on Melbourne buses/trams.

Source: Booz Allen Hamilton (2003)

Earlier Australian research by Symonds Travers Morgan (1996) (illustrated in Table 3.1) indicated that insecurities were most prominent when using toilets/waiting rooms and walking through station walkways and subways.

**Table 3.1 Insecurity (as %) by journey stages on Sydney Rail.**

Stage of journey	Very safe	Safe	Neither	Unsafe	Very unsafe	N/A
Getting to and from stations	5%	30%	15%	30%	8%	12%
Using station car parks	3%	13%	12%	26%	12%	34%
Entering and leaving stations	4%	27%	20%	27%	8%	14%
Walking through station walkways and subways	3%	12%	11%	40%	20%	14%
Using toilets/ waiting rooms	3%	11%	16%	31%	20%	19%
Waiting on the platform	3%	25%	24%	30%	6%	12%
Travelling on the train	4%	24%	17%	35%	9%	11%

Source: Symonds Travers Morgan (1996)

In the US, Wallace et al. (1999) obtained survey ratings for bus passengers – ‘very unsafe’ (1) to ‘very safe’ (5) – for certain stages of the journey. The mean safety ratings are shown below.

- Waiting at the usual stop 4.4
- Riding an AATA<sup>3</sup> bus 4.5
- Waiting at the Blake Transit Center 4.1
- Waiting at the Ypsilanti Transit Center 3.6
- Riding the bus after dark 3.7
- Walking to and from usual stop 4.3

The survey ratings show that people felt least safe ‘riding the bus after dark’. However, the survey ratings did not look at waiting at stations after dark or walking to and from usual stop after dark.

It is interesting that ‘Waiting at the Ypsilanti Transit Center’ received a very low safety rating despite there not being a reference to darkness. This agrees with research elsewhere which suggests that waiting is the stage most likely to cause distress to patrons.

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<sup>3</sup> AATA – Ann Arbor Transportation Authority



The gender differences are also interesting – women felt less safe at every stage of the journey (except on the bus during the day).

### 3.3.2.2 New Zealand evidence

Prior to this report, there were no New Zealand studies that distinguish all of the stages of the journeys discussed in section 3.3.2.1.

A New Zealand survey by Pinnacle Research & Capital Research (2001) indicates no difference between waiting at a stop/station during the day and travelling on public transport, in that 86% of the respondents felt safe waiting at a stop/station during the day, and 86% felt safe riding on public transport.

In addition, various New Zealand studies show that a significant proportion of people feel unsafe walking in the dark (and this is an inevitable consequence of much public transport).

- Casey & Crothers (2005) found that 64% of women and 42% of men felt unsafe in Auckland City after dark.
- In the 2004 *Quality of Life* survey, Gravitass Research & Strategy Limited (2005) found that, nationally, up to 18% of men and 36% of women felt unsafe walking after dark (Table 3.2).

**Table 3.2 Perceptions of security in New Zealand neighbourhoods and city centres.**

Gender	Unsafe or very unsafe		Safe or very safe	
	Local neighbourhood after dark	City centre after dark	Local neighbourhood after dark	City centre after dark
Males	8%	18%	77%	52%
Females	21%	36%	61%	36%

Source: Gravitass Research & Strategy Limited (2005) (Data extracted from report and tabulated)

Furthermore, their research shows that people feel less safe walking in the city than they do in their own neighbourhood. This contrast is particularly pronounced in Christchurch where 34% of people feel insecure in the city centre, compared to 14% when people are in their own neighbourhood.

This implies that security measures aimed at improving safety perceptions in the CBD (e.g. CCTV) may be more effective than security measures aimed at residential neighbourhoods (e.g. street lighting).

### 3.3.3 Mode of journey

#### 3.3.3.1 International evidence

In the UK, the Stafford & Pettersson (2004) findings indicate that people are more likely to feel unsafe on rail, compared to bus travel. Table 3.3 shows that the incidence of security concerns for women is higher (5%) on rail, rising to a differential of about 10% after dark.

**Table 3.3 Percentage of women who feel unsafe by mode and stage.**

Stage of journey	Time	Train	Bus
Waiting at stop/station	Daylight	10%	5%
	After Dark	60%	50%
Travelling on public transport	Daylight	5%	Negligible
	After Dark	50%	40%

Source: Stafford & Pettersson (2004). Percentages are approximate, estimated from charts in the report.

Similar patterns were observed for men, but the percentages of men with concerns are not as high so the trends are not as obvious.

### **3.3.3.2 New Zealand evidence**

Prior to this report, there were no New Zealand studies that compared security perceptions on rail with security perceptions on bus.

## **3.3.4 Design of stops and stations**

### **3.3.4.1 International evidence**

The international literature suggests that people have a particular distaste for stops and stations that leave them feeling enclosed.

- The Stafford & Pettersson (2004) UK focus groups stated that subways and long flights of stairs made people feel unsafe because of a fear of being trapped.
- The Symonds Travers Morgan (1996) survey of Sydney train users also found that people dislike situations where they feel enclosed: walking through walkways, walking through subways, and using station toilets/waiting rooms.

The Stafford & Pettersson (2004) UK focus groups found that people disliked stops and stations which made them feel more vulnerable to attack, and the factors they identified include the following:

- Isolated or secluded locations made people feel at risk because of reduced opportunities for informal surveillance from passers-by or nearby houses or shops.
- Trees or bushes made people feel less safe because they provided opportunities for people to hide, and reduced opportunities for informal surveillance.
- Poor lighting or shadows made people feel more vulnerable to attack and less visible to informal surveillance.
- Subways and long flights of stairs made people feel unsafe primarily because of a fear of being trapped, and because they are often poorly lit and dingy. Recesses and concealed corners have a similar effect.

Lusk (2002; cited in Volinski & Tucker 2003) carried out focus groups and found that a bus stop with no side- and rear-walls was least favoured by participants because they felt vulnerable to sidewalk traffic behind the shelter. Blind alley entrances near the stop also caused feelings of insecurity.

### **3.3.4.2 New Zealand evidence**

There are no New Zealand studies relating the impact of stop and station design to personal security concerns on public transport.

However, there is evidence that the public appreciate efforts to make infrastructure, such as bus shelters, address safety issues. The Christchurch City Council found that residents were more approving of its plans for a dual-purpose bus shelter/toilet in Beverley Park (Stanmore Street) when it was able to show that the site and design had taken security issues into account. This project was discussed in the McCauley & Opie (2007) discussion of research involving the Crime Prevention through Environmental Design (CPTED) philosophy for crime prevention.

One peer reviewer has pointed out that the CPTED philosophy could be used to address some of the fears associated with public transport (such as those discussed in section 3.3.4.1). The CPTED philosophy aims to reduce the incidence and fear of crime by changing the 'built environment' to reduce criminal opportunities and to foster positive social interaction. It consists of four key overlapping principles:

1. *Surveillance* – people are always present and can see what is going on.
2. *Access management* – methods are used to attract people and vehicles to some places and restrict them from others.
3. *Territorial reinforcement* – clear boundaries encourage community 'ownership' of the space.
4. *Quality environments* – good quality, well maintained places attract people and support surveillance.

See <http://www.justice.govt.nz/pubs/reports/2005/cpted-part-1/index.html> for more information.

### **3.3.5 Presence of undesirable people**

#### **3.3.5.1 International evidence**

The international literature also frequently touches on a theme of discomfort with 'undesirable' people and/or groups of youth:

- Focus groups carried out in Melbourne, Ballarat and Bendigo by Sweeney Research (2006) indicated that drug-dealing, smoking on the train, and 'hoons' all contributed to greater insecurity.
- Symonds Travers Morgan (1996) noted that over 60% of respondents found the presence of groups or gangs of young people on stations and trains to be a factor contributing to personal safety concerns.
- Stafford & Pettersson (2004) identified fear of antisocial behaviour, groups of young people and aggressive begging:
  - Antisocial behaviour and people with alcohol and/or drugs raised concerns about the unpredictability of such behaviour;

- Noisy or rowdy groups of young people made people feel unsafe, partly from a sense of oppression from the numbers involved, but also because of associations with anti-social or criminal behaviour;
- Aggressive begging can contribute to a threatening atmosphere for passengers.

Groups or gangs of youth can create fears for not just the elderly, but also for other young people.

#### **3.3.5.2 *New Zealand evidence***

There is no New Zealand evidence relating the impact of gangs or undesirable people to personal security concerns on public transport.

However, Casey & Crothers (2005) used open questions to explore the main reasons why people felt unsafe in the Auckland CBD at night-time, the most common reason being the presence of people loitering. These people are ranked below in terms of 'mentions':

- bad/dodgy/creepy people;
- homeless people;
- drunks and intoxicated people;
- street kids;
- criminals;
- boy racers.

It is possible that the same people are likely to have a similar impact on the security concerns of people waiting for or travelling on public transport.

### **3.3.6 Uncertain situations and lack of information**

#### **3.3.6.1 *International evidence***

Stafford & Pettersson (2004) identified that uncertainties about public transport made people feel less safe, both on stops/stations and during trips:

- Inadequate announcements of upcoming stations or stops can reinforce a passenger's sense of the unknown, especially in an unfamiliar location.
- Fears of missing connections resulting in long waits can increase passenger anxieties, especially in unfamiliar locations.

#### **3.3.6.2 *New Zealand evidence***

There is no New Zealand evidence relating the impact of uncertainties and lack of information to personal security concerns on public transport. However, numerous customer satisfaction surveys identify reliability as a key issue for public transport patrons in New Zealand.

### 3.3.7 Demographic and social factors

#### 3.3.7.1 International evidence

The international literature suggests that women, young people and older people represent the demographic segments most likely to have concerns about personal security on public transport.

- In the UK, Stafford & Pettersson (2004) found that women and young people were more likely to have fears about personal security (see section 3.2.1.1).
- In Australia, Booz Allen Hamilton (2003) found that the age groups most likely to feel unsafe were 16 to 18-year olds and people 60 or over. People aged 18 to 24 generally felt safe at all stages, except for waiting at the stop.
- In the US, Wallace et al. (1999) found that women are more likely to have security concerns than men, across most stages of the journey.

The international literature also analyses some of these demographic groups in more depth, and this is insightful because different groups have different reasons for having fears associated with public transport. Therefore, security measures that are effective for one demographic group may not be effective for a different demographic group. Tulloch (2000) discussed some of these differences:

- Women, particularly young women, primarily feared sexual assault and they employed strategies to assess and avoid possible threats. Bell (1998; cited in Volinski & Tucker 2003) noted that women are especially fearful of deserted spaces in which they feel vulnerable to attack by a stranger.
- Young people (15-19 years) generally found public transport to be an important mode of travel. They perceived risks but generally chose to manage them (e.g. by travelling in groups):
  - For young women, the threat was primarily from individual strange males, and their fear was of physical or sexual attack. Many young women were unwilling to travel alone at night.
  - Young men were less concerned about individual attacks and were more concerned about assault from a gang of youths or another sub-cultural group.
- Older people expressed a sense of vulnerability that made the potential consequences of victimisation more alarming. They worried about pushy young people who may 'knock your head off' with large bags. They worried about deep steps, 'the parachute jump' off the bus, and the dangerous gaps produced by curved platforms.
- Most older people saw young people as a threatening 'out-group'; they were 'noisy', 'rowdy', 'up and down the aisles yahoing', 'using pretty crook language', and 'out of control'. LeGrange & Ferraro (1987; cited in Stafford & Pettersson 2002) concluded that the 'fear' experienced by older people may be associated more with signs of disorder and a lack of community control. They contend that this should not be called 'fear of crime'.

Contrary to stereotypes, in some literature such as Ferraro (1995; cited in Tulloch 2000) perceptions of insecurity are recorded to be actually greater for young people than they are for older people. However, older people appear to be less willing to take risks and generally prefer to not go out in the evenings.

Other minorities have unique concerns relating to public transport security, including people with mental or physical disabilities, people for whom English is a second language, and people who draw attention to themselves by their dress (visibly religious persons, overt homosexuals).

For example, one of Tulloch's (2000) focus groups included gay teenagers. These teenagers noted that their individuality in appearance (painted finger nails, dyed hair, cross dressing, etc.) made them obvious targets for hostile gangs and made transport personnel less likely to protect them. Nevertheless this group of people rejected the other course of becoming more socially inconspicuous, and so reduce risks to themselves.

### **3.3.7.2 New Zealand evidence**

The New Zealand evidence is reminiscent of the international evidence in that fears about personal security on public transport are most common among women and young people (15-24 years). In addition, fears about personal security are also higher for Maori and Pacific Peoples.

In their 2004 *Quality of Life* survey, Gravitas Research & Strategy Limited (2005) asked respondents about the extent to which they agree that public transport was safe:

- Women were (slightly) less likely to feel safe on public transport – 5% of women disagreed or strongly disagreed that public transport was safe, compared to 3% of men.
- Young people (15-25 years) were less likely to feel safe on public transport than any other age group – 8% disagreed or strongly disagreed with the statement that public transport was safe. In contrast, only 1% of older people (65+ years) disagreed or strongly disagreed with the statement that public transport was safe.
- Maori and, in particular, Pacific Peoples are less likely to feel safe on public transport than other ethnicities – 6% of Maori and 9% of Pacific Peoples disagreed or strongly disagreed with the statement that public transport was safe. (However, the survey also showed that the higher incidence of fear among Maori and Pacific Peoples is in Manukau and Waitakere cities. There, Maori and Pacific Peoples are in higher numbers, and public transport is considered to be less safe.)

The findings concerning women and young people are consistent with the findings in the international literature. However, the higher fears among young people could be partially attributed to a higher likelihood of travelling on public transport at night-time.

However, the low level of fear among older people is inconsistent with the international literature. This low level of fear could be because the survey was very general and did not

distinguish between daytime and night-time, or ask about fears associated with bus stops or stations.

### **3.3.8 Psychological factors**

#### ***3.3.8.1 International evidence***

Brantingham et al. (1991; cited in Smith & Clarke 2000) claim that fear on public transport is related to the unpredictability and uncontrollability of exposure to potential crime situations. Patrons do not know with whom they are sitting and cannot exit the vehicle until the next stop. Furthermore, exiting the vehicle can lead to unknown situations and persons. This lack of control is exacerbated by the lack of staff to provide reassurance.

However, insecurity is not just about fear of crime but also appears to be related to other unsettling stimuli, including crowded conditions, unreliability and, in particular, a sense that the situation is not 'under control'.

The sense that the situation is not 'under control' appears to relate to dissatisfaction with graffiti and perceived inadequate control over youth or 'undesirables'. For example, respondents in focus groups often look favourably upon bus drivers who expel young people who are disruptive or attempting to get on without paying the correct fare.

In addition, the insecurities that people have are sometimes related to their background. For example, Stafford & Pettersson (2002) posit that the anxiety of older people should be considered in the context of structural changes that leave them feeling socially isolated and de-skilled. Similarly, Pantazis (2000; cited in Stafford & Pettersson 2002) concludes that 'fear of crime and worry about a range of non-criminal incidents can be seen as part of a long chain of insecurities that are experienced more acutely by people living in poverty'. These were conclusions from analysing British Crime Survey data on vulnerability, poverty and anxieties about crime.

Other aspects of public transport, such as reliability and frequency of services, can increase fears of insecurity, in addition to being unsettling on their own.

#### ***3.3.8.2 New Zealand evidence***

There are no New Zealand studies that explicitly explore the psychological issues surrounding insecurities associated with public transport.

## **3.4 What security measures do people say they want?**

This section describes the security measures that people express preferences for, based on survey responses, and consists of two parts:

- Section 3.4.1 describes the survey methods used to allow respondents to assess security measures.
- Section 3.4.2 describes the findings from surveys that have been carried out.

Table 3.4 describes the range of security measures considered in the international literature, along with the stage and mode that the measures are generally associated with.

A peer reviewer noted that one security measure not discussed in the international literature is 'muzak', and music designed to deter groups of young people from congregating at train stations. For example, classical music was played at five CityRail stations around the Sydney area (<http://www.abc.net.au/am/stories/s44305.htm>) in 1999. This literature review did not find any studies discussing impact of this security measure on perceptions of security at train stations.

**Table 3.4 Range of security measures in literature.**

Mode and stage of journey	Security measure
Train station	Security guards
	Presence of staff at station
	CCTV
	Alarms/phones
	Improved lighting
	Clean stations
	Accurate timetable
	Real-time information
Train	Security guards
	Conductors walking regularly through train
	CCTV
	Alarms
	Improved lighting
	Clean carriages
Bus stops	CCTV
	Improved lighting
	Alarms/phones
	Accurate timetable
	Real-time information
	Clean shelters
	Visible shelters
Buses	On-board CCTV
	Presence of staff other than driver
	Encouraging uniformed police to travel on bus
	On-board phone and/or alarm
	Refusing patrons who are intoxicated or under the influence of drugs
	Being able to get off bus anywhere
	Expelling patrons who are rowdy and/or noisy



### **3.4.1 Survey methods**

The international literature includes surveys that ask respondents to suggest, rank and/or rate a range of security measures.

The four methods used to rate and/or rank security measures are:

- Explicit rankings
- Importance ratings
- Bag of points
- Open-ended questions

#### ***3.4.1.1 Explicit rankings***

This approach involves asking respondents to explicitly rank a set of security measures, and usually used to identify the respondent's top three measures.

- Booz Allen Hamilton (2003) conducted a survey of Melbourne bus and tram users, and asked respondents to nominate three of their preferred countermeasures (at stops and on buses/trams) from a closed list of ten. For each countermeasure, the researchers then identified the percentage of people who chose that particular measure as the one they most preferred.
- Stafford & Pettersson (2004) conducted a survey of UK residents and asked respondents to rank their first, second and third priorities (from a menu of measures) while waiting at a bus stop. The researchers then created weighted percentages.

The Stafford & Pettersson approach has the advantage that it can be used to create two different ranking measures:

- A simple percentage which identifies that percentage of people who chose a particular measure as their first measure;
- A weighted percentage in which the percentages of people who chose a measure as their first, second and third priorities, were assigned respective weights of three, two and one.

#### ***3.4.1.2 Importance ratings***

This approach involves allowing respondents to indicate the importance of a security measure using rating scales. Symonds Travers Morgan (1996) employed this approach to assess the importance of various security measures. The rating scales used included very important, important, and not important at all.

One weakness of this approach was that very important or important ratings were assigned by most people to most measures, which makes comparison of the relative importance of measures more difficult.

#### ***3.4.1.3 Bag of points***

This approach involves asking respondents to divvy out a bag of points to the desired measures. It was employed by Thomas et al. (2006), who asked respondents how they would allocate one pound (£1) between four options to improve safety and security.

The researchers interpret that an average 'spend' (e.g. 32 cents for CCTV cameras) as being indicative of the mean percentage utility that passengers attach to each security initiative. However, it is not clear that this interpretation is correct as respondents may assume that there are diminishing returns to expenditure, hence they 'spread expenditure' around in the interests of getting value for their money.

#### **3.4.1.4 Open-ended questions**

This approach involves asking respondents open-ended questions about their desired security measures, an approach that has been employed by a number of researchers.

In a number of cases, researchers employed focus groups and often used open-ended questions to prompt discussion.

### **3.4.2 Survey findings**

This section describes the findings of research that examined the rankings that people assigned to potential security measures.

#### **3.4.2.1 International evidence**

##### **Waiting for the bus**

On the basis of research in the UK and Australia, the most highly ranked security measures at bus stops and bus stations is CCTV, followed by better lighting.

The UK research by Stafford & Pettersson (2004) is shown in Table 3.5 in which the most popular measure was CCTV, followed by well-lit stops. The visibility of the stop was also important to some people.

**Table 3.5 Rankings of security measures at UK bus stops/stations.**

<b>Security measures</b>	<b>Weighted percentage</b>	<b>Percentage first choice</b>
Presence of staff at station	27%	35%
CCTV/security cameras to monitor vulnerable areas	23%	26%
Good lighting throughout the station	21%	25%
Alarm system on station platforms for help	10%	not provided
Platforms are well-lit	7%	not provided
Reliable service and accurate information on delays	5%	not provided
Up-to-date timetable information at station	3%	not provided
Station is well-maintained and graffiti-free	3%	not provided

Source: Stafford & Pettersson (2004). The 'weighted percentages' are approximate, and estimated from charts in the report.

Stafford & Pettersson also separated respondents into women, men and young people. However, the ratings were similar across all demographic groups with only minor differences.

- Women were slightly more likely to support better lighting and greater visibility;
- Young people were more likely to support having a public telephone close by and were less likely to support better lighting.

The Australian research by Booz Allen Hamilton (2003) also found that the most popular measure was CCTV, followed by better-lit stops. However, Table 3.6 shows that neither measure was resoundingly popular, with only 16% of people choosing CCTV as a top three measure.

The even response rate across all of the measures in Table 3.6 suggests that a package of measures is required, rather than individual measures.

**Table 3.6** Rankings of security measures for travel on Melbourne buses/trams.

Security measure	Percentage selecting it as top three
Security CCTV cameras	16%
Better-lit stop	13%
Real-time information	11%
Clean & visible shelters	11%
Public telephone at stop	11%
Help point/emergency intercom	10%
Better-lit street/walkway	8%
Activity around stop at night	8%
Ability to get off bus/tram anywhere	5%
On-board bus/tram public phone	5%
None	2%

Source: Booz Allen Hamilton (2003)

This review notes that two measures – public telephone at stop, and help point/emergency intercom – duplicate each other somewhat. Therefore, the actual support for either one of these measures may be higher than the 10-11% indicated in Table 3.6.

US research found less support for CCTV and more support for, in particular, installation of emergency telephones. Reed et al. (2000; cited in Volinski & Tucker 2003) surveyed Michigan transit passengers and asked them to rate potential security enhancements:

- more police;
- more driver safety training;
- increased lighting at bus stops;
- see-through bus shelters;
- emergency telephones at bus stops;
- video cameras on transit buses;
- driver-operated emergency alarms.

The findings from Reed et al. (2000) are summarised as:

- Respondents from most urban areas gave the highest rating to the installation of emergency telephones at bus stops.
- Increased lighting, see-through bus shelters and more police also rated highly among all the types of urban areas surveyed.
- Women in all urban areas favoured see-through bus shelters, more driver safety training, and increased lighting at bus stops; which indicated that women feel less secure waiting at bus stops than while travelling on the bus.

In a 1997 survey, Wallace et al. (1999) asked respondents which of the following four measures would do the most to make them feel safe:

- emergency phones;
- video cameras;
- increased lighting;
- more police.

Respondents stated that increased lighting and emergency phones would be most effective at making them feel safe.

However, as will be discussed in sections 3.5.1 and 3.5.2, emergency phones went largely unnoticed once they were introduced. Furthermore, emergency phones were relatively less effective at making people feel safer.

Lusk (2002; cited in Volinkski & Tucker (2003)) surveyed 15 focus groups (using visual preference surveys) to elicit preferences for bus stop designs. She found that a bus stop with no side- and rear-walls was least favoured by participants because they felt vulnerable to sidewalk traffic behind the shelter. Blind alley entranceways near the stop were also mentioned as causing feelings of insecurity.

Participants also reported a preference for clear glass walls all the way around with no advertising, not too much or too dense vegetation around the stop, and a shelter that is not too artistic. The stop should be well maintained and clean, to reduce the impression of criminal activity.

### **Travelling on the bus**

Most surveys in the international literature combine security measures on bus stops/stations with security measures when travelling on buses. The Booz Allen Hamilton (2003) research of Melbourne bus and tram users (see Table 3.6) found that security measures relating to travel on bus – ‘being able to get off the bus/tram anywhere’ and an on-board bus/tram public phone – received less support than measures relating to the bus stops.

However, the UK research by Stafford & Pettersson (2004) is one piece of research that isolates security measures on bus travel. As Table 3.7 shows, CCTV again received the highest weighted ranking. In addition, it was chosen as the first choice by over a third of respondents.

Table 3.7 shows support for the presence of on-board staff other than the driver, and refusal to carry intoxicated people.

Interestingly, the rankings for security measures on bus travel were very similar across women, men and young people. A slight tendency was noted for women to be more likely to favour the presence of staff other than drivers, while young people were less likely to favour the presence of staff other than drivers.

