

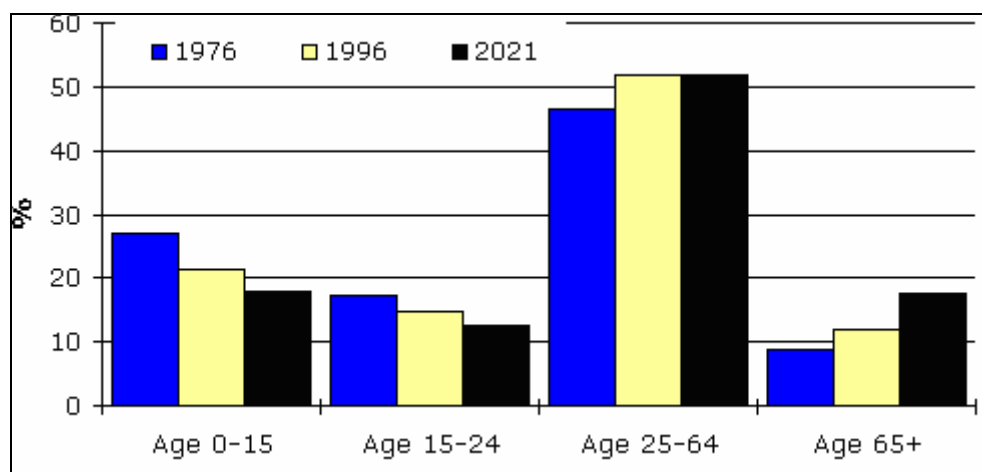
# Elderly Mobility: Issues, Opinions and Analysis of trip making in Adelaide

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## 1 Introduction

Ageing of the population is one of the major changes being experienced by Australia. New strategies for engaging with older people and providing better services are needed. Much of the discussion around population ageing considers issues associated with an increasing proportion of older people; for example, the provision of health and disability services, and family and community care. However, as population ageing also relates to declining mobility, it has implications for all sectors including transport. Quality of life in old age is related to mobility, although the relationship is not clear, in part because the concept of *mobility* is not well defined (Metz, 2000). As the objectives in urban transport planning have changed over the last decade, greater emphasis has been placed on assessing the transport needs of various minority groups that include elderly people (Richardson, 1980). Understanding travel characteristics of the elderly is essential for responding to their mobility and traffic safety needs (Benekohal et al. 1981). Transport provides an essential link to friends, family and the wider community - a vital lifeline to maintaining independence. (UK Department for Transport, 1999). It is well known that a lack of mobility can prevent older people from participating in social activities and lead to low morale, depression and loneliness. In this context, this study aims to understand the transport difficulties experienced by older people in the Adelaide metropolitan area.

It is a common knowledge that the 'older' population segment, meaning those over the age of 65 years, is rapidly increasing as a proportion of the overall population within Australia. The major factors driving the changes in population and demographic structure over this period are, declining fertility and mortality rates. In the past 20 years the demographic structure has shifted away from the younger age-groups to the middle and older age-groups (Figure 1). Over the next 25 years, the distribution of population shifts towards the older age-groups at the expense of the younger age-groups, with little change in the relative size of the middle-age cohorts. (DETYA 2005).



**Figure 1: Age distribution of the population, 1976, 1996 and 2021** (Source: DETYA 2005)  
Recent Australian projections suggest that the combined impact of more older people, a higher proportion of seniors with licences (especially women), and increasing kilometres travelled can have surprisingly dramatic effects on outcomes (Carolyn O'Fallon and

Charles Sullivan, 2003). South Australia (SA) has the highest proportion of people over 85 years of age in Australia. Over 15 per cent of the SA population is aged 65 years or more with this proportion rising rapidly. At present, South Australians also stop working earlier than people in other states. South Australia has the highest proportion of people aged 55 not in the workforce. Characteristics of older population such as numerical and geographical distributions, income distribution, health status, activity pattern, family structure and retirement status are all changing. Aged people are increasingly likely to seek and purchase high quality services and continue to engage in the economic, social, civic, cultural and sporting lives of their communities. Despite the pace at which South Australia is ageing, there is no overall plan for providing the transportation needs of older people.

There is a strong need to understand these characteristics to get a clear picture of the probable mobility needs of older people in the future. The key aims of this research project were to examine the population of interest (taking Adelaide as case study) in detail; identify barriers to mobility and methods to overcome them; detail best practices from transportation programs designed to improve travel opportunities for older persons; and identify further innovations. The study used data collected in the primary survey conducted during March 2007. Day-to-Day Travel Surveys of older people (65 years and above) were conducted to obtain essential information on the travel and activity patterns of older people – how they travel, where they go, when, why and so on (i.e. to understand their transport mobility). We sought travel details from people aged 65 and above for a particular day (4am to 4 am next day). We also collected general information of each member of the household to develop statistical relationships. This survey has also sought the opinion of the older people in Adelaide with regard to their mobility, especially public transport needs.

## **2 Study Area and Sampling Frame**

The study area was restricted to the Adelaide Statistical Division (ASD). The sampling frame consisted of randomly selected residents of age 65 and above from each post code in the ASD from those residents registered with the South Australian Council on the Ageing (COTA). COTA is the peak organisation for older South Australians. Membership of COTA is open to people over 50 years of age. COTA has both individual and organisational members jointly providing a membership base of around 85,000 older South Australians. (Council on the Ageing 2007). A quota was used in selecting the sampling frame to ensure that there is even representation in the sampling from each of the post codes in the ASD.

