The Older and Wiser Rider:

An Examination of Transportation for Older Drivers

March 2007

Prepared for the
Capital Regional District
Traffic Safety Commission
and BC Transit

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EXECUTIVE SUMMARY

In today's western society, where self-reliance and personal autonomy is highly valued, driving as a means of mobility plays an important role in the lives of older adults, connecting them to family, friends, activities and the greater community. Even though the need to maintain mobility remains an important factor in maintaining general well-being, few drivers plan for the day when they are unable to drive and many find it a difficult prospect to consider or talk about (Coughlin, 2001). Further concerns arise from research findings that indicate older drivers lack information about available alternative transportation such as public transit (Atkins, 2001; Couglin, 2001).

In a project conducted in collaboration with BC Transit, the Capital Regional District (CRD) Traffic Safety Commission, and Silver Threads (Victoria and Saanich branches), we examined the current modes of transportation used by a large sample of older adults in the Capital Regional District of British Columbia (n=275). We also investigated why older adults do not use public transportation. Some participants from this large sample volunteered to take part in a pilot project assessing the impact of participation in a group transit training program.

The results indicated that the preferred form of transportation is a vehicle, either as an operator or as a passenger. Driving was used for a variety of purposes, including shopping, health-related appointments, social events, family events, and hobby-related activities. Although it appeared that most older drivers were not planning to quit driving within six months, many restricted their driving to daylight hours or minimized driving in poor weather conditions. In addition, although the reported general health of most participants was good and did not change over the course of the study, some drivers limited their driving due to health and mobility concerns.

Our data indicated that approximately half of our participants used the bus as a form of transportation either minimally or not at all. Reasons for not using public transportation were that they found the bus inconvenient and it was not accessible for people with mobility problems.

To assess the impact of group transit training, volunteers were randomly assigned to one of three groups: a control group that received no training, a group who received group transit training only, and a group that received group transit training and a free three-month bus pass which was specially encoded to collect data on the frequency for which the participants used the bus.

The results of from the group transit training indicated that those who received travel training, regardless of whether or not they received a free bus pass, used the bus more frequently than those who did not. However, given the relatively small samples and the short duration of the study, no changes in miles driven per week, driving restrictions, primary mode of transportation or health status were seen. Based on the very encouraging results from this study, it appears that additional research is warranted to ascertain whether introducing group transit training in this way may facilitate changing transportation-related behaviors for older adults over a longer period of time.

ACKNOWLEDGEMENTS

We would like to acknowledge that this project was made possible by the collaborative efforts of the Capital Regional District (CRD) Traffic Safety Commission, BC Transit, Victoria and Saanich Silver Threads, and the Centre of Aging at the University of Victoria.

We would like to thank the staff at BC Transit, Anita Wasivta and June Klassen for their generous co-ordination of the initial mail-outs and training sessions. A special thank you is extended to Ron Drolet, Vice-President of Customer Service and Corporate Secretary, Mike Davis, Victoria Planning and Scheduling Manager, and Dr. Richard Stanwick, CRD Traffic Safety Commission for their valuable feedback and support in launching this project.

We would also like to thank Edie Copland, Executive Director of Silver Threads Service, for providing access to potential participants for the study and Sue McCauley, Director Saanich Silver Threads, for providing space for the group transit training sessions. In addition, we would like to thank BC Transit's Liaison Ambassador, Bruce Grey, who conducted the training sessions for our participants.

Further thanks are extended to the research assistants at the University of Victoria, Shelly Waskiewich and Doug Garrett who assisted with the project.

Finally, we give much heartfelt thanks to the older adults who took the time to participate in our study. The valuable information we have received would not have been possible without these individuals.

Funding for this project was provided by the CRD Traffic Safety Commission of British Columbia, BC Transit, and the University of Victoria.

TABLE OF CONTENTS

Executive Summary ... i

Acknowledgements ... ii

Table of Contents ... iii

List of Figures and Tables... iv

1. Introduction ... 1

2. Research Design and Methodology ... 6
   Phase One ... 6
      Participants ... 6
      Materials ... 6
      Procedure ... 7
   Phase Two ... 7
      Participants ... 7
      Materials ... 7
      Procedure... 8

3. Results
   Phase One... 11
      What are the current modes of transportation used by older adults?... 11
         Most Common Modes of Transportation Used... 11
         Driving Habits ... 11
         Bus Use ... 17
         HandyDART and Taxi Saver ... 19
         Mobility Aids ... 19
      What are the reasons given by older adults for not using public transportation?... 20
         Health Status and Behaviour ... 21
   Phase Two... 22
      What is the impact of participation in a group transit training program?... 22
         Bus Use ... 22
         Changes in Driving Habits ... 24
         Current Health ... 24

4. Summary and Recommendations ... 26

References ... 28

List of Figures and Tables

Table 1: Gender, Age and Education of the Phase Two Participants …..….. 9

Figure 1: Modes of Transportation Used by Participants in Percentages …. 12

Table 2: Purposes for Driving …………………………………………….. 13

Table 3: Conditions Under which Driving may be Restricted in the Future 15

Table 4: Condition Under which Driving would be Stopped in the Future .. 16

Figure 2: Percentage of Participants who Use BC Transit ………………… 18

Table 5: Purposes for Using the Bus ……………………………………… 18

Table 6: Reasons for not Using the Bus, including Gender Differences …. 20

Figure 3: Reported General Health of Participants in Percentages ……….. 21

Table 7: Frequency of Bus Use for Groups One, Two, and Three ……….. 22

Table 8: Comparison of Mode of Transportation Used Most Often by Groups One, Two and Three …………………………………….. 25