**Table 3.7 Rankings of security measures on UK buses.**

Security measures	Weighted percentage	Percentage first choice
CCTV or security camera on board the bus	27%	40%
Presence of staff other than driver on board	23%	28%
Drivers refusing to carry people under influence of drugs or alcohol	18%	14%
On-vehicle radio for driver contact	7%	not provided
Uniformed police encouraged to travel on bus	6%	not provided
Use of single-decker buses	5%	not provided
Cleaner and graffiti-free vehicles	5%	not provided

Source: Stafford & Pettersson (2004). The 'weighted percentages' are approximate, and estimated from charts in the report.

### Waiting for the train

The international evidence relating to personal security at train stations indicates strong support for a personal presence, in that the presence of staff, police or guards on the station is generally ranked higher than CCTV.

The UK research by Stafford & Pettersson (2004) indicated that the most favoured security measure at stations was the presence of staff. However, CCTV and good lighting were also supported, as shown in Table 3.8.

**Table 3.8 Rankings of security measures at UK bus stops/stations.**

Security measures	Weighted percentage	Percentage first choice
Presence of staff at station	27%	35%
CCTV/security cameras to monitor vulnerable areas	23%	26%
Good lighting throughout the station	21%	25%
Alarm system on station platforms for help	10%	not provided
Platforms are well-lit	7%	not provided
Reliable service and accurate information on delays	5%	not provided
Up-to-date timetable information at station	3%	not provided
Station is well-maintained and graffiti-free	3%	not provided

Source: Stafford & Pettersson (2004). The 'weighted percentages' are approximate, and estimated from charts in the report.

Additional UK research by Thomas et al. (2006) carried out a 'bag of points' survey for improvements to train stations, specifically for the car park and the way into the station. Four potential improvements were considered:

- A member of staff in a booth in the car park.
- Good lighting in and around the car park.
- CCTV cameras monitored by a member of staff.
- Strong and secure fencing around the car park.

Of these four potential improvements, the monitored CCTV cameras were given the highest 'spend', followed by good lighting around the car park. Our review notes that this is the same as the respective rankings obtained by Stafford & Pettersson (2004).

In the Australian research less weight was given to CCTV and more weight was given to security personnel. However, lighting was given high importance, as was also observed in the UK research.

Symonds Travers Morgan (1996) asked Sydney train users about which security measures were most effective. The levels of importance assigned to these security measures are shown in Table 3.9.

**Table 3.9 Rankings (%) of security measures on Sydney CityRail travel.**

Security measure	Very important	Important	Not important at all
Greater presence of security guards on platforms	57%	30%	4%
Greater presence of transit police/security guards on trains	67%	25%	1%
Increase CityRail staff visibility on platforms	49%	33%	7%
'Help points' on platforms providing direct contact with transit police	46%	32%	9%
Security guards on each train who go from car to car	59%	27%	4%
Staff presence on station from first to last train running	48%	31%	7%
Increased use of surveillance cameras			
- station car parks	46%	33%	10%
- station approaches	40%	34%	14%
- station walkways and subways	55%	26%	8%
- on platforms	50%	32%	8%
- on trains	55%	25%	11%
Improved lighting			
- station car parks	58%	26%	5%
- station approaches	53%	32%	4%
- station walkways and subways	63%	25%	3%
- on platforms	59%	27%	4%

Source: Symonds Travers Morgan (1996)

Table 3.9 shows that security guards on platforms and trains seem to be more popular than CCTV. It also shows that lighting is important to users, especially on station walkways and subways.

Sweeney Research (2006) sought suggestions from participants in focus groups in Melbourne, Ballarat and Bendigo. Participants suggested manning all stations and/or introducing roving police on trains.

### Travelling on the train

The international literature has not usually distinguished between security measures for train stations and security measures for train travel. The previous section touched on some security measures for train travel:

- The Symonds Travers Morgan (1996) survey showed strong support for guards on-board Sydney trains (see Table 3.9);
- The Sweeney Research (2006) focus groups in Melbourne, Ballarat and Bendigo suggested introducing roving police on trains.

Stafford & Pettersson (2004) did isolate security measures for rail travel in the UK. The security measures that obtained the most support were the presence of personnel (guards, conductors or police) and CCTV in carriages, as shown in Table 3.10.

**Table 3.10 Rankings (%) of security measures on UK Rail.**

Security measures	Weighted percentages	Percentage first choice
Guard or conductor checking tickets and regularly walking through train	27%	27%
CCTV or security camera in carriages	25%	25%
Regular spot patrols by the British Transport Police (BTP)	15%	15%
Emergency alarm system to the guard/driver	13%	13%
Locate guards' base in centre of train	6%	not provided
Clean and graffiti-free carriages	5%	not provided
Audio message from guard giving reasons for any delay	5%	not provided

Source: Stafford & Pettersson (2004). The 'weighted percentages' are approximate, and estimated from charts in the report.

### 3.4.2.2 New Zealand evidence

Prior to this report, there were no New Zealand studies that attempted to identify the types of security measures favoured by public transport users in New Zealand.

However, a survey by Central Area Planning (2003; cited in Casey & Crothers 2005) asked respondents to suggest security measures for the Auckland CBD:

- The most important improvement would be more police;
- The second most important improvement would be more lighting;
- The third most important improvement would be more CCTV.

Despite focusing on security measures for the CBD, the three top security measures correspond closely to the measures favoured in international literature relating to public transport.

The high ranking given to the presence of personnel (i.e. more police) and the low rating given to CCTV is reminiscent of the findings in Australia. The rankings differ from the UK, where CCTV is usually given a high ranking.

The high ranking given to more lighting is consistent with findings across international literature in the UK, the US and Australia.

A survey by Sullivan & O'Fallon (2006) into barriers to physical use of public transport showed that inadequate street lighting is a problem, especially for women and young people, in that 25% of women and 26% of people under 35 identified inadequate street lighting as a barrier to greater physical activity. This suggests that inadequate street lighting may increase fears for people when walking home after catching public transport. This is also reminiscent of the international literature, which often identifies inadequate lighting as a major issue, especially for women.

### **3.5 Do people notice security measures?**

Section 3.4 summarised the findings in the international literature concerning people's espoused preferences for security measures. This section 3.5 explores the extent to which people are aware of security measures and the actual effect of security measures on perceptions of security.

Section 3.5.1 reviews studies that looked at the impact of actual security initiatives on perceptions of personal security. It notes that the security measures that people state they want are not necessarily the most effective at ameliorating concerns about personal security.

The remaining sections describe factors that influence the effectiveness of security initiatives at changing perceptions of personal security:

- Section 3.5.2 discusses the importance of the visibility and awareness of security measures;
- Section 3.5.3 describes the importance of patrons having confidence in the effectiveness of security measures.

#### **3.5.1 Observed effectiveness of security measures**

The international evidence highlights several examples in which security measures have been effective at improving concerns of security. The most successful security measures seem to include personnel and/or improved lighting.

Australian research by the Audit Office of New South Wales (2003) describes a situation in which security guards appear to have been successful at ameliorating concerns of patrons.



- In a 1995 survey of passengers, Symonds Travers Morgan (1996) found that 20% of on-system respondents felt safe travelling at night during the week.
- Passengers were surveyed in September 1998, after security guards had been introduced. The guards seemed to have affected concerns for security, because up to 35% of passengers had then felt safe travelling on trains at night, and 27% felt safe waiting on stations at night. Passengers generally felt safer on trains with security guards than on those without.
- Passengers were surveyed again in April 1999, and concerns for security were similar: 33% of passengers felt safe on trains travelling at night, and 29% of passengers felt safe waiting on stations at night.

Ramsey (1991; cited in Stafford & Pettersson 2002) found that improvements to street lighting has been associated with reductions in concerns to personal security.

US research by Wallace et al. (1999) looked at the following security measures and used regressions to estimate the effect that noticing specific measures had on passenger safety ratings:

- On-board video cameras;
- Transit centre video cameras;
- More police;
- Increased lighting;
- Emergency phones.

The regressions indicated the following:

- The most effective measures at stations were more police and increased lighting (although emergency phones were also effective but only at one station).
- The most effective measure on the bus during the day was increased lighting.
- The most effective measure on the bus at night-time was an on-board camera.

The findings of the regressions are enlightening: before the introduction of security measures, respondents indicated that they wanted emergency phones (and increased lighting). However, the findings described above show that emergency phones were not as effective as more visible measures (such as more police). In addition, emergency phones were less likely to be noticed, as discussed in section 3.5.2. One lesson from these findings is that people's espoused preferences for security measures may not be consistent with the security measures that are most effective at ameliorating security concerns.

The research by Wallace et al. also highlights gender differences in responses to security measures:

- Women were more likely to notice increased lighting.
- Women were more likely to feel safer in response to increased lighting or emergency phones.

### **3.5.2 Visibility and awareness of security measures**

The US research by Wallace et al. (1999) is insightful because it also highlights the importance of visibility of measures.

They measured the percentage of respondents who noticed any of five security measures introduced by the AATA:

- On-board video cameras (70%);
- Transit centre video cameras (63%);
- More police (51%);
- Increased lighting (42%);
- Emergency phones (28%).

The figures above show that cameras were most noticeable, whereas emergency phones were not noticed by nearly three-quarters of people. This is interesting given that emergency phones (and increased lighting) were preferred by people in the surveys carried out before the introduction of security measures.

Symonds Travers Morgan (1996) found that Sydney passengers were often not aware of recent security measures that had been introduced:

- Only 51% were aware that CityRail had employed private security guards to patrol trains and stations.
- Only 35% were aware that CityRail had increased the hours of the 'Nightsafe' operation.

Stafford & Pettersson (2004) also found that the higher visibility of personnel made them more appreciated in practice: on one walk around a 'secure station,' focus group participants commented on the availability of staff but were often less aware of other safety features (e.g. CCTV coverage, help points and convex mirrors).

In a similar vein, Webb & Laycock (1992; cited in Smith & Clarke 2000) emphasised the importance of publicising the presence of security measures. They reported that a series of initiatives were introduced at the London Underground to address exaggerated fears of crime at quiet, low-crime, suburban stations. These initiatives involved passenger alarm points monitored by ticket sellers, waiting areas, mirrors, and a staffed information point. However, Webb & Laycock reported that, three months after the measures were adopted, off-peak travellers did not seem to feel that these stations were any safer. Therefore, those researchers called for more publicity to increase awareness of the changes.

New Zealand research by Casey & Crothers (2005) indicated low awareness of security measures introduced into the Auckland CBD. This research applies to the CBD, not public transport, but it is possible that security measures on public transport are likely to face the same problems.

Casey & Crothers surveyed 710 people by telephone, and only a few mentions were made of security measures that had been introduced. Good lighting received the most mentions:

- Good lighting (11 mentions);
- Video cameras operating (7 mentions);
- Alcohol ban in place (3 mentions);
- Security guards around (3 mentions).

### **3.5.3 Confidence in security measures**

The international literature also shows that security measures are less effective if there is a lack of faith in the measures.

This caveat is particularly applicable to CCTV as it will fail to reassure patrons unless patrons have confidence in this security measure:

- Participants in a focus group for Sweeney Research (2006) expressed a lack of trust in the security cameras because 'they didn't work', 'looked so rusted' and 'all they are good for is to help catch someone after the event'. Participants criticised the lack of staff presence on stations.
- Brown (1998; cited in Smith & Clarke 2000) found that women using town centre facilities received little comfort from CCTV because it detects only extreme forms of assault, whereas the source of much of the fear is related to the unruly and harassing behaviour of men.
- Trench et al. (1992; cited in Smith & Clarke 2000) found that women were sceptical about the level of monitoring behind CCTV.

## **3.6 What is the impact of security measures on public transport patronage?**

This section explores evidence concerning the impact of security measures on public transport patronage.

- Section 3.6.1 describes surveys that ask people about the extent to which they claim security measures affect patronage.
- Section 3.6.2 briefly mentions purported evidence of actual impacts on patronage but, unfortunately, more detailed evidence has not been forthcoming.

### **3.6.1 Stated impact of security measures on patronage**

Only a few international studies enquire about the impact of security measures on patronage.

Stafford & Pettersson (2004) found that 25% of respondents would make more journeys by public transport if measures for enhancing personal security were in place. Of these people, 62% are women and over 50% are car owners.

Symonds Travers Morgan (1996) asked respondents to consider whether the implementation of their most favoured security measures would increase their CityRail train services in Sydney:

- 66% of passengers (i.e. an on-system survey) said that they would increase use and 18% said they would not increase use;
- 53% of the general population (i.e. a telephone survey) said they would increase use and 38% said they would not increase use.

### **3.6.2 Actual impact of security measures on patronage**

Only limited international (or New Zealand) evidence is available that relates to the impact of security measures on public transport patronage.

Stafford & Pettersson (2002) note little evidence of the impact of security measures on patronage. They claim that there is evidence from SouthWest Trains and c2c Trains that demonstrates that personal security measures do have an impact on patronages, but they do not provide details of this evidence.

## 4. Qualitative market research – focus group design

### 4.1 Introduction

Pinnacle Research was commissioned to carry out the focus groups. The focus groups were established primarily to provide insights for the design of the quantitative survey. However, the focus group sessions also provided findings of interest.

This chapter is structured as follows:

- Section 4.2 describes the overall strategy for conducting the focus groups.
- Section 4.3 describes how the focus group participants were recruited.
- Section 4.4 describes the participation in each focus group.

### 4.2 Focus group strategy

Three focus groups were conducted in Auckland with people who are familiar with bus and/or train services and who have concerns about personal security in using, or when considering using, the services (in some or all circumstances).

The focus groups addressed current personal safety-related concerns affecting their attitudes toward, and use of, passenger transport services, potential measures to overcome these concerns and their perceived effectiveness and the likely impacts on their public transport use if the measures were introduced. A 'whole-of-journey' approach was taken in recognising that the greatest security concerns may not be in using the public transport system itself, but in gaining access to/egress from the system.

The original plan was to have two focus groups comprised solely of women, and a third group which was mixed gender as shown in Table 4.1. There were no restrictions on age, other than that the participants were to be 'adults', rather than children.

**Table 4.1 Planned structure of focus groups.**

Focus Group	Gender	Public transport mode used
1	Women only	Primarily bus
2	Women only	Primarily train
3	Mixed	Mixed

Pinnacle Research planned to recruit 12 participants for each focus group, anticipating that up to one-half of those making the original commitment might later find that they were unable to attend. The original plan was to run all three groups in the early evening, but an absence of older people in the first group caused the plan to be revised so that at least one group was held in the daytime. Hence, the third group was held on a Saturday morning in the central city.

### 4.3 Focus group recruitment

Recruitment took place at the main bus exchange in Customs Street (Auckland CBD) near Britomart train station; in Britomart itself; and at New Lynn bus exchange and train station. Most of the recruiting occurred in the central city, where the volume of public transport users was higher.

Potential participants were approached and asked if they could spend a couple of minutes answering two questions about their bus/train use. On agreement, they were asked 'which of the following two factors most affects your decision to travel by bus or train during the day?' and 'at night?' (Table 4.2). Five different factors were given, two of which were related to feeling safe, either while waiting for the bus/train or while on the bus/train.

**Table 4.2 List of factors presented to potential participants.**

Factor	During daytime	During night-time
The chance that the bus/train will be late		
Concern for my safety while waiting at the bus stop or train station		
The fact that the bus/train does not go close to my destination(s)		
Buses/trains not running often enough		
Feeling unsafe while on the bus/train		

Responses were to the question: *Out of the five factors presented in the table, which two most affect your decision to travel by bus or train?*

If the factor 'Concerns on bus efficiency' was selected, the respondent was not invited to participate further.

If either of the safety factors was selected, for day or night, or both, the respondent was invited to join a discussion group to talk about people's concerns for their safety when using the bus/train and how these concerns might be overcome. They were told that the discussion would take place in a central city hotel, and that an honorarium of \$50 would be paid to them for participating in the discussion.

Respondents agreeing to participate were given a letter with the details about the discussion group, and the recruiter phoned them the evening before the focus group to confirm their attendance.

Unfortunately, the recruiter did not take note of the number of people she had approached who were unwilling to spend the time with her to answer the two bus/train use questions. However of the 70 agreeing to speak with her, 35 agreed to participate in one of the three groups, which was a satisfyingly high recruitment rate.

Approximately 60 women were asked the question about what two factors most affected their decision to travel by bus or train. Most of them identified safety as an issue, either in

the evening or during the day. As might be expected (given what we found in the New Zealand and overseas literature), safety during the evening was more of a concern than during the day. Only three women, all of whom were over 60 years old, identified safety concerns during both the day and at night. Nearly all of the women who identified safety as a concern in the evening chose both of the safety issues presented to them. Only five women did not identify safety as a consideration at all.

Of the other options presented (the chance that the bus/train will be late; the fact that the bus/train does not go close to my destination(s); buses/trains not running often enough), it was very evenly split and nothing stood out. The only issue that stood out was safety at night for women.

In recruiting for Focus Group 3, ten men were spoken to, some of whom were much older, and none of them identified safety as an issue. When the recruiter probed further, the men said that safety 'just isn't a consideration' for them. This is despite anecdotal evidence to the contrary: for example, one young woman reported that her male friend had been 'mugged' the previous day, but that he would be too ashamed to talk about it in a group setting.

We also attempted to recruit older (aged 60+) women for the three focus groups, but found that they were not interested in participating. They generally would not entertain the idea of going out at night-time (for the evening focus group), and felt it was 'too much effort' to come out even for the daytime one. The older women we did recruit tended to be in their fifties. It took approximately 18 hours to recruit 35 people for the three groups.

#### 4.4 Focus group participation

As shown in Table 4.3, while 11 or 12 people were recruited for each group, the actual participation rates varied between the groups quite dramatically. We were unable to identify any reason for this variation.

**Table 4.3 Focus group participation rates.**

Focus group	Time	Number recruited	Number participating
1	Thursday evening	12	10
2	Thursday evening	11	4
3	Saturday morning	12	6

The attendees were a reasonable mix of New Zealand European, Maori, and other ethnicities (South African, Asian, and Indian), with the balance in favour of New Zealand European. Just over one-third (8) of the women were under 25; about one-third (7) were between 25 and 40; with the remaining 5 over 40.

Eleven women used the bus or train to travel to and from work, while two used the bus to travel to university. The remainder used either the bus or train or both to make social, family, and/or for shopping trips.

## **5. Qualitative market research – focus group findings**

### **5.1 Introduction**

Pinnacle Research was commissioned to draw insights from the three recruited focus groups, and to identify implications for the next step of the research (which are discussed in Chapters 6 and 7).

This chapter is structured as follows:

- Section 5.2 assesses the importance of personal security to focus group participants.
- Section 5.3 identifies factors that focus group participants say influence personal security.
- Section 5.4 describes the security measures suggested by focus group participants.
- Section 5.5 draws on focus group participants' feelings about the impact of security measures on public transport patronage.
- Section 5.6 describes focus group participants' suggestions for communicating with patrons about any changes designed to improve personal security.
- Section 5.7 identifies implications for the development and design of the next step, the quantitative research.

### **5.2 How important are personal security concerns?**

Women in all three groups identified safety concerns as a deterrent to making some trips by bus or train, particularly those related to 'dodgy' people waiting at the stop or station. In some cases, these people were described as youths; in others, they were 'people who hit up people for money', glue sniffers, drunks, 'creeps', people who smashed glass at the bus stop, or who simply appeared intimidating.

For women who 'park and ride' to rail, the common concern was about walking between the station and their parked car, both in terms of personal safety (concerns about being followed) and the security of their car. Some women had had their car 'tagged' (spray painted) or broken into while it had been parked near the station.

Other concerns were not related to personal safety, including:

- Uncertainty about whether or not a bus would turn up and how long it would take to make the trip.
- Infrequency of services.
- Cost of public transport.
- Access to car parking in the central city (as a reason to take the bus/train).
- The service not going 'where you want to go' or the bus stop is too far away.



- Bus drivers not stopping for you when you signal, or not waiting until you sit down in a seat before moving off from a stop.
- Difficulties in getting children on and off the bus.

Nearly one-third of the women could identify a specific experience where they felt their personal safety was being directly compromised (e.g. someone approached them; drunk person on the bus; being robbed).

### **5.3 What factors influence personal security concerns?**

#### **5.3.1 Differences between daytime and night-time travel**

In Auckland, the routes change at night-time which creates uncertainty about when and where the bus service will go.

Most women felt safer during the day, because "it's light and there are more people around and more people take the train in the day". At night, it was described as "too quiet" or "scary" with too few people taking the bus/train compared with the day, and too few people waiting at the stop/station. A few noted the lack of security people/guards at night.

One woman noted that the very early morning was a potential problem, with 'drunk guys' waiting around. She felt vulnerable waiting at the bus stop on her own, not knowing if someone would become abusive. There was general agreement that more of the 'dodgy' people were hanging around bus stops and the train stations at night than during the day.

Several women expressed concern about the walk from the bus stop to home at night. To address this, they would avoid the bus trip altogether (i.e. drive or take a taxi at night), run home from the stop, walk a longer way home (to avoid a park or unlit path), or walk down the middle of the road. Others made sure that someone knew when they were due home so that, if they did not arrive, this person could ring them on their cell phone and check on their whereabouts. One woman carried a can of mace; another spoke of "having a plan in your head so you know what to do if someone does attack you". They felt more vulnerable if the stop was near parks or bushes as opposed to shops, or if the footpath was unlit.

Lighting at bus stops was a concern at night, as some considered there were not enough lights, and those that were there regularly got broken.

#### **5.3.2 Differences between bus and train**

For the most part, the women in all three focus groups agreed that the train was more "scary – it's worse than the bus". The feeling that the train was "more threatening" was intensified by several factors, such as:

- "Less opportunity to get off" (because stations are further apart than bus stops): which creates the sense that, if people are on the train who you don't want to have around, you "kinda have to ride it out. Can't push the button for the next stop".

- The stations are often located in more isolated settings: for example, at the back of industrial areas where “you have to go down alleyways etc. It’s a big risk”.
- Train staff are less visible or accessible compared with buses: “You can’t see the driver on the train so it’s less safe” and it’s “safer on the bus than on the train because the conductor [sic] is nearby. What do you do if someone attacks you in the last compartment?”

## **5.4 What security measures do people say they want?**

Focus group participants generated many ideas about what could be done to address their personal safety concerns. In the following discussion these ideas have been grouped according to the stage of journey (travelling to/from the stop/station; waiting at the stop/station; on-board the bus/train).

### **5.4.1 Travelling to/from the stop/station**

In addition to the self-protection measures that the women identified (section 5.3.1), they highlighted two specific measures that a Council or transport operator could undertake:

- Cutting back bushes/trees to allow a ‘360° view’ so no one can hide; and
- Better lighting along pathways.

Having more bus stops to reduce the walk home was considered but concern was expressed that this would mean that “it would take too long to get home”. The example of the NiteRider services operating in Auckland from 1am to 3am on Friday and Saturday nights, which allow passengers to tell the driver where they want to be dropped off (not necessarily at an existing bus stop) was cited as a better option than increasing the number of stops. It was suggested that this service start earlier in the evening and that it be better advertised, because some women did not know about it.

### **5.4.2 Waiting at the stop/station**

There was some awareness that personal safety concerns are “a problem all over the world not just in New Zealand” and that there is “no simple answer” to addressing these. The focus groups had many ideas about how to improve the environment at bus stops and train stations, which could be grouped as follows and discussed further:

- Construction and lighting of bus shelters.
- Increased presence of security people/guards.
- Installation of security cameras/closed-circuit television cameras (CCTV).
- Provision of emergency phones or panic buttons.
- Presence of ‘street angels’.
- Provision of real time information.
- Better co-ordination of bus and train schedules/timetables.

#### **5.4.2.1 Construction and lighting of bus shelters**

The new bus shelters in Auckland, constructed of clear safety glass and brightly lit, were considered to be a significant improvement to the old wooden ones which were impossible to see into and which usually leaked in the rain. The number of new shelters in place, compared to the older ones, was not recorded.

One woman went so far as to suggest that "there's nothing wrong with the bus stops and they are usually on a main route. It's just not safe in Auckland after dark and you can't have a security guard at every stop".

The two negative comments made about the new bus shelters were that some shelters were 'occupied' by homeless people or had other people 'hanging out' in them; and anyone waiting in the shelter was highly visible to people in the street who might be potential attackers.

Several women agreed that they felt safer at Britomart because there are more people, it is a bigger station, and is in the city centre. Some of the smaller train stations were generally considered to be 'very run down' which acted as a deterrent to people catching the train. One woman suggested that they should be "spruced up so that it looked like they valued their clientele". In some cases, loiterers use the stations as urinals, which led to some discussion as to whether or not toilets should be installed. Some viewed a toilet as a place where they could be attacked.