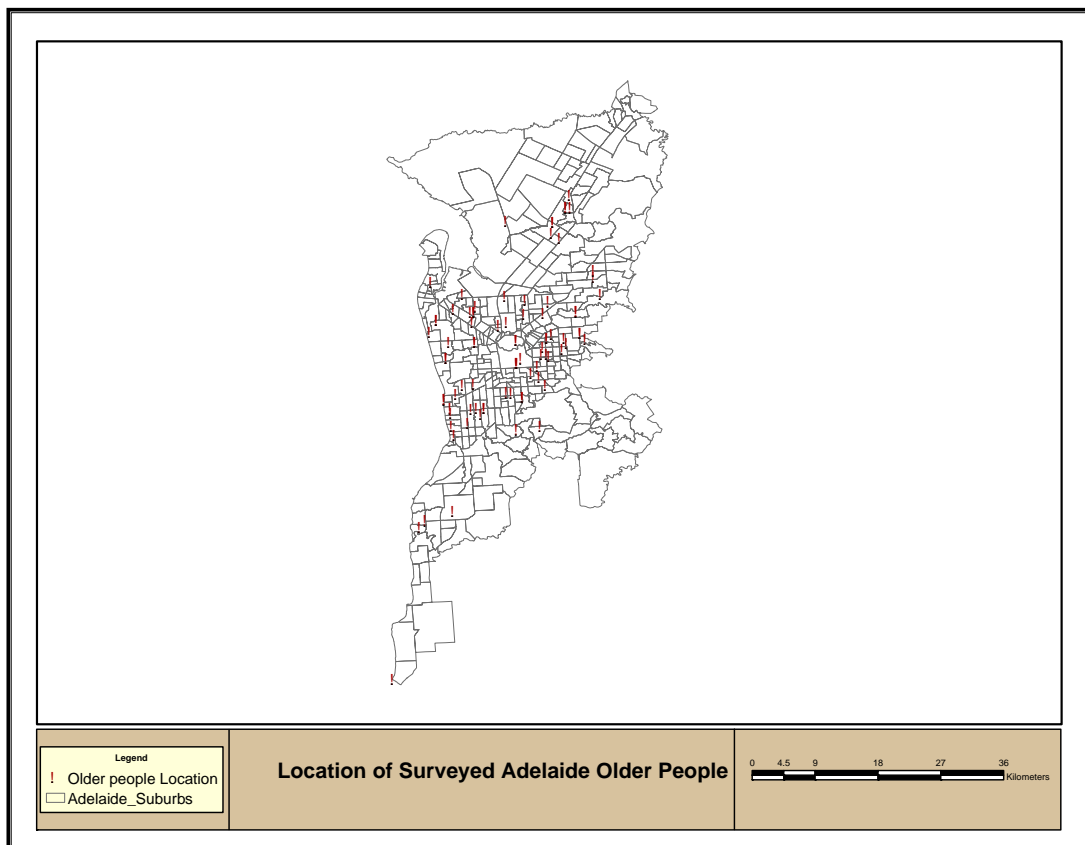
The questionnaire, which was self-administered, had two parts. The first part sought information on all the members of household and their characteristics. The second part probed travel patterns, attitudes and opinions concerning travel of the aged person/s of the household. Questions were derived initially from a literature review and refined using pilot surveys within the Transport Systems Centre of the University of South Australia, and its contacts, and discussions with the local experts. A total of 475 surveys were mailed to randomly chosen older people registered with COTA. Out of these forms 400 forms were mailed to those who had individual registration with COTA and 75 forms were mailed to older residents that had household registration with COTA. Forms were distributed by stamping resident's travel day on the survey form. This is done to obtain travel pattern information for all days of the week; meaning approximately 68 forms were stamped Monday and another 68 forms were stamped Tuesday and so on. A prepaid return envelope was included as well as one covering letter from the Transport System Centre explaining the significance and objectives of the survey and another from the Executive Director of COTA soliciting cooperation from the members of COTA .

The research carried out by the University of South Australia staff or students, involves human participants must be conducted in a manner consistent with University policy and relevant guidelines and should also meet appropriate professional and cultural standards.

Hence, the completed questionnaire was sent and received approval from the University Ethics Committee

### 3 Survey Response

A total of 97 older people responded to the mail survey. Out of these, 12 forms were either not completed or had inadequate response and hence were rejected. Finally, data from the eighty five forms (approximate sample size of 18 per cent) were geo-coded (to the nearest street intersection to the dwelling) into ArcGIS. The respondents appear to provide reasonable spatial representation of elderly residents of the study area. Figure 1 shows the locations of the surveyed households.



**Figure 1 Study area and the geocoded address of the respondents**

### 4 Survey findings

#### 4.1 Household characteristics

Figure 2 (below) shows the number of members in the surveyed households. It can be seen that a large percentage (54 per cent) of the respondents lived in single member households. This percentage seems to be higher when compared to earlier studies (10 Year Plan for Aged Services, 1995).

Most of the surveyed participants (69 per cent) were Australian born. The next highest category was older people born in UK (19 per cent). The rest of the respondents (7 per cent) represented countries such as Germany, Greece, New Zealand and Sri Lanka etc. Five respondents did not provide this information. It can be seen from Figure 3 that most respondents (72 per cent) owned their houses and units. Figure 4 shows that most of them

(55 per cent) live in independent houses. These figures more or less tally with earlier report published by the SA Office for the Ageing (10 year plan for aged services, 1995). Most of the surveyed respondents had at least completed secondary education (Figure 5)

Figures 6 and 7 show that a significant percentage (82 per cent) of the respondents owned at least one car and many of them (76 per cent) had a driver's licence.