1 INTRODUCTION

In today's western society, where self-reliance and personal autonomy is highly valued, driving as a means of mobility plays an important role in the lives of older adults, connecting them to family, friends, activities and the greater community. Driving provides seniors with a means of independence, as well as gives them a sense of freedom, flexibility and convenience to go where they want to, when they want to, without having to engage in excessive planning or dependency on others (Rothe, 1990; Atkins, 2001; Coughlin, 2001). Researchers studying the psychosocial benefits of driving have found that older adults with access to a car also report a greater sense of mastery, self-esteem, autonomy, safety, and prestige compared to those without access to a car (Ellaway, Macintyre, Hiscock, & Kearns, 2003).

Many older adults are capable of maintaining their mobility by driving. However, many experience natural physical changes associated with aging and are at increased risk for illnesses that impact safe driving. Continuing to drive and maintaining mobility, then, becomes an increasing concern and potential source of anxiety (Rothe, 1990; Couglin, 2001). For example, changes in physical range of movement (e.g., turning head to look over shoulder), aspects of vision (e.g., visual acuity, depth perception, peripheral vision), hearing ability, reaction time (time to perceive the need to stop and apply brake), and ability to attend to multiple stimuli (e.g., signs, pedestrians, traffic) are some of the age-related declines that older adults may experience and may impact safe driving. Similarly, illnesses and associated conditions may negatively impact safe driving. These include illnesses such as, heart disease, arthritis, dementia and Parkinson's, as well as certain medications and changes in metabolism rates (Smith, 2001).

Media reports of traumatic accidents involving older adults and older driver statistics report that adults 70 years of age and older are involved in 8 fatal crashes per million miles driven compared to drivers 40-49 years of age who are involved in one fatal crash per million miles driven (ICBC, 1998). This contributes to increased concerns for older driver safety.

To address these concerns, some older drivers take education courses from driving instructors or companies such as 55 Alive that specialize in older driver's safety. Others update their knowledge by reviewing the provincial driver's manual or listening to an older driver safety CD. At some point, older drivers may choose to place restrictions on their driving as a means of maintaining safe driving habits. They may choose to drive during daylight hours only, avoid poor weather conditions or restrict their travel times or routes to avoid heavy traffic. Other individuals may choose, or be forced, to quit driving.

For older adults who have driven all their lives, limiting driving or giving up a driver's license can be extremely difficult due to the high value placed on independence and the freedom, convenience, and comfort driving provides. It is known that driving a car is the preferred mode of transportation (Coughlin, 2001) and that a lack of mobility can lead to social isolation, loneliness, depression and low morale (Peel, 2002). Coughlin (2001) found that losing the ability to drive was perceived as a traumatic event by most drivers. Those who could no longer drive reported that their sense of freedom and independence had been taken away. Their world had become smaller as their access to family and friends, community involvement and needed goods and services was reduced. Among male drivers, self-image was negatively affected.

Whether the choice is to restrict or to quit driving, there is a vital need to identify suitable and practical forms of transportation so that mobility can be sustained. Even though the need to maintain mobility remains an important factor in maintaining general well-being, few drivers plan for the day when they are unable to drive and many find it a difficult prospect to consider or talk about (Coughlin, 2001). Further concerns arise from research findings that indicate older drivers lack information about available alternative transportation such as public transit or how to access volunteer drivers (Atkins, 2001; Couglin, 2001).

For older adults living in urban and suburban areas, such as the CRD, many different options for alternative travel are available, including public transit, taxis, and volunteer drivers (Allan & McGee, 2004). Of the various alternatives, older adults are likely to be most aware of availability of the public bus. However, based on the literature, older adults who have driven all their lives are likely to lack information about and be unfamiliar with, the use of the transit system and the various programs. As a result, the thought of riding the bus may create a great deal of anxiety and stress for many adults. The likelihood of this may be even greater for those who have physical disabilities, balance problems or use mobility aids. Furthermore, some older adults may perceive waiting at a bus stop or riding a bus at night as unsafe and not an option. All of these factors may contribute to delays in investigating alternative forms of transportation and possibly the avoidance of public transit. In fact, research finding indicate that, despite health concerns, the desire to avoid public transit has led some older adults to continue driving until a time when not only were they physically unfit to drive safely, but they were also physically unable to use public transit (Atkins, 2001; Burkhardt et al., 2002; Peel, 2002).

Finding effective ways to ease the transition from driving to using alternative forms of transportation, such as public transit, has the potential to:

- Maintain or increase mobility, independence and quality of life;
- Prevent some of the negative impacts of driving cessation (e.g., dependency, loss of freedom, social isolation);
- Increase use of public transit as a means of mobility;
- Reduce the number of and miles driven by unsafe older drivers;
- Decrease accident rates; and
- Decrease health care service utilization.