Better lighting that could not be vandalised was recommended. Someone observed that young people hung out at the stations because they had nowhere to go. Another suggested that classical music could be played at the stations, which apparently is done in the UK and, as a result, deters young people from 'hanging out' there.

#### **5.4.2.2 Increased presence of security people**

On the whole, all three focus groups felt that the presence of security people was better than having a security camera, emergency phone or call button, or 'street angels'.

The lengthy discussions in all three focus groups were in favour of the presence of security guards at train stations. This was perhaps best expressed as "the best security is people, not surveillance".

For bus stops, it was recognised that a security guard could not be on every stop. Instead, the suggestion was that the police or other security guards could have a set 'run', driving a route and checking on bus stops. If someone was at a stop for more than an hour, the police or security personnel should "just question whether they are taking the bus". Signs could be posted to say that the stop/station was being patrolled, to warn people they might be seen, and so deter loiterers.

Focus group participants generally agreed that the security guards at train stations should be there at night. Some suggested that they be present in the daytime and/or early morning, because "things can still happen during the day". In a few cases, people thought that more than one guard was needed in case one was attacked, or that the guard was

provided with a “cage to sit in so he’s [sic] protected”. However this then raised the possibility that the guard may not come out if someone needed help.

#### **5.4.2.3 Increased presence of security cameras (CCTV)**

Security cameras (also known as CCTV) were a less favoured secondary measure to the presence of security guards. On the positive side, some participants felt that the cameras, along with signage which warned of their presence, would deter some people from causing trouble. CCTV was noted to be a good backup if something did happen, because it provides a picture of the people involved which could be beneficial to remind the victim of what happened.

On the negative side, participants had concerns about how closely CCTV would be monitored, how quickly security personnel or the police could provide assistance if someone was being attacked, and whether or not you could actually identify people on the tape if needed because many ‘delinquents’ wear hoods or hats to disguise their appearance.

A feeling expressed by a few respondents was that drunk people would not worry about CCTV, and that the person monitoring the camera could be watching but not be able to help someone under attack, or that the camera itself might be vandalised.

#### **5.4.2.4 Provision of emergency phones or panic buttons**

Remoter smaller stations were a particular concern for the women in the focus groups. Various options were discussed about having some form of communication tool that allowed a person waiting at a bus stop or train station to contact the head office, bus driver or train conductor if there was an emergency. These included having an emergency telephone that linked automatically to an operator or having a ‘panic button’, either silent or audible, which could be activated at the stop/station. The ‘call’ could either go directly to the bus or train or go to someone located in an office, who would then contact the driver or conductor.

Downsides to both of these options were quickly identified: people, particularly teenagers, could vandalise them or play pranks; drivers could be distracted from their job by encouraging them to hurry to aid someone; and it would still take time for anyone to turn up to assist the person in trouble. (This report notes that, in Melbourne, all panic buttons are linked to CCTV so that anyone hitting a button gets video-taped. This would mitigate the problems described above.)

#### **5.4.2.5 Presence of ‘street angels’**

One woman discussed the possibility of having ‘street angels’ or ‘bus angels’, in a programme similar to that provided by Victoria University (Wellington). There, if you are studying in the library at night, you can contact the ‘street angels’ and either have them accompany you to your bus stop, or phone you to make sure you are safe and that someone knows where you are.

#### **5.4.2.6 Provision of real-time information**

Many women observed that part of their concern about waiting at the bus stop or train station stemmed from the uncertainty about when the bus and train would arrive, as often services run late. Making the services 'more reliable' was seen as a desirable attribute. In addition or perhaps as an alternative, the provision of real-time information which indicates exactly when the next bus/train will be arriving, as well as where it is going to, was suggested. At some bus stops in central Auckland, real-time information is already available.

In Christchurch, information about the estimated arrival time of the bus at a particular stop is provided through the mobile phone internet network, at a charge of less than ten cents (10¢) per request. The estimated time is based on the current location of the bus combined with historical travel-time information collected over several months.

Auckland currently provides a service whereby you can text MAXX, the regional transport information service, to find out when the next three services are scheduled to arrive at a particular bus stop. However, it cannot tell you if a bus has already been to the stop or if it is running late. According to some people in the focus group "if you ring MAXX they don't even know [if you have missed a bus/train]". MAXX also offers a text messaging service, which people have to join, where an announcement of 'significant' train delays (of ten minutes or more) for the train lines and times selected by that person are texted to their mobile phone.

#### **5.4.2.7 Better co-ordination of bus and train schedules/timetables**

In Auckland, people waiting at a stop have to wave to the driver to indicate that they wish to board the bus. Several had had the experience of 'their' bus not stopping, which left them in the vulnerable position of having to wait even longer at a bus stop than anticipated. Several suggestions were made about overcoming this problem, including having a flag at the stop that could be put out, or a light that could be turned on, so the driver knows to stop; or have the buses stop at every stop.

Several comments were made about the night-time bus routes differing from the daytime ones, and the general feeling was that they should be the same throughout the day and night, so that passengers knew exactly where they were going. Alternatively, more information was required at each bus stop about where the route actually goes.

Some women commented that, more often than not, the waiting period when transferring from bus to train, or vice versa, was too long. This extra waiting made them feel vulnerable or exposed. One cited the European situation where "trains and buses work together so you wouldn't need to take your car", thus avoiding waiting as well as the walk from the station to a car park. The lack of integrated ticketing was also cited as a deterrent to using the bus and train, as transferring means paying another fare.

#### **5.4.3 On-board the bus/train**

A few women identified the Maori Warden programme on the Western train line as an example of a measure that increases the sense of personal safety for people travelling on trains, and potentially on buses. The 'Maori Wardens of Waitemata' are present on the

school run (leaving at 3:08 pm) from Britomart station and on the weekend late-night train services. They are trained to mediate conflict and prevent trouble among people of all ages. A suggestion was to place 'wardens' or 'ambassadors' on the buses and trains to support passengers, and that a pool of potential volunteers could be older, retired people, although this may not be realistic in a situation where rowdy youths are present.

An alternative recommendation was that each bus needed a driver with a conductor who could watch what is happening on the bus. Several women also observed that the bus drivers don't seem able to remove people from the bus, or to keep themselves or other passengers safe. The perceived need was for bus drivers to be trained to deal with conflict, to have backup, as well as be fit so they could take action if "something went wrong".

### **5.5 What is the impact of security measures on public transport patronage?**

Feelings of the focus groups were rather mixed whether the potential security improvements would affect their public transport use.

A few did think they would use public transport more if security was improved.

Some maintained that "it's a start" or "there's only so much Councils or transport operators can do within reason", implying that the safety improvements would be addressing only some of their concerns.

Others stated outright that they still would not travel alone at night, although they would travel if someone was with them.

Then there were those who said straight out that those security improvements would not impact on their public transport use: for example, "I prefer to drive. It's a time and convenience thing".

Interestingly, the first focus group (comprised of ten women) was asked to name four factors that would most affect their bus or train use, without specific reference to personal safety. With respect to buses, their concerns related to the cost, frequency, and the ability to transfer between buses; while for trains, they had more concern about personal safety in the smaller more remote stations, and the need for better lighting.

### **5.6 Communicating changes**

The review of international literature indicates that the risk is that the security measures would not be noticed, and hence they would be ineffective at influencing perceptions.

Therefore, the focus groups were solicited for their views on how Councils and/or public transport operators might communicate about their safety improvements to the general public.

The general feeling was that since public transport has no 'target audience' (i.e. it is for everyone to use), the need is to advertise improvements as widely as possible, in lots of different places. Ideas that came up repeatedly include:

- On the outside and inside of buses and on-board trains;
- Television;
- Billboards;
- On bus stops (where they already have big advertisements);
- Internet banners on popular websites such as 'TradeMe';
- Women's magazines;
- Newspapers.

Word of mouth was also considered as important: "if you loved taking public transport you'd tell everyone about it". Another suggestion was to have an 'open day' or 'family day' where everyone could see and experience the services and improvements for themselves.

## **5.7 Implications for development and design of the online survey (i.e. quantitative research)**

Pinnacle Research identified a number of issues that needed to be taken account of during the development and design of the online survey. These issues are described below, along with a description of how these issues were actually addressed and how the issues were observed in practice.

### **5.7.1 Selection of men for survey sample**

Pinnacle Research attempted to recruit men for the focus groups but found that men deny that they have any safety concerns when travelling on public transport. This was despite anecdotal evidence from a few of the women in those focus groups who knew of men who had been harassed and even robbed while waiting for public transport services.

Pinnacle Research noted that the potential for anonymity that is available in an online survey may cause this problem to 'disappear', but made a number of recommendations. The following actions were developed to address the risk that men want to avoid being seen as 'wimps'.

- The introduction to the survey questionnaire emphasised that the survey was anonymous and confidential.
- The survey questionnaire provided descriptions of personal security that did not sound too 'wimpy' (e.g. 'Awareness of safety risks while walking to and from bus stop, or waiting at the bus stop').
- The 'gender balance' of responses from the survey questionnaire was checked as they became available, to ensure that sufficient numbers of men were being interviewed. (Quotas or filters would have been employed if a reasonable 'gender balance' did not eventuate.)

Somewhat surprisingly, the risks described above did not eventuate: about a third of males conceded feeling 'unsafe or uneasy' at night-time (see section 7.2.3 for more detail).

### **5.7.2 Distinguishing between daytime and night-time**

Pinnacle Research found that 55 of the approximately 60 women recruited in the Auckland focus group identified personal safety concerns when using public transport at night. These women were across the age spectrum, from 17-year-olds to beyond retirement. Only three (older) women admitted to having such concerns during the daytime (as well as night-time). This tendency is likely to be reflected in the smaller urban centres of Wellington and Christchurch.

Therefore, the survey questionnaire was developed so that the incidence of safety concerns during daytime could be distinguished from the incidence of safety concerns at night-time. Also, 'darkness' was included as a factor when the questionnaire explored factors that influenced safety concerns.

In the focus groups, many women over the age of 60 identified personal safety concerns at night; but they also disclosed that, for reasons other than personal safety, they generally did not use public transport after dark. Therefore, the survey questionnaire was developed so that the initial ranking questions asked respondents to select from a comprehensive list of barriers (e.g. cost of fare, bus too unreliable, etc.).

### **5.7.3 Distinguishing stages of the journey**

Pinnacle Research found that, when discussing personal safety concerns, women naturally made the distinctions between travelling to/from the bus stop or train station; waiting at the stop/station; and on-board the bus or train. These distinctions between stages of the journey were also evident when they made suggestions for security improvements. Therefore, these distinctions were employed for the survey questionnaire.

### **5.7.4 The impact of 'dodgy people' on personal security concerns**

Based on the focus groups, the overwhelming concern regarding personal safety was related to the 'dodgy people' (including youths, drunks, 'creeps', the homeless, etc.) encountered while waiting at a bus stop/train station. The second most frequently mentioned personal safety concern was the presence of 'dodgy people' on-board trains, combined with the lack of staff available who could assist if these people caused trouble.

Therefore, the survey questionnaire employed references to both 'people hanging around in groups/gangs' and 'drunk/intoxicated people' when exploring factors that make people feel unsafe or uneasy.

### **5.7.5 Potential security improvements**

A range of options to address personal safety concerns was identified by focus group participants. The most commonly mentioned ones are given in Table 5.1.



**Table 5.1 Potential security improvements most favoured by focus groups.**

Travelling to/from stop or station	Waiting at stop or station	On-board the bus or train
Security patrols (such as police cruising around at regular intervals)	Providing real-time info to counter fear related to uncertainty	On-board trains: security guards or 'wardens' (as in Maori Warden programme)
Better lighting on footpaths	Same routes on both day and night bus services	On-board buses: volunteer 'wardens' or conductor to accompany driver; alternatively, drivers trained to address conflict
Cutting back bushes/trees to increase visibility	New-style bus shelters (clear safety glass, brightly lit) considered to be quite safe, except for loiterers; as a safety measure, could ask to replace wooden shelters with these	CCTV: much less favoured
Expand operational hours of the 'NiteRider' service (stops on demand)	Regular patrolling of stops (as for travelling to/from stop) and removal of loiterers	
	At stations, increased presence of security guards after dark; one at every station is ideal; not as much need during the day	
	Better lighting at train stations	
	Security guards are more highly rated than CCTV	
	CCTV – need to be sure it is well-advertised, and well-protected against vandalism	
	Emergency phone or panic button but probably too easily vandalised to be useful	

The survey questionnaire asked respondents to identify preferred security measures by choosing from lists of possible security measures. All of the measures in Table 5.1 were included in those lists.

### 5.7.6 Impact of other factors on public transport use

Most of the women in the focus groups readily admitted that the potential security improvements discussed might not have any impact on their overall public transport use. Pinnacle Research recommended including a question which explores the factors that mitigate against increased public transport use, other than personal safety, may be worthwhile. Therefore, the introductory questions to the survey questionnaire asked respondents to select from a comprehensive list of barriers (e.g. cost of fare, bus too unreliable, etc.).

## **6. Quantitative market research – online survey design**

### **6.1 Introduction**

The survey design (including a questionnaire) for the quantitative market research was developed by Booz Allen Hamilton, and implemented by TNS. The survey design stage (especially the questionnaire design) was influenced by the findings of both the literature review (Chapter 3) and the focus groups of the Qualitative research (Chapters 4 and 5).

This chapter is structured as follows:

- Section 6.2 describes the overall objectives for the survey.
- Section 6.3 describes the survey method adopted, and how that survey method relates to the overall objectives.
- Section 6.4 discusses the survey specifications, which includes both the market segments being targeted and the survey process.

### **6.2 Survey objectives**

The main objective of the survey was to *obtain a general impression of the extent to which concerns about personal security are a deterrent to greater use of public transport in New Zealand.*

The other objectives of the survey were to:

- *identify the causes of personal security concerns; and*
- *explore the effectiveness of security measures at ameliorating those concerns.*

### **6.3 Survey method**

#### **6.3.1 Survey method options**

Two methods were considered in the preparation of this report:

- *A random telephone survey* – This involves ringing telephone numbers randomly, using either listed phone numbers, random phone number dialling, or a database of phone numbers provided by a market researcher.
- *An online survey using an online panel of users of public transport* – This involves selecting people from a panel of users who already have been recruited by a market researcher.

A house-to-house survey was not considered because of its excessive cost and because this research was of a preliminary nature.

The respective advantages and disadvantages of the two survey methods are shown in Table 6.1.

**Table 6.1 Advantages and disadvantages of telephone v online surveys.**

<p><b>Telephone (CATI<sup>4</sup>) method:</b></p> <ul style="list-style-type: none"> <li>• The main advantage is that it is probability-based – it randomly selects from a sample frame that includes a large section of the target population.</li> <li>• The disadvantages are that: <ul style="list-style-type: none"> <li>– The survey has to be very simple to be communicated over the telephone.</li> <li>– The survey has potential bias because some people are difficult to contact by telephone and some people (especially the elderly who are a key market segment) may have difficulty hearing over a telephone. Therefore the people who are eventually selected may not be representative of the general population.</li> <li>– The survey method takes considerable time to arrange, which could have potentially led to delays in completion of the research.</li> <li>– The survey would not sample people without a telephone.</li> </ul> </li> </ul> <p><b>Online survey of online panel of users of public transport:</b></p> <ul style="list-style-type: none"> <li>• The advantages are that the survey can be relatively detailed and can be carried out quickly and cost-effectively.</li> <li>• The disadvantage is that the survey has potential biases because of the methods used to select people for the online panel of users. These biases are discussed in section 6.3.2.</li> </ul>
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The general assessment made in our research was that both methods incur some bias, leading to some inevitable inaccuracy in estimates.

The conclusion from Booz Allen Hamilton was that a *random survey via telephone* would have produced more accurate estimates because it would have been a probability-based survey; it would have randomly selected respondents from a sample frame that included a large proportion of the target population. However it was not used because of the disadvantages given in Table 6.1.

Instead, *the on-line survey of market research members* was selected as the preferred method because it enabled more detailed surveys, and these surveys could be implemented more easily. The reduced accuracy was deemed to be less important given the preliminary nature of the research objectives:

- The main objective of the survey was to obtain a general impression of the extent to which concerns about personal security are a deterrent to greater use of public transport in New Zealand. (For example, is security an issue for a large proportion of people, say 40% of respondents, or only for a negligible proportion, say less than 5%?) Therefore, a high level of accuracy was not required and a probability-based survey was deemed unnecessary. If security was found to be an important issue in this exploratory research project then a probability-based survey could be commissioned to obtain more accurate estimates.

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<sup>4</sup> CATI Computer Assisted Telephone Interviewing

- The other objective of the survey was to ascertain the causes of personal security concerns and potential solutions for those concerns. The online survey provides more detail about concerns and preferred solutions than a telephone survey would have provided.

### **6.3.2 Survey bias issues**

We note that two potential biases could arise when using an online panel of users of public transport:

- *Recruitment vehicle bias* – The recruitment vehicles (TV advertising, online advertising, referrals) used to recruit members cause a bias towards people with internet access.
- *Self-selection bias* – The types of people who volunteer themselves for an online panel of users may differ from the general population.

This report acknowledges that a *recruitment bias* can cause the sample to under-represent certain groups. In particular, this report anticipated the risk that some of the groups most likely to feel vulnerable (e.g. elderly, Maori, Pacific Peoples) are less likely to have internet access. However this pattern was seen only in a small part of the actual data:

- The sample of bus users had a low proportion of Maori, and no Pacific Peoples, selected, but the sample of train users had a similar proportion of Maori and Pacific Peoples to the general population of public transport users.
- Both the sample of bus users and that of train users had a high proportion of elderly people. In fact, as sections 7.2.1 and 7.3.1 discuss, the main problem with both samples is under-representation of young people.

This report considers that the *self-selection bias* appears less important: people who volunteer for surveys may differ from the general population in some ways (e.g. have a lower value of time) but it seems unlikely that they will differ markedly in their attitudes towards personal security.

### **6.3.3 Post-stratification**

One consequence of these biases is that the demographics of the sample could be quite different to that of the general population (due to self-selection) and this could make the survey less representative of the general population.

To address this, the final estimates have been adjusted using a method known as post-stratification, in which the sample has been weighted so that the final estimates are more representative of the general population. The post-stratification procedures are discussed in sections 7.2.2 and 7.3.2.

## 6.4 Survey specifications

### 6.4.1 Survey segmentation

The survey sought to collect detailed information about public transport users with security concerns from each of the five following segments:

- Auckland bus
- Auckland rail
- Wellington bus
- Wellington rail
- Christchurch bus

The total target sample size is 250, with 50 people from each of the above segments.

Auckland, Wellington and Christchurch were selected because most public transport patronage occurs in these cities.

The survey also sought to collect information about the existence of security concerns among non-users of public transport. The target sample size for this segment was 60 people.

### 6.4.2 Survey process

The survey was sent to respondents who lived in Auckland, Wellington and Christchurch. Respondents were filtered out if they had moved outside of these regions or if they did not live in any of the urban areas<sup>5</sup> shown in Table 6.2.

**Table 6.2 Urban areas sampled for the quantitative survey.**

Region	Urban Area
Auckland Region	North Shore City
	Waitakere City
	Auckland City
	Manukau City
Christchurch Region	Christchurch City
Wellington Region	Wellington City
	Porirua City
	Hutt City
	Upper Hutt City

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<sup>5</sup> Respondents who lived outside these urban areas were excluded for two reasons: the incidence of public transport (PT) users in non-urban areas is low; and PT users in non-urban areas are not comparable to urban PT users and are likely to distort the samples.

The survey consisted of a series of filter questions which were used to direct respondents into the appropriate market segments. The effect of these filter questions are shown in Figure 6.1.

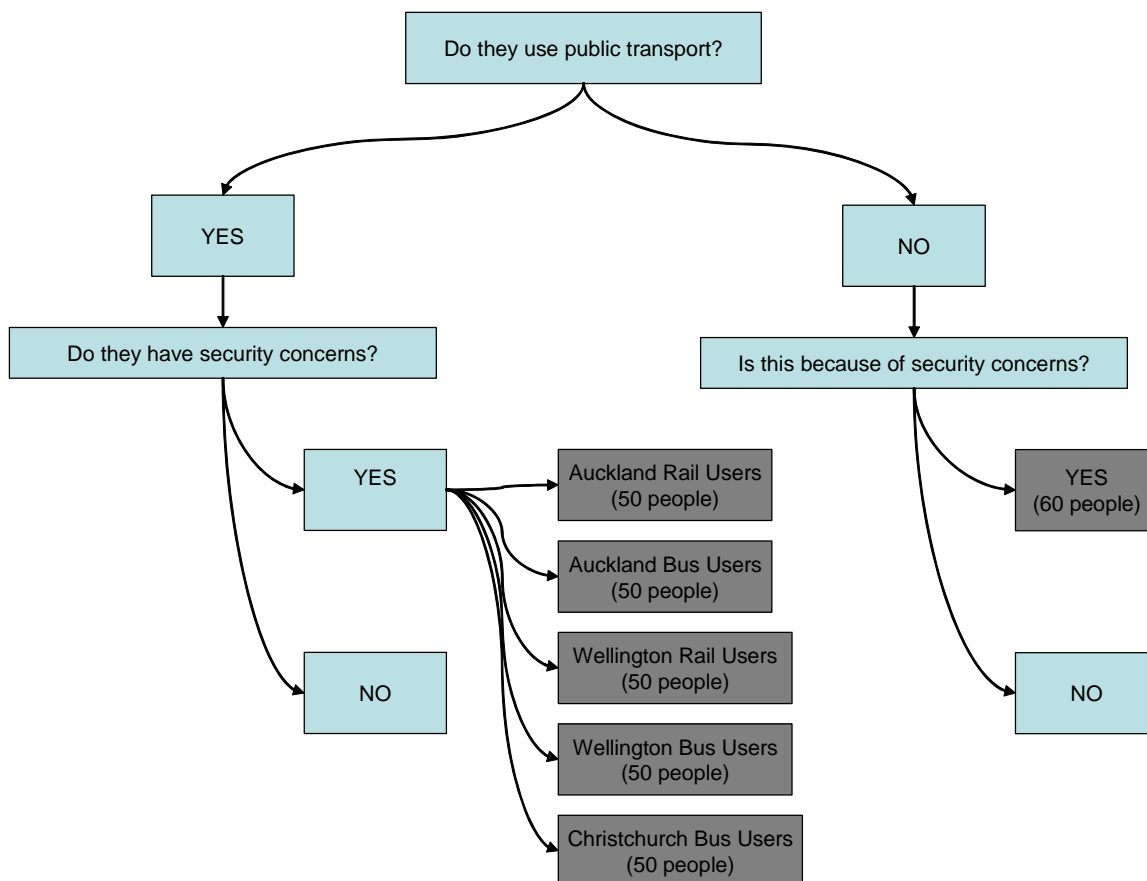


Figure 6.1 The sample selection process.

## 6.5 Survey questionnaire design

The questionnaire design took into account a number of issues identified by the focus group, the steering group of industry representatives, and peer reviewers.

Appendix B – **Screen shots of questionnaire** – shows the questions as they appear on a computer screen. It is not included in the hard copy of this report, but is available online through the Land Transport NZ website [www.landtransport.govt.nz](http://www.landtransport.govt.nz).

Key aspects of the questionnaire design include the following:

- The questionnaire began with a non-specific question (i.e. 'to what extent have the following factors discouraged you from travelling by bus ...') and provided a list of possible barriers. This question served multiple purposes:
  - The question enabled the survey to ask about personal security concerns, without unnecessarily raising concerns.
  - The question ensured that the respondent did not know that the survey was about personal security, hence 'loaded' responses were averted.
  - The question enabled analysis of how well personal security 'ranked' against other possible barriers to increased public transport patronage.
- The questionnaire was designed to be efficient: people without security concerns were 'filtered-out' and people without security concerns at certain stages of the journey were not asked questions relating to that stage of the journey.
- The questionnaire provided three separate sets of questions for three segments of the market: bus users, train users, and non-users of public transport. This ensured that the questions could be customised to the respondent's individual situation.
- The questionnaire mitigated the risk of males feeling like 'wimps' (see section 5.7.1) by emphasising that the survey was anonymous and providing personal security references that did not sound too 'wimpy' (e.g. 'Awareness of safety risks while walking to and from bus stop, or waiting at the bus stop'). A reasonably high proportion of male respondents did acknowledge personal security concerns.
- The questionnaire divided the bus or train journeys into distinct stages (walking to stop/station, waiting at stop/station, and travelling on the bus/train). This made the questions simpler (i.e. the list of security measures presented to respondents was simpler because it had to be presented for individual stages only). This was also consistent with the distinctions made naturally in focus groups (see section 5.7.2.1).
- The questionnaire asked respondents to rank measures at each stage of the journey (from 1 to 4). This approach enabled estimation of a wide range of measures (e.g. percentage who picked 1 as top, percentage who picked 3 as top) which are comparable to the measures presented in the international literature.
- The questionnaire explicitly asked respondents which stage of the journey made them feel the most unsafe or uneasy. This question had not been asked in any of the studies reviewed for the literature review.
- The questionnaire also provided an overall question that allowed respondents to identify their preferred security measures across the whole journey. This question enabled the research project to take a 'whole-of-journey' approach when assessing the preferred 'packages' of security measures.
- The questionnaire asked respondents about their likely response to a package of security measures. This question enabled the research project to estimate the impact of security measures on patronage patterns.