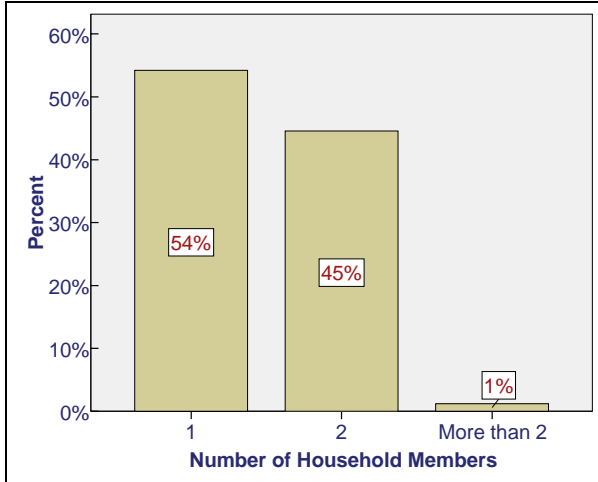


Figure 2 Number of Household members

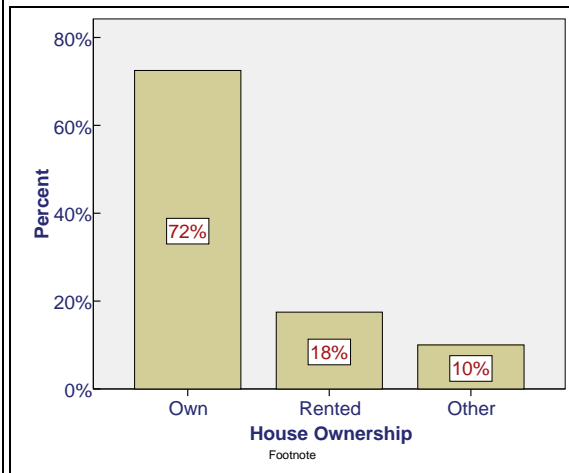


Figure 3 Respondent's house ownership

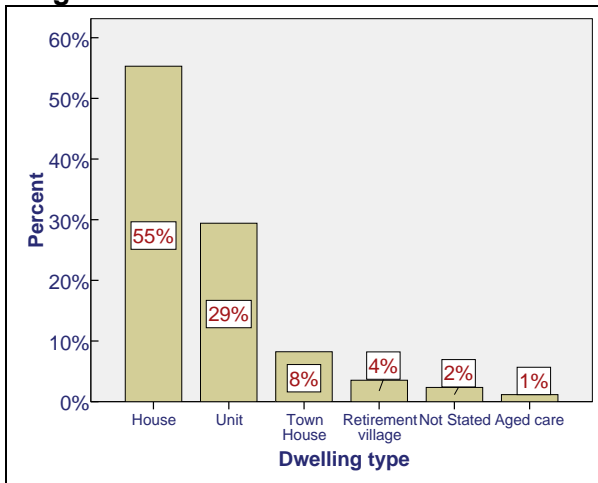


Figure 4 Dwelling type

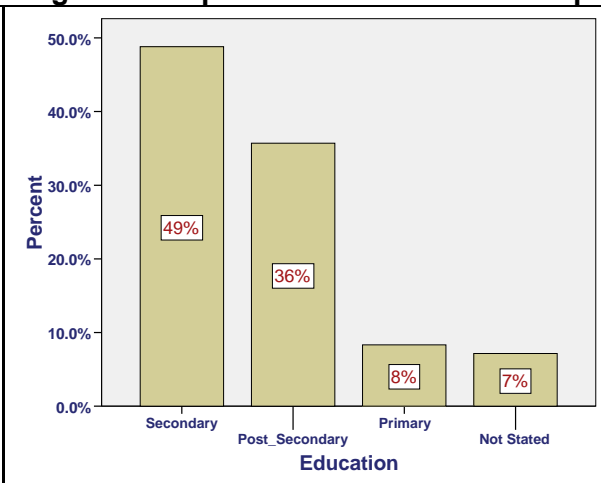


Figure 5 Education details

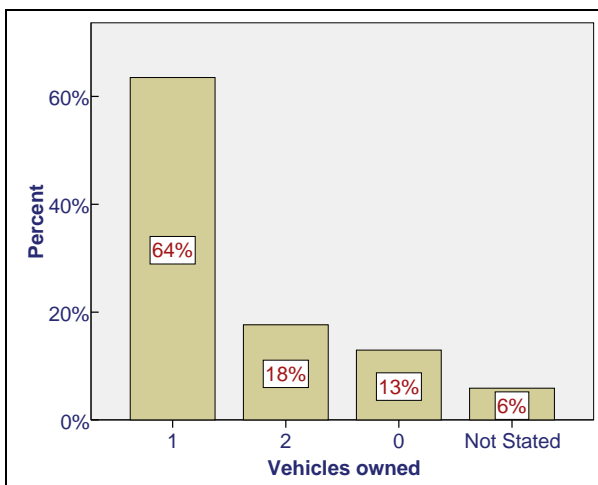


Figure 6 Vehicle Ownership

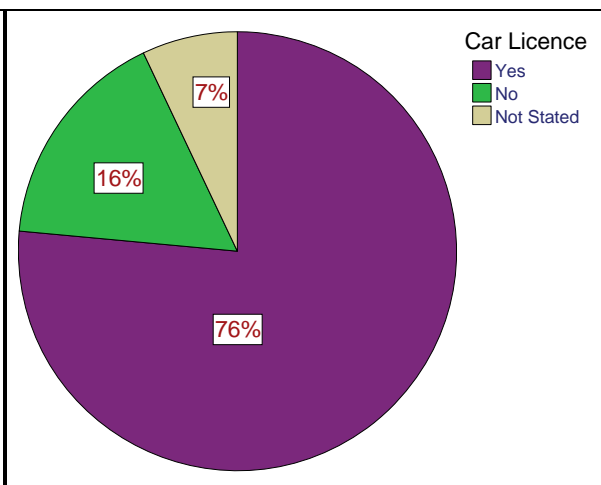


Figure 7 Driver's licence status

## 4.2 Income

The wellbeing of aged people is dependent to a great extent on their access to an adequate, regular and reliable income following retirement. It can be seen from the survey that many of the respondents were largely reliant on government pensions and benefits. When asked to indicate the total before tax income for them, (excluding 20 per cent of respondents that declined to disclose their income) more than 41 per cent of the respondents stated their household income is \$300 per week; which shows that majority of them were reliant on the income they receive from the aged pension.

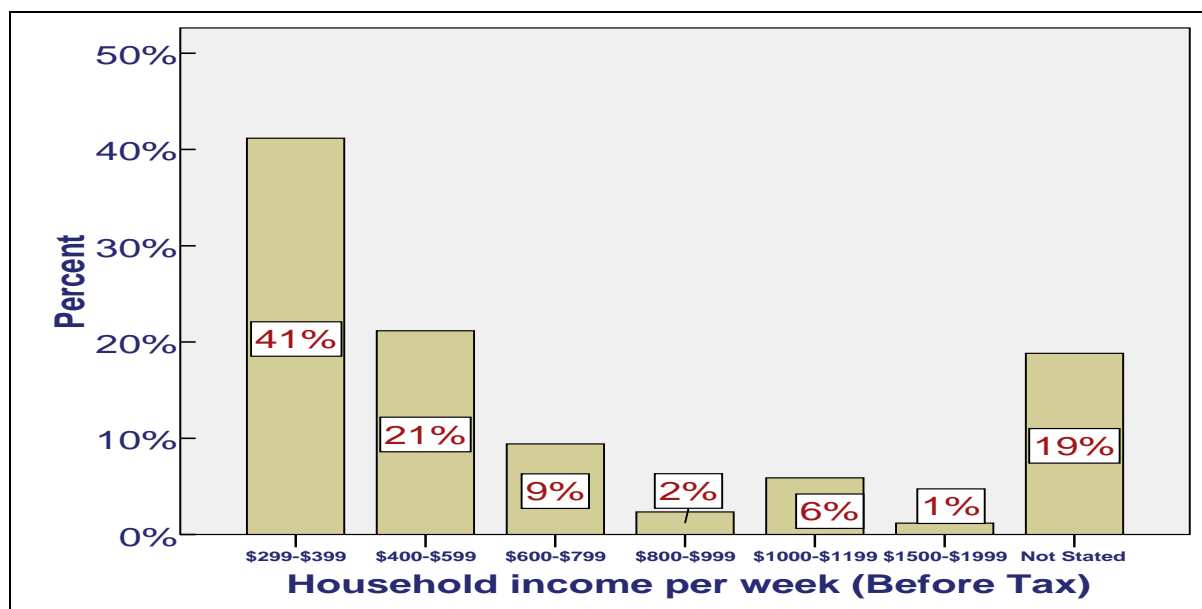


Figure 8 Household incomes before tax

## 4.3 Trip movement characteristics

Trip movement is similar to the trip chaining process which has become the preferred way to look at the series of trips made by people on a daily basis. There are many definitions for a trip chain. To aid researchers to set the stage for a common definition of a trip chain, the US Federal Highway Administration (FHWA) of United States has developed an operational definition of a 'trip chain' as a consequence of trips bounded by stops of 30 minutes or less. A stop of 31 minutes or more defines the terminus of a chain of trips and that chain of trips is considered a tour (McGuckin and Nakamoto, 2004). However for this study, trip movement is defined as the movement of a person between two stops, irrespective of the stop time. This definition is in line with Primerano et al (2007). The movement may be from home to activity or activity to activity that includes catching a bus or train. This travel is an inventory of older resident of household's individual movement from one stop (address) to another stop (address). In the trip information part of the form, each trip movement is recorded with mode, purpose at destination address and the number of people on the trip movement, the departure and arrival times, trip duration, the household vehicle used and other pertinent information about the movement. An example of one person's trip movement sought on the travel day form is shown below.