Given that older adults report interest in learning about alternative types of transportation (Tuokko & McGee, 2002), providing education on accessing transportation alternatives may be an effective way of addressing the mobility needs of older adults and easing the transition from driving to using public transportation. This could take the form of travel counseling sessions aimed at providing elderly persons with information on how to ride the bus safely and comfortably. For example, elderly persons could be taught safety tips, the cost of using the system, and how to plan routes effectively. They could also be given information on the various services and programs within the public transit system that are specifically designed to assist older adults. Travel counseling sessions may help to reduce the older person's anxiety associated with riding the bus, increase their confidence in their ability to use public transit, as well as change some of the negative views people hold towards this form of travel. Such a service is offered by BC transit but little is known about its use or effectiveness.

In this report, we describe a collaborative project undertaken by researchers at the Centre of

Aging, University of Victoria, BC Transit, Silver Threads, and the Capital Regional District (CRD) Traffic Safety Commission to examine the transportation habits of older adults and the impact of group transit training. Older adults living in the Victoria or Saanich municipalities of the CRD were recruited from a broad range of socio-economic levels. The purpose of this study was to answer three questions: (1) What are the current modes of transportation used by older adults? (2) What are the reasons given by older adults for not using public transportation? (3) What is the impact of participation in a group transit training program? Furthermore, it was anticipated that the data obtained through this study would be used to seek external funding for larger, future collaborative transportation projects.

2 RESEARCH DESIGN AND METHODOLOGY

This study was conducted in two Phases to address the three research questions. In Phase One, we examined the current modes of transportation used by a large sample of older adults in the Capital Regional District of British Columbia. We also investigated why older adults do not use public transportation. In Phase Two, three groups were selected from the Phase One participants to assess the impact of participation in a group transit training program.

Phase One

Participants

Participants for Phase One were 275 older adults, 213 females and 54 males (8 gender unknown) residing in the Capital Regional District of British Columbia. All participants were members of either the Victoria or Saanich branches of Silver Thread's, a nonprofit senior citizens activity center. Participants ranged in age from 52 to 95 years. The average number of years of education was 12.67 with a standard deviation of 3.18.

Materials

A questionnaire developed by researchers at the Centre on Aging in collaboration with BC Transit staff, was used to assess current transportation. The questionnaire included items reflecting driving habits, public transportation use, most common mode of transportation used, and reasons for quitting or restricting driving. Participants were also asked questions concerning health status, marital status, and years of education. Participants interested in being involved in additional research on transit use were asked to provide their contact information on the final

page of the questionnaire. A cover letter and an information sheet were included with the questionnaire to introduce and describe the study to potential participants.

Procedure

Cover letters, information sheets, and questionnaires were mailed to 740 Victoria and Saanich Silver Threads members. One month after questionnaires were mailed, follow-up phone calls were made by Silver Thread's personnel to confirm receipt of the questionnaire and remind potential participants to return them if they wanted to participate and had not already done so.

Phase Two

Participants

From the 275 Phase One participants, individuals who met the following criteria were identified for recruitment into Phase Two: (a) reported that they drive a car/vehicle; (b) did not report any restrictions limiting the use of the public transit system; (c) reported using the public transit system either minimally or not at all; (d) lived in the CRD; and (e) indicated an interest in continuing to engage in research related to transit use over a one year period. Of the Phase One participants, 43 met these criteria and agreed to take part in Phase Two. There were 28 females and 15 males and they ranged in age from 52 to 88. The average number of years of education for Phase Two participants[*] was 13.90 with a standard deviation of 3.75.

Materials

A second questionnaire was designed to assess the impact of the group transit training interventions on the transportation habits of older adults.

[*] (4 participants did not report education)

Procedure

Participants were divided into three groups using a random numbers technique. Group One (control group) received no transit training or bus pass. Group Two received group transit training only. Group Three received group transit training and a free, three month bus pass, specially encoded to collect data on the participant's bus usage (frequency, date, and time of day). See Table 1 for a description of the participants in these groups.

Participants attended one of four group transit training sessions; two sessions for participants in group two and two sessions for participants in group three. There were six to eight participants in each session. All training sessions were conducted in the same format.* At the training sessions, each participant was given a cover letter, along with an information sheet describing the study and a consent forms After participant read their information sheet, researchers obtained written consent from those who wished to participate.

The group transit training sessions were conducted by a BC Transit ambassador. Clip boards, lined paper, and pens were provided for participants if they wished to take notes during the session. Participants were given bus schedules and detailed pamphlets about how to use the public transit system, and were taught how to use the schedules for effective route planning. The ambassador also brought along bus signs to demonstrate where and how to get on the correct bus. The ambassador was friendly, interacted with participants, and encouraged them to ask questions and speak up if information was not clear. Refreshments of tea, coffee, and goodies were served during a ten minute break in the session.

* For one group, the first and last halves of the session were reversed due to time constraints

Table 1. **Gender, age and education of the phase two participants**

	Group One (control)	Group Two (group transit training)	Group Three (group transit training and free 3 month bus pass)
Gender			
Female	12	8	8
Male	7	4	4
Age range	52*- 88	66- 87	*56- 87
Average years of education (SD)	12.87 (2.90)	13.36 (1.80)	15.73 (5.68)

During the second half of the training session, participants were taken aboard a bus. The driver described the many safety tips and features. These included explanations concerning the specially marked seating available near the front of the bus, safe places to hold while riding the bus, and information concerning a direct communication line to emergency services available on all busses. Participants then proceeded to take a short bus ride where the driver demonstrated how to swipe a bus pass, how to ring the bell to request the next stop, how to get off the bus, and pointed out certain indicators within the bus (e.g., the sign indicating the requested next stop). Following the training session, three-month encoded bus passes were given to all participants in Group Three.

