THE PHYSICAL ACTIVITY AND MOBILITY OF FOREIGN-BORN OLDER ADULTS: A MULTILINGUAL FOCUSED ETHNOGRAPHY

by

Catherine Elisabeth Tong

B.A., The University of Victoria, 2006
M.A., Simon Fraser University, 2009

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Abstract

Introduction: Physical activity (PA), the movement of one’s body, and mobility, moving one’s body through space using a variety of modes, allow older adults to participate in their communities, cultivate social connections, maintain their health, and access services. Segments of the population, however, have been overlooked. While a growing body of research has focused on older adults, we know surprisingly little about the PA and mobility of foreign-born older adults (FBOAs).

Objective: This dissertation uses a focused ethnographic approach to characterize the PA and mobility of 49 visible minority FBOAs in South Vancouver, Canada.

Methods: The research was conducted in Hindi, Punjabi, Cantonese, Mandarin, and English. Forty-nine participants completed surveys about their PA habits; of these 49, 46 wore accelerometers and 18 completed in-depth interviews. I also developed a novel interview tool “interactive interpreted interviews”, neighbourhood walking interviews that included professional interpreters, which 13 participants completed.

Results: Participants’ mean daily step count was 7,876 (women: 8,172; men: 7,164; Chinese: 8,291; South Asian: 7,196). The bulk of their time is spent in light and sedentary activities. Physical activity is principally acquired through walking for errands and work performed in/around the home. Participants walk for physical and mental wellbeing, and have access to a supportive social environment, which includes culturally familiar and linguistically accessible shops and services.

Conclusions: This study challenges the assumption that FBOAs are less active than their non-immigrant peers and confirms the role of “nonexercise” and low activity, rather than moderate to vigorous activity, in older adults’ PA acquisition. Building on the Webber (2010) model of
mobility in older adults, this study also highlights how gender and personal biography, including work history and family context, impact participants’ PA and mobility behaviours.
Lay Summary

Physical activity and the ability to move around and engage with one’s community are vital to the wellbeing of older adults. One-third of older Canadians are foreign-born, yet we know very little about the physical activity habits of this group. I used a combination of step counters, surveys, and interviews, collected in English, Punjabi, Hindi, Cantonese, and Mandarin, to characterise the activity and mobility of 49 foreign-born older adults in Vancouver, Canada. Working with a local seniors’ council and interpreters, we developed a multilingual walking interview tool, allowing us to “see” the neighbourhood through participants’ eyes. Participants are taking an average of 7,800 steps/day. The most common activities are walking for errands and housework. Participants are walking for their wellbeing, performing activities that are culturally familiar, same language, and peer led. Given the right context and supports, participants are obtaining sufficient levels of activity and meaningfully engaging with their communities.
Preface

This dissertation is an original intellectual product of the author, Catherine E. Tong. The research included in this dissertation is derived from my (Catherine E. Tong) involvement in the Active Streets Active People - Foreign Born (ASAP-FB) project (PI, Joanie Sims-Gould). The ASAP-FB research was conducted at the Centre for Hip Health and Mobility (CHHM), a senate-approved research centre of the University of British Columbia, and Vancouver Coastal Health Research Institute (VCHRI) affiliated centre. The ASAP-FB study received approval from the UBC Behavioural Research Ethics Board (H12-01809 for Wave 1, ASAP-FB, and H13-00862 for Wave 2, ASAP-FB - Qualitative).

In the ASAP-FB study, I: served as the primary liaison between the ASAP-FB researchers and our community partners at South Vancouver Neighbourhood House (SVNH); worked with the research team and community partners to determine the research objectives and study design; assisted with the grant application for funding for this project; oversaw recruitment, trained the multilingual data collection team, and led data collection; conceived of and developed the interACTIVE walking interview method that we implemented (Chapter 5); conducted all of the interviews; oversaw data entry and cleaning; conducted the analyses presented in this dissertation, including the qualitative analysis in NVivo and accelerometry analysis in Actilife; and designed knowledge translation materials and coordinated a community forum to share our findings.

