Everyday Geographies of Stroke Survivors:  
A Case Study Examining the Relationship Between  
Activity Space, Health and Well-Being

by

Jodi L. Sturge  
Bachelor of Science, Memorial University of Newfoundland, 2001

A Thesis Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
MASTER OF SCIENCE  
in the Department of Geography

© Jodi L. Sturge, 2006
University of Victoria

All rights reserved. This thesis may not be reproduced in whole or in part, by photocopy  
or other means, without the permission of the author.
Everyday Geographies of Stroke Survivors:
A Case Study Examining the Relationship Between
Activity Space, Health and Well-Being

by

Jodi L. Sturge

B.Sc., Memorial University of Newfoundland, 2001

Supervisory Committee

Dr. Denise Cloutier-Fisher (Department of Geography)

Supervisor

Dr. Peter Keller (Department of Geography)

Department Member

Dr. Neena Chappell (Department of Sociology)

Outside Member
ABSTRACT

Although it is well known that stroke can be a very debilitating experience, little evidence exists in the literature about how well stroke survivors fare in the community after leaving the hospital. The purpose of this research study is to contribute a deeper understanding of the day-to-day experiences of stroke survivors living in the community and to investigate how the geographic concept of ‘activity space’ can be applied to understand their well-being and everyday experiences.

The research design uses both spatial (i.e., geomatics) and qualitative analysis (i.e., analysis of narratives) in a case-study approach to examine well-being and the activity spaces of stroke survivors who live in two communities on Vancouver Island, British Columbia. Primary data were collected through personal interviews with 21 stroke survivors who were recruited from Stroke Recovery Group populations in Victoria and Oceanside. Using self-rated health (SRH) as a measure of well-being, spatial behaviours and qualitative data were analyzed to illustrate the everyday experiences of stroke survivors. Geomatics, refers to the application of spatial analysis techniques was
used to measure and evaluate the activity space of stroke survivors. Qualitative data were used to complement the spatial findings to provide insight into how the stroke itself, as well as personal experience and coping resources can impact a stroke survivor’s activity space. The spatial analysis is organized to highlight differences among stroke survivors on the basis of geography and SRH. Taken together, these results illustrate how a multi-method approach (i.e., spatial analyses in combination with narrative data) can be employed to understand the activity spaces and everyday experiences of stroke survivors. While illuminating the experiences of stroke survivors with life in their communities, this approach may also have utility in the study of other chronic illnesses.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>x</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xi</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>xii</td>
</tr>
<tr>
<td>DEDICATION</td>
<td>xiii</td>
</tr>
<tr>
<td>1. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1 RESEARCH OBJECTIVES</td>
<td>1</td>
</tr>
<tr>
<td>1.2 SIGNIFICANCE OF THE RESEARCH</td>
<td>2</td>
</tr>
<tr>
<td>1.3 METHODOLOGY</td>
<td>2</td>
</tr>
<tr>
<td>1.4 ORGANIZATION OF THESIS</td>
<td>4</td>
</tr>
<tr>
<td>2. LITERATURE REVIEW</td>
<td>6</td>
</tr>
<tr>
<td>2.1 APPROACH AND CONCEPTS</td>
<td>7</td>
</tr>
<tr>
<td>2.1.1 Geography and Disability</td>
<td>7</td>
</tr>
<tr>
<td>2.1.2 Life After a Stroke</td>
<td>8</td>
</tr>
<tr>
<td>2.1.3 Health and Well-Being of Stroke Survivors</td>
<td>13</td>
</tr>
<tr>
<td>2.1.2.1 Factors Influencing the Well-being of Stroke Survivors</td>
<td>16</td>
</tr>
<tr>
<td>2.1.4 Activity Spaces and Well-Being: Making the Connections</td>
<td>17</td>
</tr>
<tr>
<td>2.1.4.1 The Activity Space Concept</td>
<td>17</td>
</tr>
<tr>
<td>2.1.4.2 Negotiating Stroke Survivors’ Activity Space</td>
<td>21</td>
</tr>
</tbody>
</table>
2.2 COMMUNITY SUPPORT SERVICES FOR STROKE SURVIVORS AND FAMILIES 22
   2.2.1 Community Support Services on Vancouver Island 23
   2.2.2 Rehabilitation 25

2.3 CONCLUSIONS 26

3. RESEARCH METHODS 27
   3.1 RESEARCH DESIGN 27
   3.2 STUDY AREA 28

3.3 SAMPLE SELECTION 30
   3.3.1 Sampling Frame 30
   3.3.2 Purposive Sample 30

3.4 RESEARCH PROCESS 32
   3.4.1 The Recruitment 32

3.5 SURVEY ADMINISTRATION 33
   3.5.1 The Interview Process 33

3.6 DATA ANALYSIS 36
   3.6.1 The Spatial Analysis 36
      3.6.1.1 The Spatial Data Preparation 36
      3.6.1.2 The Spatial Analysis 38
   3.6.2 The Qualitative Analysis 41
      3.6.2.1 Narrative Data Preparation 41
      3.6.2.2 Narrative Analysis 42

3.7 LIMITATIONS 42
4. THE STROKE SURVIVORS – A DESCRIPTIVE PROFILE

4.1 PROFILING THE SAMPLE

4.2 GENERAL CHARACTERISTICS OF THE SAMPLE

4.2.1 Age, Gender, Marital Status and Self-Reported Health

4.2.2 Household Income

4.2.3 Strokes and Personal Health

4.2.4 Mobility and Activities of Daily Living

4.3 INSIGHTS ON THE STROKE EXPERIENCE

4.3.1 Describing the Stroke

4.3.2 Loss of Employment

4.3.3 Changing Life Plans

4.3.4 Long-term Effects

4.3.5 Recoveries

4.4 DISCUSSION

5. THE ACTIVITY SPACE OF STROKE SURVIVORS

5.1 PRELIMINARY ANALYSIS

5.2 SIZE AND NATURE OF ACTIVITY SPACES OF SELECTED STROKE SURVIVORS

5.2.1 Oceanside

5.2.1.1 Mr. Derksen – Poor Self-Reported Health

5.2.1.2 Mrs. Isaac – Good Self-Reported Health

5.2.1.3 Mr. Sawatsky – Poor Self-Reported Health
5.2.2  Victoria
   5.2.2.1 Ms. Frail – Poor Self-Reported Health 67
   5.2.2.2 Mrs. Ryan – Good Self-Reported Health 69

5.3  DISCUSSION

6.  USING QUALITATIVE DATA TO FURTHER UNDERSTAND AND INTERPRET STROKE SURVIVORS ACTIVITY SPACES 72

6.1 ADDRESSING HOME AND COMMUNITY SPACES

6.1.1 Negotiating the domestic environment 73
   6.1.1.1 Home Modifications 73
   6.1.1.2 Finding a new home 74
   6.1.1.3 Obstacles in the home 75

6.1.2 Negotiating the wider environment
   6.1.2.1 Furniture: Positioning and Type 76
   6.1.2.2 The Challenges of Stairs and Lifts 77
   6.1.2.3 Fear of Falling 78
   6.1.2.4 Inaccessible washrooms 78

6.2 EVERYDAY GEOGRAPHIES 81

6.2.1 Reflections on loss of personal ability 81
   6.2.1.1 Changes in Physical Activities 81
   6.2.1.2 Changes in Social Activities 83
      A. The inability to participate in social groups 83
      B. Losing Friends 84

   6.2.1.3 Changes in Mobility 85
      A. Losing the ability to drive 85
      B. Adapting to new transportation 85

   6.2.2 Post-Stroke Activities: A Longer View 87
      6.2.2.1 Social Engagements and Connections 87
         A. The Benefits of Support Groups 87

6.3 DISCUSSION 89
7. **CONCLUSIONS**

7.1 USEFULNESS OF THE SAMPLE, RESEARCH DESIGN AND NARRATIVES 92

7.2 ADDRESSING THE RESEARCH QUESTION 94

7.2.1 LIMITATIONS 96

7.3 FUTURE RESEARCH 99

8. **REFERENCES** 102

9. **APPENDIX** 108

A. RECRUITMENT SURVEY 108
B. INTERVIEW SCHEDULE 112
C. LETTER DETAILING PROJECT 118
D. ACTIVITY SPACE MAPS 119
List of Tables

Table 3.1: Research Sample by Geography and Gender 32
Table 3.2: Features of Significance 42
Table 4.1: General Characteristics of the Sample 46
Table 4.2: Distribution of Household Income and Self-Reported Health among Sample 47
Table 4.3: Distribution of Activities by Gender among Sample 49
Table 4.4: Distribution of Activities by Geography among Sample 50
Table 4.5: Distribution of Activities by Self-Reported Health among Sample 50
Table 5.1: Mean Activity Space Distance by Geography 58
Table 5.2: Mean Activity Space Distance by Geography and Self-Reported Health 59
Table 5.3: Mr. Derksen’s Activity Space Compared to the Average Oceanside and Poor Health Activity Space 62
Table 5.4: Mrs. Isaac’s Activity Space Compared to the Average Oceanside and Good Health Activity Space 64
Table 5.5: Mr. Sawatsky’s Activity Space Compared to the Average Oceanside and Poor Health Activity Space Distance 66
Table 5.6: Ms. Frail’s Activity Space Compared to the Average Victoria and Poor Health Activity Space 68
Table 5.7: Ms. Ryan’s Activity Space Compared to the Average Victoria and Poor Health Activity Space 70
List of Figures

Figure 2.1: Associated Costs of Care for Some Stroke Survivors and their Families 10

Figure 2.2: Prompt/Trigger Disease and Spatial Outcome 21

Figure 3.1: The Study Areas 29

Figure 3.2: Flowchart of Spatial Methods 37

Figure 3.3: Shortest Path Network with a Spatial Buffer (200m) 39

Figure 3.4: A Sample of Frequency of Activities Chart 40

Figure 5.1: The Activity Space Map of Mr. Derksen 61

Figure 5.2: Mr. Derksen’s Frequency of Activity Chart 62

Figure 5.3: The Activity Space Map of Mrs. Isaac 63

Figure 5.4: Mrs. Isaac’s Frequency of Activity Chart 64

Figure 5.5: The Activity Space Map of Mr. Sawatsky 65

Figure 5.6: Mr. Sawatsky’s Frequency of Activity Chart 66

Figure 5.7: The Activity Space Map of Ms. Frail 67

Figure 5.8: Ms. Frail’s Frequency of Activity Chart 68

Figure 5.9: The Activity Space Map of Mrs. Ryan 69

Figure 5.10: Mrs. Ryan’s Frequency of Activity Chart 70
Acknowledgments

I express my gratitude to Denise Cloutier-Fisher, whose patience, understanding and expertise guided me throughout my graduate career and to the completion of this thesis. I have an utmost appreciation of her passion and experience in many areas including aging, stroke survivors, geography and parenting. I would also like to recognize her encouragement in submitting grant proposals and publications.

I thank Dr. Dave Duffus for his guidance and support, as well as the members of my committee: Dr. Neena Chappell, Dr. Peter Keller and Elizabeth Borycki for their comments and assistance in this project. I would also like to acknowledge Dr. Pamela Moss for her contributions to the research design. A special thanks to Eric Druyts and Jennifer Harvey for their field assistance and to the Centre on Aging for providing me with a supportive office environment. I also thank Janine and Chris for taking the time to edit numerous drafts.

I am grateful to Dr. Keith Storey at Memorial University for his years of encouragement and kind words that inspired me to pursue graduate school.

I thank my son Wilem who has been my inspiration in completing this project. I am also deeply grateful to Jonathan and Mom for relocating to the west coast. Many thanks to Rob, Dad, Nan and Sara who were always a phone call away, and to Serene Ford and the Little Panda’s for taking good care of Wilem during this time. A special thanks to John, Erin and Marvin who were always up for a road trip or a bottle of wine.

At last, I would like to thank the Stroke Recovery Group in Oceanside and Victoria for sharing their time, life stories and experiences.
This thesis is dedicated to

Lewis and Ted, my grandfathers, who were both strong stroke survivors

and

Wilem – my strength.
Presently, there are gaps in the literature related to how well stroke survivors fare in the community in terms of their well-being and everyday coping abilities (Teasell et al., 2003, Adkins, 1993). The purpose of this research is to contribute to an understanding of the day-to-day experiences of stroke survivors living in the community and to investigate how the geographic concept of 'activity space' can be applied to understand the everyday experiences, daily activities and well-being of community dwelling stroke survivors living in two communities on Vancouver Island, British Columbia.

1.1 RESEARCH OBJECTIVES

The research has two primary research objectives: (1) to explore and apply the concept of activity space to determine its relevance in understanding the linkages between daily activities and well-being for stroke survivors; (2) to better understand how geography (i.e., physical location) shapes the daily experiences of community-dwelling stroke survivors in the urban region of Victoria and the rural region of Oceanside (i.e., a CMA and a CA).
1.2 SIGNIFICANCE OF THE RESEARCH

Stroke has been identified by the Heart and Stroke Foundation of Canada, as a leading cause of adult death and disability in Canada (HSFC, 1999). Geography has an important influence on disability since geographic concepts such as space and place and terms such as area, neighbourhood and distance can all tell us something about the well-being of those living with a disability. Using the geographic concept of activity space—which refers to the frequency of participation on a daily, weekly, monthly and yearly basis along particular dimensions of activities such as work, education, health, services, recreation, shopping and social (Thapar, 1999)—the well-being of stroke survivors can be examined. Geomatics, referring to the application of spatial analysis techniques, is used to measure and evaluate the activity space of stroke survivors according to health status. To complement the spatial findings, themes derived from the qualitative interviews with stroke survivors are used to detail which factors enhance and restrict their activity space. This case study will address two research questions:

(1) What is the nature of the relationship between activity space and perceived well-being for stroke survivors?

(2) How do the day-to-day experiences of stroke survivors in two different geographical communities—a City and a smaller town—differ and how are they the same?

The latter question is important since the majority of stroke literature tends to focus on people living in urban settings. For example, Mold et al. (2003) states that services affecting care provision in urban areas cannot be assumed to be identical in smaller areas. Thus, this research project contributes to an understanding of how
geography (i.e., urban and rural perspectives) influences the concept of activity space and day-to-day experiences of stroke survivors.

### 1.3 METHODOLOGY

The research design is an exploratory case study which uses a multi-method approach (i.e., triangulation) to address the research questions. Both qualitative and quantitative data were collected on 21 stroke survivors living in two communities. First, spatial data analysis is used to map and improve understanding of the links between the spatial behaviour of stroke survivors and well-being. Second, the interviews with community-dwelling stroke survivors are thematically analyzed. Primary data were collected through personal interviews with 21 stroke survivors in two communities; Victoria, a CMA and the district of Oceanside which includes the City of Parksville, a CA and the nearby town of Qualicum Beach. The questions in the interview focus on identifying the location of stroke survivors’ health services, financial, recreational and social activities and how often they engage such activities and the mode of transportation used. The well-being of stroke survivors is measured by the response to the standard self-reported health question (Q9: In general, would you say your health is? Excellent, very good, good, fair, or poor) in the recruitment survey (APPENDIX A). Using postal address information gathered during the interviews (APPENDIX B), maps that illustrate and measure the activity spaces of stroke survivors were developed and are analyzed in terms of how well-being influences the size and structure of these spaces.

These data are spatially and thematically analyzed. Initially, a descriptive profile of the sample is developed to provide an overview of the stroke survivors who
participated in this research project and to identify some of the major challenges they face. Next, personal activity space is mapped using Network Analyst, a Geographic Information System (GIS) method, to measure and map the activity spaces of each stroke survivor in the sample. Using self-reported health as the key measure of well-being, the researcher is able to determine if well-being influences the activity spaces of stroke survivors. The spatial analysis examines a broad range of activities within these spaces (e.g., visiting a doctor or friends) to determine if the type of activity undertaken relates to health perceptions. For example, does poor self-reported health translate into a smaller or larger activity space for stroke survivors? Next, themes generated from the narratives are used to provide insight into the activity spaces. The qualitative analysis enriches the spatial analysis by emphasizing the individual experiences related to activity space and identifying the factors which appear to restrict or enhance a stroke survivors’ activity space.

1.4 ORGANIZATION OF THESIS

This thesis is organized into seven chapters including this introduction. The second chapter reviews the literature including the approaches and concepts discussed in this research—such as the role of geography in disability literature, health and well-being of stroke survivors, the activity space concept—and a review of the needs, the availability and the use of stroke support services in each community. Chapter three discusses the methodology of this research including the sample, the research instruments and the multi-method approach used for analysis. Next, chapter four affords a descriptive profile of the sample who participated in this research and highlights a range of challenges faced
by individual stroke survivors. This is followed by two results chapters. The first results chapter presents the illustrated maps for each participant according to well-being (i.e., poor or good health). The second summarizes the qualitative themes. By presenting the chapters this way the qualitative data provides insight into the spatial phenomena examined in the previous chapter. The concluding chapter in this thesis highlights the main conclusions of this research, identifying the key findings as well as the limitations and suggested areas for future research.
Chapter 2: Literature Review

Canada has one of the lowest death rates due to stroke, but morbidity and hospitalization costs associated with stroke remain high (HSFC, 2003). According to the Public Health Agency of Canada’s chronic disease on-line surveillance system (2005), the incidence of stroke is increasing while the mortality rates, for both men and women, are decreasing. Observing the stroke-related morbidity rates between 1978 and 1998, the number of Canadians living with stroke was at its highest in 1998. This finding highlights the magnitude of stroke as an issue in Canada. The effects of stroke range from minimal to devastating with the potential to impact all areas of life including placing burden upon stroke survivors, their families, caregivers, the community, and health care services (Rodgers et al., 2001).

Recognizing the importance of this topic in contemporary Canadian society, this chapter develops an overview of the concepts relevant to the study of stroke survivors’ activity spaces and well-being. This chapter is divided into two sections. Section one begins with a description of the relationship between geography and disability. This is an important theme in this research since the majority of stroke survivors are left with some level of disability. It is followed by literature describing life after a stroke. Next the factors which influence the well-being of stroke survivor’s are discussed followed by a brief review of literature pertaining to activities of daily living and the concept of activity space and its application in this investigation. This relationship shows how geography can be used as a tool to understand stroke. Section two describes the community support services for stroke survivors and their families that are available on Vancouver Island.
2.1 APPROACH AND CONCEPTS

2.1.1 GEOGRAPHY AND DISABILITY

Statistics Canada (2005a) defines disability as “difficulties in performing routine tasks of daily living such as walking, climbing stairs, feeding oneself, or reading a newspaper due to a long-term physical condition, mental condition, or health problem.” Bearing in mind this definition, an estimated 31% of Canadians over the age of 65 (i.e. more than 1.1 million persons) experience some form of disability (Statistics Canada, 2003).

Geography is an important discipline for understanding disability since geography itself can disable people and make it difficult to negotiate an environment. Geographic terms such as place, area, and space as well as locational elements such as neighbourhood, distance; all can tell us something about the well-being of those with a disability. Geographers address disability issues by planning accessible environments for disabled people, measuring the spatial behaviour patterns of disabled people (how far disabled people travel, how frequently, by what means etc.), examine accessibility to services, and consider service allocations (Kitchin, 2000).

Dyck (1992a; 1992b; 1995) and Moss (1997) are two geographers who have examined disability in terms of activity space and well-being. Dyck uses the story of a Chinese immigrant woman to illustrate how cultural beliefs and values can combine with rheumatoid arthritis to affect day to day life (Dyck, 1992). Similarly, Moss (1997) studied the lives of women with rheumatoid arthritis and illustrated how older women living with this disease have learned to negotiate their physical (e.g., neighbourhood) and
social environments. Both of these investigations view disability directly by linking geography (e.g., social and physical locations) to distinguish how disability can affect people’s everyday lives.

2.1.2 LIFE AFTER A STROKE

According to the Heart and Stroke Foundation of Canada, stroke is the leading cause of adult disability in Canada and the burden of stroke results in significant disabilities for over 60% of stroke survivors (HSFC, 1999). The severity of disability following stroke depends upon the type of stroke which was experienced. There are two major types of stroke—ischemic and hemorrhagic (HSFC, 2003). Ischemic strokes comprise 80% of all strokes; these occur when the blood flow to the brain is interrupted by a blood clot. The remaining 20% of strokes are hemorrhagic strokes which are caused by a bleed resulting from a ruptured blood vessel. Between 40,000 and 50,000 Canadians experience a stroke each year (HSFC, 2003). The rate of stroke is higher for females than males, and more females tend to die from stroke. Therefore, there are more male stroke survivors. In British Columbia, there are approximately 8,400 new strokes per year and an estimated 29,000 people in British Columbia suffer from or experience the lasting effects of stroke (HSFC, 2003).

Depending upon which areas of the brain are damaged by stroke, and the severity of the damage, a stroke can promote physical, emotional and/or psychosocial changes which can affect lifestyle and quality of life (HSFC, 2003). Additionally, stroke-related impairments may persist long beyond the acute phase or hospitalization phase. Anderson (1988) compares early post-stroke assessment outcomes to post-stroke assessments at 6 months. His research found that motor loss (i.e., inability to use arms or legs) was
initially experienced by 80% of persons, while at 6 months motor loss endured in 53% of stroke survivors. Disorientation or aphasia occurred in 55% of persons and persisted for 27% (Anderson, 1988). Aphasia, the result of damaged brain tissue, is a condition which impacts one’s ability to express thoughts and feelings using language. An important consequence of stroke is that it can lead to depression related to the inability to communicate well (Heart and Stroke, 2003).

Another common disability which stroke survivors experience is known as “neglect”. This disability is more common among stroke survivors who experience a stroke on the right side of the brain (i.e., this is the side of the brain that controls the left-side of the body). People with neglect appear to experience numbness or paralysis on the left side of their body and can often be oblivious to any activities happening on their left side (HSFC, 2003).

A majority of stroke survivors reside at home with their families. Because of consequent changes in family function, clinicians and researchers now identify family members as being vulnerable to high level of stress and burnout (Chappell and Reid, 2002; Reimer et al., 1998). Caregivers tend to experience effects of the stroke differently than the individual who experienced a stroke, or chronic disease, but these experiences are just as intense (Clarke and Smith, 1998).

When a stroke-patient returns home, the home environment itself can impact upon the stroke survivor’s rehabilitation and well-being. Stroke-related disabilities can make it necessary to make changes at home because of changed personal circumstances and environmental needs change (Rowles, 1987). Some stroke survivors do a small number of home modifications (e.g., installing grab bars), while others undertake many (e.g.,
building ramps and widening doorways). It is important to mention that not all home modifications support mobility. For example, a residence may be modified by using just a single floor of a house to avoid stairs. This type of modification has been found to restrict participation in household activities (Rowles, 1997).