Participants in all three groups (i.e., those receiving no training or bus pass, group transit training only, group transit training and a bus pass) were mailed a questionnaire three months after the start of the Phase Two. An information sheet and consent form was included with each questionnaire. Participants in Group One, who did not attend a training session, received information sheets about their participation in Phase Two at this time. This described the study,

* with the two participant removed who were 52 and 56 years old, the age range for Group One was 66-88 and for Group three was 66-87.

along with a form obtaining written consent for their participation. Follow-up phone calls were made by research personnel one week after mailing the questionnaires to confirm receipt of the questionnaire and remind the participant to return them if they wished to continue participating.

3 RESULTS

Results are grouped according to the three research questions.[*] Note that the sample size varied slightly by question, as not all participants responded to each item.

Phase One

(1) *What are the current modes of transportation used by older adults?*

To fully address this question, we examined, not only the most common modes of transportation reported, but other information provided by the participants about these modes of transportation.

Most Common Modes of Transportation Used

Participants were asked which mode of transportation they currently use most often. Figure 1 displays percentages of modes of transportation used most often by 275 participants. As the figure shows, a large portion (48.4%) of respondents reported that driving is the form of transportation they use most often, compared to 22.5% who use the bus, and 16.4% who ride as a passenger in a car. Less frequently reported modes of transportation were: van (2.5%), HandyDART (2.5%), volunteer drivers (1.6%), taxis (1.2%), bicycle (1.2%), sports utility vehicles (0.8%), scooters (0.4%), and other (2.5%).

Driving Habits

Most respondents (n=178, 65.2 %) reported that they hold a valid drivers license. More than half

[*] Results were tabulated and findings reported when supported by a substantial portion (approximately 50%) of respondents.

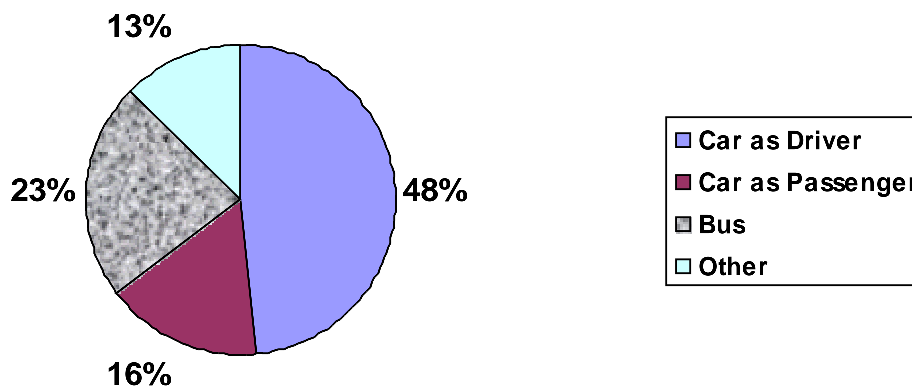

***Figure 1.* Modes of transportation used by participants in percentages**

of respondents (n=164, 60.1%) indicated that they currently drive. Of those currently driving and living with partners (i.e., married or living common-law, 36.1%), 77.1% reported that their partners also drive. Most driving participants (80.6%) stated that they *do not* have a disability parking permit/decal on their vehicle. The average number of days driven per week was 4.90 days (*SD* = 1.89) with a full range of days reported (1 – 7). Current drivers reported riding as a passenger in a vehicle an average of 1.41 days (*SD* = 1.80) per week. Responses ranged from never to seven days per week.

Respondents who were driving were asked to indicate for what purposes they drive. As shown in Table 2, the majority of respondents drive for the purpose of grocery shopping, other shopping, health-related appointments, and social events. More than half of respondents drive for the purpose of family events and hobby-related activities. Work, school, worship, vacationing and volunteer activities were reported by less than 50% of the respondents.

Table 2. **Purposes for driving**

Purpose for driving	Female N = 114	Male N = 46	Total Sample N = 164
Grocery shopping	106 (93.0%)	40 (87.0%)	150 (91.5%)
Health-related appointments	101 (88.6%)	38 (82.6%)	143 (87.2%)
Social Events	96 (84.2%)	41 (89.1%)	141 (86.0%)
Other Shopping	97 (85.1%)	39 (84.8%)	140 (85.4%)
Family events	73 (64.0%)	28 (60.9%)	103 (62.8%)
Hobby-related	66 (57.9%)	26 (56.5%)	94 (57.3%)
Vacation	45 (39.5%)	23 (50.0%)	70 (42.7%)
Work, school, or volunteer activities	40 (35.1%)	19 (41.3%)	61 (37.2%)
Worship	38 (33.3%)	20 (43.5%)	58 (35.4%)
Other	14 (12.3%)	4 (8.7%)	18 (11.0%)

N.B., responses are not mutually exclusive. Four respondents did not indicate gender, but were included in total sample column.