The research included in this dissertation has led to two peer-reviewed publications:

Co-author contributions to this publication: As lead author, I conceptualized the manuscript and research design, oversaw recruitment and data collection, conducted the interviews, completed the accelerometry and qualitative analyses, and wrote the manuscript. Sims-Gould, Principal Investigator and supervisory author, oversaw all aspects, including study design and implementation, analysis, writing, and edits. McKay, also a supervisory author, oversaw study concept and design, assisted with the accelerometry analysis, and contributed edits to the final manuscript. My contribution to the writing and research: 90%.


As lead author, I conceptualized the manuscript and research design, oversaw recruitment, conducted the interviews, completed the analysis, and wrote the manuscript. Sims-Gould, Principal Investigator and supervisory author, oversaw all aspects, including study design and implementation, analysis, writing, and edits. McKay, also a supervisory author, oversaw study concept and design, and contributed edits to the final manuscript. My contribution to the writing and research: 90%.
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<th>Description</th>
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<tbody>
<tr>
<td>ASAP-FB</td>
<td>Active street Active people - foreign-born</td>
</tr>
<tr>
<td>BMI</td>
<td>Body mass index</td>
</tr>
<tr>
<td>CALD</td>
<td>Culturally and linguistically diverse</td>
</tr>
<tr>
<td>CCHS</td>
<td>Canadian Community Health Survey</td>
</tr>
<tr>
<td>CHHM</td>
<td>Centre for Hip Health &amp; Mobility</td>
</tr>
<tr>
<td>CIHI</td>
<td>Canadian Institute for Health Information</td>
</tr>
<tr>
<td>CIHR</td>
<td>Canadian Institutes for Health Research</td>
</tr>
<tr>
<td>CMAs</td>
<td>Census metropolitan areas</td>
</tr>
<tr>
<td>CORE</td>
<td>Course on research ethics</td>
</tr>
<tr>
<td>CPM</td>
<td>Counts per minute</td>
</tr>
<tr>
<td>FBOAs</td>
<td>Foreign-born older adults (in my work FBOAs refers to foreign-born older adults who are also visible minorities)</td>
</tr>
<tr>
<td>FBVM</td>
<td>Foreign-born visible minority</td>
</tr>
<tr>
<td>FCI</td>
<td>Functional co-morbidities index</td>
</tr>
<tr>
<td>GIS</td>
<td>Guaranteed income supplement</td>
</tr>
<tr>
<td>GPS</td>
<td>Global positioning systems</td>
</tr>
<tr>
<td>IADL</td>
<td>Instrumental activities of daily living</td>
</tr>
<tr>
<td>LSIC</td>
<td>Longitudinal study of immigrants to Canada</td>
</tr>
<tr>
<td>MVPA</td>
<td>Moderate to vigorous physical activity</td>
</tr>
<tr>
<td>NHANES</td>
<td>National health and nutrition examination survey</td>
</tr>
<tr>
<td>NPHS</td>
<td>National public health survey</td>
</tr>
<tr>
<td>PA</td>
<td>Physical activity</td>
</tr>
<tr>
<td>RA</td>
<td>Research assistant</td>
</tr>
<tr>
<td>SHC</td>
<td>Seniors Hub Council</td>
</tr>
<tr>
<td>SES</td>
<td>Socioeconomic status</td>
</tr>
<tr>
<td>SNQLS</td>
<td>Neighbourhood quality of life study for seniors</td>
</tr>
<tr>
<td>SVNH</td>
<td>South Vancouver Neighbourhood House</td>
</tr>
<tr>
<td>TCE</td>
<td>Traditional Chinese exercise</td>
</tr>
<tr>
<td>TCM</td>
<td>Traditional Chinese medicine</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific, and Cultural Organization</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</table>
Acculturation: Occurs when a person moves from one “cultural context” to another, and they undergo a process of change (Berry, 1997, 6). Acculturation processes vary, and include: integration, separation, assimilation, and marginalisation. Assimilation is only one type of acculturation, and these two terms should not be used interchangeably.

Agency: The process of creating change in one’s life through intentional and proactive behaviours or actions (Wahl, Iwarsson & Oswald, 2012).

Built Environment(s): The “physical form of communities - [it] includes land-use patterns (how land is used); large and small scale built and natural features (e.g., architectural details, quality of landscaping; and the transportation system (the facilities and services that link one location to another” (Brownson, Hoehner, Day, Forsyth, & Sallis, 2009, p. 99). Lawton (1982) defines the “physical environment” as a combination of things that are both built and natural. Authors tend to use the terms “built environment” and “physical environment” interchangeably (e.g., Brownson et al., 2009).