**FIGURE 2.1:** ASSOCIATED COSTS OF CARE FOR SOME STROKE SURVIVORS AND THEIR FAMILIES

- Hospitalizations for stroke related problems
- Emergency department attendances
- Rehabilitation hospital admissions
- Outpatient rehabilitation
- Specialist medical care
- General practitioner care
- Allied health and alternative therapies
- Tests (radiology, pathology, other)
- Prescription medication
- Over the counter medications
- Provision of special equipment and aids
- Home modifications
- Ambulance transfers
- Community rehabilitation centers/day centers
- Provision of community services
- Aged care and psychogeriatric assessment teams
- Paid domestic assistance
- Respite care
- Informal care

Source: Dewey et al, 2004

Since stroke is a sudden event, many stroke survivors or family members are not financially prepared for the costs relating to the stroke. Dewey et al., (2004) identifies a range of ‘out of pocket’ costs faced by stroke survivors and their families (Table 2.1). Since many stroke survivors are on a fixed income, they don’t have the resources to overcome design barriers to their homes. Fortunately, there are several agencies in Canada that will provide financial assistance for home modifications. These include the Canada Mortgage and Housing Corporation, Home Adaptation for Seniors’ Independence (HASI), and Residential Rehabilitation Assistance Program for Persons with Disabilities,
One of the greatest losses mentioned most frequently by both men and women equally, and which relates to geography, is the loss of mobility (Mumma, 1986). Clarke et al., (2002) found that stroke survivors experience more difficulties performing Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) (e.g., bathing, walking, grocery shopping etc) than seniors living without the effects of stroke. Stroke survivors were found to require assistance bathing, preparing meals, walking and getting outside the home. Losing the ability to drive and therefore adapting to new transportation, mobility aids and obstacles to mobility are related to the well-being of stroke survivors. In a small sample study, Fisk et al., (2002) found that stroke survivors were driving prior to the stroke, but only half continued to drive after the stroke mainly due to neglect or the loss of sight. Additionally, Fisk et al., (2002) found that those who did return to driving tended to drive less than other seniors who had not experienced a stroke. The authors found that stroke survivors were less likely to travel great distances beyond their community and were more likely to rely on friends and public transit for their transportation needs (Fisk et al., 2002). Stroke survivors are likely to have difficulties in situations such as “driving alone, parallel parking, making left turns in traffic, driving on interstate highways, driving in heavy traffic, and driving during rush hour” (Fisk et al., 2002: p. 473).

For those who lose the ability to drive, many adapt by using mobility aids such as scooters and wheelchairs. In Dyck et al. (2003) research, the use of a scooter to help individuals engage in activities outside their home is discussed. However, for some
persons scooters are not so convenient or easy to use. As another example, wheelchairs are difficult to use if a stroke survivor has only retained the use of one hand (they would end up going in circles) and as Reid (2004) claims, wheelchairs are aids which can actually restrict a stroke survivors’ activity space, since they limit access to many things (e.g., any place that is not wheelchair accessible). The same arguments can be made for the use of a scooter. Therefore, it should be noted that certain mobility aids may create additional obstacles for some stroke survivors. It is important to recognize the complex barriers that exist in the environment to constrain mobility since these barriers have been found to be crucial to self-esteem and social engagement (Peace et al., 2005).

Many stroke survivors talk about their friends abandoning them after experiencing a stroke. Clarke et al., (1999) found that physical impairments resulting from a stroke can diminish the social roles and activities of a stroke survivor. Such social effects were found to persist even after physical capabilities were restored. Physical functioning such as self-care, mobility and locomotion were found to be a burden on stroke survivors since there was a challenge in engaging in valued life activities such as sports and social activities.

While household income has not been found to be associated with any of the dimensions of well-being for stroke survivors (Clarke, 2003), the household itself is. The way seniors view their home environment, and its impact on their lives, is an important factor influencing overall well-being (Lawton and Cohen, 1974; Golledge and Stimson, 1997). Other research has found that housing can also influence the well-being of those experiencing chronic illness. Dyck et al. (2003) discuss how the meaning and the use of a home for an HIV victim changed with the progression of his disease. With deteriorating
health, this individual had to conduct the majority of his duties from home and no longer viewed his home as private since there were many caregivers, professionals and friends visiting his home. Clarke et al. (1999) found that individuals living at home three months after a stroke experienced less handicap than those living in an institution. Additionally, they identify the importance of modifying a home to support physical disabilities such as problems with self-care, mobility and locomotion since struggling with these disabilities has been related to social restriction. Considering these research findings, it can be concluded that the immediate home environment can directly influence the well-being of a stroke survivor.

2.1.3 Health and Well-being of Stroke Survivors

In this research, self-reported health is the key measure used to represent the well-being of stroke survivors. Asking people to rate their overall health on a scale from excellent to very poor is one of the most frequently used measures of self-reported health (SRH) status (Fayers et al., 2002). Self-rated health (SRH) status has been validated in representing physical, emotional and social aspects of health and well-being. Idler et al. (1997) developed four possible interpretations of how self-rated health relates to an individual’s health. One interpretation concludes that self-rated health not only reflects the presence or absence of personal resources, but also the ‘adequacy’ of these resources to meet future needs. In addition, this research found that an individuals’ perception of their health status is reflected in the availability of resources and the quality of environmental factors that may ultimately affect health. The second interpretation concludes that behaviours related to poor self-reported health can affect an individual’s interest in engaging in preventive measures or self-care. For example, an individual with
poor health may live in “denial” by avoiding treatment or screening which may lead to further health issues. The third interpretation is of self-reported health as being “a dynamic evaluation, judging trajectory and not only current level of health” (p.28), while the fourth interpretation describes how measuring self-reported health captures an array of illnesses a person may have and represents judgments the individual may have toward the severity of the illness (Idler et al., 1997). Furthermore, they claim that self-reported health reflects the family history such as a family’s vulnerability and risk factors to certain diseases (Idler et al., 1997; p.28).

Not surprisingly, stroke survivors’ have been found to have a lower sense of well-being than seniors who have not experienced a stroke (Clarke, 2003). Using an alternate measure of well-being; the Ryff Measure of Psychological Well-Being, Clarke et al. (2002) found that it is less likely for a stroke survivor to rate his/her health as “very good” compared to those seniors without a stroke, and stroke-affected persons are more likely to rate their health as “poor”. Focusing on the subjective well-being of community dwelling stroke survivors (n=339) who were surveyed as a part of the Canadian Study of Health and Aging, research concluded that stroke survivors are “at a disadvantage with respect to their sense of well-being, reporting significantly lower scores on all dimensions of the Ryff measure except for autonomy and purpose in life dimensions” (Clarke et al., 2002; p.1022). Contrary to these findings of Clarke et al. (2002), earlier stroke-related research conducted by Mumma (1986) found that SRH rating for stroke survivors’ was good to excellent for two-thirds of persons. Furthermore, Mumma’s (1986) research findings conclude that stroke-related impairments did not prevent a health rating of good to excellent or interfere with their daily activities and that stroke survivors’ considered
their health problems were under control. Clarke et al’s (2003) findings are therefore contradicted by Mumma’s (1986) findings. It should be noted that Mumma’s (1986) research sample consisted of community dwelling stroke survivors (n=60) who had experienced a stroke three months prior to the study which in some ways makes these stroke survivors more interesting since the trauma from the stroke is still strong. Therefore, it is assumed that the contradiction in the research findings highlights the fact that self-reported health alone may not prove useful in stroke-related research and that there are other factors (i.e. demographic or time elapsed since stroke etc.) which influence stroke survivors’ self-reported health.

Peace et al. (2005) discuss the fact that how an individual copes with change in health status can be related to personal competence, personality and whether they can adapt behaviour to cope with change or maintain well-being. Additionally, they maintain that the lower the competence of the individual—the greater the impact of environmental factors on their ability to participate in preferred activities. Clarke’s (2003) qualitative results highlighted how temporal factors, such as adaptation, can be important in reducing the adverse effects of functional disability on well-being in later life. This suggests that the more competent a stroke survivor is, the less “pressing” the environment becomes and the less the stroke constrains their well-being.

2.1.2.1 FACTORS INFLUENCING THE WELL-BEING OF STROKE SURVIVORS

Stroke-related impairments and disabilities can pose a significant problem for the well-being of older adults. Some individuals adapt well to the effects of a stroke and maintain some sense of satisfaction with their post-stroke lives, while others lose a
positive sense of well-being in the face of this chronic disabling condition; partly depending upon their level of disability. Physical and cognitive disabilities are two of the greatest factors identified as limiting the well-being of stroke survivors, largely due to the impact on personal identity. Clarke et al., (2002) found that physical disabilities (e.g., neglect, losing the use of an arm or leg etc.) and cognitive disabilities (e.g. aphasia, memory loss etc.) do relate to a poor sense of well-being. Additionally, factors such as “greater number of health conditions” and “requiring assistance to perform daily activities” have been found to negatively influence a stroke survivor’s reported well-being. Earlier research found the opposite, claiming that such impairments do not affect well-being if the stroke survivor has them under control Mumma (1986). Again, as explained by Peace et al. (2005) the personality of the individual is the greatest factor which allows a person to maintain well-being.

Social supports (i.e., friends, social clubs, support groups etc.) have been found to reduce the adverse impacts of stroke on well-being (Clarke, 2003, Clarke et al, 2002, Glass et al., 1993, King 1996). Research further concludes that not only are social support systems vital for the well-being of stroke survivors, but they may also relieve pressure on the health care system (Clarke et al., 2002). Idler et al., (1997) identifies stroke survivors with large social support networks to view their resources as adequate and that such resources would moderate the adverse effects of stroke-related disabilities. It is important to note the personal competence issues and identify that there are some people who would be willing to participate in social groups more than others. This results in social support groups which only benefit the well-being of those who are more outgoing. Putnam (2000) supports this in reporting that stroke survivors with strong support groups
function better after a stroke, and recover more physical capabilities, than those with minimal social supports, pointing out that social connectedness is one of the greatest determinants of well-being for stroke survivors. For stroke survivors with fewer social supports, a reduced sense of well-being is likely, often because survivors were left with feelings of shame or feelings of being stigmatized (Putnam, 2000).

Glass et al., (1993) reports that social support is associated with a faster, more extensive recovery after a stroke, compared to the recovery of those stroke survivor's without social support. They further conclude that stroke survivors who are alone may be at greater risk for poor recovery. Social supports have also been found to moderate the impact of disability on well-being, while adverse effects of disabilities on well-being are much more pronounced in survivors with negative social supports since unsupportive acquaintances have been found to hinder strategies needed to adapt to disabilities (Glass et al., 1993). Therefore, it should be noted that the personalities, behaviours and attitudes of the caregiver and other surrounding social supports can have a substantial influence the well-being of the stroke survivor.

2.1.4 ACTIVITY SPACES AND WELL-BEING: MAKING THE CONNECTIONS

2.1.4.1 THE ACTIVITY SPACE CONCEPT

Examining spatial mobility patterns can reveal information about well-being. Activity patterns of humans have always been of interest to geographers. Hagerstrand’s (1973) ‘time geography’ approach was the first to describe ‘activity space’. He investigated people’s home base; where they rest at regular intervals, where they keep their personal belongings, and where people can be found. Hagerstrand viewed an
individual’s life as confined to an island, or a daily prism in which “constraints can be imposed by a society and interact against the will of the individual” (Hagerstrand, 1973: p.11).

Jakle et al., (1976) later expanded Hagerstrand’s concept of “activity space” describing it as “those places and connecting routes which comprise a person’s habitual geography on a daily or weekly basis.” Similar to Hagerstrand’s time geography concept, Jakle et al., (1976) viewed an individual’s activity space as being dominated by movement within and near his/her home; to and from regular activity locations (journeys to work, shop, socialize, etc.), and movements between activity sites.

Jakle et al., (1976) observed activity spaces to have both temporal and spatial aspects. The temporal aspects focus on movements to specific activity locations over time, and are related to the frequency and regularity by which an individual chooses to participate in a particular activity. The spatial aspect focuses on movements to specific ‘activity locations’ or ‘nodes’ as they will be referred to in this research. These movements can be captured by recording the distances related to an individual’s trips. A map can illustrate activity space analysis by detailing the arrangement of and the distances between certain socio-economic places, differing locations, or the placement of goods and services (Jakle et al., 1976).

Kellerman (1989) broadened the scope of activity spaces by looking beyond the individual. He considered two dimensions of activity spaces – individual space and societal space. The individual space is territorial, such as attachment to home, while societal space surrounds the home like a bubble. The latter has two levels, mesospace and macrospace. Mesospace includes the home and the neighbourhood while the macrospace
is the ‘home range’ or the area of commuting such as shopping, social interaction and health care visits.

Thapar et al. (2001) looked beyond physical space by discussing how technology enables people to overcome numerous social and spatial barriers. With the Internet, people engage in “cyber-space” and are able to avoid physical space altogether. Some examples are banking on-line that enables people to avoid going to the bank, chat lines provide a social atmosphere, and medical services available on the Internet may save a trip to a medical facility. Here, there is a selective reversal of space negotiation in which instead of the individual travelling to the facility, the provider reaches the person through cyber-space. This collapsing of space can provide many benefits to stroke survivors who have mobility constraints.

“Activity space” is an important concept used in human and health geography. For this research project, the definition of activity space developed by Thapar (1999) as: “the frequency of participation on a daily, weekly, monthly and yearly basis along particular dimensions of activities such as work, education, health, services, recreation, shopping and social” will be employed (Thapar, 1999: p.5). The notion of activity space has been frequently used since the 1970s as an investigation tool for several geographical problems. More recently, geographers have been using the concept of activity space to plan urban centres (Zacharias et al., 2001) and to promote public health (Frank et al., 2001). Research has found that dimensions of spatial experience and well-being are mainly affected by socio-demographic characteristics such as race, gender, handicaps and social stigma (Kruse, 2001). Spatial experiences of particular populations such as the

---

2 The popularity of this field of research lost a substantial amount of its momentum in geography in the 1990's, but is now a dominant approach among civil engineers in transportation research (Timmermans et al., 2002).
elderly (Hildebrand, 2003), homosexuals (Podmore, 2001) and the chronically ill (Holaday et al., 1997) have been examined to reveal an understanding of the varied lifestyles, activity patterns, and subsequent travel behaviour and needs of these people. For example, Holaday et al., (1997) demonstrated that chronically ill children’s activity patterns were influenced by factors such as gender, type of illness and perception of the neighbourhood and its safety.

On the other hand, other studies have found that socio-demographic characteristics have little influence on the size of an activity space. For example, Schonfelder and Axhausen, (2003) found that the groups most often considered to be at risk of social exclusion (e.g., female, lower income, elderly) did not show significantly different activity spaces compared with other members of the surveyed population.

This research has strong parallels with the research conducted by Thapar (1999) in her study on the activity space of multiple sclerosis patients. Thapar’s study is significant since it provides a strategy for using geographical concepts of spatial data analysis to explicitly examine how individuals living with a chronic illness navigate their environment. Multiple sclerosis has similarities with stroke since it is a disease with a higher potential to cause long term disabilities that affect an individual’s mobility. Thapar’s (1999) study uses Geographical Information Systems (GIS) to map the activity spaces of 52 participants. The activity spaces were illustrated by creating activity polygons to display these dimensions. These were complemented by narratives which were used to understand how multiple sclerosis patients’ activity spaces are impacted by their disease. A similar approach is taken in this research. Thapar (1999) used a model developed by Clitheroe et al., (1998) to guide her work. This model (Fig. 2.2) is useful in
conceptualizing disability in relation to activity space since it recognizes two important domains, environment and personal, that can enhance or restrict mobility.

**FIGURE 2.2: PROMPT/TRIGGER DISEASE AND SPATIAL OUTCOME**

<table>
<thead>
<tr>
<th>CONTEXTUAL FACTORS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENVIRONMENTAL</strong></td>
<td></td>
</tr>
<tr>
<td><em>Settings</em>: home</td>
<td></td>
</tr>
<tr>
<td><em>Informal social</em>: family, caregivers,</td>
<td></td>
</tr>
<tr>
<td>friends, acquaintances</td>
<td></td>
</tr>
<tr>
<td><em>Formal social</em>: i.e., Stroke Recovery</td>
<td></td>
</tr>
<tr>
<td>Group, services (community and government)</td>
<td></td>
</tr>
<tr>
<td><em>Systems</em>: laws, regulations, formal and</td>
<td></td>
</tr>
<tr>
<td>informal attitudes and ideologies, cultural</td>
<td></td>
</tr>
<tr>
<td><em>Physical Environment</em>: access to built</td>
<td></td>
</tr>
<tr>
<td>environment, weather</td>
<td></td>
</tr>
<tr>
<td><strong>PERSONAL</strong></td>
<td></td>
</tr>
<tr>
<td>Age, gender, marital status, education,</td>
<td></td>
</tr>
<tr>
<td>race, disability, personality, profession,</td>
<td></td>
</tr>
<tr>
<td>economic, ability to drive, personal mobility</td>
<td></td>
</tr>
</tbody>
</table>

Source: Clitheroe et al, 1998

### 2.1.4.2 NEGOTIATING STROKE SURVIVORS’ ACTIVITY SPACE

Strokes can seriously affect an individual’s activity space. The nature of stroke is tyrant, meaning that related disabilities can pose a major barrier to performing daily activities. Thapar et al., (1999b) discuss how disability, caused by multiple sclerosis, impacts the ability to negotiate space and restricts mobility. They identify the different spaces where daily activities occur (e.g., within the home or in the neighbourhood) and how they occur (i.e., in order to get from one place to another, one needs the ability to overcome spatial distances and obstacles). Many stroke survivors, like multiple sclerosis patients, are able to overcome social and spatial barriers and obstacles through adaptation and innovative modifications. Thapar et al., (1999b) describes being “impelled by a drive
to maintain individual dignity, to strive toward a full and meaningful life” (Thapar et al., 1999: p. 66). Furthermore, Thapar et al.’s, (1999b) research is innovative by proposing a new approach to disability research that draws attention to developing measures of ‘ability’ rather than ‘disability’. “Patients may use their time and space differently and utilize their modifications as positive changes in their life, rather than as mere substitutes” (Thapar et al., 1999b: p. 69). Overall, the research highlights how innovative people with disabilities use technology and services to reshape and reconfigure the environment to meet their individual needs. They conclude that “people are able to shape their lives as opposed to accepting the tyranny of space, whether metric or social” (Thapar et al., 1999b: p. 70).

2.2 COMMUNITY SUPPORT SERVICES FOR STROKE SURVIVORS AND FAMILIES

As mentioned in Chapter one, the experiences of stroke survivors living in the community are captured in this research. In support of this, it is crucial to examine the rehabilitation and recovery experiences of community dwelling stroke survivors much more than it is to emphasize the experiences of stroke survivors in acute care environments.

Availability and use of services such as community support groups, voluntary rehabilitation services and respite make it easier for a stroke survivor to live at home. For example, local Stroke Recovery Groups, described in greater detail throughout this section, are one type of group that provides support to people and families who have experienced stroke. Without support services, many stroke survivors would be
institutionalized in either a hospital or a nursing home. The provision of community-based services often depends on local demand and national policies (Legh-Smith et al., 1986) while the use of these services depends on the mobility of the stroke survivor.

2.2.1 Community Support Services Available on Vancouver Island

On Vancouver Island, The Stroke Recovery Association of British Columbia, and several other formal and informal voluntary groups provide support to people and families who have experienced stroke, encourage independent living, offer sessions for caregivers, and encourage survivors to attempt new hobbies and to learn new skills (Stroke Recovery Association of British Columbia, 2005a). This latter goal is an important step in stroke recovery since stroke survivors tend to accept fewer responsibilities than before, and therefore may need additional encouragement in order to remain productive and engaged. Pierce et al., (1988) reports that many stroke clubs are supported by the volunteer community, annual membership fees and donations. While this is the case for the Stroke Recovery Groups of BC, one of the greatest frustrations reported by the members of Stroke Recovery Groups is the limited financial support and recognition they receive from the Heart and Stroke Foundation of Canada. Surprisingly, the Heart and Stroke Foundation acts as a separate entity from the local chapters of the Stroke Recovery Group. On the website of the Heart and Stroke Foundation (www.heartandstroke.ca), there is a wealth of information on stroke, research publications, and volunteer opportunities, but there is no mention of the services provided by local stroke recovery groups.

Two recent studies focused on evaluating the effectiveness of stroke recovery groups. Harding et al., (2000) surveyed stroke association support organizers to
determine the roles. They found that the organizers often have complex roles which cause them to spend more time dealing with practical and organizational issues than with the more pressing emotional issues of stroke survivors. Furthermore, they found that it was important to monitor “the carer's mood and strain, and patients' and carers' knowledge and satisfaction with information and services, in order to decide what outcome measures would be appropriate for evaluating their service” (Harding et al., 2000). Stroke survivors and caregivers perceive stroke groups as a service that provides useful information about many aspects of stroke, but expressed a view that help was still needed to deal with the practical day-to-day problems related to stroke (Lilley et al., 2003). Contrary to these previous findings, Lincoln et al., (2003) found that being a participant in a stroke group does not influence a stroke survivor’s mood or determine personal or instrumental activities of daily living, neither does it influence a caregivers’ mood, strain, or independence. Considering the previous statement, the purpose of Lincoln et al., (2003) research was to identify strategies which would improve stroke support groups. They identified strategies such as highlighting the importance of gathering stroke information at these groups including medical information (e.g., symptoms of stroke) and community information (e.g., where to find respite services and emotional support).

Other informal groups that support stroke survivors on Vancouver Island include home help, meals on wheels, volunteer and laundry services. Many communities have other support groups that provide formal and informal care services for stroke survivors and their families. The meetings associated with these groups focus on a range of activities (e.g., provide a supportive atmosphere for stroke survivors, caregivers and families). Unfortunately, these groups do not represent all stroke survivors since these
groups are not suited to everyone, and persons who show signs of depression and anxiety are even less likely to attend these meetings (Evans et al., 1994). Unfortunately, these latter individuals are often in the most need of supportive care.

### 2.2.2 Rehabilitation

Regular physiotherapy is the most common rehabilitation service used by stroke survivors. Such therapy is essential to help stroke survivors rehabilitate and re-adjust to life in the community (Lewinter and Mikkelsen, 1995). This rehabilitation includes lifelong social and psychological consequences for the patient and the family. Anderson (1988) found that family participation in daily caregiving activities such as help with self-care and getting about, as well as psychological support are essential for well-being for both the survivor and the caregiver. Both education and counselling have been found to be effective rehabilitation measures to prevent or ease stroke-related stress on the family. Counselling interventions consist of education and follow-up problem solving sessions with a counsellor. These strategies are known to help families communicate better.