When asked if they were *seriously considering restricting their driving* in some way, 71.9% of respondents who currently drive stated that they were not thinking of restricting their driving within the next six months. Some respondents reported that they either *currently restrict* their driving (26.0%) or are *thinking of restricting their driving within the next thirty days (0.7%) or six months (1.4%).* The overall theme which emerged was that participants restrict their driving to maintain personal safety and avoid accidents. Participants who restricted their driving were asked to explain what led them to make this decision. Sixty-three percent of respondents reported that they felt unsafe or uncomfortable driving at night in poor weather conditions due to diminished night vision. In addition, over 40% of participants stated that declining health was a consideration in their restriction.

Current drivers who reported they were not thinking of restricting their driving in the next six months were asked to indicate under what conditions they would *consider restricting* their driving in the future. The majority of respondents stated that deterioration of vision (93.4%), deterioration of health (85.7%) and fear for safety (80.2%) would be conditions for which they would consider restricting their driving (see Table 3). This is consistent with the findings for those who already restrict their driving.

Of the respondents who were driving, 96.2% reported that they were *not thinking of quitting driving* within the next six months. When asked under what conditions they would *consider quitting* driving, health concerns were reported most frequently (see Table 4): deteriorating vision (84.4%), general decline in health (78.2%), decreasing mobility (75.5%), diminishment in learning or mental abilities (72.1%), and interference of abilities due to medications (66.7%). Over 80% of participants reported that they would cease driving should that be recommended by their doctor. Furthermore, almost 80% of individuals said they would stop should they begin to feel unsafe or nervous when driving. Fewer participants reported that they would stop driving for other reasons: on the advice of family or friends (36.1%), should an accident occur (23.8%), or rising vehicle costs (21.8%).

Table 3. **Conditions under which driving may be restricted in the future**

Conditions for considering restricting driving in the future*	**Female N = 59†**	**Male N = 30‡**	**Total Sample N = 91****
If my vision deteriorated	55 (93.2%)	28 (93.3%)	85 (93.4%)
If my general health deteriorated	51 (86.4%)	25 (83.3%)	78 (85.7%)
If there was deterioration of abilities that affect my movement	51 (86.4%)	24 (80.0%)	77 (84.6%)
If my doctor advised me to	46 (78.0%)	27 (90.0%)	75 (82.4%)
If I began feeling unsafe or nervous when driving	47 (79.7%)	24 (80.0%)	73 (80.2%)
If medications were interfering with my ability to drive	45 (76.3%)	23 (76.7%)	70 (76.9%)
If there was a deterioration of my learning or mental abilities	46 (78.0%)	19 (63.3%)	67 (73.6%)
If ICBC or the police imposed a driving restriction on me	40 (67.8%)	24 (80.0%)	66 (72.5%)
If someone else advised me to	25 (42.4%)	11 (36.7%)	37 (40.7%)
If the cost of gas and upkeep of my car gets too expensive	15 (25.4%)	9 (30.0%)	24 (26.4%)
If I have an accident	14 (23.7%)	4 (13.3%)	19 (20.9%)
When I reach a certain age	11 (18.6%)	3 (10.0%)	15 (16.5%)
There is no reason I would consider restricting my driving	6 (10.2%)	6 (20.0%)	12 (13.2%)
Other	2 (3.4%)	3 (10.0%)	5 (5.5%)

* Numbers are reported only for participants who (1) drive and (2) are not thinking of restricting driving within the next 6 months (drivers who reported that they either currently restrict driving or are thinking of doing so within the next 3-6 months were not required to respond to Q29c
**Valid N = 91 (14 cases are missing data)
†Valid N = 59 (3 gender missing and 11 females did not answer this question)
‡Valid N = 30 (3 gender missing and 2 males did not answer this question)

Table 4. **Conditions under which driving would be stopped in the future**

Conditions for considering to quit driving*	Female N = 103†	Male N = 41‡	Total Sample N = 147**
If my vision deteriorated	86 (84.5%)	35 (85.4%)	124 (84.4%)
If my doctor advised me to	84 (81.6%)	35 (85.4%)	122 (83.0%)
If I began feeling unsafe or nervous when driving	83 (80.6%)	32 (78.0%)	117 (79.6%)
If my general health deteriorated	86 (83.5%)	28 (68.3%)	115 (78.2%)
If there was deterioration of abilities that affect my movement	78 (75.7%)	31 (75.6%)	111 (75.5%)
If ICBC or the police imposed a driving restriction on me	76 (73.8%)	29 (70.7%)	107 (72.8%)
If there was a deterioration of my learning or mental abilities	79 (76.7%)	24 (61.0%)	106 (72.1%)
If medications were interfering with my ability to drive	67 (65.0%)	29 (70.7%)	98 (66.7%)
If someone else advised me to	39 (37.9%)	13 (31.7%)	53 (36.1%)
If I have an accident	27 (26.2%)	8 (19.5%)	35 (23.8%)
If the cost of gas and upkeep of my car gets too expensive	20 (19.4%)	12 (29.3%)	32 (21.8%)
When I reach a certain age	21 (20.4%)	5 (12.2%)	28 (19.0%)
There is no reason I would consider restricting my driving	8 (7.8%)	8 (19.5%)	17 (11.6%)
Other	4 (3.9%)	4 (9.8%)	8 (5.4%)