Chinese Canadian older adults: The examination of Chinese Canadian older adults typically includes people from Mainland China and Hong Kong. This grouping may also include people of Chinese origin from Taiwan, Vietnam, South East Asia, and those who were born in Canada (e.g., Chau & Lai, 2011), depending on how participants self-identify, or more commonly, how the researchers pre-define this ethnic category.

Culture: “is the common set of values, beliefs, and behavioural norms common to a given group of individuals” (Lai, Tsang, Chappell, Lai, & Chau, 2007, 172). Culture is defined many ways; see Chapter 1 for more information on the definition of culture as it pertains to health research.

Ecology: The study “of the relation of organisms or groups of organisms to their environment” (Moos, 1976, p. 9).

Economic class immigrants: in Canada, this group of immigrants includes skilled workers, business immigrants, provincial and territorial nominees, live-in caregivers, and in some cases their immediate family members.

Ethnic Identity: “refers to the component of self that includes both knowledge and evaluation of one’s membership in one or more ethnocultural groups” (Dion & Dion, 2004, 347).

Ethnocultural Group: A term that is widely used in the literature, yet rarely defined. Sasao and Sue (1993) correctly note that ethnocultural groups have typically been defined according to “ethnic-cultural markers,” such as language, skin colour, or cultural practices. This oversimplification of an individual’s ethnic identity is often referred to as “ethnic gloss” (Trimble, 1991). In the studies included in the literature review, the convention is to combine several questions in order to assign an ethnocultural label. The Canadian Community Health
Survey asks about cultural and racial backgrounds, and ethnic origins (Kobayashi et al, 2008). The Longitudinal Study of Immigrants to Canada asks, “To which ethnic or cultural groups do you belong?” and then asks participants to choose a group from a list of twelve options (White, Chinese, etc.) (de Maio & Kemp, 2009). With the National Population Health Survey, this is defined by looking at place of birth and language (Kopec, Williams, To, & Austin, 2001). While I accept this approach, especially in large quantitative studies, I am mindful of Sasao and Sue’s (1993) reminder that we must understand ethnocultural groups in context, in the appropriate social and historical context.

**Foreign-born Older Adult (FBOA):** Refers to a man or woman over the age of 65 who: (a) was born outside of Canada, and (b) currently resides in Canada. Transnational older adults who spend large portions of the year in their home country are included, if they also identify Canada as a place of residence (Treas, 2008).

**Health Disparities:** Are “differences in health status that occur among population groups defined by specific characteristics” (Health Disparities Task Group, 2005). Health inequalities include both group differences and individual differences, such as biological endowments and personal choices that may impact health. Health equity and health inequities are concepts rooted in social justice, and require a normative judgement of what is fair and just. With a focus on a particular population group (foreign-born, visible minority older adults), “health disparities” is the most appropriate term for my work.

**Immigrant:** Statistics Canada (2010) defines this as “Persons residing in Canada who were born outside of Canada, excluding temporary foreign workers, Canadian citizens born outside Canada and those with student or working visas.” However, from a policy perspective, it’s assumed that immigrants are assimilated into Canadian culture after a given amount of time. I prefer to use the term “foreign-born,” which denotes that someone was born outside of Canada but is free from the assumptions inherent in the term “immigrant.” In this same vein, Acevedo-Garcia and Almeida (2012) urge health researchers to move away from the term “immigrant” as a fixed, individual-level label.

**Mobility:** According to Webber et al.,’s framework (referred to as the Webber model throughout) mobility “may take many forms, including but not limited to, walking, using a wheelchair, driving and using alternate forms of transportation” (2010, p. 446). With a focus on the aging population, the Canadian Institutes of Health Research states that “mobility encompasses not only participation in society (e.g., ability to drive and having accessible public transportation) and physical activity of older adults, but also the performance of specific manoeuvres such as walking or climbing stairs and the carrying out of instrumental activities of daily living” (CIHR, 2013). Within the context of research on immigration, it is important to note that I do not use the term “mobility” as it relates to the relocation of individuals (e.g., Litwak & Longino, 1987). I am also not using this term within the context of “social mobility,” a term that is often associated with immigrants (Borjas, 2006).
**Neighbourhoods:** “are important physical and social places of aging” (Gardner, 2011, 263). The concept of a neighbourhood can be defined in many ways. In quantitative studies, the term “neighbourhood” is often defined using national census boundaries (Yen, Michael, & Perdue, 2009). For this study I recruited participants and conducted participant observations in the neighbourhood of “South Vancouver” (see definition below).