Providing instruction for post-stroke home care has been considered an important part of rehabilitation, and support from the family enhances the stroke patient’s ability to cope with acute and chronic phases (Evans et al., 1994).

Speech therapy is another common form of therapy used by stroke survivors who experience aphasia. In British Columbia, the stroke recovery group has a speech therapist available to work with patients on a weekly basis. Both participating stroke recovery groups claim that the number of available speech therapists is limited in the communities. Therefore, these stroke recovery groups in particular, offer speech therapy sessions as a part of their available services to compensate this service gap.
2.3 CONCLUSIONS

As this literature review demonstrates, a link can be made between geography and stroke. Since many stroke survivors are left with disabilities, it is important to identify spatial barriers and boundaries that may also restrict mobility. Within the literature, it is extremely challenging to draw conclusions about the specific factors that influence the general well-being of the “stroke survivor”. The next chapter will detail the methods in this study which includes approaches from related disability and activity space literatures.
Chapter 3: Research Methods

3.1 RESEARCH DESIGN

The purpose of this chapter is to discuss the methodology and methods used in this case study. The research design employs two methods which are spatial data analysis and qualitative analysis. Taken together, these two techniques form a method of triangulation used to gain an understanding of the factors which enhance and restrict a stroke survivor’s activity space and well-being. For this research triangulation is defined as “using two (or more) different methods to study the same phenomena” (Ratcliff, 1995). First, the spatial data analysis is used to illustrate, measure and compare the activity spaces of the 21 participants in this study. Second, the narratives from the interview sessions are used to provide insight into the dynamics of activity space and stroke survivor well-being.

It is still relatively uncommon to see the use of multiple research methods in the study of health and illness (Clarke, 2003). For instance, a review of MEDLINE citations between 1993 and 1997, (Casebeer and Verhoef, 1997) found that only 13 of 464 papers on chronic illness could be classified as “combined methods” studies. A combination of spatial and qualitative methods is a unique approach and this research design offers an opportunity to explore the benefits of combining spatial and qualitative analysis to improve understanding of the well-being and activity space of stroke survivors.

3 Thapar (1999) used a multi-method approach which included quantitative, qualitative and spatial data analysis while this research uses a combination of spatial data analysis and qualitative analysis.
This chapter is organized into six sections. The first section describes the significance of the study area selected for this research. Next, the sample selection is reviewed including the sampling frame and sampling method. Section three describes the research instruments, the survey administration process followed by a section on the data analysis methods. The final section discusses the limitations of this methodology and approach.

3.2 STUDY AREA

British Columbia is a desirable retirement location for growing numbers of elderly migrants from other Canadian provinces, and abroad (Northcott & Milliken, 1998). These in-migrations, combined with elders’ aging in place, increase the proportion of older residents within the local population, and contribute to a disproportionately high incidence of stroke risk overall in some geographical locations (Northcott & Milliken, 1998). For this research, two communities in British Columbia are selected; Oceanside (i.e. The Town of Qualicum and The City of Parksville) a census agglomeration (CA) with a population of 24,285, and the City of Victoria a census metropolitan area (CMA) with a population of 311,902 (Statistics Canada, 2001b).
FIGURE 3.1: THE STUDY AREAS

These communities were selected based on their high proportion of older persons. Seniors, age 65 and older, represent 17.4% of residents in the city of Victoria: an urban setting favored among Canadian retirement destinations (Statistics Canada, 2001a). The city of Parksville and town of Qualicum Beach represent communities containing a high proportion of the population aged 65 and over—31% and 38%, respectively (Statistics Canada, 2001a). In terms of their population age pyramid and median age, these are among the oldest communities in Canada. For comparison purposes, 13% of the provincial population are considered to be age 65 and older (Statistics Canada, 2001a). These data clearly indicate the overrepresentation of seniors in each of the study areas. Since the risk of stroke doubles every 10 years after the age of 55, older persons living in these communities may have greater odds of having a stroke (HSFC, 2004).
3.3 SAMPLE SELECTION

3.3.1 SAMPLING FRAME

The sample for this research project represents a group of men and women from a variety of age groups, marital status and income levels, who are living with the effects of stroke in the community. Thus, the sample reflects a non-random, purposive sample of older adults, who have experienced one or more strokes and who live in either Oceanside or Victoria who were recruited to participate in this research study. To recruit participants, the local Stroke Recovery Association (SRA) chapter serving Oceanside (Qualicum Beach/Parksville) and the SRA serving Victoria were contacted. The coordinator of each of these groups were approached and asked to act as a liaison for the researcher to access persons willing to participate in this study.

The Stroke Recovery Group, as described in Chapter 2, is a support group for community-dwelling stroke survivors and their caregivers. Within a social atmosphere, physical and speech therapy, along with emotional support (i.e., sharing frustrations and advice) is provided.

A 2000 report commissioned by the Heart and Stroke Foundation of BC and the Yukon characterized stroke care in BC as “disorganized, fragmented and behind international as well as current Canadian standards” (Stroke Recovery Association of British Columbia, 2005b). Keeping these findings in mind it is important to recognize the significance of the Stroke Recovery Group of BC. The mandate of the Stroke Recovery Group of BC is posted on their website stating “to help people with the challenge of
recovering from the effects of stroke and to maintain independent living at home” (Stroke Recovery Association of British Columbia, 2005a).

The groups in Victoria and Oceanside both support this mandate but there is a large degree of variation between these groups. For example, the Stroke Recovery Group in Oceanside gathers once a week for a formal meeting that includes speech and physical therapy for the stroke survivors. Furthermore, this group appears to have a strong sense of community. Not only do the members meet on a weekly basis, but many meet again for lunch at the end of the week. The Stroke Recovery Group in Victoria is quite different. On the basis of a first impression, this group tends to be less “community-oriented” and more “businesslike” or functional compared to the Oceanside group. One reason for this more businesslike climate may be that this chapter has reached its capacity and has new members on a waiting list. Not only is it difficult to become a member in this chapter because of the lack of places, but once the stroke survivor has joined they must chose either speech or physical therapy; not like in Oceanside. The different structure of each group would be expected to affect the activity spaces of the group participants.

3.3.2 PURPOSIVE SAMPLE

In total, 21 stroke-affected persons volunteered to participate (Table 3.1). Even though the numbers for this case study are small, the Oceanside sample does roughly reflect the natural tendency towards a higher proportion of male stroke survivors than females in the general population, while the opposite is true for the Victoria sample. This is illustrated in Table 3.1.
### TABLE 3.1: RESEARCH SAMPLE BY GEOGRAPHY AND GENDER

<table>
<thead>
<tr>
<th></th>
<th>Oceanside</th>
<th></th>
<th>Victoria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Males</td>
<td>9</td>
<td>83.3</td>
<td>2</td>
<td>29.0</td>
</tr>
<tr>
<td>Females</td>
<td>5</td>
<td>16.6</td>
<td>5</td>
<td>71.0</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100.0</td>
<td>7</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### 3.4 RESEARCH PROCESS

Prior to conducting the interviews, consent was obtained and ethics approval was granted by the Office of the Vice-President, Research (VPRE) at the University of Victoria. The first data collection exercise began in Oceanside (Qualicum Beach/Parksville) in 2003. The recruitment survey was administered by the researcher and two research assistants at the Stroke Recovery Group during the first week of December 2003. The follow-up interviews were scheduled for the third week in December. In Oceanside, an average of three interviews were conducted a day. They averaged 60 minutes in length. In February 2004, the project continued and the recruitment instrument (APPENDIX A) was presented to the Stroke Recovery Group in Victoria. These interviews were completed in early March at a rate of two interviews a day.

#### 3.4.1 THE RECRUITMENT

At each Stroke Recovery Group the researcher made a presentation of the project at a regular meeting. The nature of the project was explained and volunteers were requested. After the presentation, the recruitment survey (APPENDIX A) and a letter detailing the project (APPENDIX C) were provided, along with a consent form to be
signed by each participant. On average, this first questionnaire took approximately 15 minutes to complete. Some of the stroke survivors required assistance filling out the questionnaire due to physical and cognitive disabilities. A stamped addressed envelope was also provided to those who wanted to fill out the initial recruitment questionnaire at home. At the end of the meeting, extra questionnaires and letters describing the project were left with the SRG’s Coordinator for distribution to those who were not at the meeting that day and who might potentially be interested in participating.

The recruitment survey contains both open-ended and multiple choice questions, designed to gather basic quantitative data about stroke survivors’ health (e.g. socio-demographic characteristics, health status etc.) and to recruit people to participate in a more in-depth, second interview (see APPENDIX A). The survey questions in this instrument are ordered by a “funnelling” approach. This structure involves starting with general questions leading toward personal matters and issues specific to the informant (Dunn, 2002) to allow the participant to feel comfortable with the survey. This survey structure, also funneled, begins in a relaxed and non-threatening manner (e.g., asking questions about the community) followed by more sensitive questions (e.g., inquiring about personal health and attitudes toward health services).

3.5 SURVEY ADMINISTRATION

3.5.1 THE INTERVIEW PROCESS

After reviewing the completed recruitment questionnaires (APPENDIX A), the participants who expressed interest and who were stroke survivors living at home (one
stroke survivor was living in an institution and therefore was excluded from the research) were contacted to schedule a time and place to conduct the interview. Ideally, the interviews were conducted in the homes of the participants, where they would feel most comfortable in a familiar and relaxed environment. However other locations, such as coffee shops, were suggested as alternate interview sites.

The second survey used in this research is a semi-structured tool designed to provide more in-depth information on the participant’s activity spaces through a structured interview process (APPENDIX B). In this case, all respondents received the same set of questions asked in the same sequence. Typically, this type of interviewing allows the interviewer to control the pace of the interview and allows little room for variation in responses. In administering the survey, flexibility and latitude are encouraged by allowing individuals to elaborate on particular questions.

The main survey guide used in this research was adapted with permission from Thapar for her Ph.D. work (Thapar, 1999). As noted in Chapter 2, Thapar’s dissertation focused upon the activity spaces of Multiple Sclerosis sufferers in the United States (1999). This instrument is a structured guide used successfully to gather qualitative, quantitative and spatial data required to investigate the domestic (i.e., inside the home) and non-domestic (i.e., the community) activity spaces of those living with a disability (i.e., the stroke survivors).

Second, each interview was tape-recorded and took, on-average, 60 minutes to complete. The length of the interview varied—in part because some of the respondents experienced interruptions, confusion, recall and communication difficulties (due to aphasia). The questionnaire was read aloud so that the participants could focus on the
questions. This also allowed the interviewer to clarify or summarize their thoughts if need be.

The well-being of stroke survivors is measured by the response to the standard self-reported health question (Q9: In general, would you say your health is?) in the recruitment survey (APPENDIX A). Using postal address information gathered during the interviews (APPENDIX B), maps that illustrate and measure the activity spaces of stroke survivors were developed and are analyzed in terms of how well-being influences the size and structure of these spaces.

3.6 DATA ANALYSIS

A triangulation method has been used in this case study. Triangulation is defined as “using two (or more) different methods to study the same phenomena” (Ratcliff, 1995). Keeping this definition in mind, this case study uses triangulation (i.e. using spatial analysis in conjunction with qualitative data) to increase understanding of the well-being of stroke survivors.

The information obtained during the two interviews with the stroke survivors and caregivers comprise the primary data sources for this project. Using statistical software (SPSS 12.0), the data were entered and organized for the spatial analysis. Using collected postal code data and a Geographical Information System (Arc View 3.3), the results of this analysis highlight patterns and distances of activity space and are further related to well-being following a stroke. Self-reported health (SRH) is the measure used in this research to represent a measure of well-being. The sample was divided into two groups; those with good self-reported health (i.e., excellent, very good, good) 57% (n=12) and
those with poor self-reported health (i.e., poor or fair) 43% (n=9). In the second analysis, the qualitative analysis, complements and enriches the spatial findings by using themes generated from transcribed and elaborated notes from the interviews to provide a richer understanding of the everyday geography of the stroke experience. In this study, the investigation of the activity spaces highlights patterns and distances which provide an explanation for the underlying observed patterns.

3.6.1 **THE SPATIAL ANALYSIS**

3.6.1.1 **THE SPATIAL DATA PREPARATION**

During the interview process the respondent identified which services they use, where they are located, how often they use the service, and what transportation they use to obtain the service. Following the interview, the postal codes were matched with the geographic locations by using the Canada Post, 411.ca and other census geography websites. Next digital data (i.e., data with geographic units) used for this analysis were extracted from Can Street Files (street network files) and Postal Geography Suite from the Map Library at the University of Victoria. The street network and postal codes were selected for each community and exported as a shapefile (.shp), compatible with Arc View 3.3. Using the collected postal codes and the digital postal code file, the respondents’ residences and service locations were geo-coded. Geo-coding is a method that allows each address to have an exact place on the map. To ensure that all the addresses appeared on the map, the tabular data were checked thoroughly to include all the addresses for all the respondents. The steps for this analysis are detailed in Fig. 3.2.
Based on the layout of the questionnaire, four dimensions of the activity spaces were captured (a) health services, (b) financial and communication services, (c) goods and recreational services and (d) social spaces (e.g., visits to friends, social groups etc). These dimensions, as outlined below, are similar to elderly urban population studies in the United States conducted by Golant et al., (1988) which identify accessibility to a pharmacy and doctor, proximity and access to shopping centres and participation in group activities, as factors relating to higher levels of satisfaction of the elderly with their settings.
• **Health Services** – These services include physician clinics, pharmacists, physiotherapy, speech therapy, optometrist, emergency care and hospital services.

• **Financial and Communication Services** – These services include personal banking and postal services.

• **Recreational and Goods Services** – These services include movies theatres, library facilities, malls, sporting facilities, restaurants, grocery stores, and hairdressers.

• **Social Space** – This space includes the location of friends and support groups⁴.

### 3.6.1.2 SPATIAL DATA ANALYSIS

Based on the work of Schonfelder and Axhausen (2003) as discussed in Chapter 2, the ‘shortest path network’ method was selected for measuring activity spaces in this research project. The main rationale for this is that the collected postal code data used in this research project is very similar to the data used in Schonfelder and Axhausen’s (2003) social exclusion research. Additionally, both research projects’ focus upon investigating the activity spaces of vulnerable populations.

The shortest path network method is one way to measure a route using a GIS software, Arc View’s and one of it’s software extensions, ‘network analyst’. Network analyst finds the best route to each service from, in this case, the respondent’s home (i.e., stroke survivor’s home) and measures the distance of the shortest path between one node to another. A node is a geographic term which describes the often-used places in the environment such as a person’s home, their doctor’s office or where they grocery shop (Golledge and Stimson, 1997). The network analyst extension works by connecting two or more nodes on a line (e.g., a street) and a route determined by the shortest path method

---

⁴ It should be noted that the Stroke Recovery Group is considered to be a part of an individuals’ social space.
calculates the distance in miles. For this research this value was converted into kilometre.

**FIGURE 3.3: A SHORTEST PATH NETWORK**

[Image: A shortest path network diagram showing a network of locations such as Home, University, Shopping, and Leisure, with paths and connections between them.]


The shortest path method does not incorporate time into the analysis. To illustrate the temporal dimension of activity space, frequency of activity charts were created. For example, stroke survivors were asked how often they visit a specific location. These charts visually detail the activities which make up the activity spaces and how frequently stroke survivors travel to particular activities. These data were captured during the interview process and the responses were categorized as daily, more than once a week, weekly, more than once a month, once a month, every three months, twice a year and once a year. In Fig. 3.4, the bar charts are divided into four sections that correspond with the activity space dimensions. The first bars represent health activities, followed by financial and communication activities, goods and recreation activities and social activities. The hospitals were only reflected in the maps if the participant reported visiting the hospital in the past year. These charts were useful in comparing the temporal aspects of activity space. For example, as seen in Fig.3.4, the stroke survivor on graph #1
engages in activities such as going to the mall and visiting friends on a daily basis while the stroke survivor on bottom (#2) engages in fewer activities no more than once a week.

**FIGURE 3.4: A SAMPLE OF FREQUENCY OF ACTIVITY CHARTS**

1. Health Services
2. Financial/Communication Services
3. Goods/Recreation Activities
4. Social Activities
3.6.2  **THE QUALITATIVE ANALYSIS**

3.6.2.1  **NARRATIVE DATA PREPARATION**

During the interview process there are frequently questions that would prompt some research participants to elaborate on their own stroke experience (e.g., what kind of stroke did you experience?). To capture these data, transcripts were created by reviewing the questionnaires and using audio-tapes as back-up. Pseudonyms are used to protect the real identity of the participant. Often, there is not a lot of information recorded on the questionnaire itself therefore the tape and transcripts served to improve data capture. Once the transcripts were created, themes were developed by identifying, relations between variables and patterns in the data through content analysis (Dunn, 2002). Dunn (2002) defines latent content analysis “as searching the document for themes”. He describes this analysis as “determining the underlying meanings of what was said” (pp.76). This derivation of meaning within the text is a form of coding (sorting and then retrieving data).

3.6.2.2  **THE NARRATIVE DATA ANALYSIS**

As mentioned in the previous section, the elaborations during the interviews were transcribed and then thematically analyzed. To interpret the transcribed material, ‘features of significance’ which reveal information that confirm, or differ from, what was expected, or what was discussed in the literature, were identified (Love, 1994). Themes were developed utilizing the features of significance listed in Table 3.2. As themes
surfaced, they were grouped to form categories, which examined how self-reported health influences activity space experiences.

**TABLE 3.2: FEATURES OF SIGNIFICANCE**

<table>
<thead>
<tr>
<th>Features of Significance</th>
<th>Description</th>
<th>Stroke Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetition within and across interviews</td>
<td>Ideas, beliefs, concerns, and issues that are discussed repeatedly throughout the interview or/and are brought up at least once in an interview.</td>
<td>Mobility obstacles experienced outside the home.</td>
</tr>
<tr>
<td>Historical explanations, descriptions, and interpretations</td>
<td>Stories of the past that explain and justify present behaviours and meanings are considered significant.</td>
<td>Stroke survivors talk about their pre-stroke lives such as activities they used to engage in.</td>
</tr>
<tr>
<td>Serendipity</td>
<td>Behaviours and expressions of the participants that are different from what was expected, based upon reading and experience.</td>
<td>Some stroke survivors would rather not modify their homes since they often get accustomed to these adaptations and find it challenging to get by without them.</td>
</tr>
</tbody>
</table>

*Love, 1994*

### 3.7 LIMITATIONS

The first limitation of this research project is that this study represents a non-probability sample and this hampers the generalizability of the findings. However, if one is interested in a qualitative approach aimed at an increased understanding of the experiences and activities of stroke survivors, it is an appropriate method. It is also important to recognize other biases that arise in sample recruitment. For example, people with certain personality traits which might make them more willing to participate in this research project make them consequently more represented in the sample. The nature of stroke-related disabilities are another limitation of this research. For example, those with physical and cognitive impairments may have difficulty engaging fully in an interview.
It is also extremely important to emphasize the role of caregivers in stroke research. For example, in some cases the stroke survivor experiences aphasia or confusion which requires the caregiver to participate in the interview process detailing how they recall the stroke survivor’s activities. This demonstrates the importance of caregivers to stroke survivors, but also means that the research must rely upon the accuracy of the caregiver’s information in representing the true experiences and feelings of the stroke survivor. It is also important to note that this research project examines post-stroke life, therefore it is difficult to say what activities have changed since the stroke (i.e., a pre- and post-perspective).

Other limitations of this research emerge from the spatial analysis. The shortest path network is a tool which assumes rational behaviour. This tool does not incorporate variety in routine (e.g., driving a different route on a sunny day) or physical landscapes (e.g., harbours and lakesides) that may make an activity space seem bigger or smaller than it really is. Behaviourally, people rarely take the shortest path to a destination. For example, sometimes people take a path to maximize efficiencies (i.e. take the least time path which does not usually equal the shortest distance path) or conversely may take the longest route to their destination in order to maximize their viewing pleasure. Therefore, it can be concluded that the use of this tool approximates behaviour based on the rationale that people take the shortest path to their destination.
Chapter 4 - Stroke Survivors – A Descriptive Profile

As one of the stroke survivors interviewed said “Everybody is different, people with stroke are not the same”. This quote is reflected also by Peace et al., (2005) who stated that a stroke survivor’s competence is related to the individual’s personality more than the disease. The aim of this chapter is to describe the sample with a combination of descriptive statistics and narrative excerpts to provide an overview of the stroke survivors who participated in this research project and identify some of the major challenges they face. The first section of this chapter includes some selective descriptive statistics for the sample. The next section provides a personal view of stroke that is rarely found documented in the stroke-related literature. The description of the sample assists in gaining an understanding of the individuals whose activity spaces will be mapped in the next chapter.

4.1 PROFILING THE SAMPLE

For this project, a total of 41 stroke survivors completed the initial recruitment survey. However, only 51% (n=21) of these stroke survivors were willing, or able, to participate in the interview process. Reasons for not participating for some were that they were not interested while others could not participate since they had a disability (i.e., aphasia), or they were not available for an interview during the period of time when the interviews were scheduled.

Of the 21 interviews, the majority (n=15) of the interviews were conducted with just the stroke survivor. In some cases, the caregiver had to participate in the interview (n
and in others, the caregiver participated only to clarify details (i.e., doctor’s name etc.) (n=3). Of those who were interviewed 71% (n=15) have a spouse as a caregiver, one person relies on a family member as a caregiver, while six stroke survivors claim to have no caregiver.

4.2 GENERAL CHARACTERISTICS OF THE SAMPLE

In this section the sample of community-dwelling stroke survivors living on Vancouver Island is described with specific reference to socio-demographic and health characteristics of the participating. As mentioned in Chapter 2, self-reported health has been validated as accurately representing physical, emotional and social aspects of health and well-being for individuals (Idler et al., 1997). Considering that this research project focuses on the well-being of stroke survivors the sample had been divided into two groups; on the basis of self-reported good health (i.e., excellent, very good, good) 57% (n=12) and poor self-reported health (i.e., poor or fair) 43% (n=9). Each participant answered the self-reported health question in the recruitment survey.