*Numbers are reported only for participants who (1) drive and (2) are not thinking of quitting driving within the next 6 months (drivers who reported that they either quit driving or are thinking of doing so within the next 3-6 months were not required to respond to Q.28c

**Valid N = 147 because there are 6 cases missing

†Valid N = 103 because 3 gender missing and 4 females did not answer this question (missing)

‡Valid N = 41 because 3 gender missing and 2 males did not answer this question (missing)

Respondents who reported that they had already quit driving (42 of 207 people responded to this question, 20.3%) were asked why they had stopped. Participants most frequently explained that they had quit driving because of medical conditions, including impairment in vision (59.5%). Cost was considered a factor in almost 25% of cases and several participants indicated they were advised to quit by a doctor (9.5%). Various other explanations given by respondents were: that driving was too stressful, lack of confidence driving in heavy traffic, concern for the environment, and license removal.

Bus Use

Figure 2 displays BC Transit use among participants. As the figure illustrates, more than half of participants (56.6%) use the bus either minimally or not at all. That is, 19.6% reported never using the bus as an adult, 15.1% reported not using the bus in the past five years, and 21.9% reported bus use less than one time per month. A small percentage of participants (13.2%) reported using the bus moderately, defined as one to three times per month (9.8%) or using the bus one time per week (3.4%). Over thirty percent of participants (30.2%) reported that they use the bus frequently, defined as two to three times per week (10.2%) or using the bus more than three times per week (20.0%). Most respondents (59.4%) who use BC Transit more than once per month reported that they have a bus pass. The majority of respondents who reported using the bus more than once per month indicated that they had not taken part in individual Transit Travel Training (96.4%).

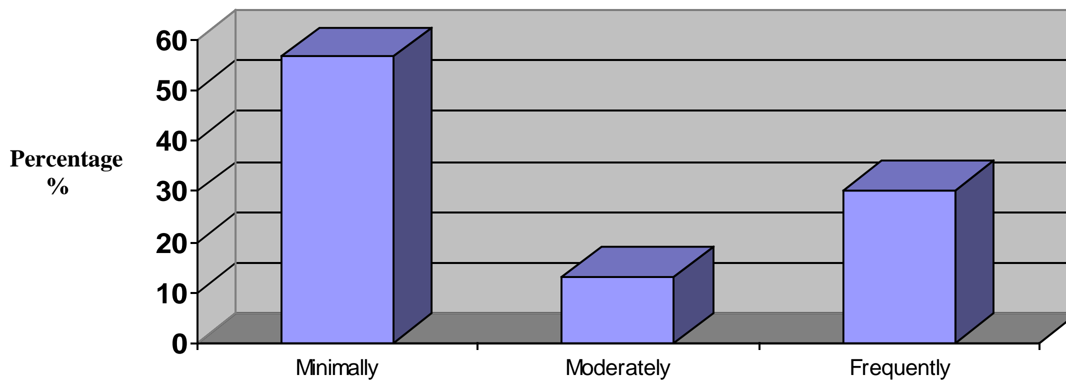

Figure 2. **Percentage of participants who use BC Transit**

Respondents who reported using the bus more than once per month (n=115) were asked to indicate the purposes for their bus use. Results are summarized in Table 5.

Table 5. **Purposes for using the bus**

Purpose for using the bus	Female N = 97	Male N = 15	Total Sample N = 115
Social events	79 (81.4%)	10 (66.7%)	91 (79.1%)
Health-related appointments	71 (73.2%)	10 (66.7%)	84 (73.0%)
Other Shopping	67 (69.1%)	6 (40.0%)	75 (65.2%)
Grocery shopping	52 (53.6%)	4 (26.7%)	58 (50.4%)
Hobby-related	36 (37.1%)	2 (13.3%)	38 (33.0%)
Work, school, or volunteer activities	29 (29.9%)	5 (33.3%)	35 (30.4%)
Other	23 (23.7%)	5 (33.3%)	28 (24.3%)
Worship	24 (24.7%)	2 (13.3%)	27 (23.5%)
Family events	24 (24.7%)	2 (13.3%)	26 (22.6%)

N.B., responses are not mutually exclusive. Three respondents did not indicate gender but were included in the total sample column.

HandyDART and Taxi Saver

Approximately one fifth of all respondents (20.1%) reported that they were qualified to use HandyDART and/or Taxi Saver. Of those who qualified, 58.8% used HandyDART for health-related appointments and over 40% used the service for attending social events (41.2%). Other uses for HandyDART included: other shopping (23.5%), maintaining hobby involvement (20.6%), attending worship (11.8%), family events (8.8%), transportation to work or volunteer positions (8.8%), and grocery shopping (8.8%).

Participants using the Taxi Saver program most frequently reported its use for health-related appointments (71.1%). The second most frequent use of the service was for social events (51.4%). The program was also used for both general shopping and grocery shopping (22.9% and 20.0% respectively). Less frequently Taxi Saver was used for hobby involvement (14.3%), attending worship (14.3%), family functions (11.4%), and transportation to work or volunteer positions (8.6%).