**Older Adult:** Refers to a man or a woman over the age of 65. There is broad consensus in the gerontological research community that “older adults” is preferable to “seniors,” “the elderly,” and other analogous terms. In my research the term “seniors” will only be used where appropriate in a colloquial context (e.g., when discussing a seniors’ group or seniors’ centre). The United Nations resolution *Principles for Older Persons* states the term “older persons” is preferable to the use of “the elderly.”

**Out-of-home Mobility:** The movement of one’s body, using motorized and non-motorized means, outside of an individual’s place of residence. I draw on Mollenkopf and colleagues’ (2004) operationalization of out-of-home mobility: “Going beyond the usual approach in traffic planning and research, that is, measuring mobility by the number of trips and journeys that persons make, we additionally included the variety of transport options used and the diversity of outdoor activities performed in our analyses” (Mollenkopf, Marcellin, Ruoppila, Széman, Tacken, & Wahl, 2004, 45).

**Physical Activity:** The World Health Organization (WHO) defines physical activity (PA) “as any bodily movement produced by skeletal muscles that requires energy expenditure” (WHO, 2015a).

**Race:** Statics Canada (2012) no longer recommends or permits use of the term “race,” with the following explanation: “Race is based primarily upon genetically imparted physiognomical features among which skin colour is a dominant, but not the sole, attribute . . . terminology may be ambiguous. . . . There may also be terminology very much in usage in the common lexicon which is actually offensive to a group in question.” Unless specifically used as a variable in another author’s study that I am referring to, I do not use this term in my writing or research.

**Recent Immigrant:** This is an important concept in the healthy immigrant literature, yet it varies from study to study. Across the studies consulted in the literature review, a recent immigrant can be someone who arrived four years prior to data collection, or someone who arrived up to 31 years prior to data collection. On average, a “recent immigrant” is someone who has arrived in Canada during the last 15 years.

**Social Environment(s):** Encompasses the immediate physical surroundings, social relationships, and cultural milieus within which defined groups of people function and interact (from Barnett & Casper, 2001).

**Socioeconomic Status (SES):** The Canadian Institute for Health Information utilizes the definition of SES provided by Last in the *Dictionary of Public Health*, which describes SES as a “descriptive term for the position of persons in society, based on a combination of occupational,
economic, and educational criteria (Last, 2007, 305). In the studies included in the literature review, SES is typically assessed by observing a combination of variables, including educational attainment and household income.

**South Asia:** Includes the countries Afghanistan, Pakistan, India, Nepal, Bhutan, Sri Lanka, Bangladesh, and the Maldives.

**South Vancouver:** A local neighbourhood and electoral riding where I conducted my dissertation research. My community research partner, South Vancouver Neighbourhood House, defines the neighbourhood with the following Vancouver streets as boundaries: North, 41st Ave.; East, Boundary Rd.; South, the Fraser River; and West, Main street. According to the 2011 Census (Statistics Canada, 2012a), the census tracts in South Vancouver have an older adult population ranging from 10-20+%. Almost all of the census tracts have more than 56% of the population reporting a first language other than English or French.

**Visible Minority:** Statistics Canada derives its definition of a visible minority from the Employment Equity Act, which states that “persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour” are visible minorities (Statistics Canada, 2012a). As many Canadian researchers have noted, the term “visible minority” is highly problematic (Mentzer, 2002): it is difficult to classify, difficult to measure, and responses are operationalized differently. For example, in one assessment a Latin American person can be classified as a “visible minority,” and in another they may not be (de Maio & Kemp, 2010). This term homogenizes many groups, which clearly have diverse experiences within the Canadian socio-political context.