4.2.1 AGE, GENDER, MARITAL STATUS AND SELF-REPORTED HEALTH

The sample used in this research is composed of 11 (52.4%) males and 10 (47.6%) females. This sample proportion reflects national stroke statistics that indicate that men are more likely to be stroke survivors than women. The average age of the stroke survivors is 73.5 years old with the youngest participant in this study being 52 years old and the oldest being 87 years old. Both the youngest and oldest participants in this sample were males, while the majority of the females (80%; n=8) belongs to the 70 –
79 age bracket. Three (27%) of the males and three (30%) of the females are single, divorced or widowed.

**TABLE 4.1: GENERAL CHARACTERISTICS OF THE SAMPLE**

<table>
<thead>
<tr>
<th></th>
<th>Good health</th>
<th>Poor health</th>
<th>Total Sample (n=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Gender (%), n=21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>5</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Male</td>
<td>41.7</td>
<td>73.0</td>
<td>52.3</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Female</td>
<td>58.3</td>
<td>27.0</td>
<td>47.6</td>
</tr>
<tr>
<td>Community (%), n=21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victoria</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Victoria</td>
<td>33.6</td>
<td>33.3</td>
<td>33.3</td>
</tr>
<tr>
<td>Oceanside</td>
<td>8</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Oceanside</td>
<td>66.6</td>
<td>66.6</td>
<td>66.6</td>
</tr>
<tr>
<td>Household Income (%), n=21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ $10,000</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Between $10,000 - $24,999</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Between $25,000 - $54,999</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>≥ $55,000</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Not Specified</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>9</td>
<td>21</td>
</tr>
</tbody>
</table>

### 4.2.2 HOUSEHOLD INCOME

Clarke’s (2002) research found that household income level does not influence the well-being of stroke survivors. These findings are reflected in this research sample. The majority of the participants (n=10) fell into the income bracket of $25,000 – $54,999. Comparing income by self-reported health, those with the lowest income (less than $10,000) reported good health while those with the highest income (more than $55,000) reported poorer health. The sample is too small to confirm if this is significant however this result is consistent with Clarke’s (2002) findings that income does not influence self-reported health of stroke survivors.
TABLE 4.2: DISTRIBUTION OF HOUSEHOLD INCOME AND SELF-REPORTED HEALTH AMONG SAMPLE

<table>
<thead>
<tr>
<th>Household Income</th>
<th>Good health</th>
<th>Poor health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $10,000</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Between $10,000 - $24,999</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Between $25,000 - $54,999</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Above $55,000</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Not Specified</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Total (%)</td>
<td>12</td>
<td>9</td>
</tr>
</tbody>
</table>

4.2.3 STROKES AND PERSONAL HEALTH

A total of 11 out of 21 of the stroke survivors in the sample had experienced a stroke more than 5 years ago. Only one (5%) stroke survivor in the sample had their stroke in the previous year. The overwhelming majority of those interviewed, twenty (i.e., 95%) of the stroke survivors reported that the stroke affects their everyday living, even after years of adapting to stroke-related impairments. When asked what type of stroke they had experienced, only 38% (n=8) identified their stroke type with medical terminology (i.e., ischemic stroke). While 52% (n=11) of the respondents use non-medical terminology, such as a “blockage” or “left-side neglect”, to describe the type of stroke that they experienced, 14% (n=3) reported that they “did not know” what kind of stroke they had experienced. This finding is a curious one, and may suggest, that these stroke survivors may not have been provided with adequate information regarding their condition or perhaps could not understand the medical terminology describing their stroke. In addition, some stroke survivors experience co-morbid diseases including high
blood pressure, diabetes and cancer. Those who reported poor health, also reported more co-morbid diseases than those with good health. Such co-morbidities are expected to affect their self-reported health.

4.2.4 MOBILITY AND ACTIVITIES OF DAILY LIVING

The mobility of stroke survivors will be focused on in greater detail in Chapter 6. This section and Tables 4.3 – 4.5 provide a brief introduction into the activities with which stroke survivors often require assistance. The activities of daily living are examined by gender, geography, and health status to determine which of these variables influence activities of daily living the most. More than half the sample (57%, n=12) report that they require assistance climbing stairs. Slightly more males report needing assistance climbing stairs (64%, n=7) compared to women (50%, n=5), while slightly more females needed assistance walking (40%, n=4) compared to men (36%, n=4). The majority of the sample has the ability to cook on their own. Approximately 40% of men and women in the sample require assistance with cooking. Males report that they require assistance doing laundry (64%, n=7) more than females (10%, n=1). This may be because the females traditionally did the household laundry and it is not that the men need help doing their laundry, they simply do not do it (i.e., therefore related to gender roles).

Cleaning is a challenging task that was reported by approximately 60% as a task that they had assistance performing. Similar to laundry, cleaning is a task that traditionally many men did not do. However, both gender groups report that they hire a cleaning group to assist them. So, perhaps it is not that they require assistance—it is that they acquire assistance. Therefore, it is probably more than a combination of their age and the availability of inexpensive cleaning services than having the inability.
TABLE 4.3: DISTRIBUTION OF ACTIVITIES BY GENDER AMONG SAMPLE

<table>
<thead>
<tr>
<th>Type of Assistance Required</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Assistance with Walking</td>
<td>4</td>
<td>36.3</td>
<td>4</td>
<td>40.0</td>
</tr>
<tr>
<td>Assistance with Stairs</td>
<td>7</td>
<td>63.6</td>
<td>5</td>
<td>50.0</td>
</tr>
<tr>
<td>Assistance with Cooking</td>
<td>5</td>
<td>45.4</td>
<td>4</td>
<td>40.0</td>
</tr>
<tr>
<td>Assistance with Laundry</td>
<td>7</td>
<td>63.6</td>
<td>1</td>
<td>10.0</td>
</tr>
<tr>
<td>Assistance with Household Cleaning</td>
<td>8</td>
<td>72.7</td>
<td>6</td>
<td>60.0</td>
</tr>
</tbody>
</table>

In the next table (Table 4.4) the type of assistance required to perform activities of daily living in each community is examined for differences. Residents of Victoria (57%, n=4) report needing more assistance with walking stairs compared to those in Oceanside (66.7%, n=8) but overall this task seems to be difficult for most stroke survivors. Residents of Oceanside report that they need more assistance with laundry (58.3%, n=7) than those living in Victoria (14.2%, n=1). The greatest differences seen in Table 4.4 are a higher percentage of people in Victoria require assistance. Those with greater disabilities may move to a bigger community in order to have more services to assist them with their disabilities. The other great difference in Table 4.4 is those requiring assistance with laundry. This could be explained by the quality of laundry services in the communities. It could be that there is a well established, well known laundry service in Oceanside that is popular that people use in this community.
TABLE 4.4: DISTRIBUTION OF ACTIVITIES BY GEOGRAPHY AMONG SAMPLE

<table>
<thead>
<tr>
<th>Type of Assistance Required</th>
<th>Victoria</th>
<th>Oceanside</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Assistance with Walking</td>
<td>3</td>
<td>42.8</td>
</tr>
<tr>
<td>Assistance with Stairs</td>
<td>4</td>
<td>57.1</td>
</tr>
<tr>
<td>Assistance with Cooking</td>
<td>3</td>
<td>42.8</td>
</tr>
<tr>
<td>Assistance with Laundry</td>
<td>1</td>
<td>14.2</td>
</tr>
<tr>
<td>Assistance with Household Cleaning</td>
<td>4</td>
<td>57.1</td>
</tr>
</tbody>
</table>

In Table 4.5, the differences in those with good and poor health and the type of assistance they require become clearer (Table 4.3, 4.4). Both health groups report requiring assistance with walking and household cleaning. However, those with poor health more often require assistance climbing stairs 66%, versus 50%, cooking 66% versus 23% and laundry 55% versus 25%. These findings demonstrate that poorer self-reported health is important in relation to assistance with activities of daily living.

TABLE 4.5: DISTRIBUTION OF ACTIVITIES BY HEALTH STATUS AMONG SAMPLE

<table>
<thead>
<tr>
<th>Type of Assistance Required</th>
<th>Good health</th>
<th>Poor Health</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Assistance with Walking</td>
<td>5</td>
<td>41.6</td>
</tr>
<tr>
<td>Assistance with Stairs</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>Assistance with Cooking</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>Assistance with Laundry</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>Assistance with Household Cleaning</td>
<td>8</td>
<td>66.7</td>
</tr>
</tbody>
</table>
4.3 INSIGHTS ON THE STROKE EXPERIENCE

In this section, narrative excerpts are selected to enhance the understanding of the individuality of the stroke experience and reflect the long window of recovery and the extreme efforts of these strong stroke survivors. The themes that are selected to highlight the stroke experience are recalling the stroke event, losing employment after a stroke, changing one’s long-term plans, the effects of stroke and successful recoveries. The narratives provide insight into the descriptive statistics in the previous section. As mentioned previously, personal narratives are rarely found in the stroke-related literature which is unfortunate since the experience of each stroke survivor is unique.

4.3.1 DESCRIBING THE STROKE

During the interviews with the stroke survivors, a few of them talked about the day the stroke happened. One very poignant story was the experience of the youngest stroke survivor in the sample.

When I was 38 [at the time of the interview he was 52 years old] I fell down on my back and I could not get up. I struggled on the ground for a half an hour trying to get rolled over on my stomach, thinking if I could get on my stomach, I could get up. A guy saw me and he lifted me up and saw that my left side was collapsing. He said “you are not okay.” So he took me to the hospital. I think my wife cried for a week steady when she heard…. ‘Cause the doctor told her that I had a massive stroke and that I would never have use of my hands and maybe not my legs [starting to cry]. But I am walking now.

Mr. Satwatsky, Parkville, Poor Health

This story was selected because it highlights two dynamics of the stroke experience. It indicates that stroke can happen at any age, at any time and that recalling the actual event can draw strong emotions even long after the stroke occurred.
4.3.2 LOSS OF EMPLOYMENT

For several stroke survivors, another challenge they had to face after their stroke was the loss of their full-time employment. This narrative describes how one stroke survivor viewed losing his job.

I was employed when I had my first stroke. I was a social worker. It was a short stroke. I was still around [i.e., working] for a little after but not very long. A month or two that was it. The doctor advised me to take an early retirement and said that the next stroke might kill you. Social work was very stressful. I was too old.

Mr. Shapter, Qualicum Beach, Good Health

4.3.3 CHANGING LIFE PLANS

People generally plan their later retirement years. This narrative, again an experience of the youngest stroke survivor in the sample, describes how experiencing a stroke can change not only employment, but plans for the future.

I had to sell my business, sell my farm and sell my sawmill; I had three things that I did. No income any more…..We moved here from the Okanagan to get away from the snow. It used to be up to our knees sometimes….out here [Vancouver Island] it is a lot more milder. We planned to move here when we retired but not when I was forty years old we weren’t planning for then…..

Mr. Satwatsky, Qualicum Beach, Poor Health

4.3.4 LONG-TERM EFFECTS

As mentioned in the previous section, 95% (n=20) of the stroke survivors in this sample reported that their lives have changed since their stroke. For some, they experience a range of cognitive impairments. These narratives highlight the long-term effects of stroke that these people experience that are not discussed in detail in the stroke literature reviewed for this research project. In the first narrative, the caregiver discusses
his wife’s aphasia and how this cognitive impairment seems to be more severe after multiple strokes.

Since the stroke she has lost her communication ability plus the fact that she cannot speak means that she cannot help you with anything….Over the past three years we have seen a little improvement but not as much as we would like. But when she had her first stroke she was unable to speak altogether and within two years it became no problem. So this [second] stroke has been much more severe, the recovery has been much slower.

_Mr. Strong for Mrs. Strong, Victoria, Poor Health_

Below, the narrative describes another cognitive impairment related to stroke, losing the ability to read well. This cognitive impairment was not identified in any of the stroke literature reviewed for this project.

_I used to go to the library every two weeks. [Now] I really can’t read very well. I have had to retrain my thoughts to accept a book. I can read a magazine but it’s coming because at first whenever I tried to do this, I had to read one place at least 10 times before it sunk in. It is all jumbled up at first, but then if I persist and do that right away I can make sense out of it._

_Mrs. Dyck, Parksville, Poor Health_

For others, there are substantial physical impairments that they experience such as a lack of muscle control and vocal cord damage. This narrative describes the frustration of a physical impairment and how one must concentrate on their actual stepping to simply walk.

_Presently my left hand doesn’t function well, there is no feeling. One [additional] of the annoyances of it [the stroke] is the muscles in my mouth do not function properly and I don’t swallow like I should, I drool and it is because the part of the brain that causes your muscles that make you swallow does not function right and I have difficulty walking because my left leg drags and I have to say to myself mentally as I walk, plant left, plant left, lift it up and put it forward because it won’t do it by itself because of the fact that you tend to fall a lot with that._

_Mr. Friesen, Parksville, Poor Health_

This narrative describes a physical impairment which has not been identified in the reviewed stroke literature – vocal damage. For this stroke survivor, this is the main stroke-related impairment that she deals with.
My voice is the most affected by the stroke. It is better now. I sound like I am being strangled, it just does not come out very well. And there is not much they can do.

**Ms. Frail, Victoria, Poor Health**

This next narrative was selected since it sums up how the long-term effects of a stroke can change a person’s entire life. This stroke survivor reflects on how the body’s function and abilities change with a stroke.

You take your body for granted, so much. You know, I did everything, built my barn on my farm, built a log workshop, fencing I did it all myself. I took everything for granted. When your body gives up on you, you cannot believe it. You think that that’s one thing that you can at least trust, you do so much with it and it does what you tell it. All of a sudden it does not do what you tell it. The biggest thing is to learn to switch from left to right; I was left handed. Now I have to write with my right.

**Mr. Sawatsky, Qualicum Beach, Poor Health**

Another theme identified in narrative analysis is that the effects of stroke vary day-to-day for some stroke survivors.

For me it has been nine years since my stroke. Sometimes when I get up in the morning I speak very well. I noticed that the third year and the fourth year and at certain times my ability to speak goes blank and other time I can speak just fine.

**Mr. Bartlett, Victoria, Poor Health**

We all have these good days and bad days but they are very pronounced in a stroker. There is a definite wave there. There is a wave within the day, wave within the month so when you are trying to measure things you try to create a constant which you can measure by.

**Mr. Harder for Mrs. Harder, Qualicum Beach, Good Health**

4.3.5 **RECOVERIES**

Although the challenges of the stroke are difficult some people see that things have gotten better since their stroke. These narratives highlight the spirit, humour and the importance of optimism about recovery that many participants value:
I spent two years in a wheelchair and I gave it up for Lent.  
Mr. Jantzen, Qualicum Beach, Good Health

Things are changing continually, but it is slow. We [people generally] are used to an illness when you are in bed for a week, but stroke is another game altogether. Your measurements are annually, you measure things [i.e., recovery] on an annual basis anything short of that really is, it just takes a long time to confirm a change.  
Mr. Harder for Mrs. Harder, Qualicum Beach, Good Health

At our church I sing in the choir so she sits with other people in the church. I am sure that you are aware that people with aphasia can’t speak, but they can sing. That is quite common. People will come up to me after and tell me that “I was in front of Suzanne and she is speaking again, I hear her singing.”……  
Mr. Strong for Mrs. Strong, Victoria, Poor Health

Since her stroke she has improved a little bit. She walks now without a walker and she uses a cane…..(Mrs. Neufeldt adds) I am not as good as I should be but I will be.  
Mr. and Mrs. Neufeldt, Parksville, Good Health

I now go swimming twice a week to a physiotherapy session. I find it better than the other physiotherapy because you can do more in the water. My husband is in the water with me with those long spaghetti things [i.e., pool noodles]. But I am getting there I think.  
Mrs. Isaac, Parksville, Good Health

### 4.4 DISCUSSION

As mentioned previously, this sample represents the national stroke survivor population – being represented by more males than females. The age range of the participants reveal that stroke happens to those who are young and old, although it is known that the risk of stroke increases with age especially after age 55 (Heart and Stroke, 2003). Income did not seem to influence the health perceptions of the stroke survivor which is consistent with the findings of Clarke et al (2002). Asking the stroke survivor to identify what kind of stroke they experienced proved that many people are unaware of the medical terminology of their strokes. This may indicate a need for more information to be distributed in a more understandable way (i.e., better communication between stroke
survivors and doctors). The activities of daily living that most stroke survivors require assistance with were investigated by gender, geography and self-rated health. The most substantive differences in daily assistance are revealed by examining good and poor health status. The selected narratives provide a more in-depth look into the sample and also highlight a few stroke-related experiences which are absent from the reviewed literature such as experiencing difficulty reading and how they view their lives years after the stroke. Overall, this overview of the participants provides an understanding of the range of dynamics and experiences of stroke survivors.
Chapter 5 – Spatial Analysis

The purpose of this chapter is to examine the results of the spatial analysis. Using the gathered postal code data and Arc View Network Analyst shortest path function, the activity spaces for 21 stroke survivors have been measured, illustrated and analyzed by frequency to determine what the geographic concept of activity space tells us about the well-being of stroke survivors. There are two main sections in this chapter; a preliminary analysis describing how the activity spaces differ by geography and health status followed by a more thorough examination of the activity space distances of selected participants by geography and self-reported health. The activity spaces are analyzed at two levels. First, the total activity space for each stroke survivor is observed followed by the sub-analysis of the dimensions that make up these spaces used to illustrate activity space in this research. As outlined in Chapter 3 the following is a list of these dimensions.

- **Health Services** – These services include physician clinics, pharmacists, physiotherapy, speech therapy, optometrist, emergency care and hospital services.

- **Financial and Communication Services** – These services include personal banking and postal services.

- **Recreational and Goods Services** – These services include grocery stores, theatres, library facilities, malls, sporting facilities, restaurants, and hairdressers.

- **Social Spaces** – This space includes the location of friends and other support groups.

Examining the dimensions of the activity spaces is necessary so that the types of activities that make up “a person’s activity space” can be analyzed and further related to
health status. The inclusion of frequency charts provides temporal insight into the activity spaces of stroke survivors.

5.1 PRELIMINARY ANALYSIS

5.1.1 THE COMMUNITIES

In this section, the sample is divided by community so that the activity space sizes that are generated can be compared in the same geographical setting. It would be more difficult to compare the activity space of someone living in Oceanside (a smaller community) to the activity space of someone living in Victoria (an urban area).

**TABLE 5.1: MEAN ACTIVITY SPACE DISTANCE OF PARTICIPANTS BY GEOGRAPHY**

<table>
<thead>
<tr>
<th>Activity Space Dimension</th>
<th>Mean Activity Space Distance by Community (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Victoria</td>
</tr>
<tr>
<td>Health</td>
<td>18.84</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>3.14</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>26.05</td>
</tr>
<tr>
<td>Social</td>
<td>14.50</td>
</tr>
<tr>
<td>Total</td>
<td>62.53</td>
</tr>
</tbody>
</table>

In Table 5.1 the total average activity space size for stroke survivors living in Oceanside is shown to be greater than the average activity space distances in Victoria. The greatest size difference is related to the health service activity space dimensions. This difference is explained by the fact that those living in Oceanside have to travel farther (e.g., Nanaimo is approximately 35 kilometres distant) to get to the nearest hospital, while Victoria residents have more hospitals located within the city. The other activity space dimension that slightly differs from CA to CMA is the goods and recreation services dimension. This difference can be explained again by the fact that such services
tend to be more prevalent in a bigger city than a smaller community. The financial and communication activity spaces are comparable, since these services tend to be readily available in both geographic settings. The social activity spaces are slightly larger in Victoria than Oceanside.

5.1.2 SELF-REPORTED HEALTH

Comparing the overall activity space distances in Table 5.2, one can see that those with poorer health have greater overall activity spaces than those with good health. Looking at the activity space dimensions, those with poorer health have a greater activity space dimensions than those with good health in both communities. The only exception is the social activity space dimension where those with poorer health in Victoria have greater social activity spaces (25.89 km) compared to those with good health (5.97 km) while in Oceanside, those with good health (11.88 km) have slightly larger social activity spaces than those with poorer health (9.35).

**TABLE 5.2:** MEAN ACTIVITY SPACE DISTANCE BY GEOGRAPHY AND SELF-REPORTED HEALTH

<table>
<thead>
<tr>
<th>Activity Space Dimension</th>
<th>Victoria</th>
<th>Oceanside</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
<td>Poor</td>
</tr>
<tr>
<td>Health</td>
<td>9.75</td>
<td>30.96</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>2.12</td>
<td>4.50</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>19.14</td>
<td>35.26</td>
</tr>
<tr>
<td>Social</td>
<td>5.97</td>
<td>25.89</td>
</tr>
<tr>
<td>Total (Average)</td>
<td>36.98</td>
<td>96.61</td>
</tr>
</tbody>
</table>
5.2 SIZE AND NATURE OF ACTIVITY SPACES OF SELECTED STROKE SURVIVORS

The activity space results in this section have been generated using the shortest path network for each stroke survivor\(^5\). The activity spaces highlight the position of the participant’s home and the major activity nodes. Five examples of stroke survivor activity spaces are featured in this chapter. Examples of activity spaces which contrast the preliminary findings discussed in the previous section—stroke survivors with poorer health have large activity spaces and vice versa for those with good health—are selected to gain additional insight into understanding the factors that truly influence the relationship between activity space and well-being. In Oceanside, the activity space of Mr. Derksen, a stroke survivor with poorer health, is considerably smaller than others with poor health, while Mrs. Isaac with good health has a large activity space size compared to others with good health. Additionally, the activity space of Mr. Sawatsky is included since he (along with Ms. Dyck) is one of the only stroke survivors who engages in activities on a daily basis. A similar approach was used to select the activity space maps of two Victorians; Ms. Frail (i.e., small space, poor health) and Mrs. Ryan (i.e., large space, good health). The results are reported for Oceanside first, followed by Victoria and are organized alphabetically by the last name of the participant. The remainder of activity spaces are included in Appendix D.

\(^{5}\) As mentioned in Chapter 3, pseudonyms are used to protect the identity of the participants.
5.2.1 OCEANSIDE

5.2.1.1 Activity Space of Mr. Derksen – Poor Health

Mr. Derksen is an 87 year old male who lives in Qualicum Beach. Mr. Derksen experienced his stroke three years prior to the interview and has been in a wheelchair ever since. He relies on his wife for help with his day-to-day activities including transportation.

**FIGURE 5.1: THE ACTIVITY SPACE MAP OF MR. DERKSEN**

Visually, the activity space map tells us that the majority of his activities take place between Qualicum Beach and Parkville. Outside of Parkville, there is an activity node in the west of Qualicum Beach, which represents the home of friends of the Derksens'.