Mobility Aids

The majority of respondents (81.2%) reported that they do not use a mobility aid. Of those who reported using mobility aids, 30.6% used more than one mobility aid. The most common mobility aid reportedly used was a cane (69.4%) with 53.1% of respondents using a walker in addition to using a cane. Furthermore, the percentage of respondents who reported using a wheelchair or scooter was 10.2% and 8.2%, respectively.

(2) *What are the reasons given by older adults for not using public transportation?*

Participants reported a number of reasons why they did not use public transportation. Nearly two-thirds (63.7%) stated that they prefer driving their own vehicle. The second most common reason given was that the bus was not convenient (30.6%). Other reasons, by gender, can be found in Table 6.

***Table 6*. Reasons for not using the bus, including gender differences**

Reasons for not using the bus	Female N = 139	Male N = 49	Total Sample N = 193
Prefer to drive my own vehicle	84 (60.4%)	35 (71.4%)	123 (63.7%)
The bus is not convenient	42 (30.2%)	15 (30.6%)	59 (30.6%)
Limitations in my physical ability to get around	31 (22.3%)	8 (16.3%)	39 (20.2%)
Other	27 (19.4%)	9 (18.4%)	37 (19.2%)
Medical or health reasons	19 (13.7%)	4 (8.2%)	23 (11.9%)
Do not know how to use the BC Transit bus system	13 (9.4%)	5 (10.2%)	18 (9.3%)
Costs too much	2 (1.4%)	2 (4.1%)	5 (2.6%)
The bus is not available in my area of the CRD	0 (0.0%)	1 (2.0%)	1 (0.5%)

N.B., responses are not mutually exclusive. Five respondents did not indicate gender, but were included in the total sample column.

Participants were also asked to identify factors that restricted their bus use. Approximately 30% of participants (29.6%) responded, with the most common response being that taking the bus was inconvenient (46.8%). Restricted physical mobility was also a significant factor (45.5%) affecting bus use. Participants who found BC Transit to be inconvenient noted infrequent service with long waits at bus stops, particularly at night (14.3%), as a major concern. Other sources of inconvenience were poor weather, no bench or shelter, and the length of time required

to get to a destination. A few respondents said they had difficulty understanding the bus schedule. Participants who had restricted physical mobility reported that it was too difficult to ride the bus when carrying numerous packages and to stay balanced while riding. Furthermore, they reported that the distance between home and a stop was too long, and that mobility aids made it difficult to board a bus.

Health Status and Behaviour

Since health-related issues were reported as affecting bus use, we also examined the health status of our sample. Figure 3 displays the reported general health of the respondents. As the figure shows, 17.2% of participants reported that they are in excellent health, 34.3% in very good health, and 32.1% in good health. Only 14.6% and 1.9% of participants reported that their health was fair or poor, respectively. When asked how their health is now compared to one year ago, 69.9% of respondents stated that their health is about the same. More than half of respondents also reported having no difficulty communicating (86.0%), learning (83.1%), seeing (69.4%), bending (61.4%), walking (54.3%), hearing (53.7%), climbing the stairs (51.6%), or doing other similar activities (72.5%).

***Figure 3.* Reported general health of participants in percentages**

Phase Two

(3) *What is the impact of participation in a group transit training program?*

To fully address this question, we examined not only the impact of bus use, but other transportation-related outcomes, such as changes in driving habits and health status.

Bus Use

The purpose of Phase Two of the study was to compare the three groups (1 - no training, no bus pass; 2 - training, no bus pass; 3 - training and bus pass) and to assess the impact of a group transit training program. Self-reported information for the three months following the group transit training was collected for each group. For the purpose of this report, Table 7 illustrates bus usage for the final two months of the study.

Table 7. **Frequency of bus use for groups one, two, and three**

Bus Use	**Group 1 N = 19***	**Group 2 N = 12**	**Group 3 N = 12**
Have not traveled on the bus	17	7	3
Less than 1 time a month	0	2	2
1-3 times a month	1	1	4
1 time a week	0	0	1
2-3 times a week	0	1	0
More than 3 times a week	0	1	0

Total N = 43. *Missing data by one participant.

Given the limited number of people reporting bus use more than one time per month, responses were recoded to classify participants into those who had not traveled on the bus in the previous

two months, and those who reported using the transit system to some degree. A $2^{(\text{travel or not})}$ X $3^{(\text{group})}$, Chi-Square analysis revealed a significant difference in self-reported bus use across groups one, two, and three, $x^2 = 12.83$, $df = 2$, $p < .05$. When examining differences between pairs of groups, $2^{(\text{travel or not})}$ X $2^{(\text{group})}$, significant differences in bus use were evident between groups one and two, $x^2 = 5.87$, $df = 2$, $p < .05$, and one and three, $x^2 = 13.08$, $df = 2$, $p < .05$. However, no significant difference was found between group two and group three, $x^2 = 1.77$, $df = 2$, $p > .05$.

BC Transit provided data obtained for the bus passes on frequency of bus use for participants in group three. To determine whether participants' self-reported data matched the objective bus use data, bus data from BC Transit was averaged across weeks, encompassing the period of the two months directly prior to completing the second questionnaire. Data was then transformed into the same frequency classifications as collected on the self-reported bus use questionnaire. A strong relationship between self-reported frequency and objective reported BC Transit information was found, $\tau = .74$, $p < .01$ indicating that self-reported data was comparable to the objectively reported data.