- The questionnaire also asked if people had noticed security measures. This question was introduced after some of the international literature suggested that security measures are often not noticed (see section 3.5.2).
- The questionnaire collected a lot of information that can be used in future research projects for regression analysis and market segmentation analysis (e.g. the mode used to get to the stop/station, demographics, frequency of use, factors that make people feel unsafe).



## 7. Quantitative market research – online survey findings

### 7.1 Introduction

The survey process consisted of a pilot survey and a final survey, the data for which were collected by TNS and analysed by Booz Allen Hamilton. As the pilot survey was successful, the pilot survey data and the final data were combined for the purposes of analysis.

This chapter is structured as follows:

- Section 7.2 describes the survey findings for existing bus users.
- Section 7.3 describes the survey findings for existing train users.
- Section 7.4 describes the survey findings for people who do not use public transport.

### 7.2 Survey of bus users

#### 7.2.1 Sample description

The overall sample size of bus users was 217. Table 7.1 shows that this sample is evenly spread across all age groups, including people aged 65 and over:

Table 7.1 Age and gender distribution of sample of bus users.

Age group (yr)	Female		Male	
	Number	%	Number	%
15-19	16	7%	14	6%
20-29	33	15%	5	2%
30-39	35	16%	15	7%
40-49	23	11%	10	5%
50-64	21	10%	18	8%
65+	10	5%	17	8%
Total	138	64%	79	36%

However, the proportion of younger people (e.g. 15-19, 20-29 years) in Table 7.1 is lower than what might be expected on bus travel. This discrepancy is discussed in section 7.2.2 and was addressed through the use of post-stratification.

The gender ratio shown in Table 7.1 is similar to what might be expected on bus travel. Gender ratios are also discussed in section 7.2.2.

Table 7.2 shows the distribution of ethnicities throughout the sample:

**Table 7.2 Ethnicity distribution of sample of bus users.**

<b>Ethnicity</b>	<b>*Sample</b>	<b>%</b>
European	149	69%
Maori	15	7%
Other	53	24%
Total	217	100%

Table 7.2 shows that Maori make up only 7% of the sample used for this survey and no people of Pacific descent were included in the sample. Therefore this sample is probably not representative of general bus users because analysis of the New Zealand Travel Survey data indicates that Maori make up about 16%, and Pacific Peoples make up 5%, of public transport users.

### 7.2.2 Post-stratification

Table 7.3 compares the gender and age distributions of the TNS sample data with those of public transport users surveyed by the NZ Travel Survey.

**Table 7.3 Demographics (gender and age) of TNS data v NZ Travel Survey data.**

<b>TNS Sample data</b>			<b>Travel Survey data<sup>6</sup></b>		
<b>Age group (yr)</b>	<b>Gender</b>		<b>Age g Group (yr)</b>	<b>Gender</b>	
	<b>Female</b>	<b>Male</b>		<b>Female</b>	<b>Male</b>
15-24	15%	8%	15-24	30%	15%
25-49	34%	12%	25-49	19%	15%
50+	14%	16%	50+	13%	8%
Total	64%	36%	Total	62%	38%

Table 7.3 shows that the sample from TNS tended to under-sample people in the 15-24 age group and over-sample people in the 50+ age group. Females in the 25-49 age group were definitely over-sampled.

Post-stratification was employed to address this discrepancy. Post-stratification involves giving groups that are under-sampled (e.g. Females 15-24 years) a higher weight when estimates are produced. Groups that were over-sampled (e.g. Males 50+ years) are given a lower weight. These weightings are shown in Table 7.4.

<sup>6</sup> The proportions derived from the NZ Travel Survey reflect the age distribution across all public transport users (i.e. both bus and rail) because of sample size limitations in the NZ Travel Survey. However, numbers of females in each age group were 'scaled up' and the number of males in each age group were 'scaled down', so that the overall gender ratio reflects the gender ratio observed for bus users in the NZ Travel Survey.

**Table 7.4 Weightings used for post-stratification of sample.**

Gender	Age group	Weighting
Females	15-24	1.96
	25-49	0.56
	50+	0.90
Males	15-24	1.85
	25-49	1.21
	50+	0.50

### 7.2.3 How important are personal security concerns?

Respondents were asked "To what extent have the following factors discouraged you from travelling by bus *during daytime*?" and they were presented with the list of potential barriers shown in Figure 7.1.

**Figure 7.1 Barriers to increased daytime-use of buses (for existing bus users).**  
(Security-related barriers are in bold borders)

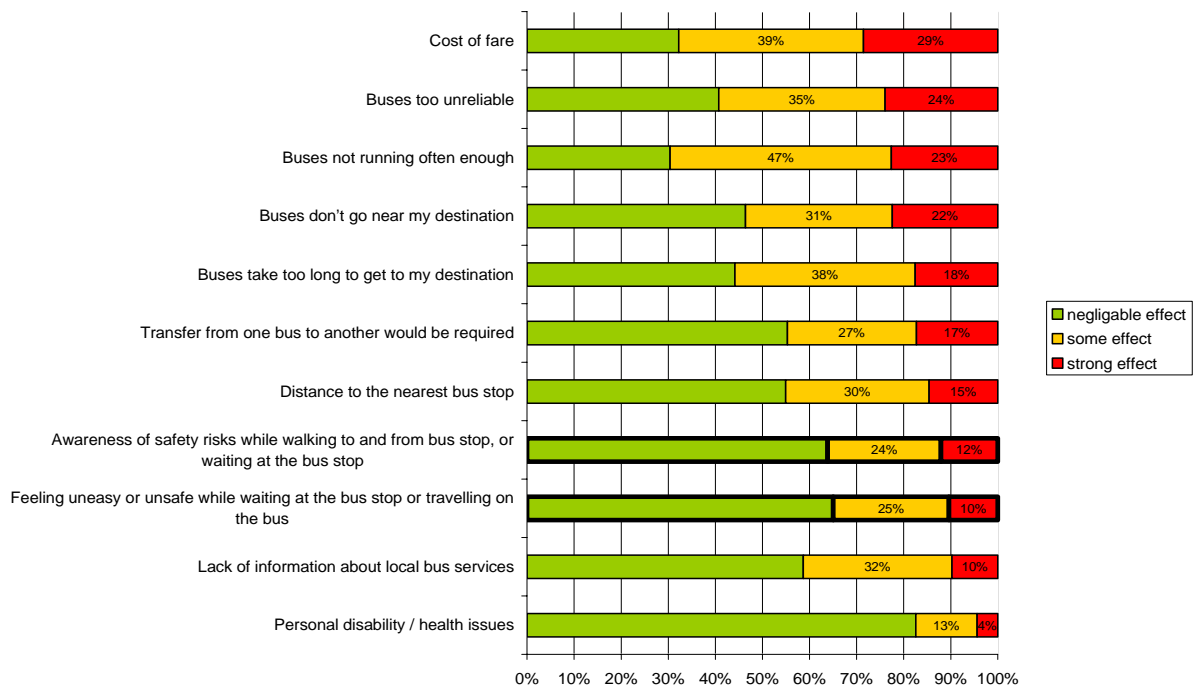


Figure 7.1 shows that the most significant barrier to increased use of buses during daytime is the cost of the fare (28%), followed by reliability (24%), insufficient frequency (23%), and distance between bus-stop and the respondent's destination (22%).

Figure 7.1 shows that the two security-related categories (highlighted with bold borders) have a relatively low ranking: about 10-12% of bus users indicated that security concerns discouraged them from using the bus more during daytime.

Respondents were also asked “To what extent have the following factors discouraged you from travelling by bus *after dark*?” Figure 7.2 shows that security concerns become the most significant barrier to using the bus more after dark.

**Figure 7.2 Barriers to increased night-time use of buses (for existing bus users).**  
(Security-related barriers are in bold borders)



Figure 7.2 shows that both categories of security concerns rate very highly, with nearly half of the sample population saying that these security concerns have a strong effect at discouraging them from travelling by bus after dark. Less than a quarter of bus users said that security concerns had a negligible effect on them.

Figure 7.2 also indicates that, after security concerns, the next most important barrier appears to be frequency (i.e. buses not running often enough). The barriers ranked below these are all given similar ratings.

These general findings from Figures 7.1 and 7.2 are replicated across the three cities. Table 7.5 shows that around 10% of bus users are strongly discouraged by security concerns from using the bus during the day, while near 50% are strongly discouraged from using the bus after dark.

**Table 7.5 Security concerns as a barrier to using the bus, by city.**

Time of day	Security concern	% strongly discouraged from using bus		
		Auckland	Wellington	Christchurch
Daytime	awareness of safety risks	16%	9%	11%
	feeling uneasy or unsafe	11%	9%	10%
Night-time	awareness of safety risks	46%	42%	51%
	feeling uneasy or unsafe	47%	43%	45%

Table 7.6 shows that females are more likely to be discouraged from using the bus after dark. However, a significant proportion of males also acknowledged that they would be discouraged by security concerns (both during daytime and after dark).

**Table 7.6 Security concerns as a barrier to using the bus, by gender.**

Time of day	Security concern	% strongly discouraged from using bus	
		Female	Male
Daytime	awareness of safety risks	11%	13%
	feeling uneasy or unsafe	7%	16%
Night-time	awareness of safety risks	53%	37%
	feeling uneasy or unsafe	51%	35%

Table 7.7 shows how bus users respond to security concerns: 43% of the respondents stop using the bus after dark, thus providing more evidence that security concerns impact on patronage; 53% avoid the back of the bus; and 49% sit near the driver. These percentages are large enough to be of interest to bus operators.

**Table 7.7 The impact of security concerns on bus-user behaviour.**

Change in behaviour related to security concerns	n/a: no security concerns	Change in behaviour	
		Yes	No
Waited for other people to alight before getting off at stop	12%	24%	63%
Moved to a different stop to wait	12%	26%	62%
Got off at a different stop to the one originally planned	12%	28%	60%
Moved to a bus stop that is busier	12%	31%	56%
Stopped using the bus after dark	12%	43%	44%
Sat at the front of the bus, near the driver	12%	49%	39%
Avoided the back of the bus	12%	53%	35%

## 7.2.4 What factors influence personal security concerns?

### 7.2.4.1 Darkness

The survey asked respondents how safe they felt (safe, slightly unsafe, very unsafe) at the three stages of the journey (see section 7.2.4.2), and during either daylight and after dark. Table 7.8 shows the proportion of people (by gender, and total) who feel 'very unsafe' during daylight.

**Table 7.8 Proportions (%) of people who feel 'very unsafe' during daylight, by stage of their journey.**

Gender	Stage of journey		
	Walking to/from bus stop	Waiting at bus stop	Travelling on bus %
Female	3%	4%	1%
Male	4%	3%	4%
Total	4%	4%	2%

Table 7.9 shows that the proportion of people who feel 'very unsafe' increases dramatically after dark.

**Table 7.9 Proportions (%) of people who feel 'very unsafe' after dark, by stage of their journey.**

Gender	Stage of journey		
	Walking to/from bus stop	Waiting at bus stop	Travelling on bus
Female	41%	38%	13%
Male	21%	22%	9%
Total	33%	32%	12%

#### 7.2.4.2 Stage of bus journey

The survey broke a bus journey down into three stages:

- Walking to the bus stop, or walking home from the bus stop;
- Waiting at the bus stop;
- Travelling on the bus.

Respondents with concerns about personal security were asked to identify the one stage in which they felt the least safe. The responses (by gender) are shown in Table 7.10.

**Table 7.10 Stage of bus journey during which people feel the least safe, by gender.**

Gender	Walking to/from the bus stop	Waiting at the bus stop	Travelling on the bus
Female	55%	41%	3%
Male	40%	44%	16%
Total	50%	42%	8%

Table 7.10 shows that bus users generally feel most safe when travelling on the bus, especially if they are females. Most females (55%) feel the least safe while walking to the bus stop, but also a large proportion (41%) feel the least safe while waiting at the bus stop.

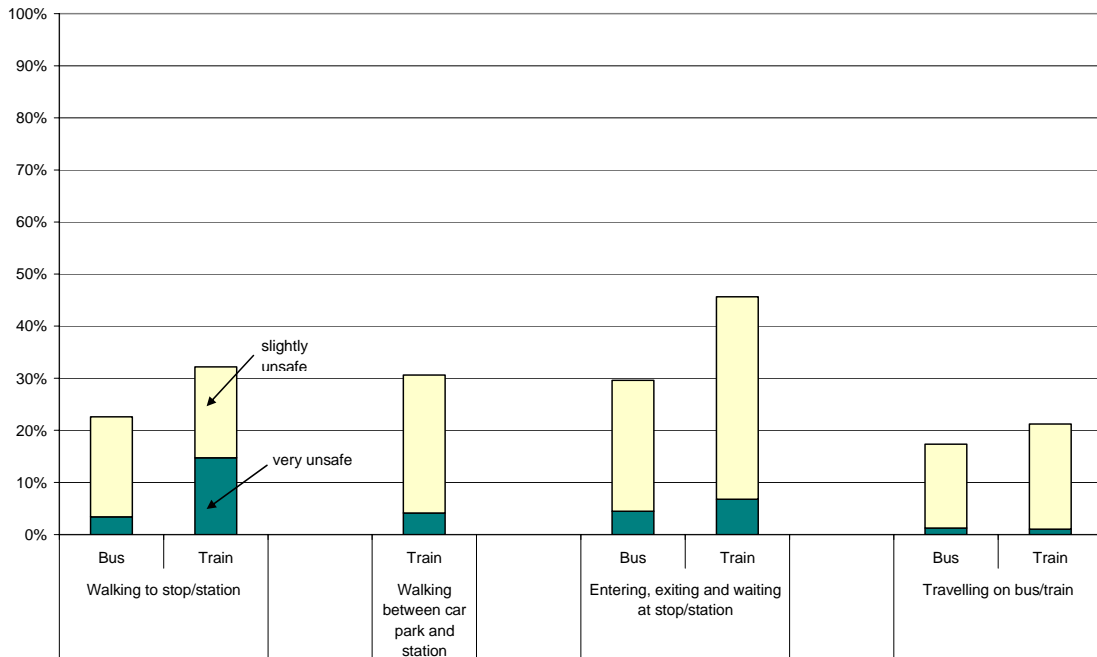
#### 7.2.4.3 Mode of journey

As noted in sections 7.2.4.1 and 7.2.4.2, the survey asked bus users how safe they felt (safe, slightly unsafe, very unsafe) at certain stages of the journey, and during both daylight and after dark. Rail users were also asked the same question, hence enabling comparisons of security concerns across both bus and rail transport.

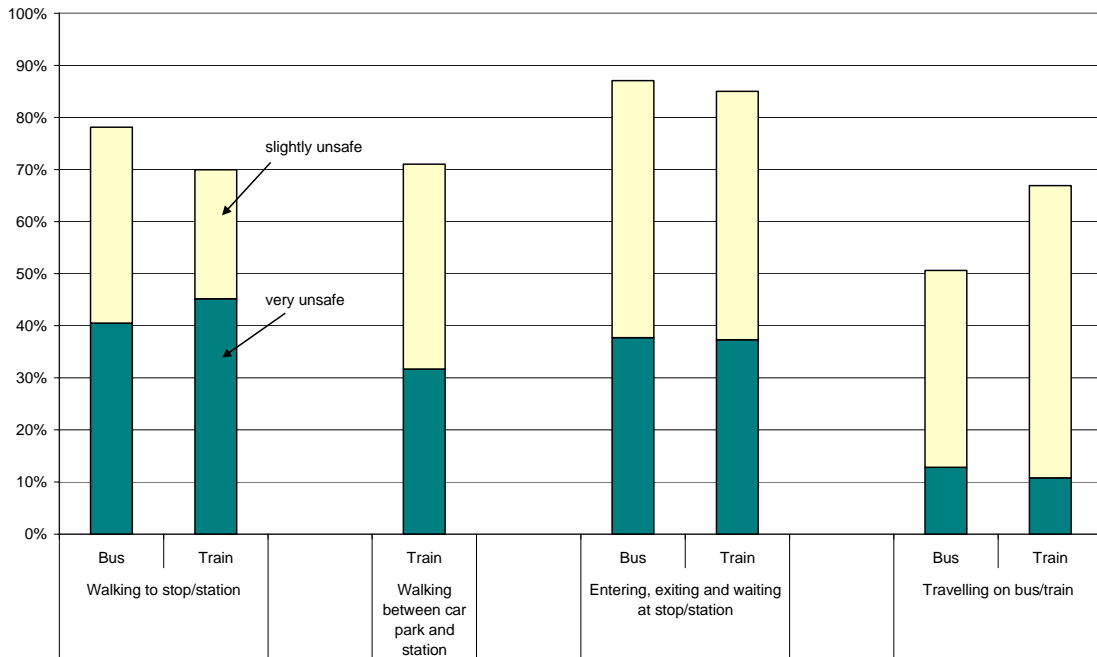
Figures 7.3 and 7.4 provide a comparison of the security concerns of females on bus and rail, during daylight and after dark.

Both Figures 7.3 and 7.4 show that the incidence of security concerns is remarkably similar across both bus and train. The only discernible difference is that train users are more likely to feel very unsafe during the walk to the station.

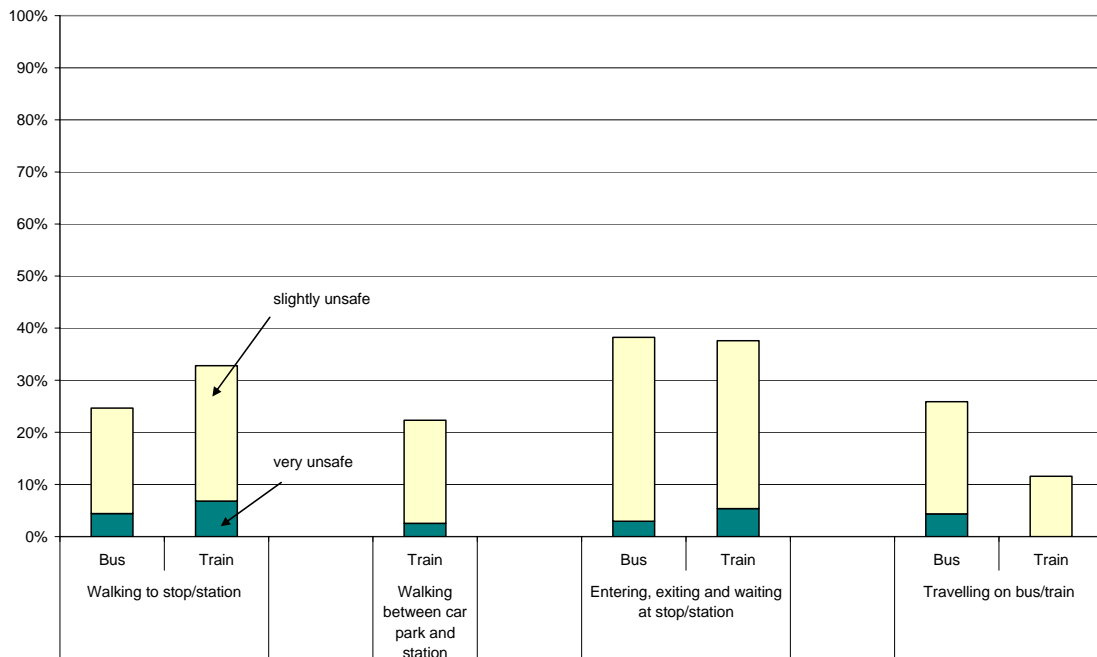
**Figure 7.3 Comparison of feelings of safety between bus and train, for females for the three stages of a journey during daylight.**



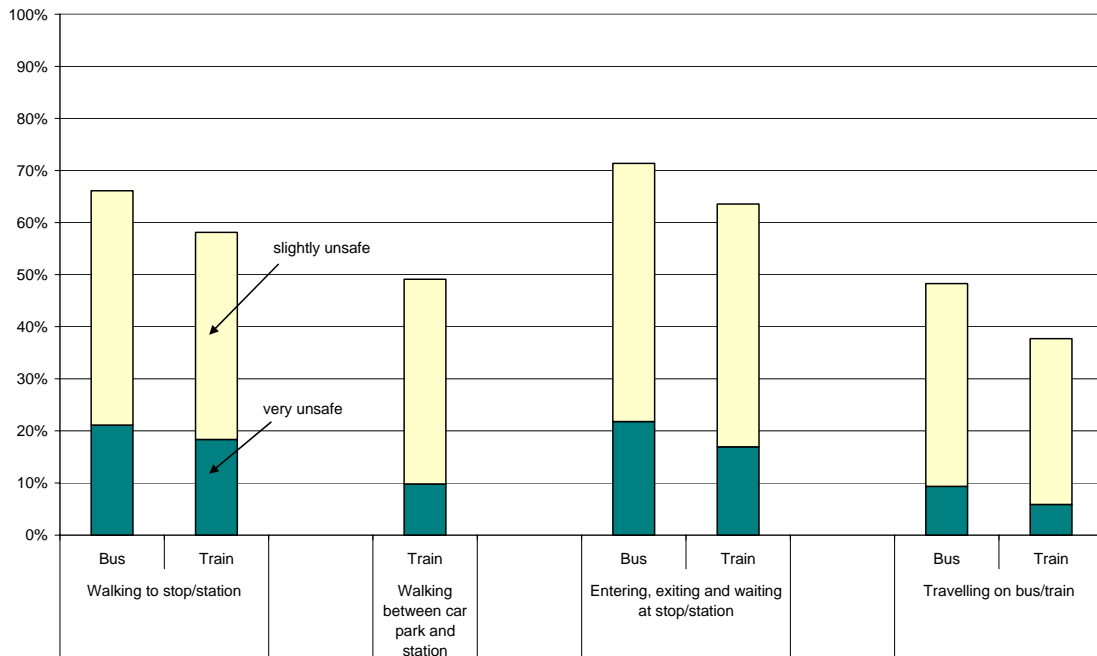
**Figure 7.4 Comparison of feelings of safety between bus and train, for females for the three stages of a journey after dark.**



**Figure 7.5 Comparison of feelings of safety between bus and train, for males for the three stages of a journey during daylight.**



**Figure 7.6 Comparison of feelings of safety between bus and train, for males for the three stages of a journey after dark.**



Figures 7.5 and 7.6 provide a comparison of the security concerns of males using either bus or rail, during daylight and after dark.

They show that, even when concerns of males are compared across modes, the differences between bus and train are not discernible.



### 7.2.4.4 External factors affecting the stage of bus journey

#### Factors influencing the walk to/from bus stop

Respondents were asked "To what extent do the following factors make you feel unsafe or uneasy when walking to the bus stop, or walking home from the bus stop?" Possible responses to this question included the following:

- This is not really a problem for me.
- This happens *occasionally* and makes me feel *a bit* unsafe or uneasy.
- This happens *occasionally* and makes me feel *very* unsafe or uneasy.
- This happens *a lot* and makes me feel *a bit* unsafe or uneasy.
- This happens *a lot* and makes me feel *very* unsafe or uneasy.

Figure 7.7 shows the factors that respondents were able to select from, and also shows the rankings given to each of those factors.