**Walkability:** A term used to describe an environment, typically a neighbourhood, in which the act of walking is accessible, feasible, useful, safe, comfortable, and provides sensory pleasures and a sense of belonging (Mehta, 2008). Often measured using a global walkability tool (WalkScore, 2016) that generates a walkability score that ranges from 1 (not walkable) to 100 (walker’s paradise) using an established set of urban form evaluation criteria.
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To my supervisory committee, I struggle to find the words that accurately reflect my deep appreciation for all that you have done. Committee member, Dr. Atiya Mahmood, your knowledge of and passion for conceptual frameworks set the foundation for my writing. Every time we met you shared a piece of wisdom: advice on managing childcare and a PhD, advice on teaching my first university class. You really have been a mentor. Committee member, Dr. Anne Martin-Matthews, as I have said many times, you made me a gerontologist. Our Friday teas at the Nexus Home Care Project introduced me to the world of aging studies. I learned the names, the lingo, the people and the projects shaping aging research around the globe. I have always felt that you had faith in me as a junior academic, saw something in me worth nurturing. Thank you for all that you have done for me personally, and for our field.

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Murray, we started this PhD journey as boyfriend-girlfriend, and we finish as Dr. & Mr. Tong, tired but enthusiastic parents of two beautiful children. While academic honours and more letters behind our names are wonderful, I am so grateful to share this journey with someone who lives his life according to this quote:

“There are many kinds of success worth having. It is exceedingly interesting and attractive to be a successful business man, or railroad man, or farmer, or a successful lawyer or doctor; or a writer, or a President, or a ranchman, or the colonel of a fight regiment, or to kill grizzly bears and lions. But for unflagging interest and enjoyment, a household of children, if things go reasonably well, certainly makes all other forms of success and achievement lose their importance by comparison” - Theodore Roosevelt
Dedication

For Shelly, the caregiver

For Justina, the teacher

For Lisa, the writer
Chapter 1: Introduction, Literature Review, Guiding Theoretical Models, Research Questions, and Objectives

1.1 Introduction

Physical activity (PA), the movement of one’s body (WHO, 2015a), and mobility, moving one’s body through space using a variety of modes (Webber, Porter, & Menec, 2010), allow older adults to participate in their communities (Gardner, 2011; Levasseur et al., 2015), cultivate social connections (Hurley, Mitchell, & Walsh, 2003; Kohn, Belza, Petrescu-Prahova, & Miyawaki, 2016; Mollenkopf, Hieber, & Wahl, 2017), actively maintain their health (Hirvensalo, Rantanen, & Heikkinen, 2000; Paterson & Warburton, 2010), and access vital services and resources (Shigematsu et al., 2009; van Cawenberg et al., 2011). Physical activity and mobility play a vital role in supporting community-dwelling older adults who overwhelmingly wish to age in place—that is, to remain in their homes and communities for as long as possible (Wiles, Leibing, Guberman, Reeve, & Allen, 2012).

In spite of the well-documented benefits of PA, in 2005 62% of Canadian seniors were inactive (NACA, 2006). Guided by Torres (2013), I focus on PA not only because it results in lower rates of disease and better physical function, but also because PA facilitates “active engagement with life” (Torres, 2013, p. 48). Physical activity and mobility are closely related concepts. Supporting the PA and mobility of older adults is a public health imperative, yet some segments of the population have been overlooked. As my literature review demonstrates, we know very little about the PA of foreign-born older adults (FBOAs), and even less about their mobility.

Older Canadians are more ethnically diverse than the general population, and people who have immigrated to Canada comprise 30% of the older adult population (Ng, Lai, Rudner, &
Orpana, 2012). In Vancouver, the region in which I conducted my dissertation research, half of older adult residents were born outside of Canada, and nearly one third identify as members of a visible minority group (United Way, 2011). There is an established body of research that highlights some of the health challenges that FBOAs face: research has consistently shown that foreign-born and visible minority older adults residing in Canada are confronted with multiple health-related challenges, including declining health status, limited access to programs and services, social isolation, and discrimination (e.g., de Maio & Kemp, 2009; Koehn & Badger, 2015; Lai & Chau, 2007; Zhao et al., 2010; Wu & Hart, 2002). Compared to their Canadian-born peers, some FBOAs living in Canada experience worse health, or health-related challenges. These health disparities appear to be driven by socioeconomics (e.g., income), socio-demographics (e.g., gender, education), health behaviours (e.g., smoking and heavy drinking), and immigration-specific variables (e.g., length of time in Canada).