To determine whether transit use changed across months one, two and three, the number of trips obtained from the objective bus data was examined. Paired samples *t*-tests revealed no difference between months one and two, $t\ (12) = 1.00$, $p > .05$; months two and three $t\ (12) = .23$, $p > .05$; and months one and three, $t\ (12) = .27$, $p > .05$ indicating that the use of bus transportation was consistent over time.

Changes in Driving Habits

To assess if any changes in miles driven per week had occurred within the 3 months following group transit training, a 3 $^{(group)}$ X 3$^{(change)}$ Chi-Square analysis was conducted. No significant change in miles driven per week, $x^2 = 2.32$, $df = 4$, $p > .05$, was revealed. Further, a one-way ANOVA revealed no significant differences in the number of days driven per week within the 3 months following group transit training, $F(2, 37) = 1.21$, $p > .05$.

Few participants reported changes in driving restrictions three months following group transit training. A one-way ANOVA revealed no significant difference between groups one, two, and three, in the number of reasons for currently restricting driving $F(2, 8) = .62$, $p > .05$.

To assess if the primary mode of transportation had changed within the three months following group transit training, the frequency of reports was examined. As shown in Table 8, the majority of respondents in all three groups indicated the car continued to be their major form of transportation.

Current Health

To determine whether the self-reported health of the participants had changed over the three months following group transit training, a 3$^{(group)}$ X 3$^{(change)}$ Chi Square analysis was conducted. No difference in participants' health, x^2 2.16, $df = 4$, $p > .05$ was revealed.

Table 8. **Comparison of mode of transportation used most often by groups one, two, and three**

Mode	*Group 1		**Group 2		***Group 3	
	Time 1 N=18	**Time 2 N=19**	**Time 1 N=12**	**Time 2 N = 11**	**Time 1 N=12**	**Time 2 N = 12**
Car as a driver	15 (78.9%)	15 (83.3%)	11 (91.7%)	10 (83.3%)	10 (83.3%)	9 (81.8%)
Car as a passenger	1 (5.3%)	1 (5.6%)	0	0	2 (16.7%)	2 (18.2%)
Volunteer driver	0	0	0	0	0	0
Truck	0	0	0	0	0	0
Van	1 (5.3%)	1 (5.3%)	1 (8.3%)	0	0	0
Sports Utility Vehicle	0	0	0	0	0	0
Motorcycle	0	0	0	0	0	0
Wheelchair	0	0	0	0	0	0
Taxi	0	0	0	0	0	0
Bus	0	0	0	1 (8.3%)	0	0
HandyDART bus	0	0	0	1 (8.3%)	0	0
Scooter	0	0	0	0	0	0
Bicycle	1 (5.3%)	1 (5.3%)	0	0	0	0

*Group one (Time 1) had data unable to be used from one participant
** Group two (Time 2) had data unable to be used from one participant
* **Group three (Time 2) had data missing or unable to be used from one participant

4 SUMMARY AND RECOMENDATIONS

Results for Phase One revealed that a private vehicle was the preferred form of transportation among our sample of older adults who reported being either the driver or the passenger. Drivers in Phase One reported driving approximately 5 days per week on average whereas respondents reported traveling as a passenger in a vehicle on average 2 days per week. The majority of older drivers reported that they are not thinking of quitting or restricting driving within six months. Some respondents, however, revealed that they had already quit driving, sometimes due to medical conditions that impaired their sensory functions or caused slower physical responses. In some cases, doctors had recommended that a respondent quit driving. Participants who were still driving gave reasons' similar to their non-driving counterparts when asked under which conditions they would consider quitting driving in the future. Those who restricted their driving did so because of health reasons, and because they felt uncomfortable driving in poor weather, heavy traffic, or at nighttime.

Approximately half of our Phase One participants reported using the BC Transit buses either minimally or not at all. For participants who did use the bus, the majority did so for health-related appointments and social events. Women who used the bus also frequently used it for shopping. Most respondents did not have any individual transit travel training and many were not aware that BC Transit offered such training. When participants were asked why they did not use the bus, the majority reported that they preferred driving their own vehicle. Some participants, however, reported that they did not use the bus because it was inconvenient and/or their physical mobility was restricted. It appears that public transportation may not be a convenient or attractive transportation option for some older adults.

A major impact of group transit training (Phase Two) was seen regardless of whether a free bus pass was supplied or not. Participants who received group transit training used the bus more often than those participants in the control group who received neither a free bus pass nor group transit training. Self-reported bus use was strongly related to frequency of bus use collected on the bus passes for group 3. This increase in bus use by groups 2 and 3 did not relate to changes in miles driven per week, driving restrictions, primary mode of transportation or health status. Given the relatively small sample and short duration of this pilot study, it is not surprising that broader changes (e.g., miles driven, health status) were not seen. It may be, though, that an introduction to transit use through group transit training may facilitate future changes in transportation–related behaviors. For example, those who are familiar with bus use may more readily alter their driving or use of multiple forms of transportation than those without this knowledge, when needed, thereby maintaining mobility independence. This possibility could be addressed in future research with larger samples drawn from the general population of older adults or specific subgroups most likely to benefit from such training.

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