The calculated size of the activity space of (50.98 km) Mr. Derksen is small compared to others in Oceanside (90.76 km) and the average total activity space of those individuals with poor health (102.89 km). Examining the activity space dimensions, it is noted that both the health space (18.02 km) and goods and recreation space (6.11 km) are much smaller than the community average (43.08 km vs. 33.00 km) and those with poor health (44.53 km vs. 44.20 km). However, his financial and communication space (14.96 km) and his social space (11.89 km) are greater than the calculated averages.

**TABLE 5.3: MR. DERKSEN’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND POOR HEALTH ACTIVITY SPACE**

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Derksen’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Poor Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>18.02</td>
<td>44.53</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>14.96</td>
<td>4.81</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>6.11</td>
<td>44.20</td>
<td>33.00</td>
</tr>
<tr>
<td>Social Activities</td>
<td>11.89</td>
<td>9.35</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>50.98</td>
<td>102.89</td>
<td>90.76</td>
</tr>
</tbody>
</table>

The frequency chart of activities (Fig. 5.2) shows that Mr. Derksen engages in activities on a weekly basis; such as visiting his bank, the mall and the grocery store. He also dines at a restaurant a few times a month and visits friends once a month.
5.2.1.2 Activity Space of Mrs. Isaac– Good Health

Mrs. Isaac lives with her husband in Qualicum Beach. Mrs. Isaac experienced her stroke two years ago at the age of 69. Presently, Mrs. Isaac relies on her husband to drive her to activities and uses a cane, and sometimes a wheelchair, to get around places.

**Figure 5.3: The Activity Space Map of Mrs. Isaac**

Mrs. Isaac’s activity space map shows that she lives in Qualicum Beach and that the majority of her activities occur there. Similar to others in Oceanside, Mrs. Isaac travels to Nanaimo to shop and visited the hospital Nanaimo in the past year prior to the interview.
The calculated activity space for Mrs. Isaac (110.37 km) indicates that she has a greater total activity space than those in Oceanside (90.76 km) and than those with similar good health (81.65 km). Looking at the activity space dimensions, it is noted that she has a large goods and recreation activity space (43.48 km) compared to both calculated averages (33.00 km; 24.61 km). Both her health activity space (51.92 km) and her social space (12.13 km) are larger than the averages of both groups. The only exception is her financial/communication activity space (2.85 km) which is smaller (2.85 km) than both averages.

**TABLE 5.4:** MRS. ISAAC’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND GOOD HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Isaac’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>51.92</td>
<td>41.99</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>2.85</td>
<td>3.16</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>43.48</td>
<td>24.61</td>
<td>33.00</td>
</tr>
<tr>
<td>Social Activities</td>
<td>12.13</td>
<td>11.88</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>110.37</td>
<td>81.65</td>
<td>90.76</td>
</tr>
</tbody>
</table>

Mrs. Isaac’s frequency of activity chart (Figure 5.4) indicates that she most frequently engages in activities such as playing sports and dining at restaurants.

**Figure 5.4:** Mrs. Isaac’s Frequency of Activity Chart
5.2.1.3 Activity Space of Mr. Sawatsky—Poor Health

Mr. Sawatsky is a 52 year-old man and the youngest participant in this research. He experienced his stroke more than 5 years prior to the interview. He lives in Parksville with his wife who is his caregiver. Mr. Satwatsky has minor physical disabilities related to his stroke. He is unable to drive a car, but he uses a scooter for transportation.

The activity space map for Mr. Sawatsky shows that the majority of his activities take place in Parksville. Similar to others who live in Parksville, he goes to restaurants in Qualicum Beach. Otherwise he travels to Nanaimo to shop and has visited the hospital in the past year.
Mr. Sawatsky’s activity space size (106.61 km) is larger than the average sample size (90.76 km) and the activity space of those with poor health (102.89 km) while his social space (10.25 km) is comparable to the sample average (10.79 km). The greatest difference noted in Table 5.14 is that Mr. Sawatsky has a larger goods and recreation activity space (56.67 km) compared to both comparison groups (33.00 km; 44.20 km).

**Table 5.5:** Mr. Sawatsky’s Activity Space Compared to the Average Oceanside and Poor Health Activity Space Distance

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Sawatsky’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Poor Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>37.74</td>
<td>44.53</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>1.95</td>
<td>4.81</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>56.67</td>
<td>44.20</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>10.25</td>
<td>9.35</td>
<td>10.79</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>106.61</strong></td>
<td><strong>102.89</strong></td>
<td><strong>90.76</strong></td>
</tr>
</tbody>
</table>

Mr. Sawatsky’s activity frequency chart (Figure 5.6) shows that each day, he is either with his friends or at the mall, or both. He also participates in the Stroke Recovery Group more than once a week as a volunteer to plan fundraisers for the group.

![Figure 5.6: Mr. Sawatsky’s Frequency of Activity Chart](image)
5.2.2 VICTORIA

5.2.2.1 Activity Space of Ms. Frail – Poor Health

Ms. Frail is a 77 year old single woman who lives in Victoria. She experienced a stroke less than a year ago at the time of the interview and experiences a few stroke-related impairments such as vocal cord damage. She requires no assistance getting around her house and relies on her scooter, taxis and public transportation to get to her activities.

*Figure 5.7: The Activity Space Map of Ms. Frail*

The activity space map of Ms. Frail show that she goes beyond Victoria for activities and goes to Sidney to get her hair cut. Aside from that, the activity nodes for Ms. Frail are clustered close to her home.
The size of Ms. Frail’s activity space (39.58 km) is significantly smaller than both the average activity space for stroke survivors living in Victoria (62.53 km) and for those with poor health (96.61 km). Looking at the activity space dimensions her activity spaces are smaller than the other groups. Only her goods and recreation space (24.99 km) is comparable to the goods and recreation space of those living in Victoria (26.05 km).

**TABLE 5.6: MS. FRAIL’S ACTIVITY SPACE COMPARED TO THE AVERAGE VICTORIA AND POOR HEALTH ACTIVITY SPACE**

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Frail’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Poor Health (km)</th>
<th>Victoria: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>7.43</td>
<td>30.96</td>
<td>18.84</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>1.56</td>
<td>4.50</td>
<td>3.14</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>24.99</td>
<td>35.26</td>
<td>26.05</td>
</tr>
<tr>
<td>Social</td>
<td>5.60</td>
<td>25.89</td>
<td>14.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39.58</strong></td>
<td><strong>96.61</strong></td>
<td><strong>62.53</strong></td>
</tr>
</tbody>
</table>

The frequency of activities chart (Figure 5.8) shows that Ms. Frail engages in activities on a weekly basis. The activities which she does each week include going for physiotherapy at the Stroke Recovery Group, visiting the library or shopping for groceries.
5.2.2.2 Activity Space of Mrs. Ryan – Good Health

Mrs. Ryan is a 69 year old woman who lives with her husband. She experienced a stroke more than 5 years prior to the interview that left her with a slight limp. She walks everywhere and when it is too far to walk she will use the “handyDART” (transportation available in Victoria for those with a disability).

**FIGURE 5.9: THE ACTIVITY SPACE MAP OF MRS. RYAN**

This activity space map pattern is different than that of Ms. Frail. Comparing the activity space of Ms. Frail, Ms. Ryan’s activities are concentrated in the southern part of the city.
Mrs. Ryan’s activity space (47.39 km) is larger than those with good health (36.98 km) but smaller than the average activity space size of those stroke survivors living in Victoria (62.53 km). This trend is similar when looking at the dimensions of her activity space. The exception is her financial and communication space (1.71 km) which is smaller than both averages.

**TABLE 5.7: MS. RYAN’S ACTIVITY SPACE COMPARED TO THE AVERAGE VICTORIA AND POOR HEALTH ACTIVITY SPACE**

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Ryan’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Victoria: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>11.45</td>
<td>9.75</td>
<td>18.84</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>1.71</td>
<td>2.12</td>
<td>3.14</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>24.48</td>
<td>19.14</td>
<td>26.05</td>
</tr>
<tr>
<td>Social</td>
<td>9.75</td>
<td>5.97</td>
<td>14.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>47.39</strong></td>
<td><strong>36.98</strong></td>
<td><strong>62.53</strong></td>
</tr>
</tbody>
</table>

In the frequency of activities chart (Figure 5.10) we see that Mrs. Ryan is very active engaging in activities more than once a week. She most often visits the mall, dines at a restaurant or buys groceries. She is also involved in the development of the Stroke Recovery Group, therefore participating with the group twice a week.

**Figure 5.10:** Mrs. Ryan’s Activity Space Frequency Chart

1. Health Services
2. Financial/Communication Services
3. Goods/Recreation Activities
4. Social Activities
5.3 DISCUSSION

The shortest path network is an effective tool used to measure the activity spaces of stroke survivors. The activity space maps highlights the position of the stroke survivors’ homes with respect to their activity nodes such as the location of the Stroke Recovery Group in each community. In some cases, the maps had examined just the immediate community (e.g., Mr. Derksen and Mrs. Ryan) while others included areas beyond the communities (e.g., Mrs. Isaac and Ms. Frail). It is difficult to establish a clear association between the structure of the activity spaces and self-reported health.

It seems that stroke survivors with poor health have larger activity spaces travelling farther for health services than those in good health in both communities. However, in this chapter, extreme cases were featured to highlight what could be learned more broadly since the interpretation is not straight forward because of the multiple factors influencing activity space.

The frequency charts also provide additional temporal insights into each activity space dimension. It seems that the majority of those with good health (e.g., Mrs. Isaac and Mrs. Ryan), engage in a higher frequency of activities than those with poor health (e.g., Mr. Derksen and Ms.Frail). However, the exceptions should be discussed. Ms. Dyck (included in the appendix) and Mr. Sawatsky both with poorer health, engage in activities on a daily basis. Mr. Sawatsky engages in social activities everyday, yet he still reports poor health. His example is especially important since it supports the possibility of other factors that influence activity space than health status for stroke survivors.
Chapter 6 – Using Qualitative Data to Further Understand and Interpret Stroke Survivor’s Activity Spaces

The purpose of this chapter is to provide insight into the dynamics of stroke survivors’ activity spaces and highlight specific aspects of the stroke experience. Using qualitative data, the factors which enhance and restrict a stroke survivors’ activity space will be discussed and elaborated. In light of the research questions, the interpretive data analysis begins by considering the health status of stroke survivors. Self-reported health is a well established indicator of personal health (Idler et al., 1997). In this research, stroke survivors were initially divided into two groups on the basis of health; those with good self-reported health (i.e. excellent, very good or good) and those with poor self-reported health (i.e. poor or fair) for comparative purposes. Self-reported health perception is then related to emerging themes from the interviews to further understand the links between activity space and well-being. The first section of this chapter focuses on “space” and how stroke survivors negotiate their domestic (i.e., home) and non-domestic environments (i.e., community). The second part focuses on the “activities” in the activity space.

6.1 ADDRESSING HOME AND COMMUNITY SPACES

One way that space can be addressed is to consider the home and community environments of stroke survivors. First, the domestic environments are reviewed by looking at the strategies adapted by the stroke survivors and their families to develop a home suited to their stroke-related disabilities. Second, the mobility obstacles and aids
that exist in and outside the home such as, carpets, furniture, and weather conditions are examined.

6.1.1 NEGOTIATING THE DOMESTIC ENVIRONMENT

6.1.1.1 HOME MODIFICATIONS

Modifications to a home, some basic and some extensive, are usually necessary to assist a stroke survivor in negotiating and adapting to their home environment. Stroke-related disabilities, such as “neglect” described in Chapter 2, can make mobility in, and outside, the home a big challenge. When a stroke survivor returns home, the home environment plays an important role in helping them cope with disabilities that may place considerable limits on their well-being (Clarke, 2003). Home modifications for stroke survivors include widening doorways, installing ramps and equipping washrooms so that the stroke-affected person has the ability to address their own personal needs at home.

Such modifications, along with other stroke-related devices (e.g., grab bars and rails) can be costly for some people. These two excerpts from the interview transcripts illustrate the difficulties that stroke survivors and caregivers have in making home modifications and how they overcame the related costs. These narratives also suggest how adaptive and inventive some people tend to be.

We did the house when we came home. We put in the big doors and made a shower for Geoff in the bathroom. I had that all done, my daughter and I. We did it ourselves; who could afford $7,000!

- Mr. Derksen, Poor Health (Caregiver Response)
When we left hospital we had a full page of stuff that we should have. So, before I paid out anything I fired this list off to the health plan and they said that they would pay for the wheelchair and the quad cane. You know they would not pay for bars, ceiling bars. So I made most of the stuff. For example, I put a special bar beside the bed which allows Stacy to get in and out of bed by herself.

- Ms. Isaac, Good Health (Caregiver Response)

6.1.1.2 FINDING A NEW HOME

As an alternative to home modifications, the majority of stroke survivors 62% (n=13) of the stroke survivors and their families found it easier to move to a new home after their stroke.

Our old place had a lot of stairs so we had to move. We would have still been in that house if you did not have the stroke. We moved to this house so he could get around in that chair.

- Mr. Koop, Poor Health (Caregiver Response)

We bought our new house because it had wide doors just in case I end up in a wheelchair or something.

- Mr. Satwatsky, Poor Health

As these previous narratives describe, some stroke survivors and their families are forced to move to a new home and select housing based on present needs, while others look ahead at how their needs may change in the future. In this next narrative, a stroke survivor with good self-reported health describes how his new home will be designed to support his current and future stroke-related disabilities.

In our new house we will have a custom built shower stall which is completely level, no threshold and has a drain in the centre. So, it is a walk-in shower 4 feet by 3 feet. And then all the thresholds are dropped throughout the house…...this house has been designed to be an accessible home. All the doorways and hallways are the right width. The light switches will be put at wheelchair height.

- Mr. Jantzen, Good Health

---

6 At the time of this interview this stroke survivor was not in a wheelchair.
6.1.1.3 OBSTACLES IN THE HOME

Despite home modifications, some stroke survivors experience obstacles within their home environment. Secondary data analysis of the Canadian Study of Health and Aging data (n=5395) identified a range of challenges (i.e., cognitive and physical disabilities) that stroke survivors experience that may compromise their overall well-being (Clarke, 2002). In this research, to identify these challenges in the home, the sample were asked to identify which obstacles they experience in their domestic environment. Both carpets and rugs and “lack of rails” are reported by 45% (n=10) as the main obstacles in both their own and other people’s homes. The following narratives describe how rugs are a mobility obstacle for two men who experience ‘neglect’.

People that put rugs down don’t realize that the rugs are really bad for strokers. That’s the most dangerous thing there is. The bathrooms are usually pretty bad; everyone seems to have a rug in their bathroom and they are always tripping on it.
- Mr. Sawatsky, Poor Health

The only thing I have problems with is that I shuffle. I drag my right foot. Occasionally, if there are little scatter rugs, I might trip on the scatter rug.
- Mr. Shapter, Good Health

The placement of furniture was reported by 23% (n=5) as an obstacle in their home. In these next excerpts, participants discuss how they overcome furniture and rug obstacles in their home.

I have changed the furniture around in my house since my stroke….I have lifted the floor mats in my bathroom but left the rest.
- Ms. Dyck, Good Health

We don’t move things around to accommodate. She has to accommodate in an environment she is in. I think that it’s a mistake to start changing things because you cannot change the environment when you get out on your own [in the community].
- Ms. Harder, Good Health (Caregiver Response)
The excerpt from the Harder’s highlights an interesting point that supports Rowles (1986) findings. Both this excerpt and Rowles’ findings suggest that becoming dependent on modifications in the home may result in greater difficulties when negotiating obstacles outside the home and restricting mobility within the home. This conclusion is supported by this stroke survivors’ experience.

I don’t know if you have noticed, but these (sofa cushions) are very hard. I had all the cushions replaced with the firm stuff because I was sinking down and had a hard time getting up. It’s a real problem when we go to someone else’s house.
- Mr. Shapter, Good Health

6.1.2 NEGOTIATING THE DOMESTIC ENVIRONMENT

This section highlights the challenges which restrict stroke survivors’ mobility outside of their homes. Using selected transcripts, the obstacles that stroke survivor’s experience outside the home are identified. In addition, how some stroke survivors overcome obstacles, while others struggle with such obstacles is examined.

6.1.2.1 FURNITURE: POSITIONING AND TYPE

As mentioned in the previous section, 24% (n=5) of the participants said they find furniture an obstacle in their home. Furniture outside their home, is also identified as an obstacle by 43% (n=9). The narratives reveal that this particular obstacle is not only more evident outside the home, but it is the placement and the type of furniture that is the challenge.

In the restaurants sometimes the table is too close to me. There is not much room between the bench and the table. I have trouble standing up because the table is so close.
- Mr. Shapter, Good Health
When we go to a restaurant this is one of the problems, they must have chairs with arms. If the chairs do not have arms I can’t get up. When you go to the theatre, depends on the theatre, they got to have arms in them as well.
- **Mr. Koop, Poor Health**

To go into a restaurant it is a chore to get in. If they have arm chairs we walk in with a quadcane, otherwise we cannot take the scooter in.
- **Ms. Isaac, Good Health**

These narratives highlight the difficulty some stroke survivors experience with furniture in a public place. Chairs with arms are identified as one essential aid to overcoming this obstacle.

6.1.2.2 THE CHALLENGES OF STAIRS AND LIFTS

Another main obstacle which was reported to restrict some stroke survivor’s mobility outside of the home are stairs (62% (n=13). This stroke survivor describes his experience with stairs:

> Stairs are a problem. Usually up is the best, coming down you got watch to your foot. I go up one at a time and come down one at a time. I hold on to the rail. If the rail is on the one side I go over there since I have one hand only. Unless there is no handle then I got to watch it. Usually, there is somebody there I can hang on to.
- **Mr. Green, Good Health**

Stairs are not the only problem for stroke survivors. For this stroke survivor using an elevator was inconvenient even though it is meant to be a mobility aid.

> Once I had to go for an interview downtown. My company was doing these interviews on the tenth or twelfth floor. So I go in the main lobby, push the button for the elevator, there’s a whole bank of elevators, three on this side, three on that side, ding and by the time I got there, the bloody doors would shut. I had an awful time.
- **Mr. Morgan, Good Health**

---

7 This stroke survivor experiences “neglect”.
6.1.2.3 FEAR OF FALLING

As with many elderly people, stroke survivors have a common fear of falling. Carpets and rugs were identified previously as an obstacle a stroke survivor experiences at home. This obstacle is also a challenge reported by 48% (n=10) outside of their home. The next narrative describes how a stroke survivor chooses to avoid this obstacle and how this avoidance would restrict their activity space.

We go to visit people who have had a stroke so they don’t have rugs or anything that would get in his way or the rugs are picked up. Anywhere that is not accessible we simply don’t go.
- Mr. Derksen, Poor Health (Caregiver Response)

Not all obstacles that would cause someone to trip are easy to avoid. Those obstacles that exist outside a home environment seem to be the most difficult to overcome. For example, 50% (n=11) of stroke survivors reported steep slopes and street curbs as obstacles outside. This stroke survivor identifies gravel as an obstacle.

I have a fear of falling on loose gravel, in driveways or parking areas…I don’t like it because you don’t feel very secure on that stuff.
- Mr. Friesen, Poor Health

6.1.2.4 INACCESSIBLE WASHROOMS

The availability and nature of washroom facilities also influences the stroke survivors’ activity space. Only 19% (n=4) identified inaccessible washrooms as an obstacle outside their home however. Throughout the interviews, the importance of this obstacle became readily apparent. The narratives highlight the frustrations faced by both, the stroke survivors and their caregivers. These narratives describe how the availability of accessible public washrooms is of great importance for getting out of one’s home.
Outside there are not enough restrooms. Where is there a rest room in Qualicum, unless you go into a restaurant? And they don’t like you doing that unless you sit down and have a meal. They don’t have public toilets like they have in England.
- Mr. Koop, Poor Health

That is one thing that we have to look for when we enter a place (a washroom). Some places they have it upstairs and you just can’t get there. We went to a Chinese place downtown and the washroom was upstairs so that was no good for me.
- Ms. Ryan, Good Health

Based on these narratives and self-reported health, it seems that it is easier for Ryan to overcome finding an accessible washroom than Mr. Koop. Mrs. Ryan lives in Victoria where it can be assumed that there are more opportunities to find public washroom facilities. If they go to one place and it is not suitable, there are other choices available. On the other hand, Koop lives in Qualicum Beach were there are fewer amenities, and very few, or almost no public washrooms. The availability of washrooms and other services and amenities in a community can therefore influence which activities an individual engages in. However, at one extreme, the lack of accessible washrooms may cause the Koops or Ryans to stay at home. These particular narratives support Idler et al.’s (1997) claim that self-reported health reflects the presence or absence of resources. In this case, Mr. Koop’s poor self-reported health may partly be reflected by the inadequacy of resources (lack of accessible washrooms) and the quality of a service environment to meet their needs in their community.

The next washroom related obstacle relates to washroom size and design for both the stroke survivor and the assisting caregiver. These narratives demonstrate the importance of finding a washroom facility that can accommodate two people in certain cases (e.g., both the stroke survivor and caregiver).
She went to the bathroom in the mall. While I was waiting I ordered us a meal. In the meantime, I have eaten my whole meal and I am still waiting for her to come back. It was over a half hour, by now I am debating getting someone to go into the lady’s washroom and check. It turns out that she was constipated and I was unaware of it. Now to send somebody in, I could have done it, but I respect her privacy as much as possible. In the meantime, I am thinking what the hell is happening?

- Ms. Strong, Poor Health (Caregiver Response)

Things are better though with all the new malls. They have an individual handicap washroom. Older places where they have been retrofitted with a larger stall it does not take into account at all that almost always the caregiver is somebody from the opposite sex. And you get tired of saying “Close your eyes girls I am coming in”.

- Ms. Isaac, Good Health

Based upon the previous narratives, so far, stroke survivors require accessible washrooms that are equipped for people with disabilities and that can accommodate both the stroke survivor and the caregiver, as the caregiver is often required for assistance. Having a facility that is set up properly is also a challenge a stroke survivor faces. These narratives of two stroke survivors who experience “neglect”, a stroke-related disability that results in paralysis, describe how washroom stalls are not designed to accommodate this disability.

Every time I go to a public washroom the toilet paper is always hanging on the left so I have to reach, my body all awkward like that (demonstrated).

- Mr. Sawatsky, Poor Health

Sometimes the handles in the washrooms are on the wrong side. You know if they are not on this side he has to reach across. That’s a problem for him sometimes. But they are getting better and better all the time.