The mobility of an older adult is inextricably linked to his or her built and social environments (Hanson, Ashe, McKay, & Winters, 2012; Rosso, Auchincloss, & Micheal, 2011), yet there is a greater need to understand the role that environment plays in older adults’ PA and mobility (Trost, Owen, Bauman, Sallis, & Brown, 2002). Neighbourhoods “are important physical and social places of aging” (Gardner, 2011, p.263). A positive neighbourhood context is crucial for the wellbeing of older adults, especially if health challenges, financial limitations, or driving cessation impede their ability to travel outside their immediate area (Gardner, 2011; Rosso, 2011). In their systematic review on neighbourhood environment and the health of older adults, Yen, Micheal and Purdue (2009) concluded: “Aging research has documented various racial/ethnic and SES disparities in health among older adults. . . . It is valuable to do more studies with racially/ethnically diverse communities, perhaps incorporating community-based
participatory research (CBPR) methods . . .” (p. 460). My dissertation contributes to this identified gap in the literature.

As detailed in Chapter 3, I worked closely with a Seniors Advisory Council and community members to conduct this study. This mixed-method dissertation uses a focused ethnographic approach to answer the following questions:

1. What are the PA levels of foreign-born, visible minority older adults who reside in South Vancouver, British Columbia?
2. What features of the neighbourhood environment, both built and social, promote or inhibit the PA and mobility of FBOAs?
3. How do issues of gender, culture, and biography, as suggested by the Webber model of mobility in older adults (Webber et al., 2010), impact the mobility and PA of FBOAs?

The primary objective of my research is to characterize the mobility of a mixed-ethnicity, visible minority group of foreign-born older adults (FBOAs) residing in South Vancouver.

To achieve this objective, my dissertation is divided into three parts. In Chapter 1 I review the pertinent literature and guiding theoretical models; in Chapters 2 and 3 I detail the ethnographic approach and methods used; Chapters 4 through 7 present results and highlight implications for policy, research practice, and future studies.

Chapter 1 is divided into two sections, the literature review and guiding theoretical models. In the literature review I examine the existing literature on the health of immigrants to Canada, with a focus on older adults; summarize the definitions, importance, and measurement of mobility and PA within older populations; and present the very limited evidence available
regarding the mobility and PA of FBOAs. The second section of this chapter summarizes the theoretical models guiding my dissertation. This study is socio-ecological, rooted in the understanding that individuals and their health-related behaviours cannot be divorced from the context and environments in which they live (Bronfenbrenner, 1979; Lawton, 1982). Specific to mobility and physical activity, I am guided by the socio-ecological model put forth by Webber and colleagues (2010), “Mobility in Older Adults: A comprehensive framework.”

In Chapter 2, I outline the methodological approach guiding my research. My research questions and objectives are fundamentally ecological, in that they seek to understand how individuals react and interact with their environment(s). Ecological studies must be conducted in natural settings, over an extended period of time, and ideally include an observational component; drawing on multiple data sources is preferable (Bronfenbrenner, 1979). The principles of ethnographic data collection are closely aligned with Bronfenbrenner’s criteria for ecological research. In this chapter I review the key tenets of ethnographic research, drawing heavily on Roper and Shapira’s (2000) “Ethnography in Nursing Research.” I have included this chapter to help guide readers who are perhaps unfamiliar with the ethnographic approach and/or the principles of qualitative research.

In Chapter 3, I provide a comprehensive overview of the mixed-method study that forms my dissertation. The ASAP-FB (Active Streets Active People- Foreign-Born) study utilizes ethnographic and micro/focused ethnographic methods (Knoblauch, 2005; Roper & Shapira, 2000), and was conceived by and executed with community partners and a local Seniors Advisory Council at South Vancouver Neighbourhood House. In Wave 1, the ASAP-FB team (PI: Joanie Sims-Gould) surveyed 49 FBOAs residing in South Vancouver. Surveys assessed self-reported health, mobility, difficulties with instrumental activities of daily living (IADLs),
physical activity patterns, perceptions of their local built environments, and demographic information. To objectively capture PA levels, Wave 1 participants also wore accelerometers (ActiGraph GT3X) for one week. In Wave 2, 19 participants, recruited from Wave 1, completed in-depth interviews and interACTIVE walking interviews. The in-depth interviews probed questions regarding participants’ mobility, travel patterns, activity patterns, and their experiences and perceptions of the local built and social environment(s). Walking interviews provided the observational component, allowing the ASAP-FB team to see and document participants engaging with their local environment(s).