**Figure 7.7 The impact of factors influencing the bus user during their walk to/from the bus stop.**

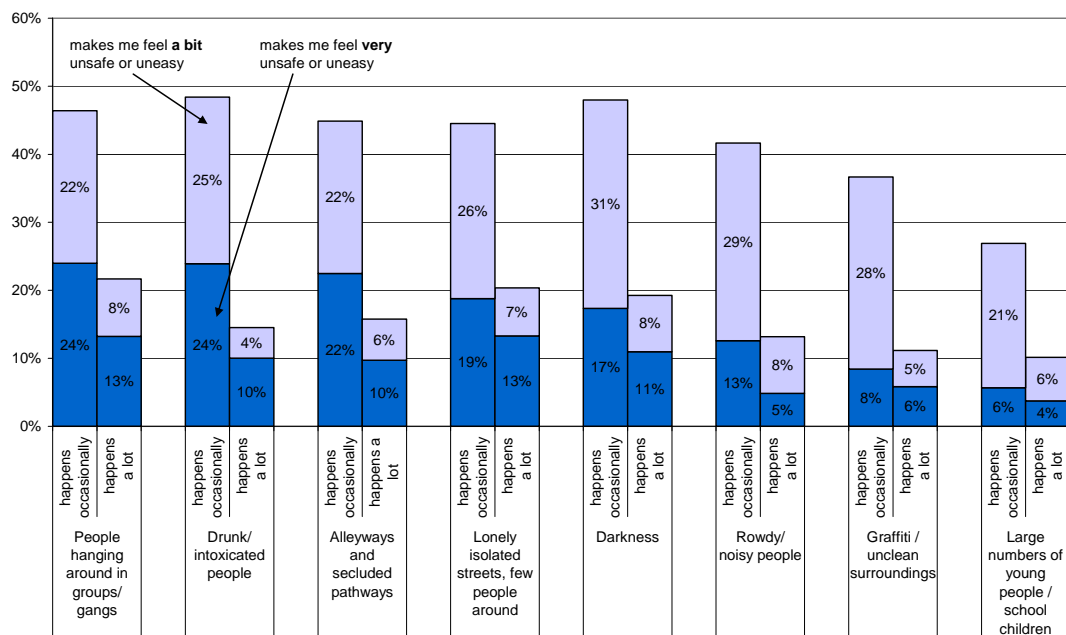


Figure 7.7 shows that all five of the factors on the left contribute, more often, to people feeling unsafe or uneasy on the walk to/from the bus stop:

- People hanging around in groups;
- Drunk/intoxicated people;
- Alleyways and secluded pathways;
- Lonely isolated streets, few people around;
- Darkness.

The three factors on the right of Figure 7.7 (rowdy/noisy people, graffiti/unclean surroundings, and large numbers of young people/schoolchildren) generally have less impact on how uneasy or unsafe people feel.

**Factors influencing the wait at the bus stop**

Respondents were asked “To what extent do the following factors make you feel unsafe or uneasy when entering, exiting or waiting at the bus stop?” Possible responses to this question included the following:

- This is not really a problem for me.
- This happens *occasionally* and makes me feel *a bit* unsafe or uneasy.
- This happens *occasionally* and makes me feel *very* unsafe or uneasy.
- This happens *a lot* and makes me feel *a bit* unsafe or uneasy.
- This happens *a lot* and makes me feel *very* unsafe or uneasy.

Figure 7.8 shows the factors that respondents were able to select from, and the rankings given to each of those factors.

**Figure 7.8 The impact of factors influencing the bus user during their wait at the bus stop.**

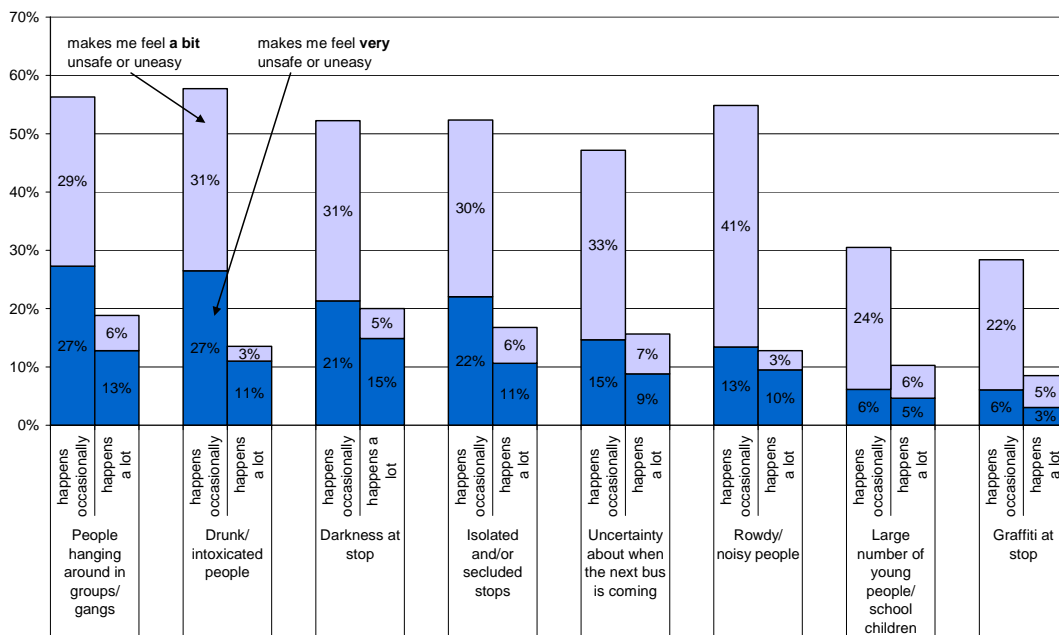


Figure 7.8 shows that the people are most likely to have concerns relating to the following:

- People hanging around in groups;
- Drunk/intoxicated people;
- Darkness at stop;
- Isolated and/or secluded stops.

Figure 7.8 also shows that the most common cause of people feeling *very* unsafe or uneasy is darkness at stop, with about 15% of people finding that this happens a lot and makes them feel very unsafe or uneasy.

As well it shows that 'undesirable people' contribute a lot to security concerns: two of the highest ranked factors are 'people hanging around in groups/gangs' and 'drunk/intoxicated people'. This is similar to the pattern observed in Figure 7.7.

**Factors influencing travel on the bus**

Respondents were asked "To what extent do the following factors make you feel unsafe or uneasy when *travelling on the bus*?" Possible responses to this question included the following:

- This is not really a problem for me.
- This happens *occasionally* and makes me feel *a bit* unsafe or uneasy.
- This happens *occasionally* and makes me feel *very* unsafe or uneasy.
- This happens *a lot* and makes me feel *a bit* unsafe or uneasy.
- This happens *a lot* and makes me feel *very* unsafe or uneasy.

Figure 7.9 shows the factors that respondents were able to select from, and the rankings given to each of those factors.

**Figure 7.9 The impact of factors influencing the bus user during travel on board the bus.**

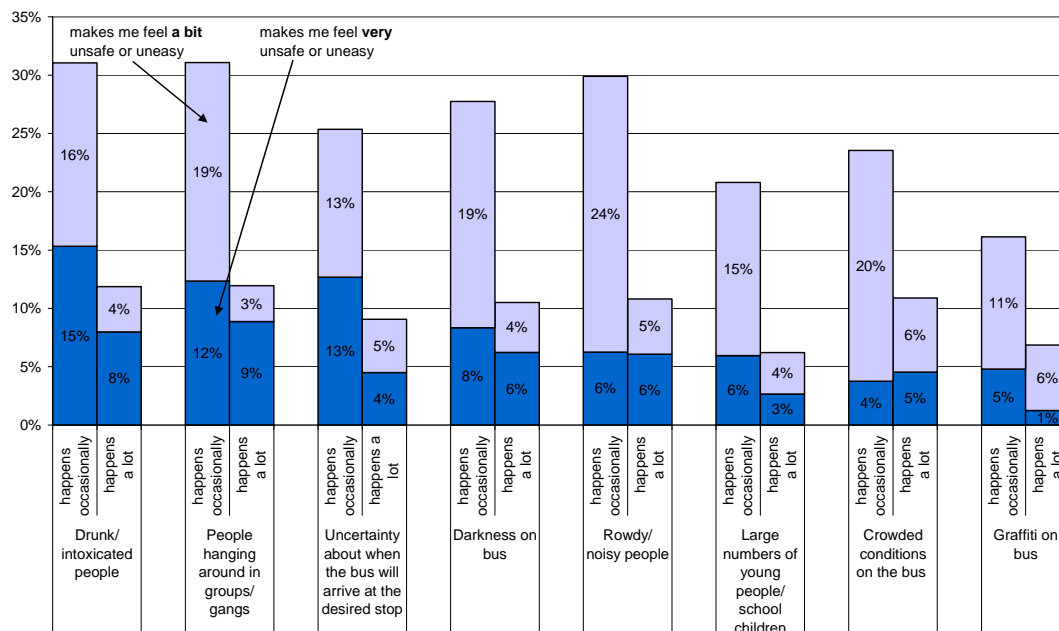


Figure 7.9 identifies the presence of 'undesirable' people as a key factor influencing perceptions of personal security: two of the highest ranked factors are again 'people hanging around in groups/gangs' and 'drunk/intoxicated people'.

However, Figure 7.9 also identifies ‘uncertainty about when the bus will arrive at the desired bus stop’ and ‘darkness on bus’ as common sources of anxiety. This is insightful because these factors could be addressed reasonably easily by communication with the driver, announcements by the driver, and improved lighting on the bus as well as at the stop.

#### 7.2.4.5 Demographic factors

Respondents were asked for information about gender and age, information which can be used to explore demographic differences between bus users who are deterred by security concerns and those who are unaffected by security concerns.

Table 7.11 uses the data discussed in section 7.2.3 to segment the population into three groups and by gender, according to how much they were discouraged from using buses:

- Bus users who were *strongly discouraged* from using buses because of concerns about personal security.
- Bus users who were *somewhat discouraged* from using buses because of concerns about personal security.
- Bus users who were *not discouraged* at all from using buses because of concerns about personal security.

**Table 7.11 Segmentation by level of discouragement (%) and gender.**

Gender	Not discouraged	Somewhat discouraged	Strongly discouraged	Total
Female	9%	33%	58%	100%
Male	18%	40%	42%	100%
Total	12%	36%	52%	100%

Table 7.11 shows that females are more likely to be strongly discouraged for security concerns, in that 58% of females are strongly discouraged, compared to 42% of males. However, it also shows that a large proportion of males are strongly (42%) or somewhat (40%) discouraged.

Table 7.12 shows these groups segmented by age, and that people aged 50+ appear slightly less likely to be strongly discouraged. However, the age differences are not dramatic.

**Table 7.12 Segmentation (%) by level of discouragement and age.**

Age (yr)	Not discouraged	Somewhat discouraged	Strongly discouraged	Total
15-24	14%	33%	53%	100%
25-49	9%	34%	58%	100%
50+	15%	44%	41%	100%
Total	12%	36%	52%	100%

## 7.2.5 What security measures do people say they want?

### 7.2.5.1 Security measures for the walk to/from the bus stop

Respondents who felt unsafe during the walk to/from the bus stop were given a list of possible measures that could address security concerns associated with the walk to/from the bus stop. Respondents were then asked to rank them from 1 to 4.

The rankings given to these security measures are illustrated by Figure 7.10: for example, 25% of respondents ranked flexible night buses/shuttles as their number 1 measure, and 7% ranked flexible night bus/shuttles as their number 2 measure.

**Figure 7.10** Rankings for measures that could address the security concerns associated with the walk to/from the bus stop.

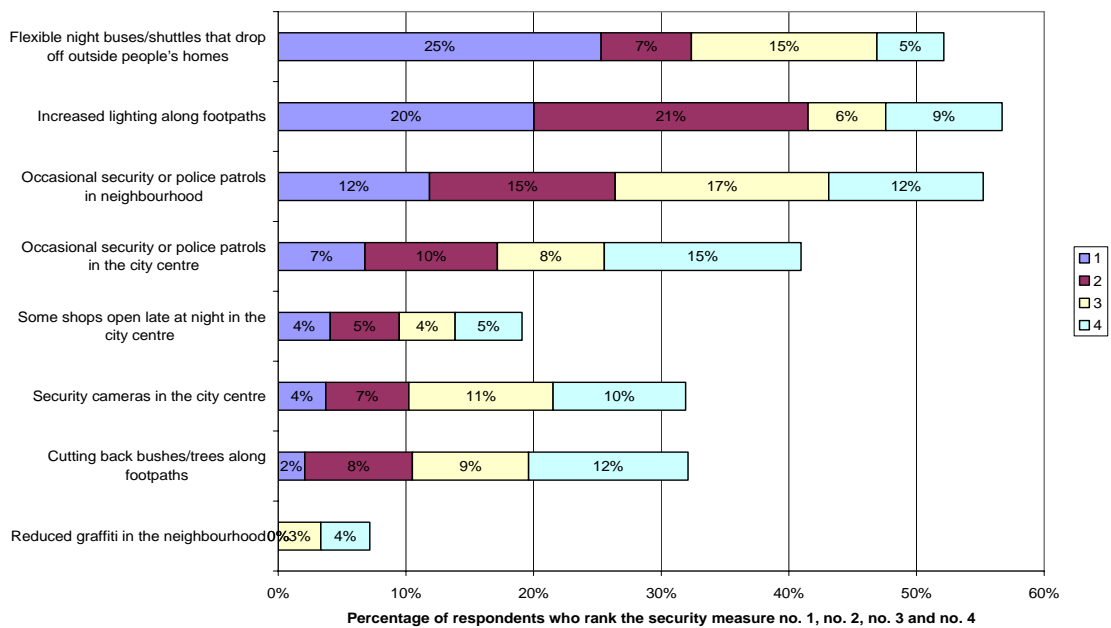


Figure 7.10 indicates that the most popular measures are flexible timetables and stops for buses/shuttles, and increased lighting along footpaths. Occasional security or police patrols were also popular, but less likely to be selected as the number 1 measure.

### 7.2.5.2 Security measures for the wait at the bus stop

Respondents who felt unsafe waiting at the bus stop were given a list of possible measures that could address security concerns associated with waiting at the bus stop. Again, respondents were asked to rank them from 1 to 4, and the rankings given to these security measures are illustrated by Figure 7.11.

**Figure 7.11 Rankings of measures that could address the security concerns associated with waiting at the bus stop.**

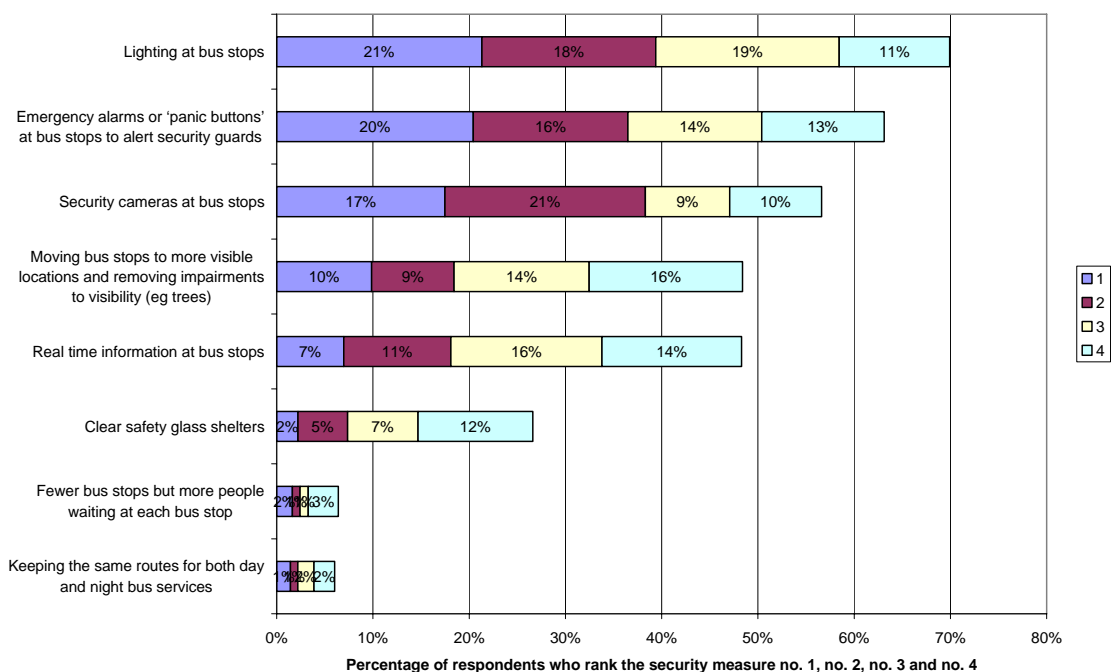


Figure 7.11 shows three security measures that are discernibly more popular than the remaining measures:

- Lighting at bus stops.
- Emergency alarms or 'panic buttons'.
- Security cameras at bus stops.

Figure 7.11 also shows that the most popular measure is lighting, and that both lighting and alarms are more popular than security cameras. However, this report notes that both lighting and emergency alarms may attract vandalism and/or pranks, meaning that lighting and/or emergency alarms may require security cameras to make them workable. (One alternative option to circumvent the risk of vandalism of lighting might be to locate bus stops beneath street lights.)

### 7.2.5.3 Security measures while travelling on the bus

Respondents who felt unsafe travelling on the bus were given a list of possible measures that could address security concerns associated with travelling on the bus. Again, respondents were asked to rank them from 1 to 4, and the rankings given to these security measures are illustrated by Figure 7.12.

**Figure 7.12 Rankings of measures that could address the security concerns associated with travelling on the bus.**

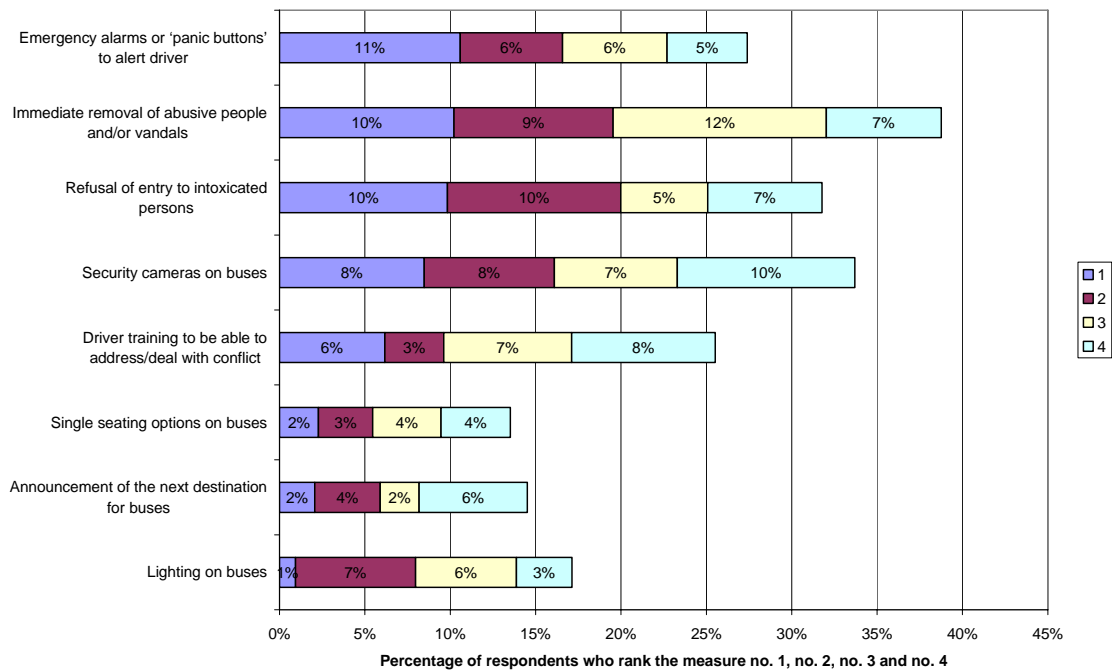


Figure 7.12 shows considerable support for the removal of abusive people and vandals and for refusal of entry to intoxicated persons. However, this report notes that such policies can be problematic. For example, one bus operator has a policy of not confronting abusive people because this can accentuate conflict. Legal barriers may also prevent bus operators from removing people or refusing entry. This report notes that night-time buses serve the public good by taking intoxicated persons home safely, hence preventing those persons from drinking and driving, or walking home under unsafe conditions.

Figure 7.12 also indicates support for emergency alarms and security cameras on buses.

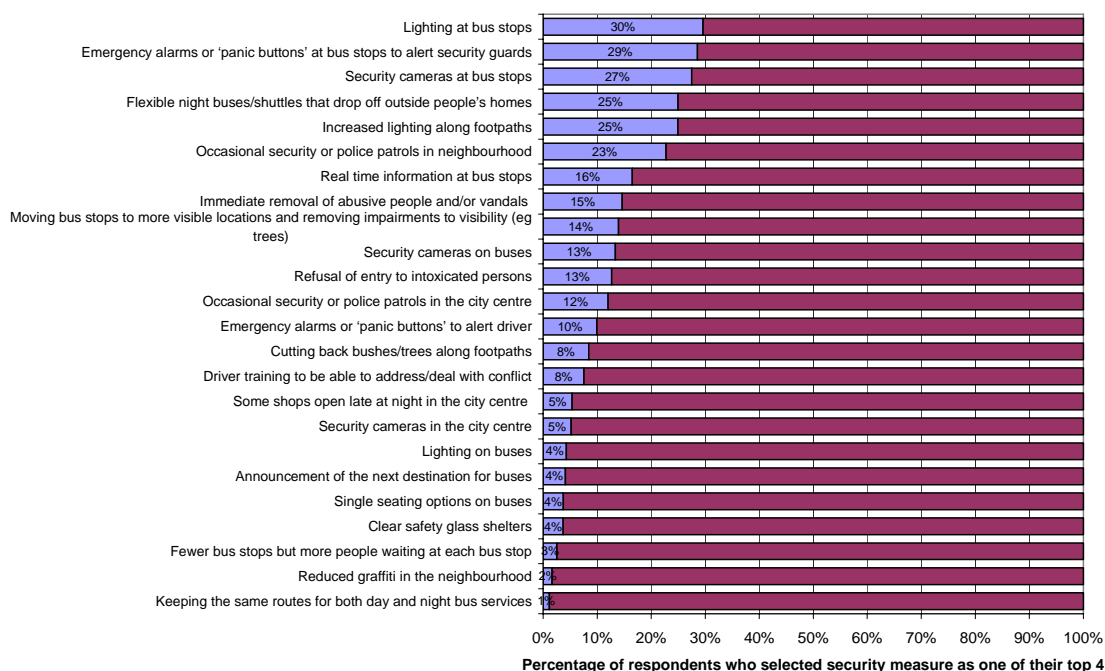
**7.2.5.4 Security measures across the whole bus journey**

Respondents who felt unsafe across two or more stages of the journey (e.g. walking to the bus stop and waiting at the bus stop) were asked about security measures that would improve the whole bus journey. These respondents were presented with the top 4 measures from each stage and asked to pick a top 4 across the whole journey. Figure 7.13 shows the frequency with which certain initiatives made it into the top 4.

The measures most favoured by respondents all relate to *waiting at bus stops*. The top 3 measures in Figure 7.13 are the following:

- Lighting at bus stops;
- Emergency alarms or 'panic buttons at bus stops to alert security guards;
- Security cameras at bus stops.

**Figure 7.13 Rankings of security measures that would improve the whole bus journey.**



The next 3 measures in Figure 7.13 relate to *walking to the bus stop*:

- Flexible timetables and stops for buses/shuttles;
- Increased lighting along footpaths;
- Occasional security or police patrols in neighbourhood.

The remaining measures (which including measures relating to *travel on buses*) all obtained much less support.

### 7.2.6 Do people notice security measures?

Respondents who had security concerns were asked if they noticed any security measures associated with their bus or bus stop. Table 7.13 shows that most of the respondents had not noticed any security measures.

**Table 7.13 Awareness of security measures installed on bus or stop.**

Not applicable – did not have concerns about security measures	Awareness of security measures among people with security concerns		Total
	Aware	Not aware	
17%	11%	72%	100%

The findings in Table 7.13 resonate with the international literature (see section 3.5) which finds that security measures are often not noticed, especially if they are not visible. However, the use of security measures such as CCTV has been rare in the bus industry in the past, and the findings in Table 7.13 may reflect this.



### 7.2.7 What is the impact of security measures on bus patronage?

Respondents were presented with the top 12 security measures across their whole bus journey. (Respondents were presented with the top 8 security measures if they felt unsafe during only two stages, and the top 4 security measures if they felt unsafe during only one stage.)