- Mr. Epp, Male, Poor Health (Caregiver Response)

This obstacle, which is experienced by two stroke survivors with poor self-reported health, is difficult to overcome. Facilities should be designed to consider that

---

8 This stroke survivor experiences aphasia.

9 This stroke survivor experiences “neglect”.
some stroke survivors only have the use of one side of their body. One simple solution is for grab rails and toilet paper to be placed on both sides of the stall to enhance the physical functioning of the stroke survivor.

6.2 EVERYDAY GEOGRAPHIES

In the previous chapter, maps illustrated the activity spaces of stroke survivors based on obtaining four types of services; health services, communication/financial services, recreational and goods services, and social spaces. This section uses the narrative data to highlight the activities that are related to the individual’s well-being.

6.2.1 REFLECTIONS ON LOSS OF PERSONAL ABILITY

While it is not surprising that all the stroke survivors report that their lives have changed following their stroke, not all survivors have poor self-reported health. Recalling that Clarke (2003) found that if stroke-related disabilities prevent a person from engaging in activities that are considered to be an important component of that person’s identity, then the well-being of a stroke survivor was considerably reduced. The following section examines personal activities to evaluate which relate to positive health status and well-being.

6.2.1.1 CHANGES IN PHYSICAL ACTIVITIES

Some of the stroke survivors were physically active before their stroke. Clarke (2003) reported that physical activity restrictions tend to have less of an impact on the
stroke survivor than social activity restrictions. Insights from the qualitative data for this research project reinforce these research findings.

I cannot go wood cutting anymore because of my stroke. Most of the physical activities I used to do I cannot do because of my stroke. My walking has become more limited. I used to swim but I found when I got out of the swimming pool I was so tired it was not doing what it was supposed to do.

- Mr. Shapter, Good Health

I miss a lot of them (activities). I used to go water skiing, snow skiing, play hockey. I was playing old timers hockey. Now, well, I can I still drive my boat and the other activities I can’t do since I walk slowly and can’t run.

- Mr. Jantzen, Good Health

Both of these stroke survivors, with good self-reported health, discuss matter of factly, the activities that they can no longer participate in and further mention activities they can still do while recalling what they can no longer do. Losing the ability to engage in such physical activities did not appear to influence their self-reported health, this is not the case for the caregiver of one stroke survivor with poor self-reported health.

The focus is on the activities that this couple can no longer participate in.

He just sits there. There is nothing he can do. We used to go to shows, we used to go to plays, we used go camping, we were great campers, we climbed mountains, we went hunting we did everything. We tented for 25 years.

- Mr. Derksen, Poor Health (Caregiver Response)

This poignant quote highlights one of the challenges in this type of research – having the caregiver respond to the questions. In the previous narrative, it seems that the inability to engage in physical activities is more an issue for the caregiver or both than just the stroke survivor. More than other excerpts, this piece emphasizes the heavy burden and life altering experience of being a caregiver of a stroke survivor.
6.2.1.2 CHANGES IN SOCIAL ACTIVITIES

Individuals who experience aphasia as a result of stroke appear to have greater challenges and perhaps more restrictions in their lives. Aphasia and other cognitive impairments have been associated with a low sense of purpose in life which further affects the well-being of the stroke survivor. Clarke (2003) reports that even mild or moderate difficulties with cognitive function can limit a survivor’s ability to plan and develop goals in life, thereby constraining their sense of purpose and meaning.

A. THE INABILITY TO PARTICIPATE IN SOCIAL GROUPS

Not surprisingly, a large-scale population-based study reported that the absence or withdrawal of social supports following a stroke can have negative effects on survivors’ well-being (Clarke, 2003). These research findings are also reflected in this present research. In these next two narratives, stroke survivors have experienced a cognitive disability; a level of aphasia, which has had an effect on their ability to participate in social activities that may have been an important aspect of their identity. These narratives also reflect Clarke et al., (1999) findings that social roles are constrained by a stroke even after significant recovery (both of these women have had significant recovery).

Now I am at home more. I used to go out everyday. Painting and volunteer work, the whole bit.
- Ms. Frail, Poor Health

She used to belong to the United Church woman’s group and they still invite her on a regular basis, but she feels that she is not contributing to the group (due to her aphasia). And as a matter of fact, she thinks that she is a bit of a deterrent if she does go. They would like to have her there but she feels uncomfortable not only with strangers, but people that she does not see on a regular basis.
- Ms. Strong, Poor Health (Caregiver Response)
Neither of these participants mention any gains in social support that have occurred since the stroke. Instead, they focus on what they can no longer do, similar to Mr. Derksen’s caregiver who focused on his physical losses.

B. LOSING FRIENDS

These stroke survivors with poor self-reported health discuss how they have “lost” a number of their friends after their stroke.

We used to do a lot of entertaining. We had a group of friends that we would meet once a week. The thing is when you have a stroke you lose your friends. They are there for a little while, but they can’t ask him to go anywhere. That’s the worst part of a stroke is losing friendship.

- Mr. Koop, Poor Health (Caregiver Response)

The stroke does affect many aspects of your social life because some superficial friends they are not interested anymore. I just hope nothing ever happens to them. But then there are others that you don’t expect to help that do. I have some very good friends. It (my stroke) has restricted my social activities, but it is still okay.

- Ms. Dyck, Poor Health

One stroke survivor with good self-reported health also describes the challenge of losing friends after the stroke, but highlights a tangential perception that they had to “change their friends” after the stroke. This narrative also provides a sense why the Stroke Recovery Group is so important to some people. It also supports Glass et al., (1993) findings that social supports moderate the impact of disability on well-being.

When you have a stroke, your friends move on, but you don’t. You don’t have many of the same friends anymore. They are embarrassed and they don’t know what to do or what to say. I think gradually you lose them. I have only got one real friend that I knew before my stroke. All the others have just gone away. So yes, you have to change your friends when you have a stroke. That is one of the bad things about having a stroke is losing your friends.

- Ms. Ryan, Good Health
6.2.1.3 CHANGES IN MOBILITY

A. LOSING THE ABILITY TO DRIVE

One central theme that emerged from these narratives, which is not central in stroke-related literature, is losing the ability to drive. This theme is extremely important in influencing a stroke survivors’ mobility and activity space, since only 24% (n=5) of the sample are able to drive and 62% (n=13) rely on another individual to drive them anywhere. The following excerpts highlight how some stroke survivors have lost their ability to drive.

I used to drive until last December and they took my license away because they said I was wavering, I couldn’t hold a straight course, you know. So, I don’t think I was [wavering] but they did.
- Mr. Friesen, Poor Health

When he first had his stroke they allowed him to drive. Then they took him for a test and that was it, no more.
- Mr. Koop, Poor Health (Caregiver Response)

That’s the biggest complaint now. I took a driver’s test and failed it the first time and did it again last week and I have not received the results yet but they might fail me again.
- Ms. Frail, Poor Health

There is nothing that she can do (since the stroke) without me driving.
- Mr. Strong, Poor Health (Caregiver Response)

All of these stroke survivors with a negative self-reported health perception describe the frustration of losing the ability to drive. None of the participants mentioned the availability of other transportation to help them to overcome this obstacle.

B. ADAPTING TO NEW TRANSPORTATION

Without the ability to drive, some stroke survivor’s rely on public transportation such as buses and taxis (24%, n=5) or the “handyDART” (10%, n=2) to overcome mobility
obstacles, while others use personal mobility aids such as a scooter (14%, n=3) or a walker (5%, n=1) to get around. Using transportation aids, either public or private, can be frustrating for some, while being extremely convenient for others. In this narrative, the stroke survivor expresses her frustration with using a scooter.

Now I have a scooter, stupid thing. I don’t like it very much. It’s not a car, that’s why I don’t like it. I curse while I go along.
- Ms. Frail, Poor Health

This stroke survivor mentions how having a scooter enhances her mobility.

We go to the mall now once or twice a month now that we have a scooter. Doing it with a wheelchair was too much for Bob. We had to take our daughter to push the wheelchair around.
- Ms. Isaac, Good Health

A scooter is a common transportation aid for stroke survivors. For this stroke survivor, transportation aids do not seem to influence their poor self-reported health.

I can take my scooter on the bus to Nanaimo to go shopping if I want. I also do a paper route. It is on Tuesdays and Fridays; the Parksville News. I walk up to the doors and get exercise that way. I park my scooter on the street and I walk up to the door.
- Mr. Satwatsky, Poor Health

Now he goes outside in his electric chair and usually he will be away anywhere from an hour to two hours, probably traveling 5 to 6 miles. He goes visiting, he has many friends and he brings home care packages.
- Mr. Derksen, Poor Health (Caregiver Response)

The previous narratives show that some stroke survivors find transportation aids are useful to maintain some sense of independence however, in these cases, this liberation does not influence their health. It is useful to recall Reid’s (2004) research findings that some mobility aids, such as wheelchairs, can actually restrict the mobility of stroke survivors.
6.2.2 POST-STROKE ACTIVITIES: A LONGER VIEW

6.2.2.1 SOCIAL ENGAGEMENTS AND CONNECTIONS

While most of the activities a stroke survivor engages in are restricted, in some cases the stroke has resulted in individuals becoming more involved in social and leisure activities. In the following narrative, the stroke survivor discusses how they have more time to socialize since the stroke.

I think I have more of a social life now than I had before my stroke. Because when I was working I did not have much of a social life I was just working and played a lot of tennis and tennis is not really a social thing it is just bang, bang hit the old ball. The stroke affects some people’s ability to socialize. It affects their mental capacity and they don’t want to do it. Now other people, like it affected me the other way, like I am more socially polite than I was before. Some people are not like that.

- Mr. Morgan, Good Health

This narrative reinforces how stroke can influence social participation and how being a part of a social network can result in a higher sense of well-being and further diminish the effects of stroke related disabilities.

A. THE BENEFITS OF SUPPORT GROUPS

The positive influence of social supports and social networks have been found to be associated with a higher quality of life (Wyller et al., 1998, Glass et al., 1993, Kim et al., 1999, King, 1996) for older persons and tend to moderate the effects of disability on well-being. The narratives highlight the benefits of being in social groups for people in either good or poor health. These stroke survivors describe how they feel comfortable with their stroke-related disabilities in certain social group settings.
Now we depend on the church for a lot of it because they are quite forgiving and they realize that I cannot prance around like I used to.
- Mr. Friesen, Poor Health

We have a cartoon in our stroke recovery group that tells the embarrassing stories that have happened to us.
- Mr. Satwatsky, Poor Health

A lot of people go the stroke recovery group for the social part. They feel comfortable with people with similar difficulties.
- Ms. Strong, Poor Health (Caregiver Response)

Focusing on the Stroke Recovery Group it seems that self-reported health of the stroke survivor can be linked to what they say they gain from being a part of this group. Those with poorer health highlight the support group as beneficial for maintaining social interaction.

The only friendships we have are those in the stroke group.
- Mr. Koop, Poor Health

We have friends because we belong to the stroke club.
- Mr. Derksen, Poor Health

In the next excerpts those with positive self-reported health perceptions tend to emphasize the health services provided by the support group. In these two cases, the stroke survivors highlight the therapy available.

Speech therapy is just one of the benefits of our stroke group.
- Ms. Harder, Good Health

I go to physiotherapy once a week at the stroke recovery club. They have a physiotherapist from the Gorge. It is quite good.
- Ms. Ryan, Good Health

This caregiver mentions the therapy and the services provided to the caregivers.

Going up to the stroke club, what we are doing now, and it’s sort of a slow process but they go in there and do a half hour of exercises and then I join the caretakers. After the exercises we have lunch she goes and sees the therapist.
- Ms. Neufeldt, Good Health (Caregiver Response)
6.3 DISCUSSION

Through a careful examination of the personal narratives additional insight is provided into understanding the ways that stroke survivors and their caregivers work to overcome some of the geographic and social barriers in their life spaces. These barriers are found both inside and outside the home and they shape the activity space by restricting when a stroke survivor may go out and when and how often they go. Additionally, by relating these qualitative data to health status revealed more clearly how, people in this case study with poor self-reported health seem to negotiate their activity spaces differently from those with good self-reported health. For example, it seems that those with poor self-reported health struggle with obstacles (e.g., rugs, washrooms) while those with good self-reported health overcome obstacles more easily.

The first section of this chapter focused on the ‘spaces’ of stroke survivors. First, home environments were examined by looking at modifications made to the home and trying to determine if the self-reported health of the stroke survivor influenced these modifications. It appears that stroke survivors with both good and poor health have made home modifications. The narratives also reveal that self-reported health does not seem to influence their decision to move to a new home, since stroke survivors from both health groups reported doing so if necessary. But, it is important to note that those with poor health talked about moving into a house “so he could get around in that chair” or “because the house had wide doors” while the stroke survivor with good health talked about “building a house that would be an accessible home”. Focusing on actual obstacles in the home, stroke survivors from both health groups expressed experiencing obstacles (e.g., stairs, furniture).
One finding shared by one of the participants with good health, that is absent from
the literature, is that becoming dependent on modifications in the home may result in
greater difficulties when negotiating obstacles outside the home. This seems to be a point
to consider when making extensive modifications to a home. Although it seems to be a
very one-sided and perhaps an extreme view, keeping all of these points in mind, it can
be concluded that most stroke survivors make some sort of housing modification despite
their health status to accommodate their post-stroke abilities. However, it seems that
those with good health tend to take better control of their housing environments as
illustrated by overcoming obstacles through customizing their homes to suit their own
individual needs and by getting accustomed to the obstacles, as opposed to removing
them.

The majority of the obstacles identified in the narratives were found outside the
home (e.g., stairs, elevators and restaurant accommodations). It can be concluded that
those who struggle with obstacles decline to participate in certain activities and therefore
would have a more restricted activity space than those who overcome obstacles. The
reduced activity space of the individual can be tied to their approach to these washrooms.
This was illustrated by the two cases of Koop and Ryan’s who both discussed
inaccessible public washrooms. The Koops claim that there are not enough public
washroom facilities in their community of Qualicum Beach which may cause them to
stay home, while Ms. Ryan discussed how she chooses where she will go in Victoria
based on the availability, or lack of, of a public washroom. Therefore, it can be concluded
that the availability of public amenities, such as accessible washrooms, can enhance or
restrict a stroke survivors’ activity space. Overall, the narratives have provided insight
into the struggles and the accomplishments of stroke survivor groups in relation to their navigation of home and community spaces.

The second section focuses on the activities of stroke survivors. First, the narratives revealed reflections on the implications of the loss of personal ability. It was found that those with poor self-reported health tend to focus on the activities that they can no longer engage in, while those with good health were more likely to discuss the gained activities. Three themes linked to poor health were the inability to participate in social groups, losing friends and losing the ability to drive. Focusing on their personal gains, those with good health talked about having more time to socialize since their stroke.

Secondly, mobility was examined. Again, it was found that for some with poor health, losing the ability to drive restricted their engagements. Even mobility aids such as scooters seemed to have little influence on certain stroke survivors with poor health. The final theme which emerged from the narrative analysis is the benefits of support groups. Those with poor health discussed how church and the stroke recovery group provided places where they feel comfortable and understood with their stroke-related disabilities.

An important sub-theme in this section is the Stroke Recovery Group itself. Those with poor health highlight the Stroke Recovery Group as a means of maintaining social connections, while those with good health, highlight the health enhancing therapy sessions available for stroke survivors and caregivers.
**Chapter 7 – Conclusions**

The purpose of this chapter is to summarize the main findings of this research project as well as discuss its limitations and directions for future research. The original objective of this research was to gain an understanding of the link between activity space and the well-being of stroke survivors living in two geographical communities. These objectives were attained by using a multi-method approach which includes a secondary spatial analysis to illustrate the complexities and diversities of everyday life and qualitative data to provide insight into these activity spaces and experiences. In this chapter, the main results are presented followed by a brief discussion of some research limitations. The chapter concludes by exploring future directions.

### 7.1 USEFULNESS OF THE SAMPLE, RESEARCH DESIGN, ACTIVITY SPACE AND NARRATIVES

The sample selected for this research is representative of the national stroke survivor population (i.e. being represented by more males than females). The profile chapter provided key insights into the demographics of the sample. The narratives highlighted personal stroke experiences and the different impacts that stroke can have on individual’s lives.

The shortest path network, a GIS method, successfully measured the activity spaces for each of the stroke survivors in this research. Initially, after dichotomizing the stroke survivors into categories based upon good and poor self-rated health it was found that activity spaces are larger for stroke survivor’s with poor health compared to those...
with good health regardless of the community. This observation is best explained by the fact that those with poor health must travel farther, in general, for certain health services (e.g., the hospital) compared to those in good health. Therefore, by examining the regular activities of day-to-day life that make up the activity space of individual stroke survivors, it was possible to see if this trend (those with poor health have larger activity spaces than those with good health) was consistent. Examining the specific activity space dimensions (e.g., health service space, social space etc.) further supported these findings however exceptions emerged. For example, in Oceanside a few stroke survivors with good health have a slightly larger social activity space than those with poor health. This would be expected since those with good health would be able to travel further for social activities.

To gain an understanding of individual activity spaces, a map of each participant’s activity space was created but only some were featured in Chapter 5; the remainder were placed in Appendix D. The individual activity spaces are compared with the average activity space for those in the same community, and for those in the same health status category. The spatial analysis also incorporated time by examining how often each participant engages in various activities (e.g., health activities, social visits). This level of analysis reveals that there are some exceptions to the preliminary findings, and that not all stroke survivors with poor health have large activity spaces and vice versa. In an attempt to examine this relationship further, contradictory cases were selected. Specifically, these cases featured stroke survivors who had poor health and small activity spaces, and stroke survivors with good health and large activity spaces. Such results serve to highlight the individuality of the participants. The frequency of activity charts, also support the findings that that those with good health engage in
activities more frequent than those in poor health as expected, although there are exceptions here as well. For example, one man with poor health engaged in daily activities across the spectrum, however it is noted that he goes to visit friends on a daily basis.

The qualitative analyses reveal how the perceptions of health for a stroke survivor have an influence on an individual’s activity space. Firstly, looking at the activity space of stroke survivors, the vast majority of stroke survivors make home modifications and face obstacles within and outside the home, regardless of their health status. This analysis highlights how the health of the stroke survivor has an influence on the activity space experience which can be best understood with reference to other characteristics of stroke survivors that emerged into the qualitative analysis. For example, some stroke survivors discussed their need to find a new home after their stroke to suit their specific individual needs. It was noted that a stroke survivor with good health is better able to take control of their environment (e.g., Mr. Jantzen who was building his house to suit his needs; Mrs. Harder adapting to her environment) by comparing those with poor health who seem to settle for basic modifications (e.g., Mr. Sawatsky bought his new house because it had wide doors, while Ms. Dyck removed her scatter rugs). To illustrate, the narratives suggest that those with poorer health tend to focus on lost abilities, while those with good health tend to focus on the future and the personal gains they have made.

7.2 ADDRESSING THE RESEARCH OBJECTIVES

This research contributes to a greater understanding of the day-to-day experiences of stroke survivors in two types of geographical communities, Oceanside and Victoria.
Not surprisingly, one of the differences, which the activity space maps illustrate, is the health service environment. In Oceanside, the nearest hospital is approximately 35 kilometres away. This distance has an influence on stroke survivors since they would be forced to travel to the hospital for care, compared to those living in Victoria where the hospital services are more readily available and in closer proximity. Another difference between the communities is the structure of the local Stroke Recovery Groups. As described in Chapter 3, the Stroke Recovery Group in Oceanside is much more community-oriented and offers services more freely to stroke survivors (e.g., no restriction on the type of therapy available). On the other hand, the Stroke Recovery Group in Victoria has adapted a business-like structure, has a waiting list, and restrictions on the services available to each individual. One might expect Oceanside to have the waitlist, since the health service environment is more limited in terms of range and scope of available hospital and other health related services. But, it is known from interviews with the Stroke Recovery Group coordinator that there are more stroke survivors living in Victoria without community support such as the Stroke Recovery Group, compared to Oceanside.

The second objective of this research was to explore and apply the concept of activity space to determine if it is helpful in understanding the linkages between daily activities and well-being for stroke survivors. To address this objective, a geomatics method featuring spatial data analysis, was used to measure the activity spaces of individuals. The calculated distances for the activity spaces in conjunction with frequency of activity charts pointed to a link between well-being and daily activity patterns. For the most part, those with poor health have greater activity spaces than those with good health.
Using qualitative data as a complementary method to the spatial analysis provided insight into the activity spaces and the day-to-day experiences of stroke survivors.

7.2.2 LIMITATIONS

This research project does not aim to infer causality given that the project is more qualitative in nature, and the sample size is small (n =21) and purposive. The cause, which here is the stroke, does not necessarily chronologically precede the effect, which could be either well-being or activity space. It is difficult to conclude how activity space and well-being have changed since it is unclear what the activity space was before the stroke. In addition, there are many other factors, such as personality, lifestyle or level of disability that may influence the relationship between well-being and activity space.

These results are not generalizable to all stroke survivors. On the one hand, the findings are specific to Vancouver Island. Stroke survivors here tend to be less restricted by climatic factors such as snow and ice. British Columbia is also a desirable retirement location for numerous elderly migrants from other Canadian provinces and this population influx may result in both a population and a service environments unlike others in Canada. On the other hand, it seems highly plausible that many of the findings do have broader applicability for stroke survivors in other settings. For example, stroke survivors are in general likely to experience mobility obstacles, due to inaccessible washrooms and furniture. Nonetheless, the generalizability of this research could be improved by increasing the sample size and distribution to other settings, such as places characterized by different environmental and social restrictions.
Additionally, many issues arise with the interview process. For example, there are always questions that emerge as the interviewing proceeds suggesting a need to modify the questionnaire after the first two interviews, but this would have disrupted the consistency and the comparability of the interviews. It was difficult to pilot test a questionnaire for this project, because the sample was small to begin with. With a larger sample, piloting the questionnaire would have addressed problems with a few questions (e.g., the income brackets were too broad to facilitate any conclusions based on income). Since the questionnaire was adapted from a previous study on Multiple Sclerosis, some questions only applied to those experiencing that particular chronic illness (e.g., stroke survivors with paralysis rarely use walkers). Also, since this is partly a qualitative case study, multiple and maybe longer, interviews would also have been meaningful to develop a fuller understanding of individual’s experiences.

One particularly challenging facet of interviewing stroke survivors is that caregivers are often needed to speak for stroke survivors (i.e., provide their voice and thereby filter the stroke survivor’s experience). This means that the stroke survivor’s experiences may not be truly captured except by proxy. Furthermore, in some cases, where the stroke survivor had a cognitive impairment, it was difficult to differentiate between the activity space of the stroke survivor and the caregiver. For example, a caregiver may discuss their activity space more than the actual activity space of the stroke survivor.