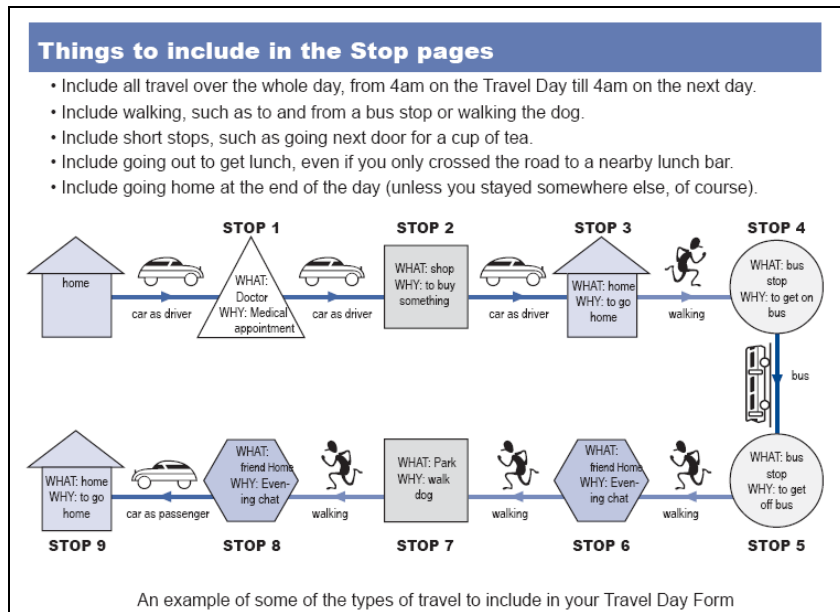


Figure 9 Extract from Travel Day form relating to trip movement details sought

The survey results indicated that older drivers used their cars on a regular basis. The survey represented sample from all days of the week (Figure 10). This figure suggests that the Saturday might be the most popular day for older people's travel needs. It seems that older people tend to avoid days with more traffic on the roads. This is also seen in the low figures for Friday travel.

Figure 11 suggests that a significant number of seniors (49 per cent) perform three or more trip movements a day that includes a return to home trip movement. The main purposes of the travel movements include shopping (29 per cent), visiting (11 per cent), eat or drink (8 per cent), recreation (8 per cent), medical (7 per cent), and others (26 per cent) (Figure 12). However the other purposes include trip movements for accompanying someone, library visits, buying petrol, buying medicine, collecting medical reports, visits to gym, morning walks, and other voluntary activities.

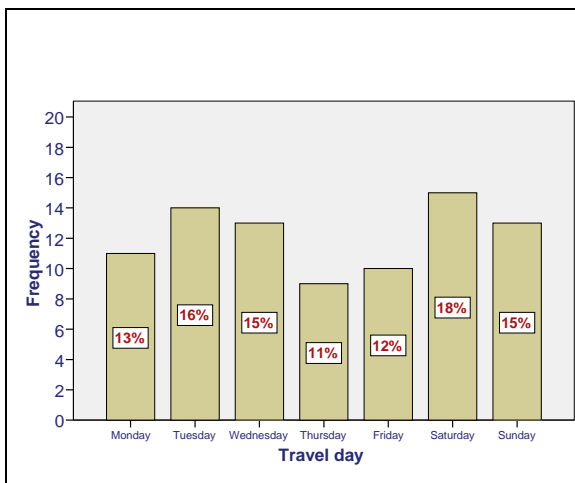


Figure 10 Travel day of the participants

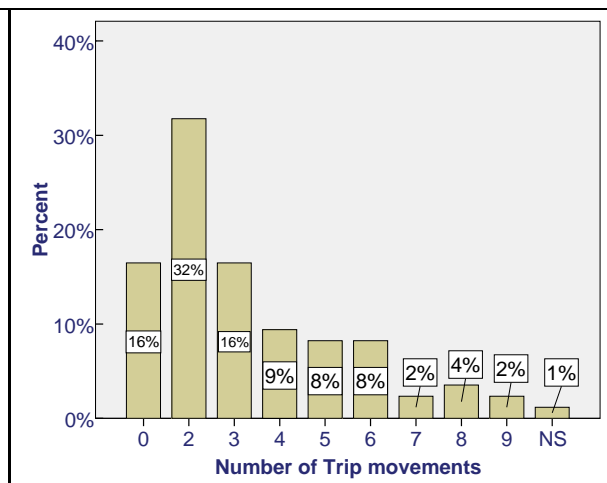


Figure 11 Total trip movements per day

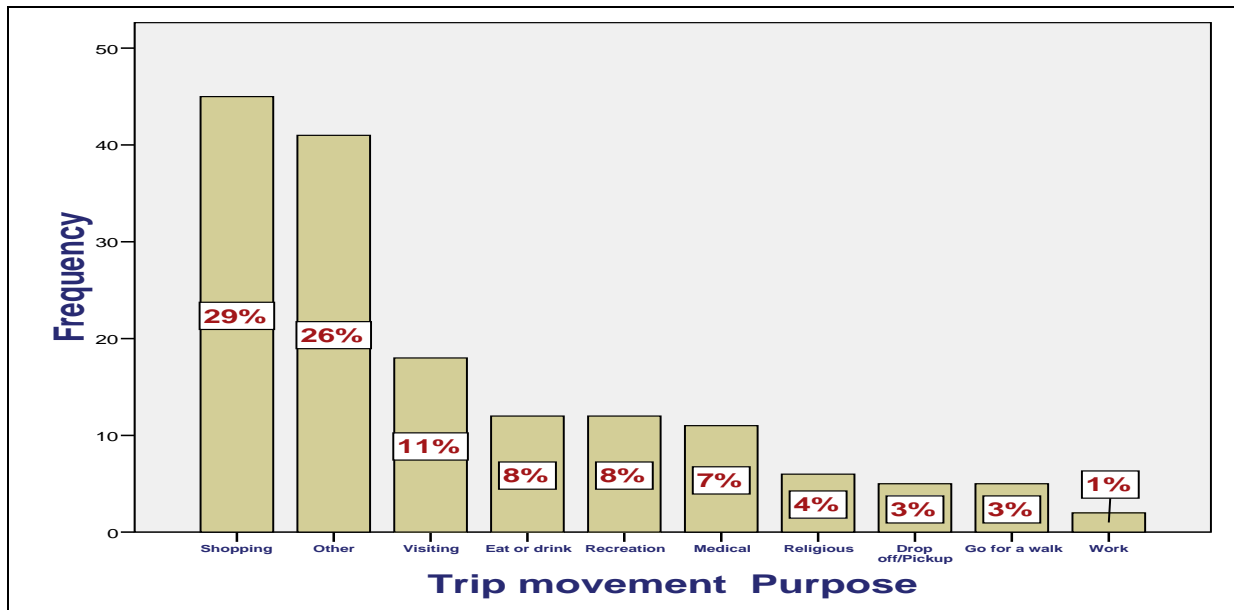


Figure 12 Trip movement purpose

Current trends suggest that (Figure 13) an overwhelming majority of the seniors are dependent on their personal car for mobility, most often (more than 50 per cent of trips made) as a driver. Survey respondents aged 80 years and above also reported that they were using their car for their daily needs. This trend suggest that when they lose their licence, they continue to have the desire and the need to travel outside their home to receive services such as buying food and maintain their social and religious activities. Thus seniors' mobility is essential to their personal health and social wellbeing; however those seniors who are living alone will be deprived of their mobility if there is no alternative form of transport when they relinquish their licence. In this context the role of public transport and subsidised taxi vouchers may play an important role in fulfilling the senior's mobility needs.