Respondents were then asked if they would travel more than they would now if these security measures were made and, if so, how many extra trips they would make during daytime and after dark. The responses to this question are shown in Tables 7.14 and 7.15.

**Table 7.14 Impact of security measures on daytime bus travel patronage.**

Bus users	Average increase in trips/week
Impact across 32% of respondents who would increase bus trips	3.9
	3.3 excluding outliers*
Impact across all respondents	1.3
	1.0 excluding outliers*

\* Excluding outliers involves removing persons making 8 or more trips per week.

Table 7.14 shows that 32% of respondents said they would make more trips during daytime. These respondents said, on average, that they would make 3.9 additional trips per week. However, 68% of respondents indicated that they would not respond, hence the average increase across all respondents was only 1.3 trips per week.

**Table 7.15 Impact of security measures on night-time bus travel patronage.**

Bus users	Average increase in trips/week
Impact across 41% of respondents who would increase bus trips	3.9
	3.2 excluding outliers*
Impact across all respondents	1.6
	1.2 excluding outliers*

\* Excluding outliers involves removing persons making 8 or more trips per week.

Table 7.15 shows that 41% of respondents said they would make more trips after dark. They said, on average, that they would make 3.9 additional trips per week, but the average increase across all respondents was 1.6 trips per week.

## 7.3 Survey of train users

### 7.3.1 Sample description

The overall sample size of train users was 152. Table 7.16 shows how the sample is distributed across a range of age groups.

**Table 7.16 Age and gender distribution of sample of train users.**

Age group (yr)	Female		Male	
	Number	%	Number	%
15-19	5	3%	13	9%
20-29	28	18%	6	4%
30-39	24	16%	16	11%
40-49	18	12%	3	2%
50-64	17	11%	14	9%
65+	3	2%	5	3%
Total	95	63%	57	38%

Table 7.16 shows that the proportion of people aged over 65 is low (about 5% of the sample) but this is comparable to the age distribution seen on public transport, in that analysis of the NZ Travel Survey data showed that people aged 65+ made up only 7% of public transport passengers.

The proportion of younger people (e.g. 15-19, 20-29 years) in Table 7.16 is lower than what might be expected on train travel since public transport is often dominated by young people. This discrepancy has been discussed in section 7.2.2 and was addressed through the use of post-stratification.

The gender ratio shown in Table 7.16 has a higher proportion of females than might be expected in train travel, as analysis of the NZ Travel Survey data showed that train travellers are more likely to be men. This discrepancy is discussed in section 7.3.2 and it is also addressed through the use of post-stratification.

**Table 7.17 Ethnicity distribution of sample of train users.**

Ethnicity	Number	%
European	94	62%
Maori	20	13%
Pacific	7	5%
Other	31	20%
Total	152	100%

Table 7.17 shows the ethnicity of the sample, and that the ethnic distribution of the sample is comparable to the general population of public transport users. Analysis of this NZ Travel Survey data showed that Europeans made up 62% of public transport users, Maori make up 13% of public transport users, and Pacific Peoples make up 5% of public transport users.

### 7.3.2 Post-stratification

Table 7.18 compares the gender and age distributions of the TNS sample data with those of public transport users surveyed by the NZ Travel Survey.

**Table 7.18 Demographics (by age and gender) of TNS data v NZ travel survey data for train users.**

TNS Sample data			NZ Travel Survey data <sup>7</sup>		
Age group (yr)	Female	Male	Age group (yr)	Female	Male
15-24	9%	11%	15-24	20%	24%
25-49	41%	14%	25-49	13%	23%
50+	13%	13%	50+	9%	13%
Total	63%	38%	Total	42%	60%

Table 7.18 shows that the sample from TNS tended to under-sample people in the 15-24 age group and over-sample people in the 50+ age group. Females in the 25-49 age group were definitely over-sampled. Post-stratification was employed to address this discrepancy.

Post-stratification involves giving groups that are under-sampled (e.g. Females 15-24 yr) a higher weighting when estimates are produced. Groups that are over-sampled (e.g. Females 25-49 yr) are given a lower weighting. These weightings are shown in Table 7.19.

**Table 7.19 Weightings used for post-stratification of sample of train users.**

Gender	Age group (yr)	Weighting
Females	15-24	2.31
	25-49	0.31
	50+	0.65
Males	15-24	2.27
	25-49	1.56
	50+	1.00

### 7.3.3 How important are personal security concerns?

Respondents were asked "To what extent have the following factors discouraged you from travelling by train *during daytime*?" and they were presented with the list of potential barriers shown in Figure 7.14.

Figure 7.14 shows that the most common barrier to increased use of trains during daytime is that the train does not go near the respondent's destination. Insufficient frequency, the need for a transfer, the fare, unreliability, and the distance to the nearest station are also common barriers for existing users of train services.

<sup>7</sup> The proportions derived from the NZ Travel Survey reflect the age distribution across all public transport users (i.e. both bus and rail) because of sample size limitations in the NZ Travel Survey. However, numbers of females in each age group were 'scaled up' and the number of males in each age group were 'scaled down', so that the overall gender ratio reflects the gender ratio observed for bus users in the NZ Travel Survey.

**Figure 7.14 Barriers to increased daytime use of trains (for existing train users).**  
(Security-related barriers are in bold borders)

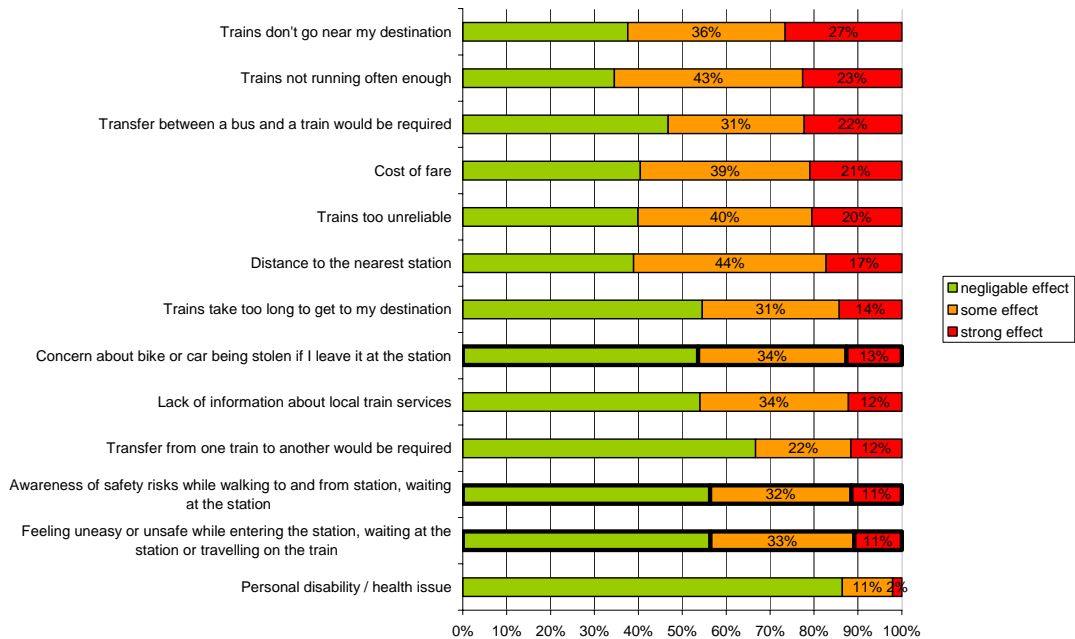
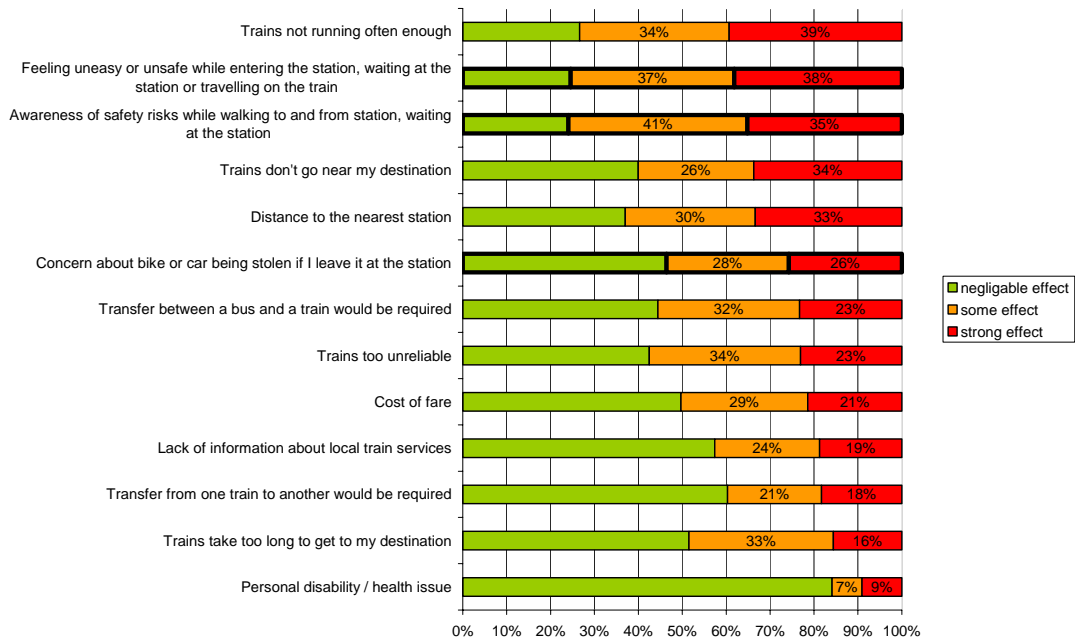


Figure 7.14 also shows that the security-related categories (highlighted with bold borders) have relatively low rankings, in that about 11% of train users indicated that security concerns discouraged them from using the train more during daytime. Concern about a bike or car being stolen was more of a barrier, and 13% of people said that this was a strong deterrent to them using train services more.

**Figure 7.15 Barriers to increased night-time use of trains (for existing train users).**  
(Security-related barriers are in bold borders)



Respondents were also asked "To what extent have the following factors discouraged you from travelling by train *after dark*?" Figure 7.15 shows that security concerns become a more significant barrier to using the train after dark.

Figure 7.15 shows that the infrequency of trains becomes a problem for train users during night-time, with 39% of respondents saying that "Trains not running often enough" was a strong deterrent to their increased use.

It also shows that both categories of security concerns rate highly: more than 35% of respondents were discouraged from using the train at night due to security concerns, and only about a quarter of respondents said that security concerns had a negligible impact on their train use.

The general findings from Figures 7.14 and 7.15 are replicated across both Auckland and Wellington. Table 7.20 shows that more than 10% of train users are strongly discouraged by security concerns from using the train during the day, while nearly 40% are strongly discouraged from using train after dark.

**Table 7.20 Security concerns as a barrier to using trains, by city.**

Time of day	Security concern	% strongly discouraged from using train	
		Auckland	Wellington
Daytime	awareness of safety risks	12%	11%
	feeling uneasy or unsafe	8%	15%
Night-time	awareness of safety risks	33%	38%
	feeling uneasy or unsafe	38%	38%

Table 7.21 shows that females are three times more likely to be discouraged from using the train after dark. However, it also shows that a small proportion of men acknowledge being deterred by security concerns (during both daylight and after dark).

**Table 7.21 Security concerns as a barrier to using trains, by gender.**

Time of day	Security concern	% strongly discouraged from using train	
		Female	Male
Daytime	awareness of safety risks	23%	4%
	feeling uneasy or unsafe	11%	10%
Night-time	awareness of safety risks	64%	15%
	feeling uneasy or unsafe	64%	20%

**Table 7.22 The impact of security concerns on train-user behaviour.**

Behaviour based on security concerns	Change in behaviour		
	n/a: no security concerns	Yes	No
Avoided carriages that are too empty	12%	61%	27%
Avoided using the train after dark	12%	45%	43%
Avoided certain people in the train	12%	40%	47%

Table 7.22 shows how train users respond to security concerns, in that they often avoid carriages that are too empty, and that nearly half of train users avoided using the train after dark because of personal security concerns.

### 7.3.4 What factors influence personal security concerns?

#### 7.3.4.1 Darkness

The survey asked respondents how safe they felt (safe, slightly unsafe, very unsafe) at certain stages of the journey (see section 7.3.4.2), and during both daylight and after dark. Table 7.23 shows the proportion of people (by gender, in total, and stage of their journey) who feel 'very unsafe' during daylight.

**Table 7.23 Proportion (%) of people who feel 'very unsafe' during daylight, by stage of their train journey.**

Gender	Walking to/from station	Walking to/from car park & station	Entering/exiting/waiting at station	Travelling on train
Female	15%	4%	7%	1%
Male	7%	3%	5%	0%
Total	10%	3%	6%	0%

Table 7.24 shows the proportion of people who feel 'very unsafe' after dark when making a train journey. Only a small proportion of people feel unsafe while travelling, but a significant portion of females feel 'very unsafe' through all of the preceding stages of the train journey, including walking, entering, exiting and waiting.

**Table 7.24 Proportion (%) of people who feel 'very unsafe' after dark, by stage of their train journey.**

Gender	Walking to/from station	Walking to/from car park & station	Entering/exiting/waiting at station	Travelling on train
Female	45%	32%	37%	11%
Male	18%	10%	17%	6%
Total	29%	19%	25%	8%

#### 7.3.4.2 Stage of train journey

The survey broke a train journey into four stages:

- Walking to the train station, or walking home from the train station.
- Walking between the car park and the train station.
- Entering, exiting and waiting at the train station.
- Travelling on the train.

Respondents with concerns about personal security were asked to identify the one stage in which they felt the least safe. The responses (by gender) are shown in Table 7.25.

**Table 7.25 Stage of train journey at which people feel least safe, by gender.**

Gender	Walking to/from station	Walking to/from car park & station	Entering/exiting/waiting at station	Travelling on train
Female	49%	11%	27%	12%
Male	39%	12%	35%	14%
Total	44%	12%	31%	13%

Table 7.25 shows that train users (and nearly half of female train users) feel the most unsafe when walking to/from the train station. About a third of train users feel the most unsafe when entering, exiting or waiting at the station.

#### **7.3.4.3 Mode of journey**

The differences in security perceptions across both bus and rail have been discussed in section 7.2.4.3, and in that section it is noted that few discernible differences are shown between the two modes. See also Figures 7.3 and 7.4, 7.5 and 7.6.

#### **7.3.4.4 Factors affecting the stage of train journey**

##### **Factors influencing the walk to/from train stop**

Respondents were asked "To what extent do the following factors make you feel unsafe or uneasy when *walking to the train stop*, or *walking home from the train stop*?" Possible responses to this question included the following:

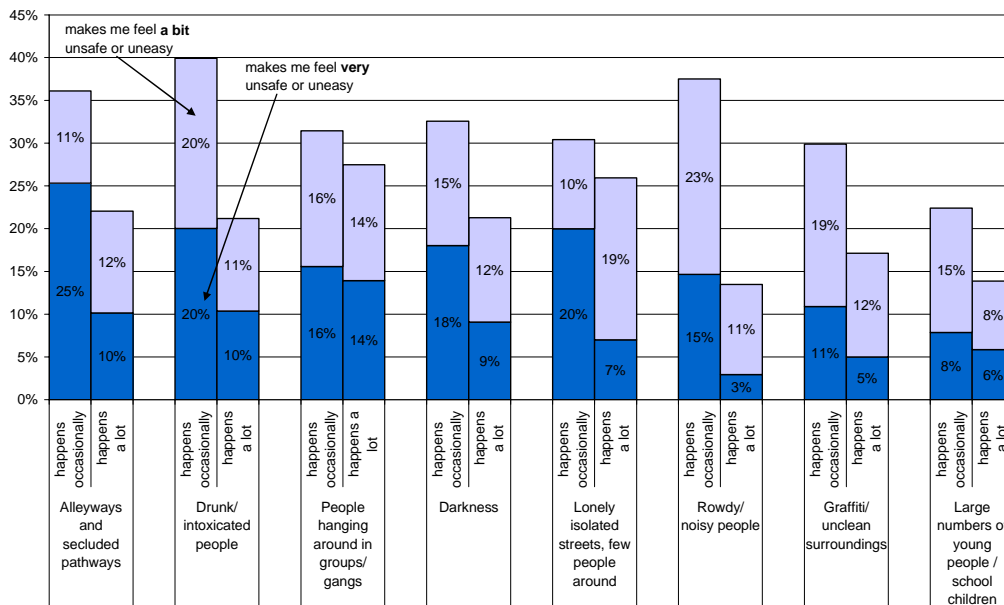
- This is not really a problem for me.
- This happens *occasionally* and makes me feel *a bit* unsafe or uneasy.
- This happens *occasionally* and makes me feel *very* unsafe or uneasy.
- This happens *a lot* and makes me feel *a bit* unsafe or uneasy.
- This happens *a lot* and makes me feel *very* unsafe or uneasy.

Figure 7.16 shows the factors that respondents were able to select from, and shows the rankings given to each of those factors, with the following results.

The presence of undesirable people (i.e. drunk/intoxicated people and people hanging around in groups or gangs) is a common problem on trips to and from the train station. Furthermore, evidence is that this is quite frequent: 28% of people (causing a bit unsafe/uneasy or very unsafe/uneasy feelings) say that "people hanging around in groups or gangs" happens a lot.

It shows too that 'alleyways and secluded pathways' contribute to personal security concerns. This happens only occasionally for about 36% of people but it makes more than 35% of people feel very unsafe or uneasy, either occasionally or a lot.

**Figure 7.16 The impact of factors influencing the train user during their walk to/from the train station.**



**Factors influencing the wait at the train station**

Respondents were asked “To what extent do the following factors make you feel unsafe or uneasy when entering, exiting or waiting at the train station?” Possible responses to this question included the following:

- This is not really a problem for me.
- This happens *occasionally* and makes me feel *a bit* unsafe or uneasy.
- This happens *occasionally* and makes me feel *very* unsafe or uneasy.
- This happens *a lot* and makes me feel *a bit* unsafe or uneasy.
- This happens *a lot* and makes me feel *very* unsafe or uneasy.

Figure 7.17 shows the factors that respondents were able to select from, and also shows the rankings given to each of those factors.

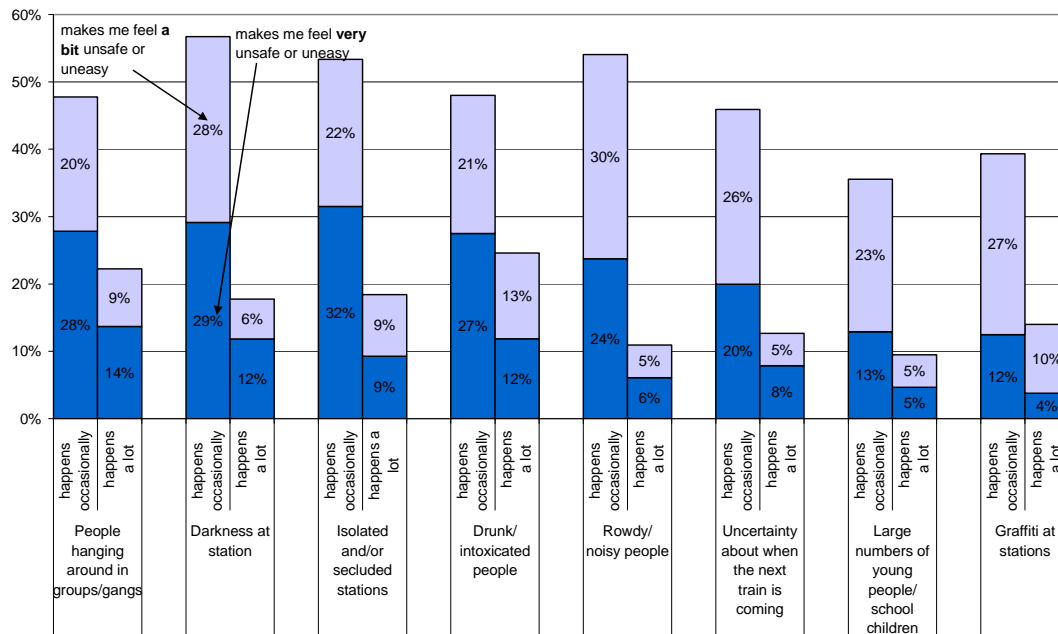
A comparison of Figures 7.16 and 7.17 shows that many factors are more of a problem at stations (compared to walking or travelling on trains). For example, darkness is occasionally a problem for 33% of people during their walk to the station and it happens a lot for 21% of people. In contrast, darkness is occasionally a problem for 57% of people while waiting at the station and it happens a lot for about 19% of people.

Figure 7.17 shows that ‘darkness at station’ and ‘isolated and/or secluded stops’ are very frequent concerns and they make about 30% of patrons feel very unsafe or uneasy.

‘Undesirable’ people are aggravating factors, and are perceived to be quite common at stations. Figure 7.17 shows that 25% of people say that ‘drunk/intoxicated people’ happen a lot and make them feel unsafe or uneasy.



**Figure 7.17 The impact of factors influencing the train user during their wait at the train station.**



**Factors influencing travel on the train**

Respondents were asked "To what extent do the following factors make you feel unsafe or uneasy when travelling on the train?"

Possible responses to this question included the following:

- This is not really a problem for me.
- This happens *occasionally* and makes me feel *a bit* unsafe or uneasy.
- This happens *occasionally* and makes me feel *very* unsafe or uneasy.
- This happens *a lot* and makes me feel *a bit* unsafe or uneasy.
- This happens *a lot* and makes me feel *very* unsafe or uneasy.

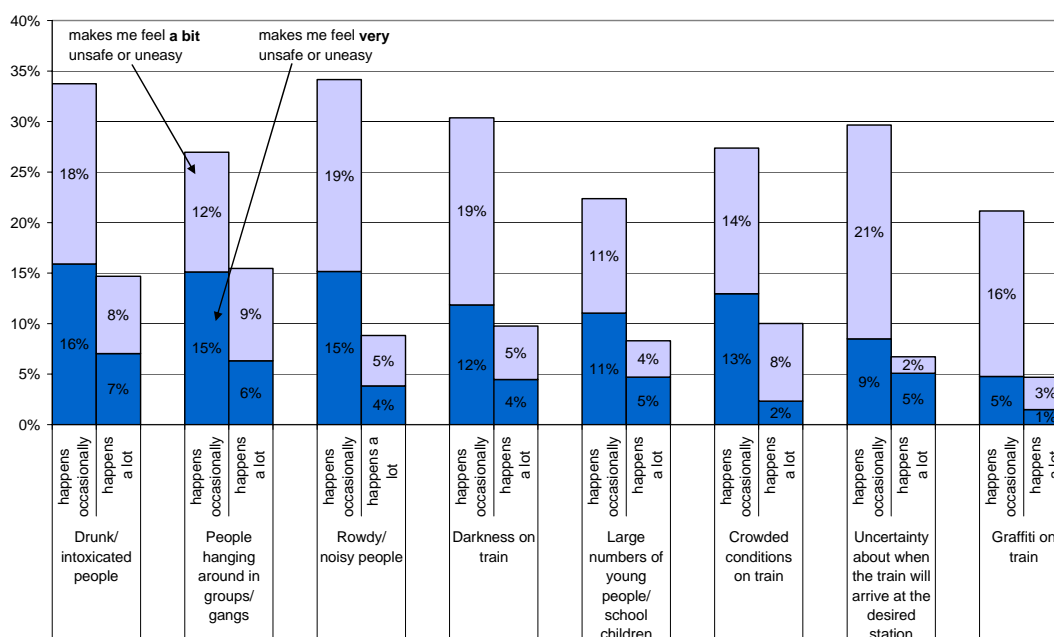
Figure 7.18 shows the factors that respondents were able to select from, and also the rankings given to each of those factors.

The presence of 'undesirable' people is the main source of anxiety for patrons when travelling on the train, with relatively high levels of feeling very unsafe or uneasy for the following categories:

- Drunk/intoxicated people;
- People hanging around in groups/ gangs;
- Rowdy/ noisy people.

But Figure 7.18 also shows that 'darkness on [the] train' and 'uncertainty about when the train will arrive at the desired station' cause concerns on occasion for a number of patrons. This is notable because these factors could potentially be addressed through better lighting or by announcements to patrons.

Figure 7.18 The impact of factors influencing train users during their travel on the train.



### 7.3.4.5 Demographic factors

Respondents were asked for information about gender and age, information which can be used to explore demographic differences between train users who are deterred by security concerns and train users who are unaffected by security concerns.