Another important aspect to consider in this research is the individual personalities of the participants. It is difficult to reach conclusions on what factors influence a person’s activity space, since prior to the stroke each person had their own
life experiences, personalities, and responsibilities that would influence their spatial behaviour. Thus, in an ideal laboratory, a research design that allowed pre-stroke and post-stroke data to be captured would be enormously helpful.

Regarding the geomatics analysis, the shortest path network is an effective tool used to measure activity spaces of stroke survivors, but it has some limitations. For example, some of the addresses were not specific enough to gather postal code information. In another example, in describing the social spaces of individuals, a person may say they visit a friend that lives on “Spruce Road” which may have a variety of postal codes associated with it. Therefore, where such uncertainty arose, these data were omitted. Fortunately this occurred only once in this study. Additionally, if the stroke survivors gave information about visiting friends in Vancouver or another province, this information was omitted since these addresses were not in the street network file used to calculate the distances. In a small case study, omitting such data (e.g., three postal codes) is a small issue since the essence of space is developed by using other data. Also, if stroke survivors visited their neighbours, or anyone in the same postal code, this value could not be recorded due to software restrictions (e.g. the same origin or same destination). Furthermore, due to map limitations distances to such places as parks and beaches were not included in the analysis since they do not have postal address information. This is a key restriction of this research method. However, at this point in time there is no geomatics method available to take such considerations into account.

Another limitation to consider in this analysis is that not all the services used by stroke survivors were represented fully in the analysis. For example, other health services, such as dentists or chiropractors were not included in the questionnaire. In
addition, some activities have become obsolete with the availability of services (such as prescription and grocery delivery) and technology (such as on-line banking) which would decrease an individual’s activity space, but potentially increase their well-being particularly for those with severe disability.

7.3 DIRECTIONS FOR FUTURE RESEARCH

Activity space is a geographical concept that is useful in investigating the range of activities and the well-being of persons experiencing stroke and may also be fruitful to explore other chronic illnesses. For example, mapping the activity space of persons suffering from mental illness may be very revealing (e.g., schizophrenia, depression etc.). But it should be recognized that there are several factors that influence an individual’s activity space that highlight the importance of using a multi-method approach (i.e., combining quantitative and qualitative results) to enrich such an investigation. As previously discussed, an individual’s personality also influences their spatial behaviour in ways that may outweigh the influence of a disease, making it important to take personality and behavioural factors into account. It could also be that a person who lives in a particular neighbourhood that has all of life’s amenities in close proximity may influence the size of their activity space more than the illness itself (i.e. the environment may have a greater effect than the illness).

One of the limitations mentioned earlier, in Chapter 3 and 6 was that pre-stroke activity spaces are not considered. It would be interesting if it were possible to determine if activity space actually changed before and after a stroke, (i.e., does the person retain the same spatial behaviour?). Fortunately, answers to some of these questions were captured in personal interviews. The only evidence of change in this research is
highlighted by the narratives (e.g., I used to drive before my stroke). In this sense, people reflected on their past experiences. It would also be interesting to research the same sample of individuals in five years time to see if their activity spaces have changed and to determine why and how.

Nevertheless, this research has addressed some of the key relationships between activity space and other factors such as age, income, personal mobility, transportation, obstacles, mobility aids, time since their last stroke, other co-morbidities and social group involvement. But ultimately, other work is necessary.

The findings of this geographic case study research not only contribute to disability and stroke-related research, but may also help to inspire researchers to seek new perspectives and techniques regarding the complex relationship between activity space and well-being. This work is also important for researchers, health practitioners and stroke survivors and their families to think more carefully and fully about how their activity space relate to the promotion of health and well-being.

Finally, the findings from this research have policy implications that could be applied to planning a provincial stroke strategy. For example, public washroom design should consider washrooms with “ambidextrous” features such as having rails and paper holders that could be placed on both sides of a washroom stall. Another policy implication would be to provide hospital information that clearly explains the stroke terminology in lay terms so that people who experience stroke can understand their illness medically.

In this case study, human experience is directly illustrated by using qualitative data in conjunction with spatial data techniques. Together, these methods result in a more
rounded and enriched analysis of the everyday experiences of stroke survivors. In future, it would be useful to conduct this research with a larger sample and to focus on pre-stroke life. Another possibility is to re-visit the participants (i.e., do multiple interviews) and take their illustrated activity maps to them as a point of further discussion. For example, it could be that the visual map would spur further discussion about places that are not captured by the questionnaire, and that having the map in front of them may present the chance to reflect, discuss or expand upon their illustrated spatial behaviours. To conclude, these results indicate the utility of a unique, multi-method approach to enhance the understanding of the activity spaces of stroke survivors. Such methods may also be usefully extended to the study of other chronic illnesses.
References


STATISTICS CANADA, 2005B. Geographic Units: Census Metropolitan Area (CMA) and Census Agglomeration (CA) Web Page: [http://www12.statcan.ca/english/census01/Products/Reference/dict/geo009.htm](http://www12.statcan.ca/english/census01/Products/Reference/dict/geo009.htm).


APPENDIX A

Activity Spaces & Well-Being – Questionnaire

A Project of the Centre on Aging/University of Victoria

YOUR COMMUNITY

General Instructions: Please circle the number for the correct response and return this questionnaire in the stamped self-addressed envelope that is attached.

Q1: Which community do you live in?

1 Victoria
2 Other (please specify)_________________________________________

Q2: What is your gender?

1 Male
2 Female

Q3: How long have you lived in your present community? _________________ (years)

Q4: Whom do you live with?

1 I live alone
2 With a spouse
3 With a family member or other relative
4 With a friend
8 Other_____________________________________________________

Q5: How do you usually get to places from your home (Circle all that apply)

1 Walk
2 Car
3 Bus
4 Taxi

Q6: If you have lived in the community less than 10 years, where did you come from? (Please indicate the city, town, province and the length of time you lived there)

Place:____________________ Length of time:_________________
Q7: Are you planning to move to another community in the next five years?

1 Yes
2 No

Q8: What factor(s) may influence you to move? (Circle all that apply)

1 To be closer to family
2 To be closer to friends
3 To be closer to services such as hospitals
4 To be closer to services such as a family doctor
5 House is too big
8 Other (please specify)_________________________

YOUR HEALTH

Q9: In general, would you say your health is:

1 Excellent
2 Very Good
3 Good
4 Fair
5 Poor

Q10: How many strokes have you had? ___________________________

Q11: When was your last stroke?

1 Less than a year ago
2 1 – 2 years
3 2 – 5 years
4 More than 5 years ago

Q12: Did you suffer from any of the following diseases in the past year? (Circle all that apply)

1 Heart Problems
2 High Blood Pressure
3 Stroke
4 Cancer
5 Respiratory Aliments
6 Stomach or Digestive Problems
7 Bowel or Urinary Problems
8 Arthritis or rheumatism
9 Diabetes
10 Osteoporosis
11 Orthopedic problem or injury
12 Eye Problems (not corrected by glasses)
13 Hearing Problems
14 Skin Problems
15 Parkinson’s Disease
16 Alzheimer’s Disease
17 Other serious memory problems
18 Mental or emotional distress
19 Drinking problem
99 Other (specify)_________________________
Q13: Does your stroke affect your everyday living?

1  Yes  2  No

Q14: If you were to become ill for a week who would take care of you?

1  Spouse  2  Friend  3  Family Member  4  Neighbor  5  Volunteer Group  6  Community Agency

YOUR THOUGHTS

Q15: Describe the quality of health care in your community:

1 Excellent  2 Very good  3 Good  4 Fair  5 Poor

Q16: Do you think that the quality of health care in your community has changed in the past year?

1  Yes  2  No

Q16(b): If yes, what changes have you noticed in health care in your community?
Q17: Which health care services, if any, do you feel you need that are not available in your community?

Thank you for filling out this questionnaire. Would you like to participate in the next phase of our project?

1 Yes, I would like to participate
2 No thank you, I am unable to participate at this time

If yes, we hope to conduct another interview with you in your home, or in another location that you specify, at a time that is convenient for you. We hope to conduct these interviews between (dates). If you are interested in participating in the interviews please fill out your name, telephone number and preferred date in the space provided below.

Again, thank you so much for your time.

Name: Postal Address:
Tel: Preferred Interview Date:
Activity Spaces and Well-Being of Stroke Survivors
Interview Questionnaire Survey Form

I: Personal Information

1. Respondent Name: ____________________
2. Age: ________
4. Marital Status:
   a. single
   b. married
   c. divorced
   d.widowed
   e. separated
   If yes, how many? _______________
6. Nationality: ________________
7. Occupation: __________________
8. Level of Education: ________________
9. Household Income:
   a. less than $10,000
   b. Between $10,000 – $24,999
   c. Between $25,000 – $54,999
   d. above $55,000
10. Who are your caregivers?

<table>
<thead>
<tr>
<th>Family</th>
<th>Non-Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Spouse</td>
<td>a. Professional (Nurse)</td>
</tr>
<tr>
<td>b. Son, daughter</td>
<td>b. Social Worker</td>
</tr>
<tr>
<td>c. Relative</td>
<td>c. Friend</td>
</tr>
<tr>
<td>d. Other</td>
<td>d. Volunteer</td>
</tr>
<tr>
<td></td>
<td>e. Other (hired)</td>
</tr>
</tbody>
</table>
II: Disease Related Information – Stroke History

11(a). Have you ever experienced a stroke? Yes No

11(b). If so, when? ___________ (month/year)

11(c). What type(s) of stroke did you experience? (circle all that apply)
   a. Ischemic stroke
   b. Hemorrhagic stroke
   c. Other ___________
   d. Don’t know

12. Have you experienced a second or recurrent stroke? Yes No

12(b). If so how soon after your first stroke?
   a. within 30 days of stroke
   b. between one month and one year
   c. between one and two years
   d. greater than two years

III: Impact of the Disease on Physical Activity / Mobility at Different Scales

Negotiating Domestic Space
1.1 Do you need any assistance with: If yes, what type?

   a. Walking Yes No _________________
   b. Climbing stairs Yes No _________________

1.2 How do you undertake the following?

   For researcher: Independently (I); With Assistance (WA); or Do Not Perform (N); If WA, nature (i.e. relationship) of enabler.

<table>
<thead>
<tr>
<th>Type of Activity</th>
<th>Independently (I)</th>
<th>With Assistance (WA)</th>
<th>Enabler</th>
<th>Do Not Perform</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Cooking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Laundry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Cleaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Self care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Gardening</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Household repairs/maintenance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Regard Housing

<table>
<thead>
<tr>
<th>Independently (I)</th>
<th>With Assistance (WA)</th>
<th>Enabler</th>
<th>Do Not Perform</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Activities on the same floor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. On the upper or lower floor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Activity in the yard</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## NEGOTIATING NON-DOMESTIC SPACE

### 2.1 Where do you go for the following health and health related services?  

<table>
<thead>
<tr>
<th>Address</th>
<th>How frequently do you visit?</th>
<th>How do you travel?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Primary physician</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Pharmacist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Therapist (physio)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Therapist (speech)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Optometrist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Emergency Care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2.2 Where do you go for your banking, postal and other services?  

<table>
<thead>
<tr>
<th>Address</th>
<th>How frequently you travel?</th>
<th>How do you travel?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Banking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Post office</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2.3 Where do you go for local recreation?  

<table>
<thead>
<tr>
<th>Address</th>
<th>How frequently do you visit?</th>
<th>How do you travel?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Theatre/movies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Library</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Mall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Swimming/Sports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Restaurant/bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.4 Where do you go most frequently for shopping?

<table>
<thead>
<tr>
<th>Address</th>
<th>How frequently do you visit?</th>
<th>How do you travel?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Convenience store</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Supermarket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Shopping mall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Hairdresser/Barber</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.5 Where do you go for your social visits?

<table>
<thead>
<tr>
<th>Address</th>
<th>How frequently do you visit?</th>
<th>How do you travel?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Relative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Friends</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Support Groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Religious Activity (place of worship)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Clubs/Organizations</td>
<td>a.</td>
<td>b.</td>
</tr>
</tbody>
</table>

IV: Impact of Stroke

1. How did Stroke affect your economic situation?
   - a. change of employment? Yes No _________________
   - b. loss of employment? Yes No _________________
   - c. change of residence? Yes No _________________

2. How did stroke affect your social situation?
   - a. Are there any activities you cannot do because of your stroke? _______________________________
b. Are there any new activities or roles you have undertaken because of your stroke? (volunteer?)

V: Obstacles to Mobility

<table>
<thead>
<tr>
<th>Obstacles</th>
<th>In Home</th>
<th>Outside: Where?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Placement of furniture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Presence of stairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Curbs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Steep slopes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Narrow doors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. carpeting/ rugs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. inaccessible door handles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. lack of rails</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. lack of signs/symbols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. lack of benches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>k. lack of space for maneuvering wheelchair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>l. Lack of parking spaces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>m. lack of accessible restrooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n. lack of ramps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o. lack of lifts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p. lack of elevators</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. How does the weather affect your mobility?
   a. Rain/Snow_____________________
   b. Heat/Cold_____________________

VI: Overcoming Obstacles to Mobility

<table>
<thead>
<tr>
<th>Personal Aids</th>
<th>In Home</th>
<th>Outside Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Glasses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Cane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Orthotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Braces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Crutches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Prosthetics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Walker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Wheelchair (manual)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Three wheeler scooter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B: What structures aid your mobility?

<table>
<thead>
<tr>
<th>a. placement of furniture</th>
<th>g. elevators</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. skid resistant floor for stairs and ramps</td>
<td>h. accessible door handles</td>
</tr>
<tr>
<td>c. grab bars</td>
<td>i. rails</td>
</tr>
<tr>
<td>d. wide doors</td>
<td>j. benches</td>
</tr>
<tr>
<td>e. ramps</td>
<td>k. lifts</td>
</tr>
<tr>
<td>f. sidewalks</td>
<td>l. other</td>
</tr>
</tbody>
</table>

Other comments/things you would like to add?

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________
Introduction

“Activity Spaces and Well-Being” is a research project within a larger study called “Home Sweet Home: Experiences of Place for Retirement Populations on Vancouver Island.” This study will explore activity patterns of persons who have experienced a stroke and their caregivers in two rural and an urban site on Vancouver Island, British Columbia – Qualicum Beach, Parksville and Victoria.

The research will examine the patterns of stroke and cardiovascular disease on Vancouver Island and aims to understand the weekly and monthly activity patterns of people affected by stroke. We will focus on activities people participate in, healthcare accessibility and the resources needed to maintain a good quality of life.

Focus and Aim of the Project

To learn more about the day-to-day activities of stroke persons and their caregivers a questionnaire survey will be followed up by in-depth interviews. A data analysis will also be conducted to look at variations in cardiovascular in British Columbia.

On (date) questionnaires will be administered at your Stroke Recovery Group meeting to all persons interested in participating. The questionnaire can be filled out at the convenience of the participant and mailed back to the Centre on Aging in the stamped self-addressed envelope that is provided. At the end of the survey, we will ask individuals if they would like to participate in a second interview that can be arranged at a convenient time for the participant. We hope to conduct these interviews between (dates). The interviews will investigate the experiences of persons affected by stroke. We will use maps to illustrate routes throughout the community, identify meeting places and important facilities.

The Research Team

The research team includes, myself, Jodi Sturge, as Project Coordinator, Dr. Denise Cloutier-Fisher, Centre on Aging as Principal Investigator and Dr. Patricia Mackenzie, School of Social Work as Co-investigator on this study. I am a graduate student at the Centre on Aging /Department of Geography at the University of Victoria and this is my Master of Sciences research project. I am looking forward to beginning my work on this exciting project and hope you will agree to participate.

For further information please feel free to contact:

Jodi Sturge, Project Coordinator, Centre on Aging, UVIC  
Dr. Denise Cloutier-Fisher, Principal Investigator, Centre on Aging, UVIC  
Dr. Howard Brunt, Vice-President of Research, University of Victoria
APPENDIX D

OCEANSIDE

1. Activity Space of Ms. Dyck – Poor Health

Ms. Dyck is a 73 year old woman who lives alone in Parksville while her husband, who is also a stroke survivor, is institutionalized in Parksville. At the time of the interview, she had had a stroke two years ago. She is able to walk with a cane and relies on public transportation and friends to get around.

FIGURE 1A: THE ACTIVITY SPACE MAP OF MS. DYCK

The activity space map for Ms. Dyck, shows that the majority of her activities take place in Parksville. Apart from that, she goes to the shopping mall or a restaurant in Qualicum Beach and has traveled to Nanaimo to the hospital in the past year.
Ms. Dyck’s total activity space (100.21 km) is larger than the average activity space size (90.76 km), but slightly smaller than the average activity space size of others like her with poor self-reported health (102.89 km). She has a greater goods and recreation activity dimension (40.08 km) than the average community sample distance (33.00 km) but a lower than the average distance calculated for those with poor health (44.20 km). Ms. Dyck has a small social activity dimension (3.39 km) compared to the average for the community sample (10.79 km) and for those with poor self-reported health (9.35 km).

**TABLE 1:** MS. DYCK’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND POOR HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Dyck’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Poor Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>53.45</td>
<td>44.53</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>3.28</td>
<td>4.81</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>40.08</td>
<td>44.20</td>
<td>33.00</td>
</tr>
<tr>
<td>Social Activities</td>
<td>3.39</td>
<td>9.35</td>
<td>10.79</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.21</strong></td>
<td><strong>102.89</strong></td>
<td><strong>90.76</strong></td>
</tr>
</tbody>
</table>

Ms. Dyck’s frequency of activities chart (Fig.1b) shows that the most regular activity she engages in is physiotherapy which she goes for on a daily basis and visits friends more than once a week.

**Figure 1b:** Ms. Dyck’s Frequency of Activity Chart
2. Activity Space of Mr. Epp – Poor Health

Mr. Epp is a 79 year old male who lives in Parksville with his wife. Mr. Epp experienced his stroke more than five years prior to the interview and remains in a wheelchair. He relies on his wife for help with his day-to-day activities.

The activity space maps for Mr. Epp show that he lives in Parksville and has few activity nodes. Similar to Derksen and Dyck, Mr. Epp goes to Qualicum Beach for restaurants and had been to the hospital in Nanaimo in the past year. Mr. Epp also shops at the shopping malls in Nanaimo for recreation.

Mr. Epp’s total activity space size (122.54 km) is large comparable to the average sample activity space size (90.76 km) and average size for those with poor health (102.89 km).
km). He has the smallest financial and communication activity space (1.12 km) and social space (2.59 km) compared to the calculated averages and the entire sample. The greatest difference in averages is seen by examining the goods and recreation space. His goods and recreation service dimension (70.09 km) is the greatest in the total sample since his recreational activities are situated in Nanaimo.

**TABLE 2:** MR. EPP’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND POOR HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Epp’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Poor Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>48.74</td>
<td>44.53</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>1.12</td>
<td>4.81</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>70.09</td>
<td>44.20</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>2.59</td>
<td>9.35</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>122.54</td>
<td>102.89</td>
<td>90.76</td>
</tr>
</tbody>
</table>

The frequency of activities chart (Fig. 2b) shows that Mr. Epp most frequently participates in sport related activities and grocery shopping.

**Figure 2b:** Mr. Epp’s Frequency of Activity Chart
3. Activity Space of Mr. Friesen – Poor Health

Mr. Friesen is an 83 year old male stroke survivor who lives in Parksville. His wife takes care of him at home and drives him to his activities. Since his stroke, three years prior to the interview, Mr. Friesen is able to walk on his own, but uses a wheelchair when he is outside his home.

**FIGURE 3a: THE ACTIVITY SPACE MAP OF MR. FRIESEN**

The activity space map of Mr. Friesen shows that he visits few locations in both Parksville and Qualicum Beach. The activity nodes outside his community in Nanaimo are similar to those in the previous maps due to travel to shopping. Mr. Friesen also visited the hospital in Nanaimo in the past year prior to the interview.
Comparing total activity space, it is noted that Mr. Friesen’s activity space (118.37 km) is greater than the sample average activity space (90.76 km) and greater than those with similar health (102.89 km). His health activity space (48.89 km) is larger than the health activity space for those also with poor health (44.53 km) and health activity space for the Oceanside sample (43.08 km). The greatest difference in distances can be identified by looking at the social space and the financial and communication space.

Comparing financial/communication activity space dimensions, Mr. Friesen has a small activity space (1.8 km) but a greater social space (20.00 km) compared to the calculated averages.

**TABLE 3:** MR. FRIESEN’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND POOR HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Friesen’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Poor Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>48.89</td>
<td>44.53</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>1.8</td>
<td>4.81</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>48.48</td>
<td>44.20</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>20.00</td>
<td>9.35</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>118.37</td>
<td>102.89</td>
<td>90.76</td>
</tr>
</tbody>
</table>

The frequency chart (Figure 3b) shows that Mr. Friesen engages in activities related to his goods and social activities on a weekly basis. Most often, he participates in his social activities such as stroke recovery meetings and church services.

**Figure 3b:** Mr. Friesen’s Frequency of Activity Chart
4. Activity Space of Mr. Green – Good Health

Mr. Green is a 61 year old man who experienced a stroke more than five years before the interview. He lives alone in Parksville and drives himself to his activities. The only mobility aid that he uses, both inside and outside the home, is a cane.

**Figure 4a: The Activity Space Map of Mr. Green**

Mr. Green’s activity space map shows that he lives in Parksville where his activities tend to be concentrated. There is one activity node just outside of Parksville which is where he visits a friend.

Mr. Green’s total activity space size (35.78 km), his health activity space (22.79 km), goods and recreation activity space (4.46 km) and his social space (4.02 km) are
smaller than the average participant in Oceanside sample (90.76 km; 43.08 km; 33.00 km; 10.79 km) and than those with good health in Oceanside (81.65 km; 41.99 km; 24.61 km; 11.88 km). While his financial/communication activity space (4.46 km) is greater than the sample (3.87 km) and the average space for those with good health (3.16 km).

**TABLE 4**: MR. GREEN’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND GOOD HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Mr. Green’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>22.79</td>
<td>41.99</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>4.46</td>
<td>3.16</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>4.51</td>
<td>24.61</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>4.02</td>
<td>11.88</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>35.78</td>
<td>81.65</td>
<td>90.76</td>
</tr>
</tbody>
</table>

The frequency of activity chart (Figure 4b) shows that Mr. Green most frequently travels more than once a week for goods and services and for social reasons.