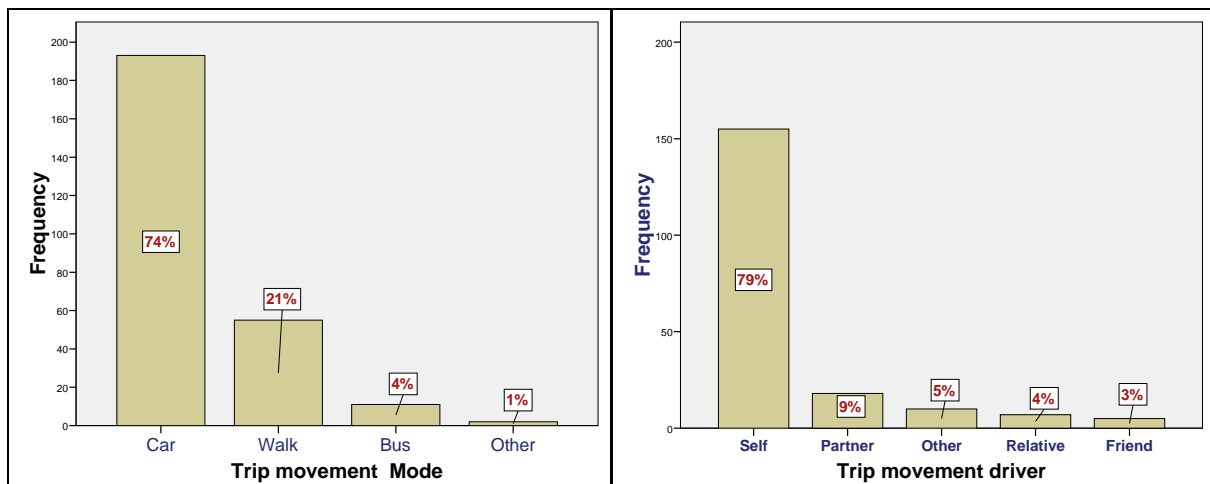


Figure 13 Trip movement mode

Trip 14 Trip movement drivers

The survey findings indicate that most of the respondents preferred morning off peak hours for their travel needs (Figure 15). They tended to avoid morning and evening peak hours as they did not feel safe to drive in those times. They also tried to avoid school hours. Figure 15 clearly demonstrates that they avoid night driving. The main reasons they attributed for avoiding driving at different times were i) night time due to glare ii) peak hours due to impatient younger drivers and iii) parking problems especially in the city centre and Glenelg.

This information should be useful for public transport planners when they plan the time tables for the public transport.

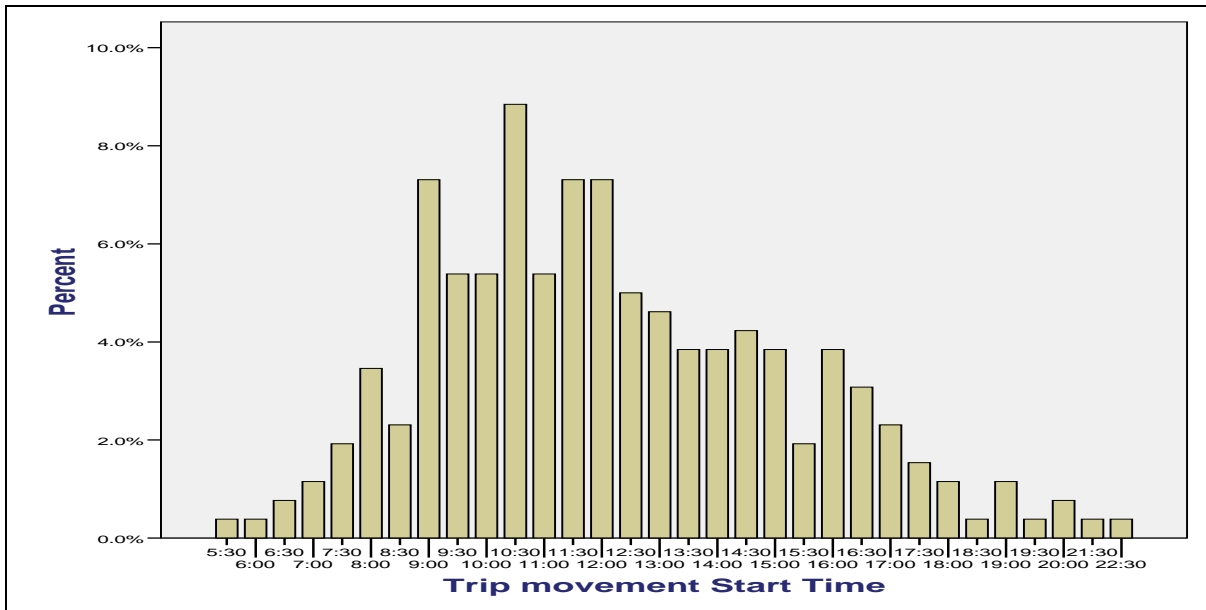


Figure 15 Trip movement start time

Figure 16 below shows that a significant (43 per cent) number of seniors reported some kind of disability. However a reasonably high percentage (30 per cent) of them reported no disability and an equally significant number (25 per cent) did not respond to this question. Moreover, around 50 per cent did not report any difficulties in using the bus mode. So, if good service alternative transport (whether it is public transport or community buses etc) were offered to them, then there is high probability that these people could be attracted to these alternative modes of transport.

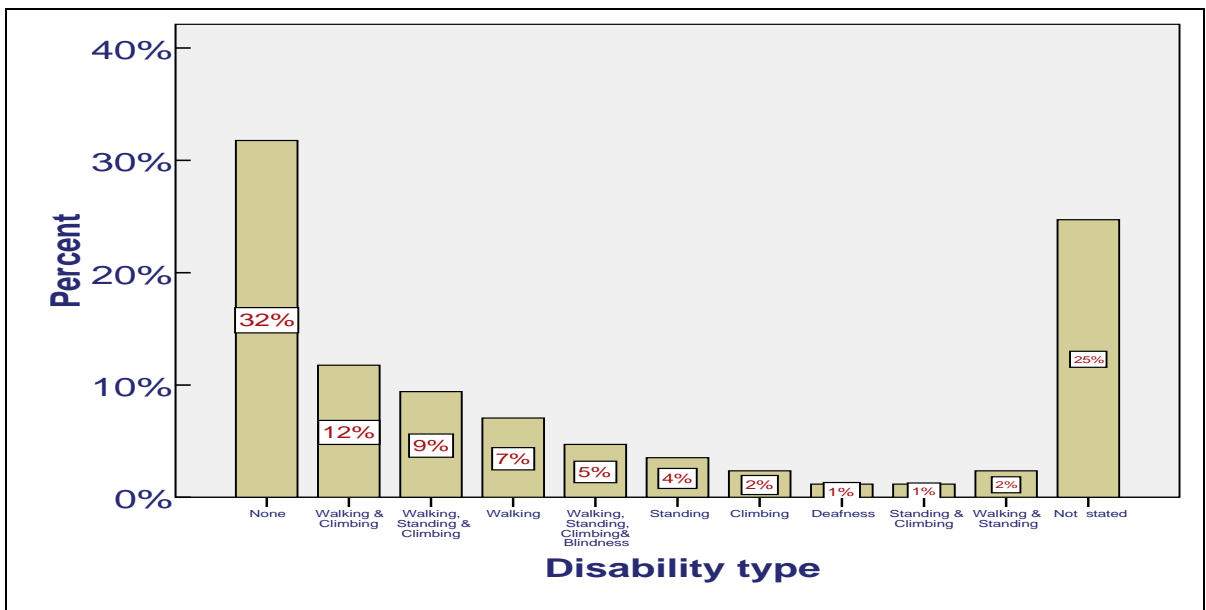


Figure 16 Participants disability type



## 5 Opinion about Gophers

In the next part of the survey form, a number of questions were presented to elicit respondents' opinions on various transport issues. One of the issues was about Gophers (Motorised Scooters).