Table 7.26 uses the data discussed in section 7.3.3 to segment the population into three groups according to how much they are discouraged from using trains:

- Train users who were *strongly discouraged* from using trains due to concerns about personal security.
- Train users who were *somewhat discouraged* from using trains due to concerns about personal security.
- Train users who were *not discouraged* at all from using trains due to concerns about personal security.

Table 7.26 shows these groups segmented by gender, and that more than 70% of females are in the 'strongly discouraged' segment. By comparison, 24% of males are strongly discouraged, which is a minority but still a notable proportion of all males.

Table 7.26 Segmentation by level of discouragement and gender (%).

Gender	Not discouraged	Somewhat discouraged	Strongly discouraged	Total
Female	4%	26%	71%	100%
Male	19%	57%	24%	100%
Total	12%	45%	43%	100%

Table 7.27 shows these groups segmented by age, and also shows that 97% of people aged 15-24 fit into the 'somewhat discouraged' or 'strongly discouraged' segments. Also, people of this age group are more likely to be strongly discouraged (52%), followed by people aged 50+ (44%).

**Table 7.27 Segmentation by level of discouragement and age (%).**

Age group (yr)	Not discouraged	Somewhat discouraged	Strongly discouraged	Total
15-24	3%	45%	52%	100%
25-49	20%	48%	31%	100%
50+	18%	38%	44%	100%
Total	12%	45%	43%	100%

### 7.3.5 What security measures do people say they want?

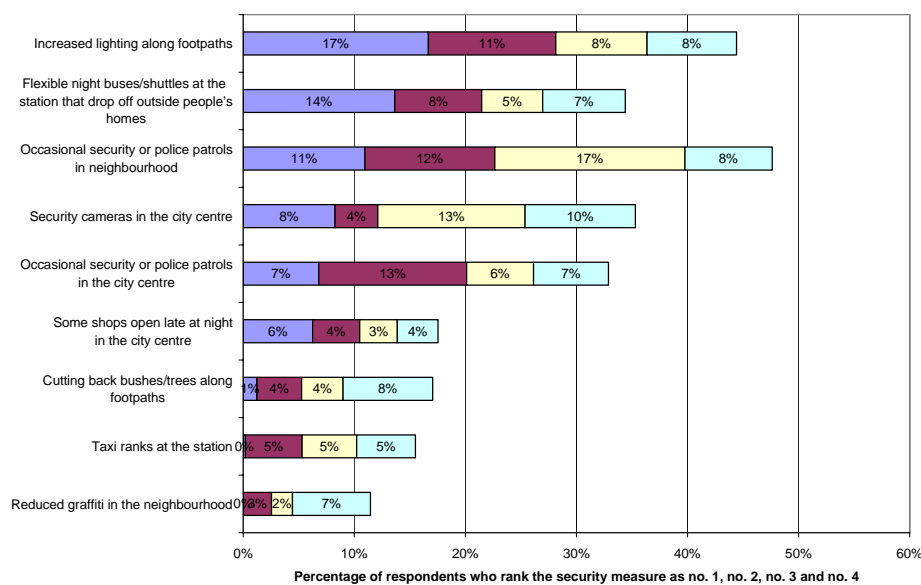
#### 7.3.5.1 Security measures for the walk to/from the train station

Respondents who felt unsafe during the walk to/from the train station were given a list of possible security measures to address security concerns associated with the walk to/from the train stop. Respondents were then asked to rank them from 1 to 4.

The rankings given to these security measures are illustrated by Figure 7.19: for example, 17% of train users ranked 'increased lighting along footpaths' as their number 1 measure and 11% ranked it as their number 2 measure.

Figure 7.19 indicates that the most popular measure is 'increased lighting along footpaths', though 'flexible timetables and stops for night buses/shuttles from the station', and 'occasional security police patrols' were also popular.

**Figure 7.19 Rankings of security measures that could improve the walk to/from train station.**



**7.3.5.2 Security measures for the wait at the train station**

Respondents who felt unsafe waiting at the train station were given a list of possible measures that would improve security concerns associated with waiting there. Again, respondents were asked to rank the measures from 1 to 4, and the rankings given to these security measures are illustrated in Figure 7.20.

**Figure 7.20 Rankings of security measures that would improve the wait at the train station.**

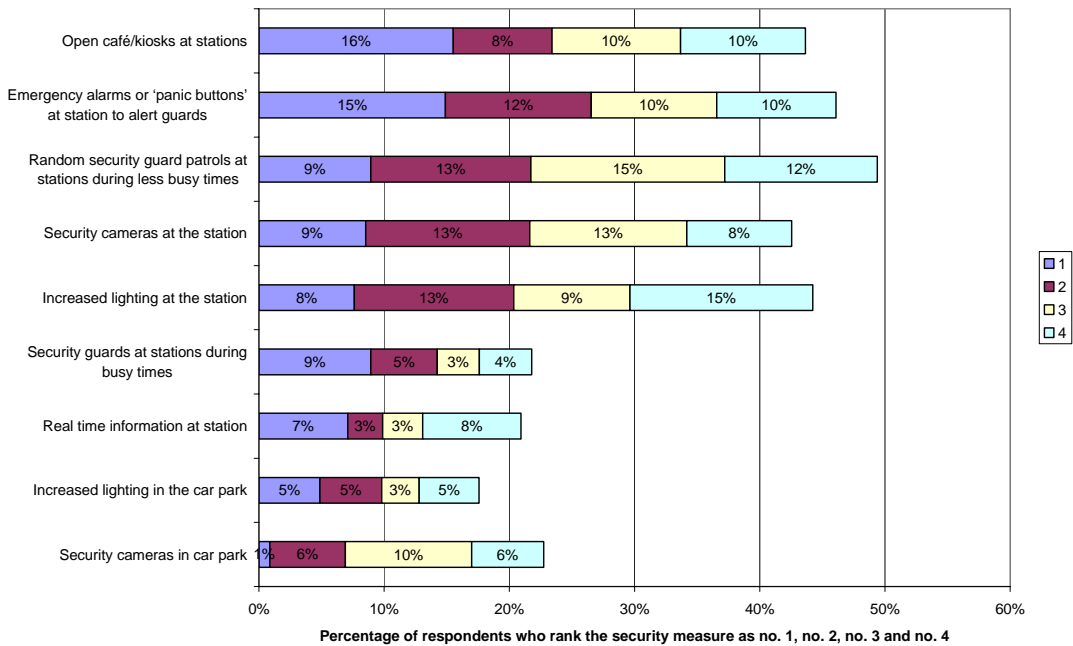


Figure 7.20 shows strong support for 'open cafes/kiosks at stations' and 'emergency alarms or panic buttons'. Other measures that obtained wide support include random security guards during less busy times, security cameras and increased lighting.

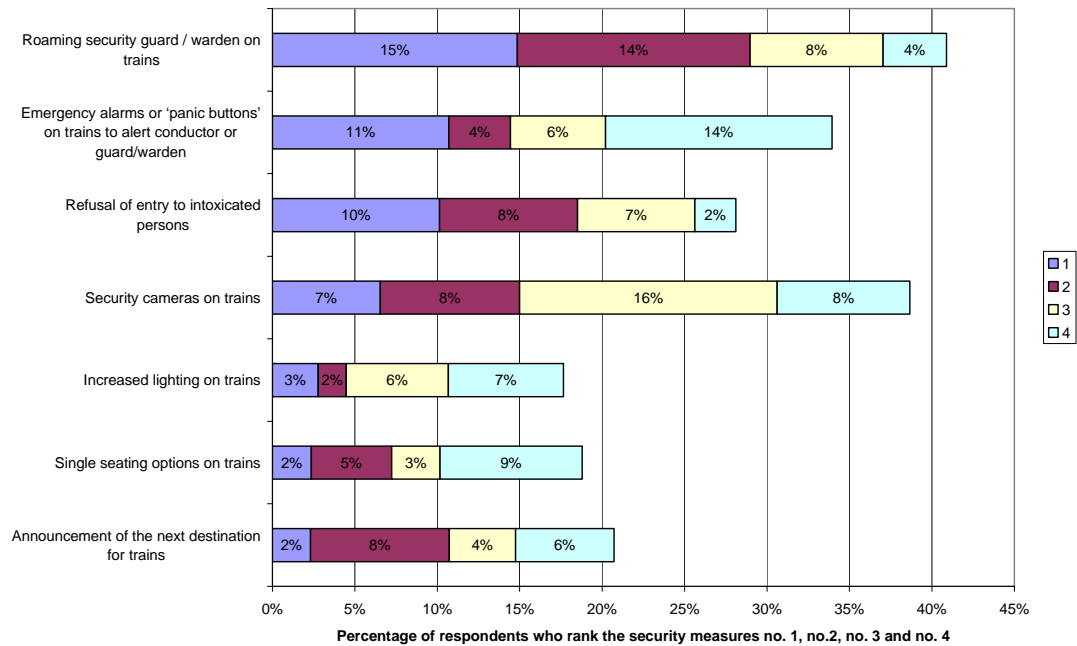
It shows more overall support for a random security guard during less busy times, when compared to a security guard at stations during busy times.

**7.3.5.3 Security measures while travelling on the train**

Respondents who felt unsafe travelling on the train were given a list of possible measures that would address their security concerns. Again, respondents were asked to rank them from 1 to 4, and the rankings given to these are illustrated in Figure 7.21.

Figure 7.21 shows that the most popular policy is a 'roaming security guard/warden on trains'. Security cameras also get support, but were more commonly ranked second, third or fourth, suggesting that they need to be supplemented by a guard/warden service.

**Figure 7.21** Rankings of security measures that would improve travelling on the train.



**7.3.5.4 Security measures across the whole train journey**

Respondents who felt unsafe across two or more stages of the journey (e.g. walking to the train stop and waiting at the train stop) were asked about measures that would provide improved security across the whole train journey. These respondents were presented with the top 4 measures from each stage and asked to pick a top 4 that would apply across the whole journey.

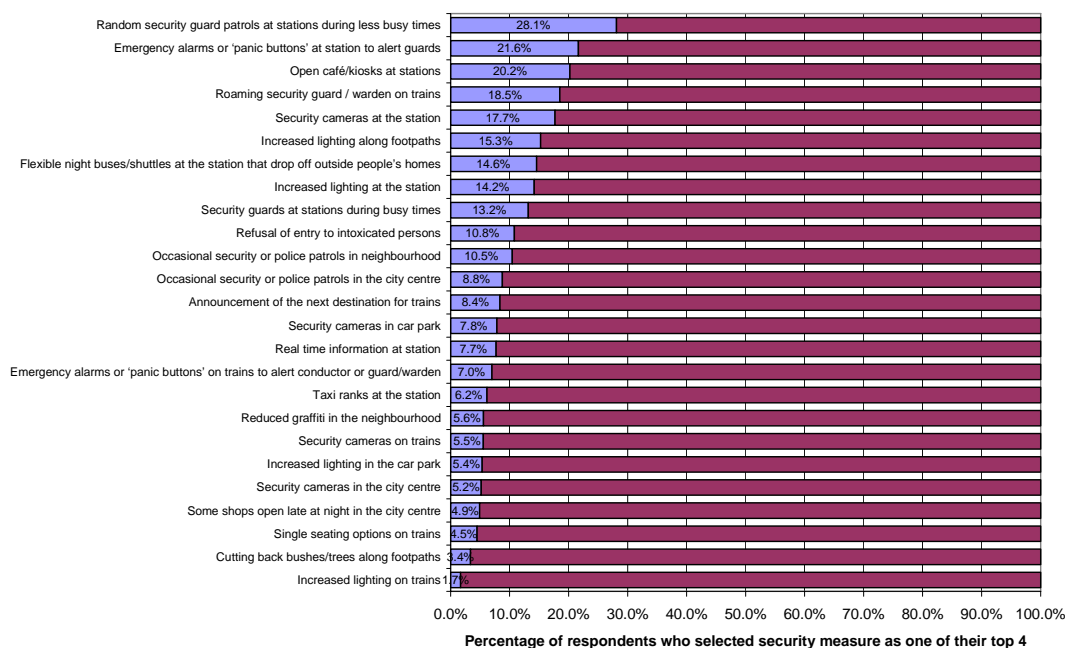
Figure 7.22 shows that 4 of the top 5 most popular measures relate to waiting at train stations:

- Random security guard patrols at stations during less busy times;
- Emergency alarms or 'panic buttons' at station to alert guards;
- Open cafés/kiosks at stations;
- Security cameras at the station.

Figure 7.22 shows that a personal presence on stations (e.g. guards, attendants at cafés/kiosks) gains more overall support than security cameras on the station. This is concordant with the international literature, which also finds that a personal presence is more popular than cameras (see section 3.4.2.1).

It shows remarkable support for cafés/kiosks, despite these not being an obvious security measure. This finding suggests that offering low rent or subsidies to such ventures may be a cost-effective means of ameliorating patrons' security concerns.

**Figure 7.22 Rankings of security measures that would improve the whole train journey for the user.**



### 7.3.6 Do people notice security measures?

Respondents who had security concerns were asked if they noticed any security measures associated with their train or train station. Table 7.28 shows that most of the respondents had not noticed any security measures.

**Table 7.28 Awareness of security measures installed on train or station.**

Not applicable – did not have concerns about security measures	Awareness of security measures among people with security concerns		Total
	Aware	Not aware	
17%	15%	67%	100%

The findings in Table 7.28 resonate with the international literature (see section 3.5) which finds that security measures are often not noticed, especially if they are not visible.

### 7.3.7 What is the impact of security measures on train patronage?

Respondents were presented with the top 12 security measures across their whole train journey. (Respondents were presented with the top 8 security measures if they felt unsafe during only two stages and the top 4 security measures if they felt unsafe during only one stage).

Respondents were then asked if they would travel more than they would now if these security measures were undertaken and, if so, how many extra trips they would make during daytime and after dark. The responses to this question are shown in Tables 7.29 and 7.30.

**Table 7.29 Impact of security measures on daytime train travel patronage.**

Train users	Average increase in trips/week
Impact across 36% of respondents who would increase train trips	3.7
	3.0 excluding outliers*
Impact across all respondents	1.3
	1.0 excluding outliers*

\* Excluding outliers involves removing persons making 8 or more trips per week.

Table 7.29 shows that 36% of respondents said they would make more trips during daytime, and the same respondents said, on average, that they would make 3.7 additional trips per week. However, the remaining 64% of respondents indicated that they would not respond, reducing the average increase across all respondents to 1.3 trips per week.

**Table 7.30 Impact of security measures on night-time train travel patronage.**

Train users	Average increase in trips/week
Impact across 38% of respondents who would increase train trips	2.7
	2.3 excluding outliers*
Impact across all respondents	1.0
	0.8 excluding outliers*

\* Excluding outliers involves removing persons making 8 or more trips per week.

Table 7.30 shows that 38% of respondents said they would make more trips at night-time, and the same respondents said, on average, that they would make 2.7 additional trips per week. The average increase across all respondents was 1.0 trips per week.

A comparison of Tables 7.29 and 7.30 shows that security measures may have more effect on train trips during daytime than on train trips at night-time.

## 7.4 Survey of people who have not used public transport

### 7.4.1 Sample description

Respondents were asked if they had used public transport in the last 12 months, and those who had not were classified as *non-users of public transport*.

The overall sample size of non-users of public transport consisted of 188 respondents. The age and gender breakdown of this sample is shown in Table 7.31.

Table 7.31 exhibits plausible patterns: in particular, the sample has a low proportion of very young people and is dominated by people aged 30-64. The gender ratio is not as male-dominated as might be expected: however, the authors judged that post-stratification was not appropriate to address this male domination because no statistics were available that indicated the actual gender balance for the population of non-users of public transport.

**Table 7.31 Age and gender distribution of sample of non-users of public transport.**

Age group (yr)	Female		Male	
	Number	%	Number	%
15-19	0	0%	2	1%
20-29	8	4%	2	1%
30-39	23	12%	18	10%
40-49	22	12%	17	9%
50-64	36	19%	23	12%
65+	10	5%	27	14%
Total	99	53%	89	47%

The ethnicity breakdown of the sample of non-users of public transport is shown in Table 7.32, which shows that the sample of non-users appears to be dominated by European ethnicities.

**Table 7.32 Ethnicity distribution of sample of non-users of public transport.**

Ethnicity	Number	%
European	150	80%
Maori	13	7%
Other	22	12%
Pacific	3	2%
Total	188	100%

## 7.4.2 How important are personal security concerns?

### 7.4.2.1 Barriers to bus use

Non-users of public transport were asked "To what extent have the following factors discouraged you from travelling by bus *during daytime*?" They were then presented with the list of potential barriers shown in Figure 7.23.

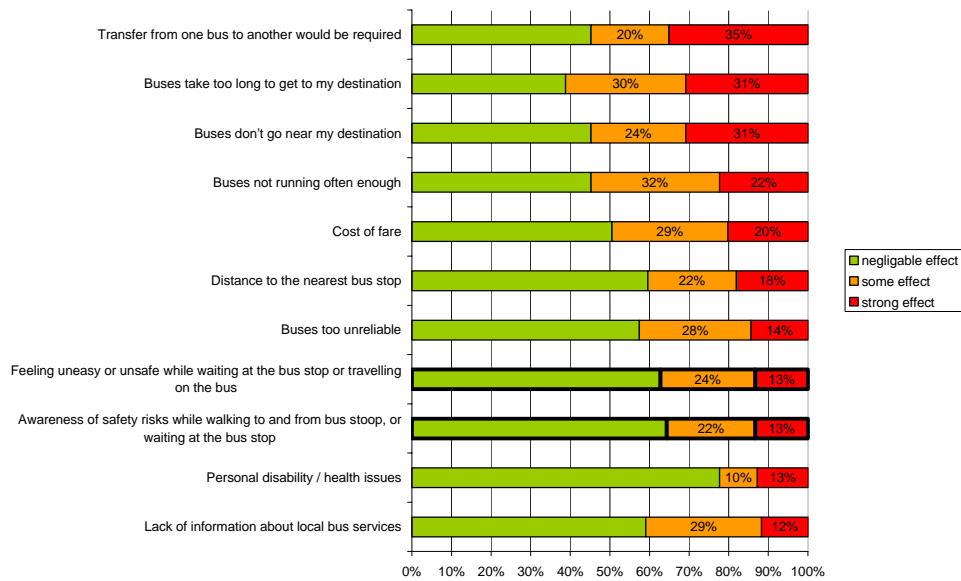
Figure 7.23 shows that the main barriers for non-users of buses relate to distance and practicality:

- Transfer from one bus to another would be required.
- Buses take too long to get to my destination.
- Buses don't go near my destination.
- Buses not running often enough.

Figure 7.23 also shows that security concerns are a barrier to increased daytime use of buses, but only a small proportion of people (around 12%) describe them as a strongly discouraging factor.



**Figure 7.23 Barriers to daytime use of buses (for non-users of public transport).**  
(Security-related barriers are in bold borders)

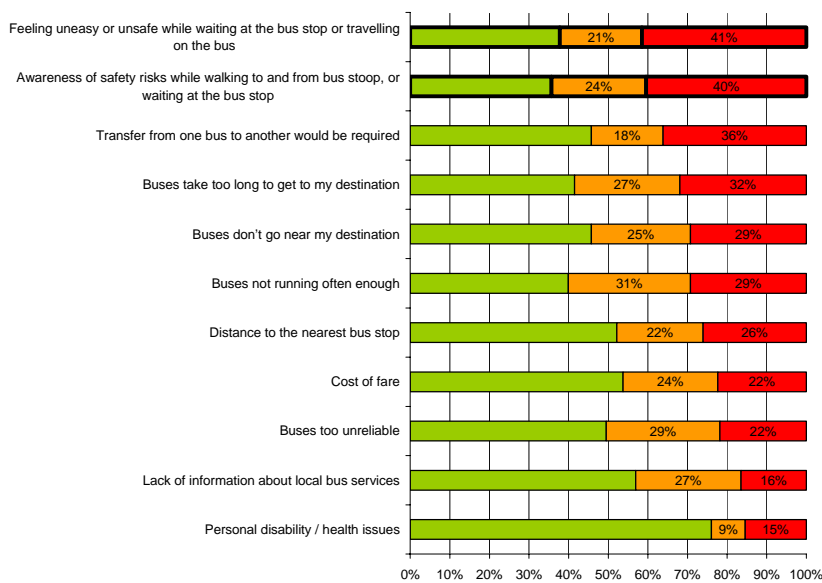


Non-users of bus public transport were asked "To what extent have the following factors discouraged you from travelling by bus *after dark*?" They were then presented with the list of potential barriers shown in Figure 7.24.

Figure 7.24 shows that security concerns become a predominant barrier to bus use after dark as about 40% of non-users describe them to be a strongly discouraging factor.

However, a number of other factors also act as barriers to use of bus services, including factors relating to distance and practicality (as discussed in regard to Figure 7.23).

**Figure 7.24 Barriers to night-time use of buses (for non-users of public transport).**  
(Security-related barriers are in bold borders)



**7.4.2.2 Barriers to train use**

Non-users of public transport were asked “Did they have a train service near them that they could use to commute to work?” Those who had access to a train service were asked “To what extent have the following factors discouraged you from travelling by train *during daytime?*” They were then presented with the list of potential barriers shown in Figure 7.25.

**Figure 7.25 Barriers to daytime use of trains (for non-users of public transport).**  
(Security-related barriers are in bold borders)

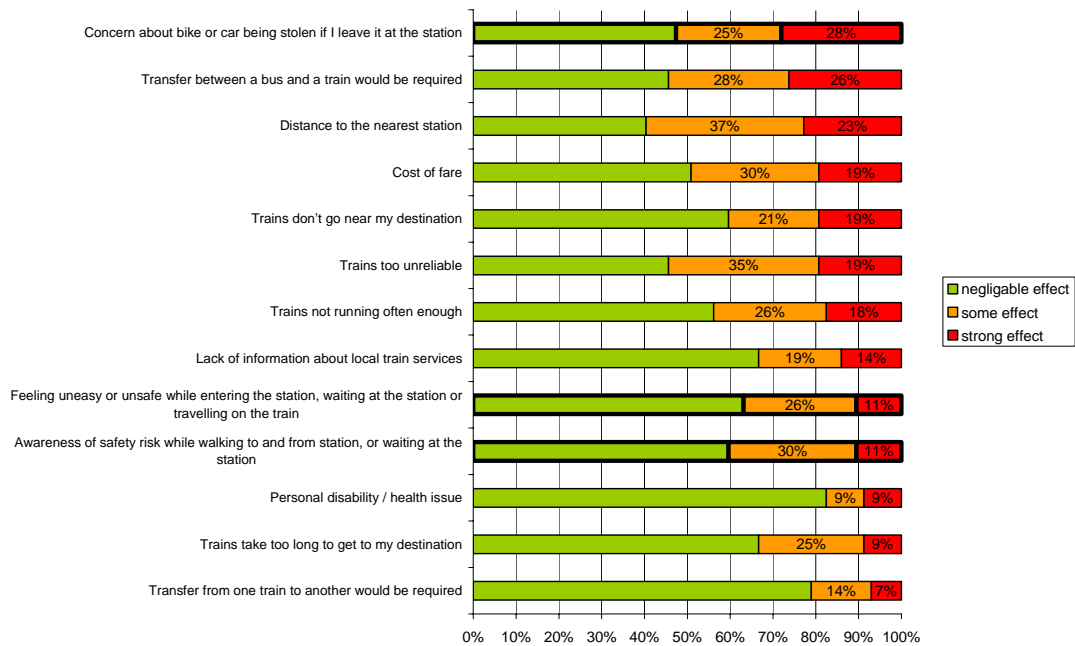


Figure 7.25 shows that one of the main barriers to increased use of train services during daytime is “concern about car or bike being stolen if I leave it at the station”. This confirms the anecdotal evidence provided by people familiar with the train industry.

It shows too that the need for a transfer and the distance to the station are also barriers for a large proportion of non-users of public transport. Security concerns are a strongly discouraging factor, but only for about 11% of non-users.

Non-users of public transport with access to a train service were then asked “To what extent have the following factors discouraged you from travelling by train *after dark?*” They were then presented with the list of potential barriers shown in Figure 7.26.

Figure 7.26 shows that personal security concerns become more important when using public transport after dark: about 40% of non-users describe them as strongly discouraging.