In Chapter 4, I characterize the PA of FBOAs. Forty-nine participants completed surveys about their PA habits; of these, 46 wore accelerometers and 18 completed in-depth interviews. Participants’ mean daily step count was 7,876 (women: 8,172; men: 7,164; Chinese: 8,291; South Asian: 7,196). The bulk of their time is spent in light and sedentary activities. Physical activity is principally acquired through walking for errands and work performed in/around the home. This study challenges the assumption that FBOAs are less active than their non-immigrant peers, and confirms the role of “non-exercise” and low activity, rather than moderate to vigorous activity, in the PA acquisition of older adults.

In Chapter 5, I present the development of a novel interview tool, “InterACTIVE Interpreted Interviews (I3).” The interACTIVE interviews were mobile interviews: neighbourhood walks, guided by the participants and aided by professional interpreters. The interACTIVE method builds on the go-along method (e.g., Carpiano, 2009; Kusenbach, 2003; Kinney, 2017), with the addition of an interpreter working in a multilingual context. The interACTIVE approach allowed me to experience the neighbourhood alongside participants. I overcame concerns of privacy, safety, and comfort to successfully implement this observational
tool and recommend it as an attractive, alternative approach for those conducting studies with FBOAs.

In Chapter 6, I draw on in-depth interviews and ethnographic observations to describe what factors facilitate levels of PA. Participants are walking for physical and mental wellbeing, and have access to a supportive social environment, which includes culturally familiar and linguistically accessible shops and services. Building on Webber and colleagues’ comprehensive framework of mobility in older adults, this study expands on the notion that “gender, biographical, and cultural influences” (Webber et al., 2010) have an impact on the mobility of older adults.

In Chapter 7, I provide an overview of the key findings from this dissertation, and highlight implications for research practice and policy, and the theoretical contributions of my work. I acknowledge the limitations of my work, identify directions for future research, share some key reflections from my ethnographic fieldwork, and close this section with conclusions.

1.2 Literature Review

In this literature review, I present the existing literature in three key areas: 1) immigration and health; 2) the mobility and PA of older adults, and 3) a brief review of the limited studies pertaining to the mobility and PA of FBOAs.

In the first section, Immigration and Health, I focus heavily on the “the healthy immigrant effect,” as this is the most established body of work examining the health of immigrants to Canada. Over time, foreign-born individuals experience a decline in their health, and their self-assessed measures of health converge with those of their peers. This health transition, whereby immigrants arrive healthier than their Canadian-born peers and subsequently experience a decline, is known as “the healthy immigrant effect.” I also look specifically at
healthy immigrant effect studies that focus on older adults. This body of literature provides a rationale for studies focusing on FBOAs, and highlights key variables to consider in future studies of FBOAs.

In the second section, the Mobility and PA of Older Adults, I review the definitions and importance of mobility for older adults, and draw on systematic and scoping literature reviews that highlight the important role of the neighbourhood environment. I clarify the distinction between mobility and PA, and highlight the small body of literature that articulates the relationship between these two concepts. Finally, I summarize quantitative and qualitative methods used in the literature to assess mobility and PA in older adults, as these helped to guide the development of my research design.

In the final section of this literature review, the Mobility and PA of FBOAs, I summarize and critique the very small body of literature available regarding PA and the mobility of FBOAs.

Like all other segments of the population, immigrants to Canada are a highly heterogeneous group whose experiences vary greatly (de Maio & Kemp, 2009). In spite of this heterogeneity, numerous population-based studies attempted to understand overarching trends that explain the health transitions of individuals who have immigrated to Canada. The bulk of this research has been guided by the healthy immigrant effect.