The majority of respondents (Figure 17 and 18) that answered this query were satisfied with the speed and the degree of convenience offered by gophers. Currently many of the respondents (Figure 19) did not own a gopher; however significant numbers of people (Figure 20) might consider buying one in the future. Since many of them are happy with gophers, there is a high degree of probability that the number of people who belong to this category ('Not Sure') may purchase. Urban planners must take note of this fact and accordingly plan ahead for this eventuality.

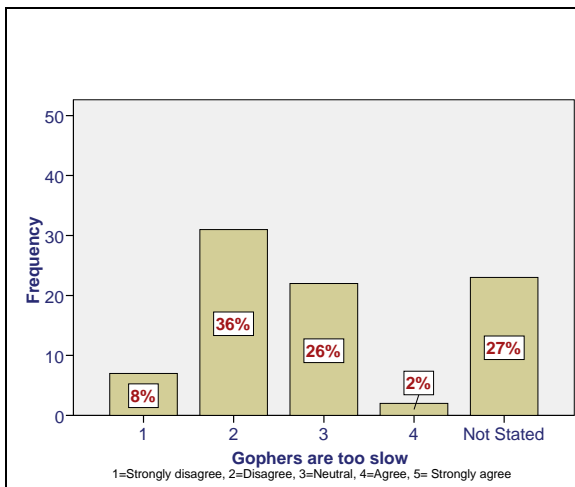


Figure 17 Opinion on Gophers safety

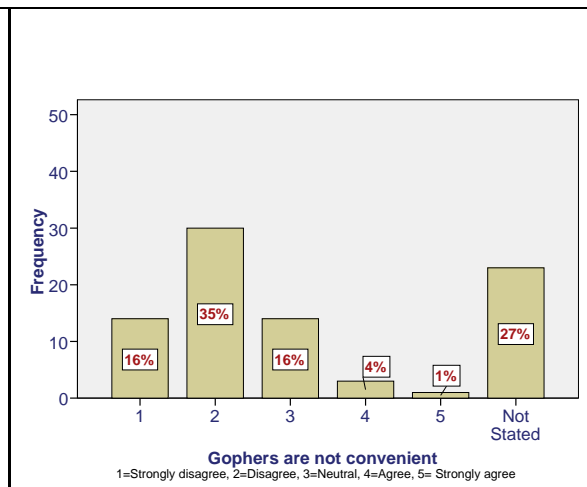


Figure 18 Opinion on Gopher's convenience

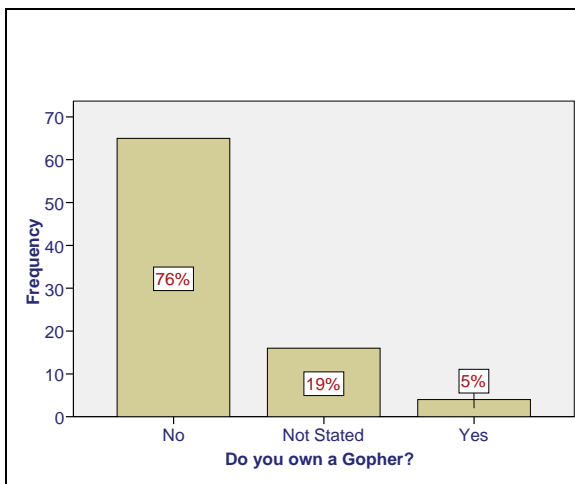


Figure 19 Gopher ownership

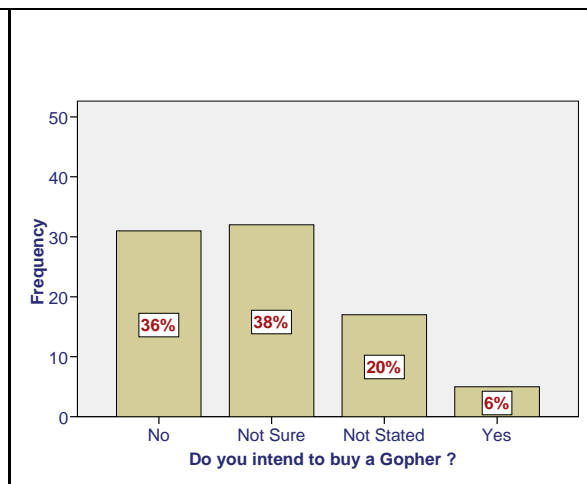


Figure 20 Intention to buy Gopher

## 6 Bus usage problems

The next series of questions sought opinions regarding the problems faced by them while using buses. The first question related to bus stops. Figure 21 shows that the majority of respondents who answered this question were either happy or neutral with the current situation regarding the location of their nearest bus stop. This is also supported by the survey

findings (Figure 22) that a majority of the respondents stated that their nearest bus stop was less than ten minutes walking distance. Similarly, Figures 23 and 24 suggest that they were not unduly concerned with either bus fares (i.e. concession fares) or the condition of bus stop shelters.

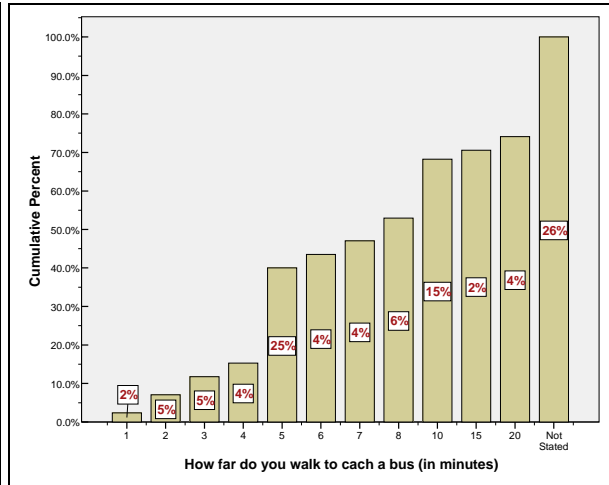
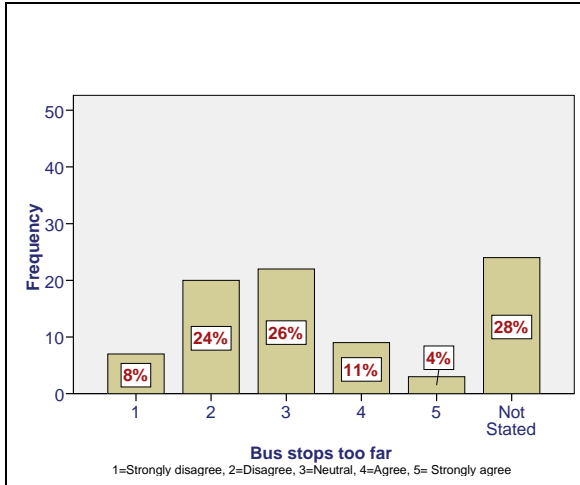