It also identifies vehicle theft as a major deterrent to increased use of trains after dark, as nearly half (47%) of non-users of public transport describe this as strongly discouraging to increased train use. Although the focus of this report is on personal security, rather than vehicle security, these results suggest that vehicle security is also a significant barrier to increased use of train services.

**Figure 7.26 Barriers to night-time use of trains (for non-users of public transport).**  
(Security-related barriers are in bold borders)

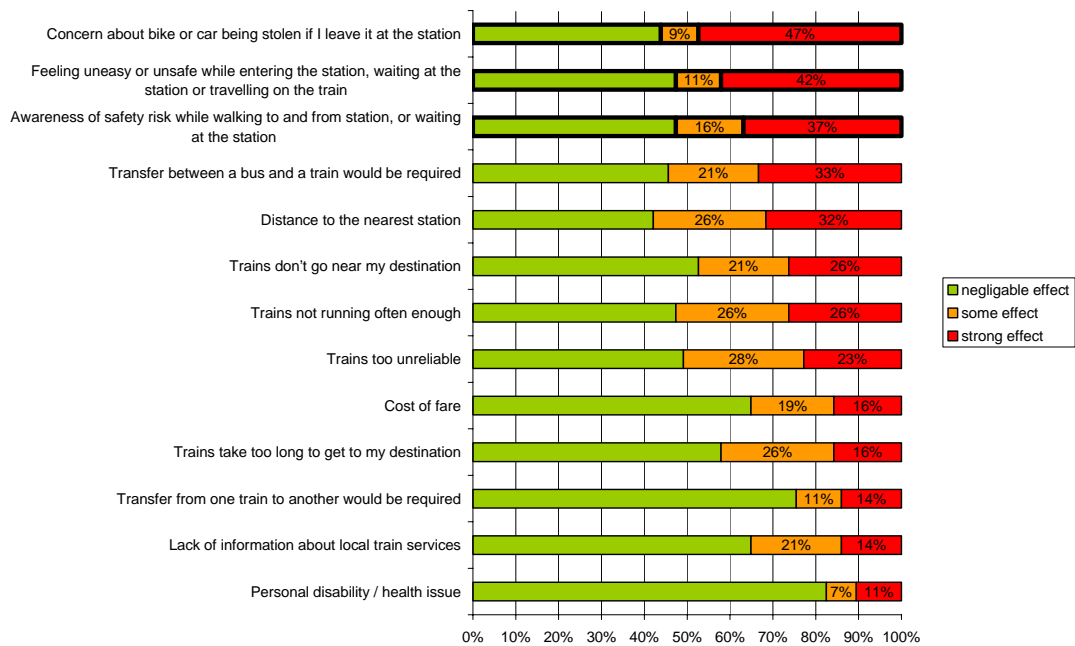


Figure 7.26 gives considerable weight to the need for 'transfer' and 'distance to the nearest station' as discouraging factors.

### 7.4.3 What factors influence personal security concerns?

Non-users of public transport were not asked about the factors which influence their perception of personal security measures because many would not be familiar enough with public transport to answer such questions. Also, the sample of non-users was too small to enable accurate estimates.

### 7.4.4 What security measures do people say they want?

As noted in section 7.4.3, many non-users of public transport would not be familiar enough with public transport to answer such questions. Therefore, they were not presented with such questions.

### 7.4.5 Do people notice security measures?

Non-users of public transport were not asked about their awareness of security measures because many would not be familiar with public transport.

### 7.4.6 What is the impact of security measures on bus patronage?

Non-users of public transport were asked to imagine a sophisticated package of safety measures introduced for their local bus services. Suggestions were for improved lighting, alarm buttons and cameras as possible measures on buses and at bus stops.

Non-users were then asked if they would have used the bus at all during the last week if these security measures had been in place. If they said they would use the bus, they

were asked how many extra trips they would make during daytime and after dark. The responses to this question are shown in Tables 7.33 and 7.34.

**Table 7.33 Impact of security measures on daytime bus travel for current non-users of public transport.**

Non-bus users	Average increase in daytime bus trips/week
Impact across 13% of respondents who would increase daytime bus trips	4.4
	2.8 excluding outliers*
Impact across all respondents	0.6
	0.3 excluding outliers*

\* Excluding outliers involves removing persons making 8 or more trips per week.

Table 7.33 shows that only 13% of non-users would actually start using the bus, even when they were asked to imagine a very sophisticated package of security measures.

It shows that non-users who would start using the bus would make a significant number of trips (i.e. 4.4 per week, on average) but these people were a minority. Therefore, the average number of new trips per person is only 0.6 trips per week.

Table 7.34 explores the impact of a sophisticated package of security measures on bus travel after dark.

**Table 7.34 Impact of security measures on night-time bus travel for current non-users of public transport.**

Non-bus users	Average increase in night-time bus trips/week
Impact across 9% of respondents who would increase night-time bus trips	4.0
	2.9 excluding outliers*
Impact across all respondents	0.3
	0.2 excluding outliers*

\* Excluding outliers involves removing persons making 8 or more trips per week.

Table 7.34 shows that the response of non-users to security measures is even more muted when night-time trips are explored. Only 9% of people would start using the bus, and, therefore, the average number of new trips per person is only 0.3 trips per week.

#### **7.4.7 What is the impact of security measures on train patronage?**

Non-users of public transport who had access to a train service were asked to imagine a sophisticated package of security measures introduced for their local train services. Suggestions were for improved lighting, alarm buttons and cameras at train stations, and cameras and security guards on trains as possible security measures.

Non-users were then asked if they would have used the train at all during the last week if these security measures had been in place. If they said they would use the train, they were asked how many extra trips they would make during daytime and after dark. The responses to this question are shown in Tables 7.35 and 7.36.

**Table 7.35 Impact of security measures on daytime train travel (for current non-users of public transport).**

Non-train users	Average increase in daytime trips/week
Impact across 11% of respondents who would increase daytime train trips	2.8
Impact across all respondents	0.3

**Table 7.36 Impact of security measures on night-time train travel (for current non-users of public transport).**

Non-train users	Average increase in night-time train trips/week
Impact across 9% of respondents who would increase night-time train trips	2.5
Impact across all respondents	0.2

Tables 7.35 and 7.36 both show that, as with bus travel, the proportion of non-users who would begin using the train is very low. Consequently, the average number of new trips is also very low.

## **8. Conclusions and policy implications**

### **8.1 Introduction**

This concluding chapter is structured as follows:

- Section 8.2 discusses the conclusions obtained from this research project, drawing mainly on the online survey, but also incorporating evidence from the focus groups, and the international literature review.
- Section 8.3 describes the policy implications drawn from the research project.
- Section 8.4 lists three key avenues for further research into personal security when using public transport.

### **8.2 Conclusions**

#### **8.2.1 How important are personal security concerns?**

##### ***8.2.1.1 Incidence of personal security concerns***

Concerns for personal security do discourage people from using public transport:

- The online survey showed that a large proportion of public transport users are 'slightly discouraged' or 'strongly discouraged' because of their personal security concerns.
- The focus groups also identified safety concerns as a deterrent to making some trips by bus or train.

About 10% of public transport users are discouraged by personal security concerns during daylight:

- The online survey showed that personal security concerns 'strongly discourage' about 10% of public transport users during the day, and up to 10% of public transport users feel 'very unsafe' during the day.
- The international literature showed that a small proportion of public transport users is discouraged from using public transport during the day. For example, Stafford & Pettersson (2004) found that up to 10% of UK women felt unsafe on public transport during the day. Symonds Travers Morgan (1996) also found that nearly 10% of people avoided Sydney trains during daytime.

But after dark this concern for personal security increases – about 40% of public transport users are discouraged from using public transport by such concerns:

- The online survey showed that nearly 50% of bus users and 30% of train users are 'strongly discouraged' from using the train after dark.
- The online survey showed that about 40% of people feel 'very unsafe' at some point when using public transport at night (for both bus and train).

- The review of New Zealand literature (Morris et al. 2003) showed 26% of people 'always avoiding' or 'mostly avoiding' buses at night. (This percentage appears to be relatively low because 'always' or 'mostly avoiding' reflects a stronger sense of discouragement than being 'strongly discouraged' or 'very unsafe'.)

This is comparable to the UK research, e.g. Stafford & Pettersson (2004) who found that the proportion of young people and women who feel unsafe increases to 40-50% after dark.

However, this is lower than the fears seen in some Australian research, especially where train transportation is concerned: Symonds Travers Morgan (1995) found that 50-55% of people avoided certain Sydney trains after dark. As discussed in section 8.2.2.4, the difference may be related to a greater prevalence of 'undesirable' behaviour (e.g. graffiti, drug-dealing, crime, gangs, etc.) associated with rail transport in Sydney.

### ***8.2.1.2 Importance of personal security concerns***

#### ***Relative importance of personal security concerns:***

The online survey showed that, during the day, the main barriers to increased patronage were insufficient frequency and impracticality (e.g. buses/trains don't go near the destination, transfer required). Personal security was also a factor for a minority of daytime users.

However, personal security concerns become common barriers after dark, and they rank very highly. The online survey findings were as follows:

- For existing users of buses, personal security concerns were the most common barrier to increased use of buses after dark.
- For non-users of public transport by bus, personal security concerns were the most common barrier to using buses after dark.
- For existing users of trains, personal security concerns were the second most important barrier to increased use of trains after dark (second to insufficient frequency).
- For non-users of public transport by train, personal security concerns were the second most important barrier to using trains after dark (second to concern about a bike or car being stolen).

Frequency is also a prominent theme when barriers to patronage are analysed, and it becomes more important after dark.

- In the online survey results for existing users of buses, insufficient frequency was ranked third during the day and second only to personal security concerns after dark.
- In the online survey results for existing users of trains, insufficient frequency was ranked second during the day and first after dark.
- The focus group participants were asked unprompted questions about what was important to them: bus users mentioned cost, frequency, and the ability to transfer

between buses; for train users, there was more concern about personal safety in remote stations and the need for better lighting.

***Impact on mode shift:***

The online survey suggests that personal security may have an impact on the frequency of patronage by existing patrons, but it seems ineffective at encouraging mode-shift by non-users of public transport. In the New Zealand literature, both a Booz Allen Hamilton (2005) survey and a Pinnacle Research and Capital Research (2001) survey found that personal security had little impact on mode-shift decisions.

A more important barrier to modal shift by non-users of public transport is probably vehicle security:

- The online survey indicated that, for non-users of public transport, the most common barrier to train use was vehicle security, and the concern that a bike or car being stolen if it is left at the station. Furthermore, this was a concern both during the day and after dark. This observation supports some of the anecdotal perceptions of car theft risks raised in discussion with people familiar with the New Zealand rail industry.
- The focus group participants also identified vehicle security as an issue for people who 'park and ride'. Furthermore, this common concern had validity because some of the women in the focus groups had had their car vandalised or broken into.

**8.2.2 What factors influence personal security concerns?**

***8.2.2.1 Darkness***

Feeling unsafe on public transport is more common after dark. This finding was observed in the online survey, as discussed in section 8.2.1.1. The New Zealand focus groups also found that safety was more of an issue during the evening. Furthermore, these findings are consistent with the international literature.

Feeling unsafe after dark is more commonly associated with walking and waiting in the dark. However, the online survey showed that darkness when travelling on trains and/or buses is a problem for a minority of people (see section 8.2.2.2).

***8.2.2.2 Stage of journey***

The walking and waiting stages of public transport journeys are the stages when most people feel concerned. This relates more to a fear of being outside in the dark, rather than of public transport itself. For example:

- The online survey showed that about 40% of people felt very unsafe walking and waiting (whether on buses or trains) but only 10-15% of people felt very unsafe when travelling.
- The New Zealand literature showed that many people feel unsafe walking in the dark. Casey & Crothers (2005) found that about 50% of people felt unsafe in Auckland after dark and Gravitax Research & Strategy Limited (2005) found that, nationally, 27% of people felt unsafe walking after dark.



The online survey showed that the walk to the stop/station was given just as much, if not more, weight than the wait at the stop/station. For example:

- When bus users were asked which stage made them feel most unsafe or uneasy, the split was even between walking to the bus stop and waiting at the bus stop.
- However, for train users, the walk to the station was often considered less safe than the wait at the station (especially by females).

But this finding differs from that in the international literature in which waiting was the stage when people are most likely to feel fearful, as noted by Stafford & Pettersson (2004) in the UK, and Booz Allen Hamilton (2003) in Australia. Negative associations with stops/stations may not be as strong in New Zealand as observed in other countries.

### ***8.2.2.3 Mode of journey***

Evidence is conflicting with regard to the comparison between train and bus:

- The focus group participants all agreed that train travel was more 'scary' than bus travel, for the reasons discussed in Chapter 5.
- The online survey results suggested little overall difference between the two modes: therefore, the results differ slightly from the international literature. In particular, Stafford & Pettersson (2004) found that the incidence of feeling unsafe is about 10% higher on train, and Sweeney Research (2006) recorded considerable concern about safety on some Sydney train stations.

Taking everything into account, security concerns appear to be more common when travelling on trains in New Zealand, but the difference between trains and buses is relatively small. This is perhaps because the problems associated with train stations (e.g. graffiti, drug-dealing, crime, gangs, etc.) are not as prominent or as serious in New Zealand as they are in other countries.

### ***8.2.2.4 Presence of undesirable people***

The presence of 'undesirable' people is a common cause of anxiety for people contemplating or participating in public transport travel, a theme that comes across in the online survey, the focus groups and the literature review as follows:

- The focus group participants directly associated personal security concerns with 'dodgy' people waiting at the stop/station: youths, glue-sniffers, drunks, 'creeps', and people who appeared intimidating.
- The online survey showed that the presence of people hanging around in groups/gangs and drunk/intoxicated people commonly stood out as factors that made people feel unsafe or uneasy.
- The international literature also found that the presence of people in groups/gangs and disruptive behaviour made people feel very unsafe.

#### **8.2.2.5 Other external factors**

The online survey results showed that darkness and isolated streets contributed a lot to personal security concerns. For a minority of people, uncertainty about when the bus/train would arrive was a problem, as was darkness on the bus/train.

#### **8.2.2.6 Demographic and social factors**

The online survey showed that females were more likely to be discouraged by personal security concerns, especially with regard to train travel:

- About 58% of female bus users were strongly discouraged from using the bus at some point, compared to 42% of male bus users.
- About 71% of female train users were strongly discouraged from using the train at some point, compared to only 24% of male train users.

However, the proportion of males that was discouraged by personal security concerns is still notable, and this shows that personal security is not solely a female topic.

The online survey also showed that security concerns were spread evenly across all age groups. The only discernible pattern was that, for train travel, young people (15-24 years) were more likely to be somewhat or strongly discouraged.

In the international literature, personal security concerns tended to be higher among females, young people and older people. The higher incidence of fears among females was observed in the online survey, but there were no discernible differences across different age groups. Unfortunately, the sample sizes did not enable accurate estimates for more finely defined age groups such as 15-19 or 65+ years.

### **8.2.3 What security measures do people say they want?**

#### **8.2.3.1 Security measures in the bus industry**

The online survey showed that the three most popular measures across the *whole bus journey* all related to bus stops:

- Lighting at bus stops.
- Emergency alarms or 'panic buttons' at bus stops to alert guards.
- Security cameras at bus stops.

The next three most popular measures across the *whole bus journey* related to walking to the bus stop:

- Flexible buses/shuttles.
- Increased lighting along footpaths.
- Occasional security or police patrols in neighbourhood.

The online survey also enabled assessment of the preferred measure to be employed at each stage of the bus journey:

- The most popular security measures to manage *walking to/from the bus stop* were flexible buses/shuttles and increased lighting along footpaths.

- The most popular measures while *waiting at bus stops* were lighting, followed closely by 'panic buttons' and security cameras.
- The most popular measures while *travelling on the bus* were panic buttons, immediate removal of abusive people and/or vandals, refusal of entry to intoxicated persons, and security cameras.

### **8.2.3.2 Security measures in the train industry**

The New Zealand online survey shows that four of the five most popular measures across the *whole train journey* all relate to waiting at train stations:

- Random security guard patrols at stations during less busy times.
- Emergency alarms or 'panic buttons' at stations to alert guards.
- Open cafés/kiosks at stations.
- Security cameras at stations.

Of these measures, a personal presence (e.g. guards, attendants at a café/kiosk) gained more overall support than security cameras on the station. This is consistent with the international literature, which also found that a personal presence was more popular than cameras (see section 3.4.2.1).

The online survey findings also enabled assessment of the preferred measure to be employed at each stage of the train journey, as follows:

- The most popular security measures to manage *walking to/from the train station* were flexible buses/shuttles, increased lighting along footpaths, and occasional neighbourhood patrols.
- The most popular measures while *waiting at the train station* were open cafés/kiosks and 'panic buttons' followed closely by random security guard patrols, and security cameras at the station.
- The most popular measures while *travelling on the train* were roaming security guards/wardens, 'panic buttons', refusal of entry to intoxicated persons, and security cameras on trains.

The survey findings also showed that vehicle security was an important barrier that discourages non-users from using the train. This was shown to be the most common barrier to both travel during the day and travel after dark.

### **8.2.4 Do people notice security measures?**

Security measures are not noticed unless they are sufficiently visible to patrons. The online survey indicated that only a minority of public transport users (less than 20% of the people surveyed) were aware of security measures introduced by the public transport industry.

This might appear surprising, especially given the large numbers of CCTV cameras deployed in the New Zealand train industry. However, this lack of awareness has also been observed in the international literature.

### **8.2.5 What is the impact of security measures on public transport patronage?**

Security measures may increase the frequency of use by existing public transport users, but they are unlikely to have much influence on any mode-switch decisions made by people who currently do not use public transport.

The online survey findings suggested that any security measures put into use are likely to impact on the patronage of existing users of public transport, as follows:

- About 40% of existing bus users would increase their use of buses, leading to an average increase, across all bus users, of 2.2 extra trips per week (excluding outliers).
- About 40% of existing train users would increase their use of trains, leading to an average increase, across all train users, of 1.8 extra trips per week (excluding outliers).

However, these survey results suggested that non-users of public transport are unlikely to respond dramatically to security measures because:

- Only about 10% of non-users indicated that they would start using the bus, and the average number of trips across all non-users would be 0.5 trips per week.
- Only about 10% of non-users with access to train indicated that they would start using the train, and the average number of trips across all non-users with access to the train would be 0.5 trips per week.

## **8.3 Policy implications**

### **8.3.1 General policy implications**

The online survey shows that the target market for security measures crosses both genders and all age groups. This diversity should be kept in mind in the development and marketing of security measures.

The online survey results also imply that security measures will be more effective if they are targeted towards increasing the frequency of use of *existing patrons*. Security measures will be less effective for persuading *non-users of public transport* to become users.

Awareness of security measures was shown to be very low in the online survey, and this is consistent with findings in the international literature. Therefore, the public transport (especially the train) industry should consider how it can make people more aware of security measures (especially CCTV) without unnecessarily alarming them.

The factors that drew some attention in the online survey were darkness on buses/trains and uncertainty about when the bus/train was arriving at the next destination. They affect a discernible proportion of the population and are reasonably easy to address.

The international literature review noted that people dislike stop/station designs that make them feel enclosed or vulnerable (see section 4.3.4.1). Therefore, stop/station design could draw on the insights provided by the Crime Prevention through

Environmental Design (CPTED) crime prevention philosophy – this philosophy aims to reduce the incidence and fear of crime by changing the 'built environment' to reduce criminal opportunities and to foster positive social interaction.

The international literature review also showed that improved lighting is one of the most popular (and probably cost-effective) security measures. Therefore, any security package that is developed should ensure that lighting is satisfactory.

### **8.3.2 Bus-specific policy implications**

The online survey indicated strong support for a 'package' of measures that address security concerns at bus stops:

- Lighting at bus stops.
- Emergency alarms or 'panic buttons' at bus stops to alert guards.
- Security cameras at bus stops.

These measures are most effective when packaged like this, as noted in section 5.4.6. For example, a CCTV would record people who had pressed the 'panic button' as a prank when no emergency had occurred.

Improved street lighting and flexible timetables and stops for buses/shuttles both have strong support. Options relating to flexible buses/shuttles (e.g. introducing early services in Auckland and Christchurch) are worth further exploration because they may be more effective at increasing patronage. Regression analysis (see section 8.4.1) could be used to test this hypothesis.

### **8.3.3 Train-specific policy implications**

The online survey showed strong support for security measures relating to the wait at train stations:

- Random security guard patrols at stations during less busy times.
- Emergency alarms or 'panic buttons' at stations to alert guards.
- Open cafés/kiosks at stations.
- Security cameras at stations.

The support for open cafés/kiosks at stations is notable because this could potentially be a low-cost means of making people feel safer. Also they make people feel that someone is present without the tensions associated with more authoritative figures.

The overwhelming support for a personal presence at stations (e.g. guards, attendants at cafés/kiosks) is also notable. It is consistent with the international literature, in which a personal presence was more popular than cameras (section 3.4.2.1). This has implications for policies like installing automatic ticketing which could potentially remove this personal presence.

### **8.3.4 Wider policy implications**

The walking and waiting stages of a public transport journey contribute more to people feeling unsafe than the travelling stage. Darkness, alleyways, secluded pathways, lonely isolated streets made a number of respondents feel unsafe or uneasy. But there is evidence (section 8.2.2.2) that this reflects a wider issue relating to safety when walking in cities and neighbourhoods (especially at night-time). Therefore, these are policy implications for Police and/or City Councils.

This wider issue of safety could be addressed through a range of policy measures, but improved street lighting is an obvious option, especially as improved street lighting received broad support in the survey results.

Security or police patrols also received support, but they were not quite as popular.

Designing neighbourhoods to minimise situations where people feel vulnerable (e.g. alleyways) may also be an option. This concept touches on the CPTED philosophy already discussed in section 8.3.2.

## **8.4 Further research directions**

This report concludes that the three key avenues for further research into personal security on public transport are:

- Regression analysis and market segmentation analysis.
- Further surveys of people identified in the online survey.
- Further surveys using probability-based survey methods.

### **8.4.1 Regression analysis and market segmentation analysis**

The survey estimates presented in Chapter 7 were produced to meet the objective described in the proposal: *To investigate the extent to which perceived concerns about personal security are a deterrent to greater use of public transport services in New Zealand, and the causes of these concerns; and to develop policy recommendations/guidelines to address these causes and hence increase personal accessibility and use of public transport.*

However, the survey collected a lot of data on individuals. This data could be used for regression analysis and market segmentation analyses.

*Regression analysis* could be used to explore the following questions:

- What types of security measures are most effective for increasing public transport patronage?
- What types of people are most likely to increase public transport patronage in response to security measures?

*Market segmentation analysis*, using advanced statistical tools, could be used to explore the following questions:

- Can the market be segmented into different groups on the basis of their security concerns and the factors that cause security concerns? For example, park and ride travellers during daytime may have different concerns to people who walk home after dark. Also, some people may be 'fearful' all the time, while some people may only feel unsafe at certain stages of the journey.
- What are the characteristics of market segments? For example, people who only feel most unsafe while travelling may have certain characteristics.
- Can the market be segmented into groups based on the preferred 'packages' of security measures? For example, some segments may be more concerned about disorder on trains while other segments may be more concerned about security measures at train stations.
- What is the relationship between the factors that cause concerns and the types of security measures preferred by individuals? For example, people concerned about social disorder may place more emphasis on the presence of guards or other authority figures.

#### **8.4.2 Surveys of people identified in online survey**

The online survey has also collected identification information for individuals who had been surveyed for this report. Therefore, those people who had indicated that they had security concerns could potentially be re-surveyed if transport operators or transport policy makers want to ask more detailed questions. For example, the individuals could be re-surveyed and asked detailed questions about how they would like a flexible night bus/shuttle to operate.

#### **8.4.3 Surveys using probability-based survey methods**

The online survey results presented in Chapter 7 were intended to produce only preliminary 'ball-park' estimates because using a market research panel has potential self-selection biases. These potential biases are discussed in section 6.3.2.

The online survey estimates suggest that a sizable portion of public transport users are discouraged by their personal security concerns, a topic that may deserve more attention. If so, a further survey using probability-based survey methods may be justified as a means of producing more accurate estimates. Such methods give every member of the target population a probability of being selected (e.g. on-service surveys, house-to-house surveys, etc.).

In addition, a further survey would allow researchers to build on market segmentation analysis described in section 8.4.1. The market segmentation analysis could be used to develop 'packages' of security measures designed to appeal to certain market segments, and the effect of these 'packages' on patrons could then be explored.

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