**Figure 4b**: Mr. Green’s Frequency of Activity Chart
5. **Activity Space of Mrs. Harder – Good Health**

Mrs. Harder is 73 years old and experienced her stroke 30 years ago. Mrs. Harder lives in Qualicum Beach with a husband who drives her to all her activities. Aside from orthotics in her shoes, she requires no aids to assist her with mobility.

**FIGURE 5a: THE ACTIVITY SPACE MAP OF MRS. HARDER**

The activity map of Mrs. Harder has many activity nodes which indicate that she is a busy woman with lots of places to go. These activity nodes show that the majority of her activities take place in her community while she occasionally goes to Parksville to shop or to visit friends. The nearest hospital for Mrs. Harder is located in Nanaimo which she had visited three months prior to the interview.
The calculated activity space (97.22 km) shows that Mrs. Harder has a greater activity space than those with good health (81.65 km) but a slightly smaller space compared to those who live in Oceanside (90.76 km). Her health activity space (57.68 km) and her financial/communication activity space (6.16 km) are greater than the sample averages (43.08 km; 3.87 km) and the calculated averages for those with good health (41.99 km; 3.16 km). Her goods and services activity space (22.72 km) is slightly smaller compared to the average size space for those with good health (24.61 km) and smaller than the goods and recreation space for the sample (33.00 km).

**TABLE 5: MRS. HARDER’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND GOOD HEALTH ACTIVITY SPACE**

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Harder’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>57.68</td>
<td>41.99</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>6.16</td>
<td>3.16</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>22.72</td>
<td>24.61</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>11.65</td>
<td>11.88</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>97.22</td>
<td>81.65</td>
<td>90.76</td>
</tr>
</tbody>
</table>

The frequency of activities chart (Figure 5b) illustrates that she engages in her activity space on a weekly basis including activities relate to her physical (speech therapy) and mental health.

**Figure 5b:**
Mrs. Harder’s Frequency of Activity Chart
6. Activity Space of Mr. Jantzen—Good Health

Mr. Jantzen is a 61 year old male who experienced his stroke one year ago. He lives in Qualicum Beach with his wife, who is his caregiver. He requires no mobility aids and is able to drive himself to his activities.

![The Activity Space Map of Mr. Jantzen]

The activity space map of Mr. Jantzen shows that the majority of his activities take place within the Oceanside community. Similar to those who live in Qualicum Beach, Mr. Jantzen travels to Parksville to shop or to visit friends.
Compared to the total activity spaces of the Oceanside sample (90.76 km) and those with good health (81.65 km), Mr. Jantzen’s activity space (65.38 km) is smaller. This is the case for his health, goods and recreation and his social space while his financial and communication space (3.94 km) is comparable to those living in Oceanside (3.87 km) and those with good health (3.16 km).

**TABLE 6: MR. JANTZEN’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND GOOD HEALTH ACTIVITY SPACE**

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Jantzen’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>37.19</td>
<td>41.99</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>3.94</td>
<td>3.16</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>18.12</td>
<td>24.61</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>6.13</td>
<td>11.88</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>65.38</td>
<td>81.65</td>
<td>90.76</td>
</tr>
</tbody>
</table>

The frequency of activities chart (Fig. 6b) shows that Mr. Jantzen engages in goods and recreation activities more than once a week when he goes to the grocery store.

**Figure 6b:**
Mr. Jantzen’s Frequency of Activity Chart
7. Activity Space of Mr. Koop—Poor Health

Mr. Koop is a 78 year old man who lives in Qualicum Beach with his wife. Since his stroke occurred, more than five years ago, he relies on his wheelchair as a personal mobility aid while his wife drives him to his activities.

The activity map for Mr. Koop shows the dispersion of the activities he is involved in throughout Oceanside. When it comes time to shop Mr. Koop sometimes travels to the shopping mall in Nanaimo. Mr. Koop had had to visit the hospital in Nanaimo in the past year.
Overall, Mr. Koop has a much larger activity space (177.96 km) than the sample (90.76 km) and those with poor health (102.89 km). Most of the activity dimensions are also greater than the calculated averages. The greatest difference is noted by examining his health activity space (60.35 km) which is much greater than the average health space for those living in Oceanside (43.08 km) and those with poor health (44.53 km). The only activity space that is smaller than the group average is Mr. Koop’s social space which is only 8.00 km.

**Table 7:** Mr. Koop’s Activity Space Compared to the Average Oceanside and Poor Health Activity Space

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Koop’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Poor Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>60.35</td>
<td>44.53</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>5.79</td>
<td>4.81</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>43.81</td>
<td>44.20</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>8.00</td>
<td>9.35</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>117.96</td>
<td>102.89</td>
<td>90.76</td>
</tr>
</tbody>
</table>

The frequency of activities chart (Figure 7b) indicates that Mr. Koop engages in health and goods and services activities on a weekly basis.

**Figure 7b:** Mr. Koop’s Frequency of Activity Chart

1. Health Services
2. Financial/Communication Services
3. Goods/Recreation Activities
4. Social Activities
8. Activity Space of Mr. Murphy – Good Health

Mr. Murphy is a 71 year old man who lives alone in Parksville. Less than a year before the interview, he experienced a stroke that left him with a minor physical disability (slight limp). He uses a cane at home and drives himself to his activities.

**Figure 8a: The Activity Space Map of Mr. Murphy**

Mr. Murphy’s activity space map indicates that Mr. Murphy engages in activities at both Qualicum Beach and Parksville. Around his home in Parksville, Mr. Murphy visits the mall and buys groceries while he goes to Qualicum Beach to lawn bowl, visit friends and dines in restaurants. Mr. Murphy went to the hospital in Nanaimo when he had his stroke.
Mr. Murphy’s activity space (80.86 km) is smaller than the activity spaces of those who live in Oceanside (90.76 km) and slightly smaller compared to those with good health in Oceanside (81.65 km). Mr. Murphy tends to have smaller activity spaces than the comparison groups for all types of activities, the exception of his health and social space. Mr. Murphy’s social space (14.69 km) is larger than the social space of those in his community (10.79 km) and also greater than the average size activity space of those with similar health (11.88 km) while his health space (42.59 km) is comparable to both averages (41.99 km; 43.08 km).

**TABLE 8** Mr. Murphy’s Activity Space Compared to the Average Oceanside and Good Health Activity Space

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Murphy’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>42.59</td>
<td>41.99</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>2.12</td>
<td>3.16</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>21.46</td>
<td>24.61</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>14.69</td>
<td>11.88</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>80.86</td>
<td>81.65</td>
<td>90.76</td>
</tr>
</tbody>
</table>

In the frequency of activities chart (Fig. 8b) we can see that Mr. Murphy most frequently participates in activities such as going to the mall, playing sports and buying groceries.

![Figure 8b: Mr. Murphy’s Frequency of Activity Chart](image-url)
9. **Activity Space of Mrs. Neufeldt—Good Health**

Mrs. Neufeldt is an 81 year old lady who lives with her husband in Parksville. At the time of the interview, Mrs. Neufeldt had experienced a stroke less than a year ago which left her with the inability to walk on her own. Her husband assists her with her day-to-day activities, providing her transportation when required.

![The Activity Space Map of Mrs. Neufeldt](image)

*Figure 9a: The Activity Space Map of Mrs. Neufeldt*

The activity space map for Mrs. Neufeldt’s illustrates that the activities which she engages in are mainly in Parksville, with the exception of trips to Nanaimo for shopping. Mrs. Neufeldt went to the hospital in Nanaimo when she had her stroke.

The activity spaces that are calculated for the total activity space indicate that Mrs. Neufeldt has a slightly larger space (91.15 km) than the compared to those who live...
in Oceanside (90.76 km) but a smaller overall space compared to those with good health (81.65 km). Her health space (47.17 km) is larger than the other health spaces (41.99 km; 43.08 km). The greatest difference is seen when comparing her goods and recreation space (35.77 km) which is larger than that goods and recreation activity space of the others in the sample (33.00 km) and greater than those with good health (24.61 km).

**TABLE 9:** MS. NEUFELDT’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND GOOD HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Neufeldt’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>47.17</td>
<td>41.99</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>2.54</td>
<td>3.16</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>35.77</td>
<td>24.61</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>5.66</td>
<td>11.88</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>91.15</td>
<td>81.65</td>
<td>90.76</td>
</tr>
</tbody>
</table>

The frequency of activities chart (Figure 9b) indicates that Mrs. Neufeldt engages in her activities more than once a week. Her activities include attending to church, visits to the doctor and participating in therapy sessions.

*Figure 9b: Mrs. Neufeldt’s Frequency of Activity Chart*

1. Health Services
2. Financial/Communication Services
3. Goods/Recreation Activities
4. Social Activities
10. **Activity Space of Ms. Schmidt—Good Health**

Ms. Schmidt is a 69 year old woman who lives alone in Parksville. She experienced a stroke three years prior to the interview which had left her dependent on a wheelchair to get around her home. Her friends and family drive her to her activities.

**Figure 10a: The Activity Space Map of Ms. Schmidt**

The activity space map for Ms. Schmidt illustrates that she lives near the stroke recovery group meeting place which may make it easier to get there since she depends on others for transportation. Many of her activities are in Parksville but like many others she goes to Qualicum Beach to the restaurants and to Nanaimo to visit the hospital.
The activity space (62.24 km) for Ms. Schmidt is smaller than the Oceanside average (90.76 km) and smaller than the average size activity space for those with good health (81.65 km). Looking at the dimensions which make up the space, her health activity space (12.62 km) and her financial and communication space (1.17 km) are smaller than the other spaces.). While her social activity space (22.59 km) is twice as large as the average activity space for the total sample (10.79 km) and those with good health (11.88 km).

**TABLE 10: MS. SCHMIDT’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND GOOD HEALTH ACTIVITY SPACE**

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Schmidt’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>12.62</td>
<td>41.99</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>1.17</td>
<td>3.16</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>25.86</td>
<td>24.61</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>22.59</td>
<td>11.88</td>
<td>10.79</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>62.24</strong></td>
<td><strong>81.65</strong></td>
<td><strong>90.76</strong></td>
</tr>
</tbody>
</table>

The frequency of activities chart (Fig.10b) shows that Ms. Schmidt engages in her activities once a week. Her weekly engagements include attending to the Stroke Recovery Group meeting and buying groceries. Aside from those weekly activities once a month she visits her doctor and her friends on a monthly basis.

**Figure 10b:** Ms. Schmidt’s Frequency of Activity Chart
11. *Activity Space of Mr. Shapter– Good Health*

Mr. Shapter is a 77 year old stroke survivor who lives with his wife in Qualicum Beach. Mr. Shapter experienced his stroke four years prior to the interview. His stroke has left him with neglect but he is still able to drive himself to his activities.

**Figure 11 a: The Activity Space Map of Mr. Shapter**

The activity map indicates that Mr. Shapter performs the majority of his activities in his community of Qualicum Beach. He travels to Parksville to visit friends or attend the Stroke Recovery Group. The nearest hospital for Mr. Shapter is in Nanaimo.
The calculated activity space size indicates that Mr. Shapter has a greater activity space (110.23 km) than the community average (90.76 km) and those with good health (81.65 km). Additionally, Mr. Shapter has a greater health activity space (64.03 km) and social space (19.18 km) compared to the other groups. His financial and communication space (2.06 km) is smaller than the other groups while his goods and service space (24.96 km) is comparable to the activity space of those with similar health (24.61 km) but smaller than the average activity space of those who live in Oceanside.

**TABLE 11:** MR. SHAPTER’S ACTIVITY SPACE COMPARED TO THE AVERAGE OCEANSIDE AND GOOD HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Shapter’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Oceanside: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>64.03</td>
<td>41.99</td>
<td>43.08</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>2.06</td>
<td>3.16</td>
<td>3.87</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>24.96</td>
<td>24.61</td>
<td>33.00</td>
</tr>
<tr>
<td>Social</td>
<td>19.18</td>
<td>11.88</td>
<td>10.79</td>
</tr>
<tr>
<td>Total</td>
<td>110.23</td>
<td>81.65</td>
<td>90.76</td>
</tr>
</tbody>
</table>

The frequency of activities chart (Figure 11b) indicates that Mr. Shapter engages his activities on a weekly basis. His weekly activities include going for physiotherapy sessions, groceries shopping and church attendance.

**Figure 11b:**
Mr. Shapter’s Frequency of Activity Chart
12. Activity Space of Mr. Bartlett – Poor Health

Mr. Bartlett is a 74 year old male who lives in Victoria with his wife. The stroke that he experienced more than five years prior to the interview has left him with physical disabilities. He needs the support of wheelchair. Mrs. Bartlett drives him to all of his activities.

The activity space map for Mr. Bartlett indicates that most of his activities occur in Victoria including visiting the hospital on a weekly basis. A single node in the town of Sidney represents visits to a friend.
The calculated activity space sizes show that Mr. Bartlett has a greater overall activity space (105.47 km) compared to the average activity space in Victoria (62.53 km) and compared to those who live in Victoria with poor health (96.61 km). His health activity space (26.41 km) and his goods and recreation space (27.32 km) are both larger than the average activity space in Victoria (18.84 km; 26.05 km) but are smaller compared to the activity space size for those with poor health (30.96 km; 35.26 km).

**TABLE 12: MR. BARTLETT’S ACTIVITY SPACE COMPARED TO THE AVERAGE VICTORIA AND POOR HEALTH ACTIVITY SPACE**

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Bartlett’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Poor Health (km)</th>
<th>Victoria: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>26.41</td>
<td>30.96</td>
<td>18.84</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>5.47</td>
<td>4.50</td>
<td>3.14</td>
</tr>
<tr>
<td>Goods/Recreation</td>
<td>27.32</td>
<td>35.26</td>
<td>26.05</td>
</tr>
<tr>
<td>Social</td>
<td>46.25</td>
<td>25.89</td>
<td>14.50</td>
</tr>
<tr>
<td>Total</td>
<td>105.47</td>
<td>96.61</td>
<td>62.53</td>
</tr>
</tbody>
</table>

The frequency of activities chart (Figure 12b) shows that he engages in activities more than once a week when he buys groceries. Aside from that, his weekly activities include visiting the doctor, going to physiotherapy at the Stroke Recovery Group, dining at restaurants and attending church.

**Figure 12b:**
Mr. Bartlett’s Frequency of Activity Chart
13. Activity Space of Mrs. Critch – Good Health

Mrs. Critch is a 74 year old woman who lives with her husband in Victoria. She experienced a stroke five years prior to the interview which left her with severe aphasia. She is able to take care of herself for the most part, but relies on her husband to drive her to her activities.

**Figure 13a: The Activity Space Map of Mrs. Critch**

The activity space map for Mrs. Critch displays activity nodes to the north of her home and others to the south-west of her home. The nodes in the northwest are social activities and goods and recreation services, the nodes in the south are health services and the nodes nearby the house are financial and communication nodes.
The size of Mrs. Critch’s activity space (42.39 km) is smaller than the average activity space in Victoria (62.53 km) but is bigger than the activity spaces of those with good health (36.98 km). Her health, goods and recreation and social activity spaces (14.72 km; 6.28 km; 19.91 km) are both smaller than the average activity space in Victoria but are bigger compared to the health activity (9.72 km), social (5.97 km) and the goods and recreation (19.14 km) spaces for those with good health.

**TABLE 13:**  MRS. CRITCH’S ACTIVITY SPACE COMPARED TO THE AVERAGE VICTORIA AND GOOD HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Critch’s Activity Space (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Victoria: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>14.72</td>
<td>9.75</td>
<td>18.84</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>1.48</td>
<td>2.12</td>
<td>3.14</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>19.91</td>
<td>19.14</td>
<td>26.05</td>
</tr>
<tr>
<td>Social</td>
<td>6.28</td>
<td>5.97</td>
<td>14.50</td>
</tr>
<tr>
<td>Total</td>
<td>42.39</td>
<td>36.98</td>
<td>62.53</td>
</tr>
</tbody>
</table>

The frequency chart (Figure 13b) shows that Mrs. Critch engages in several weekly activities. During the week she goes to the Stroke Recovery Group to her speech therapy session and buys groceries.

**Figure 13b:**
Mrs. Critch’s Frequency of Activity Chart
14. Activity Space of Mr. Morgan – Good Health

Mr. Morgan is a 70 year old man who lives alone in Victoria. Mr. Morgan experienced his stroke five years before the interview. He is able to get around by himself with a cane and relies on friends, public transportation and the “handyDART” (local transportation for those with disabilities) to get to his activities.

Figure 14a: The Activity Space Map of Mr. Morgan

The activity space map for Mr. Morgan has a pattern similar to others in Victoria. There are several nodes located in the south of his home which represent health related activity nodes while the nodes north of his home are the location of his social activities.
The size of Morgan’s activity space is smaller (23.38 km) than the average activity space size in Victoria (62.53 km) and smaller than the average activity space size for those with good health (36.98 km). This is the case for all of the activity space dimensions. The only comparable activity space is his social space (5.02 km) which is comparable to the social activity space for those with good health (5.97 km).

**TABLE 14:** MR. MORGAN’S ACTIVITY SPACE COMPARED TO THE AVERAGE VICTORIA AND GOOD HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Morgan’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Victoria: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>6.89</td>
<td>9.75</td>
<td>18.84</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>2.25</td>
<td>2.12</td>
<td>3.14</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>9.22</td>
<td>19.14</td>
<td>26.05</td>
</tr>
<tr>
<td>Social</td>
<td>5.02</td>
<td>5.97</td>
<td>14.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23.38</strong></td>
<td><strong>36.98</strong></td>
<td><strong>62.53</strong></td>
</tr>
</tbody>
</table>

In the frequency of activity chart (Figure 14b) we see that Mr. Morgan engages in his activities on a weekly basis. During the week he receives physiotherapy at the Stroke Recovery Group, buys groceries and visits friends.

![Figure 14b: Mr. Morgan’s Frequency of Activity Chart](image-url)
15. Activity Space of Mrs. Rutherford – Good Health

Mrs. Rutherford is one of the oldest participants in this research—she is 87 years old. Her husband takes care of her and drives her to most of her activities but sometimes she walks. She experienced her stroke more than five years before the interview and aside from a slight speech impairment, she has fully recovered.

**FIGURE 15 a : THE ACTIVITY SPACE MAP OF MRS. RUTHERFORD**

The activity space map for Mrs. Rutherford is different than the other maps since she lives in the southern part of the city. The majority of the activities take place in the south while she will go north to see friends.

The size of Mrs. Rutherford’s activity space (35.77 km) is smaller than the average activity space size of the sample (62.53 km) and the space of those with good
health (36.98 km). This is also the case for her health activity space (6.95 km) and her social space (2.82 km). Her financial and communication activity space (3.04 km) and her goods and recreation activity space (22.96 km) are greater than the average size activity space for those in good health (2.12 km; 19.14 km) but smaller than the average activity space size in Victoria (3.14 km; 26.05 km).

**TABLE 15:** MS. RUTHERFORD’S ACTIVITY SPACE COMPARED TO THE AVERAGE VICTORIA AND GOOD HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Rutherford’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Good Health (km)</th>
<th>Victoria: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>6.95</td>
<td>9.75</td>
<td>18.84</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>3.04</td>
<td>2.12</td>
<td>3.14</td>
</tr>
<tr>
<td>Goods and Recreation</td>
<td>22.96</td>
<td>19.14</td>
<td>26.05</td>
</tr>
<tr>
<td>Social</td>
<td>2.82</td>
<td>5.97</td>
<td>14.50</td>
</tr>
<tr>
<td>Total</td>
<td>36.98</td>
<td>36.98</td>
<td>62.53</td>
</tr>
</tbody>
</table>

In the frequency of activities chart (Figure 15b) we can see that Mrs. Rutherford engages in her activities once a week. The activities that she does most often are going to the Stroke Recovery Group for speech therapy and buying groceries.

**Figure 15b:**
Mrs. Rutherford’s Frequency of Activity Chart
16. **Activity Space of Mrs. Strong – Poor Health**

Mrs. Strong is a 72 year old woman who lives with her husband. She experienced a stroke two years before the interview which left her with severe aphasia. She is able to walk around on her own but requires her husband to drive her to her activities.

**FIGURE 16 a: THE ACTIVITY SPACE MAP OF MRS. STRONG**

The activity map for Mrs. Strong shows that the activities that she engages in are dispersed throughout Victoria and Sidney. Unlike the other activity space maps in
Victoria, her activity nodes are dispersed near her home and there are few nodes in the south. Mrs. Critch and Mr. Bartlett are the only Victoria participants who report visiting the hospital in the year prior to the interview.

Mrs. Strong’s calculated activity space size is the greatest of the sample (144.79 km) compared to those living in Victoria and Oceanside. The only activity space that is comparable in Table 5.19 is her social space. Her social space is 25.81 km which is again larger than those who live in Victoria but is comparable to those with poorer health in her community (25.89 km).

**TABLE 16:** MRS. STRONG’S ACTIVITY SPACE COMPARED TO THE AVERAGE VICTORIA AND POOR HEALTH ACTIVITY SPACE

<table>
<thead>
<tr>
<th>Activity Space Dimensions</th>
<th>Strong’s Activity Space Size (km)</th>
<th>Average Activity Space Size for those with Poor Health (km)</th>
<th>Victoria: Average Activity Space Size (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>59.03</td>
<td>30.96</td>
<td>18.84</td>
</tr>
<tr>
<td>Financial/Communication</td>
<td>6.47</td>
<td>4.50</td>
<td>3.14</td>
</tr>
<tr>
<td>Services/Recreation</td>
<td>53.48</td>
<td>35.26</td>
<td>26.05</td>
</tr>
<tr>
<td>Social</td>
<td>25.81</td>
<td>25.89</td>
<td>14.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>144.79</strong></td>
<td><strong>96.61</strong></td>
<td><strong>62.53</strong></td>
</tr>
</tbody>
</table>

In the frequency of activities chart (Figure 16b) we see that Mrs. Strong tends to engage in her activities once a week. During a week she goes to the Stroke Recovery Group for speech therapy, visits the mall, dines at a restaurant and attends church.

**Figure 16b:** Mrs. Strong’s Frequency of Activity Chart
I hereby grant the right to lend my thesis to users of the University of Victoria Library, and to make single copies only for such users or in response to a request from the Library of any other university, or similar institution, on its behalf or for one of its users. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by me or a member of the University designated by me. It is understood that copying or publication of this thesis for financial gain by the University of Victoria shall not be allowed without my written permission.

**Title of Thesis/Dissertation:**

Everyday Geographies of Stroke Survivors: A Case Study Examining the Relationship Between Activity Space, Health and Well-Being

**Author**  
Jodi L. Sturge

**Signature**  
______________________________  
**Dated:**  
_______________________