Figure 21 Opinion on bus stop distance Figure 22 Distance to bus stop

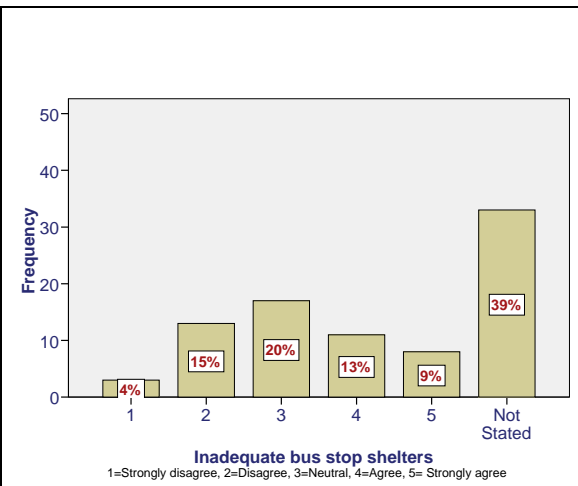
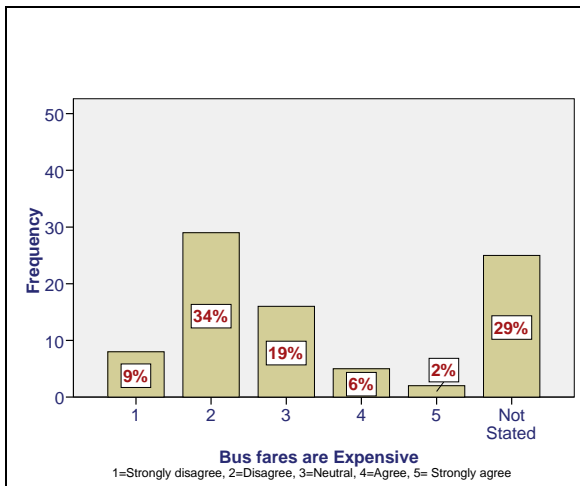


Figure 23 Opinion on bus fares

Figure 24 Opinion on bus stop shelters

The two main issues of concern were i) poor coverage during weekends and ii) poor coverage during outside normal hours. Figures 25 and 26 below amply support this argument. The outside normal hours that respondents were mainly concerned about were the morning off-peak hours i.e. from 9 am to 3.30 pm. This information is again important for public transport operators and planners.

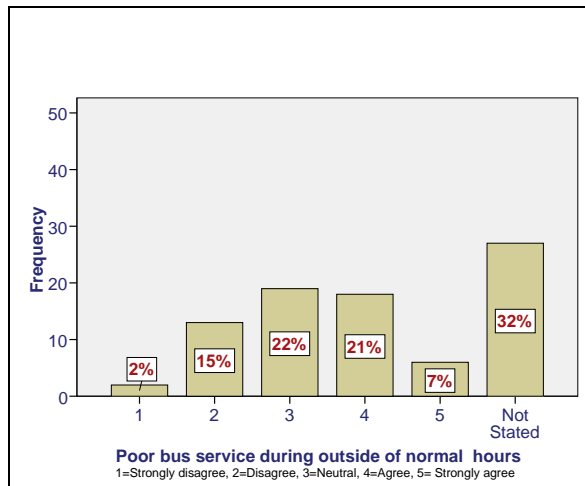
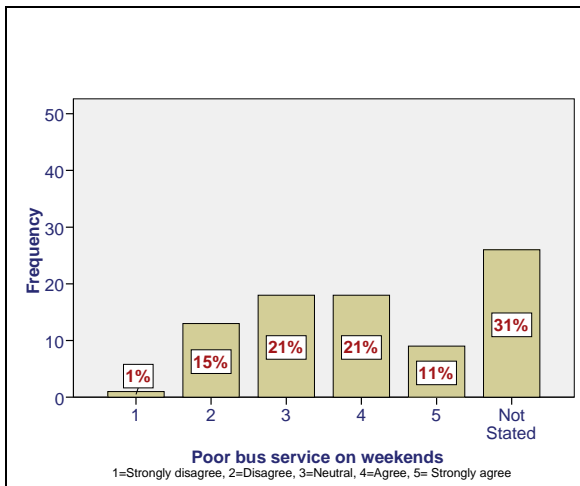


Figure 25 Opinion on weekend bus service Figure 26 Opinion on after hrs bus service

## 7 Other Transport issues

The other transport issues on which opinion was sought from older people related to road furniture, parking, and taxi concessions and subsidised car pooling. For each issue, they were asked to state their opinion as 1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree. Based on the responses below (Figures 27 to 32), the following issues can be ranked (based on the scores for agree and strongly agree category) in this order of priority.

1. Need taxi concessions for people aged over 70 years.
2. Need designated parking spaces ('designated Senior parking bays') – especially in the City and Glenelg
3. Footpaths urgently need upgrading – this is important as more people start using gophers
4. Green 'walk' time in traffic lights to be lengthened
5. Street lighting is poor and inadequate
6. Need subsidised car pooling i.e. local councils to provide car pool service to take them for their shopping, medical and recreational needs

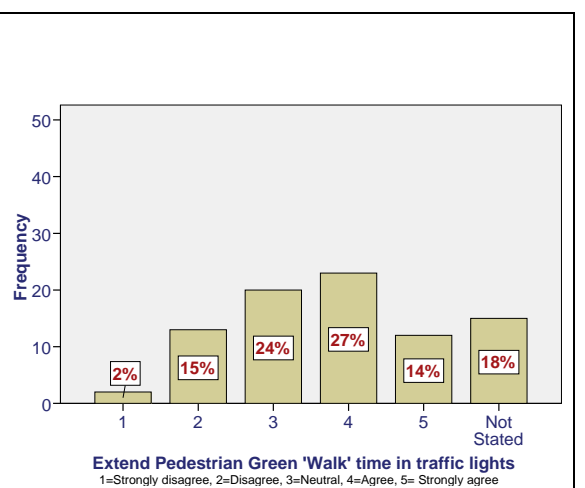
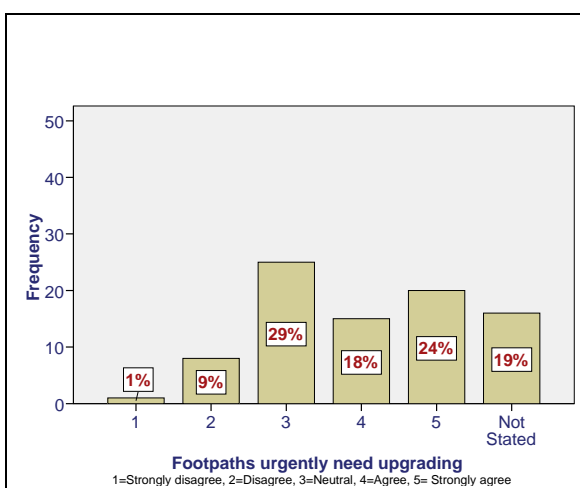


Figure 27 Opinion on footpaths

Figure 28 Opinion on 'green walk' times

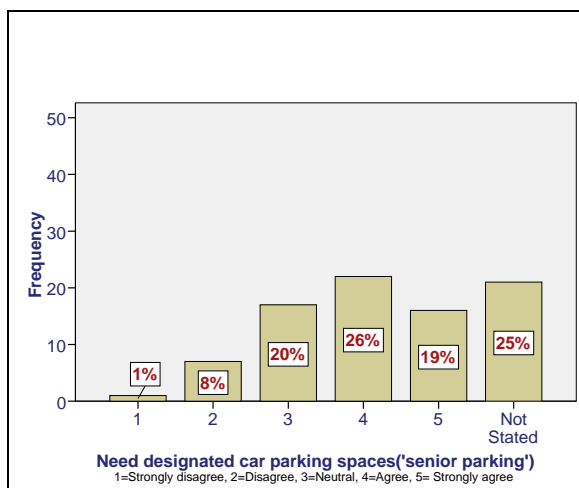


Figure 29 Opinion on Senior parking

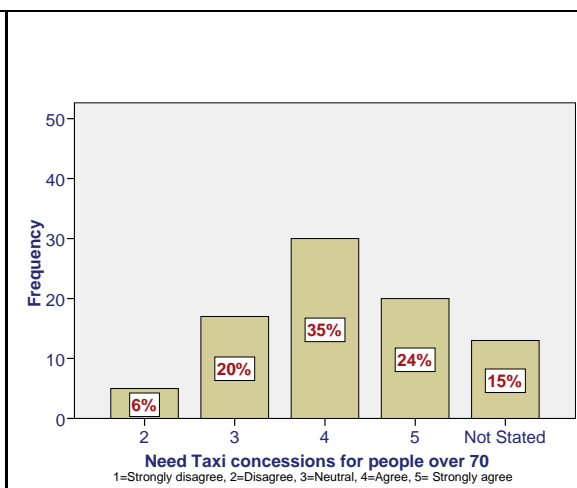


Figure 30 Opinion on Taxi concessions

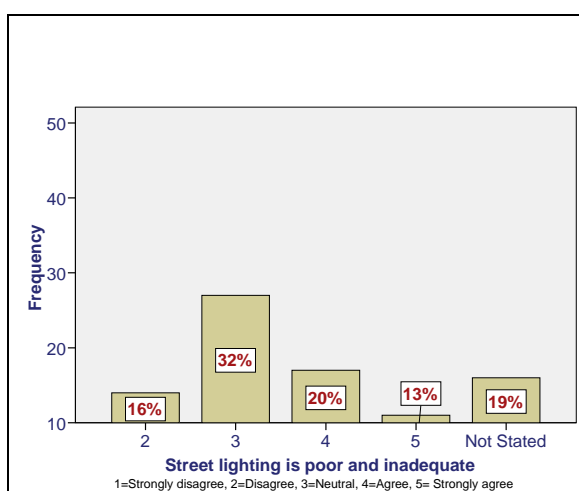


Figure 31 Opinion on street lighting

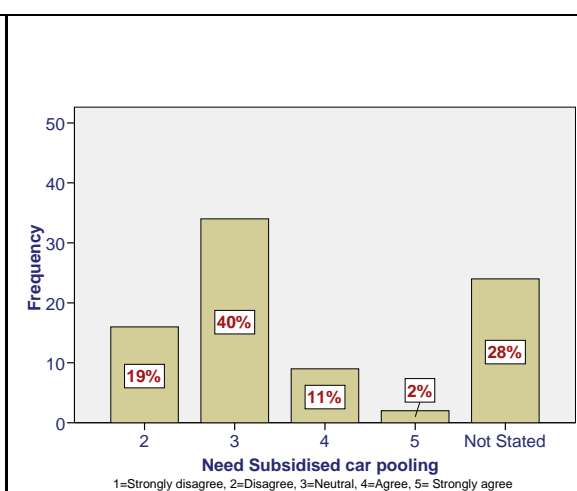


Figure 32 Opinion on subsidised car pooling

## 8 Opinion on improving the level of service of buses

The public transport system in Adelaide is not designed around the changing population. Given the premise that the expenses associated with buying a car and running a car will continue to rise, then alternative modes of transport, including public transport, may become more attractive to older drivers. The survey results have shown that majority of the elderly continue driving their own cars. However a majority of them have no ailments that would prevent them using public transport. Those elderly people who are frail and no longer able to drive will become increasingly dependent on public transport, and hence this service must be improved and made more accessible. The survey results suggest that the elderly are not using public transport due to its poor service or the inappropriateness of the current services. The table below ranks (in the order of priority) the problems survey respondents reported in using the available bus services. These issues need to be addressed with high priority.

- 1) More tilting buses are required as it is difficult to get in and out of the old buses
- 2) Drivers should wait until the older people take their seat before taking off
- 3) Increase the service frequency, especially in off peak hours and on week ends
- 4) Priority seating (or elderly designated seats) should be provided on buses. Younger people, especially students, do not offer their seats to older people
- 5) Buses should stop closer to footpaths

- 6) Easier ways of purchasing the tickets (for example use vending machines)
- 7) Need smaller more frequent eco-friendly council buses for shopping, recreation and medical purposes
- 8) Placement of stop buzzers in the buses can be lower
- 9) Run the buses according to the time table
- 10) Bus drivers should be more courteous
- 11) Provide more bus stops closer together

Out of all the above issues many respondents emphasised the first four issues more often. Even amongst these, the first two issues bothered them immensely i.e. their first common complaint is that they cannot get into and out of the buses easily due to steep steps and hence the tilting buses are high in their priority while the next most common complaint is that drivers do not wait until they are seated.

## **9 Conclusion**

An ageing population offers as many opportunities as it offers challenges for South Australia. This paper presents initial results from a survey travel patterns of the elderly in Adelaide metropolitan area. The survey showed that significant proportion (62 per cent) elderly residents depend on the aged pension for their living. Many elderly people with cars do not believe that they need a gopher at present, but they could consider purchasing one in the future. When asked their opinion about gopher safety and convenience, the majority were satisfied with them. So there is good chance that when they become frail and no longer able to drive they may start buying gophers. Among other suggestions, older Adelaidians felt the need for taxi concessions for those aged 70 and over, and the provision of designated parking for the elderly. The present study has highlighted several factors dealing with public transport (especially buses) for the elderly. Among them, steep steps in the old buses, drivers not waiting for them to be seated before they drive off, poor frequency of buses during off peak hours and weekends, and not having designated and priority seating in the buses were ranked high in their list of suggestions. It is essential that keeping transport mobility patterns in view, special programs for the provision of transport services for the elderly are of high priority. The final conclusion is that unless those professionals planning and running public transport and the general community take a more active role in understanding and helping the elderly, their problems will continue to exist and will not go away.

## **Acknowledgements**

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