1.2.1 The healthy immigrant effect

Various national data sets have been used to examine the health of foreign-born individuals, including the cross-sectional Canadian Community Health Survey (CCHS) (e.g., Halli & Anchan, 2005; Gee, Kobayashi, & Prus, 2004), the Longitudinal Survey of Immigrants to Canada (LSIC) (e.g., de Maio & Kemp, 2009; Zhao, Xue, & Gilkinson, 2010), the longitudinal National Population Health Survey (NPHS) (e.g., Newbold, 2005a, 2005b; Ng,
Wilkins, Gendron, & Berthelot, 2005) and the Joint Canada/US Survey of Health (e.g., Lasser, Himmelstein, & Woolhandler, 2006). In some cases, these data sets were combined to support more robust analyses (e.g., McDonald & Kennedy, 2004). Across various analyses and data sets, there is consistent evidence that when a person immigrates to Canada their self-rated health, on average, is better than that of their Canadian-born peers. Across all of these data sets, self-rated health and/or self-reported health indices are used to measure health. Many studies supported the efficacy of using a self-assessed measure of health as proxy for health status (Newbold, 2005b).

Over time, foreign-born individuals experience a decline in their health, and their self-assessed measures of health converge with those of their peers. This health transition, whereby immigrants arrive healthier than their Canadian-born peers and subsequently experience a decline, is known as “the healthy immigrant effect.” The healthy immigrant effect is supported in the literature (Halli & Anchan, 2005; de Maio & Kemp, 2009); however, a broad range of studies have provided mixed support (e.g., Newbold 2005b, 2006; Gee et al., 2004; McDonald & Kennedy, 2004), and a few studies provide limited support (e.g. Dunn & Dyck, 2000; Kopec, Williams, To, & Austin, 2001). A number of factors determined whether or not an immigrant experiences a health decline: immigration cohort and length of time in Canada (Newbold, 2005b, 2006; Gee et al., 2004); age at time of immigration (Gee et al., 2004); European vs. non-European origins (Ng et al., 2006); race (Newbold, 2005b) and ethnocultural group (Kobayashi, Prus & Lin, 2008); the health variables being measured, including number of chronic conditions (McDonald & Kennedy, 2004), mental health (de Maio & Kemp, 2010), and body weight (McDonald & Kennedy, 2005); socioeconomic status (de Maio & Kemp, 2010; Newbold, 2005b); gender (de Maio & Kemp, 2010; Newbold, 2005b); and having experienced discrimination or unfair treatment (de Maio & Kemp, 2010). Thus, it is not simply by dint of
being an immigrant that you experience the “healthy immigrant effect” as a host of other factors are at play.

Explanations for the healthy immigrant effect are numerous and include: the acquisition of unhealthy habits and lifestyle choices (McDonald & Kennedy, 2005; Ng et al., 2006); the abandonment of “protective health behaviours that characterize many immigrant cultures” (Beiser, 2005, p.33); the process of deskilling, preventing immigrants from obtaining employment in their fields of expertise, which impacts both mental health and socioeconomic status (Newbold, 2005b); challenges navigating or accessing the health care system (Gee et al., 2004); discrimination in Canada (de Maio & Kemp, 2010); and health screenings prior to immigration, which explains immigrants’ relative health advantages upon arrival (Zhao et al., 2010). These can roughly be divided into two hypotheses: selectivity and acculturation (Kobayashi et al, 2008). The selectivity hypothesis argues that people who elect to immigrate are typically healthier, and the immigration screening processes prevent those deemed unhealthy from entering Canada. The acculturation hypothesis argues that immigrants adopt more “mainstream Canadian beliefs and lifestyle behaviours,” resulting in a deterioration of health (Kobayashi et al., 2008, p.131). Although acculturation and assimilation are typically viewed as positive processes for an immigrant person (Berry, 1997), with respect to health, acculturation may actually render negative results.

It is important to highlight some methodological limitations of these surveys. The national surveys, including the NPHS and the Joint Canada/US Survey of Health, are collected through random sampling of the population, often through telephone calls and typically in one of the two national languages. Low-income individuals may be under-represented on account of phone ownership (Lasser et al., 2006). Lasser et al. (2006, p.305) also acknowledged that “it is
possible that the observed differences . . . may in part reflect language barriers.” Yet authors rarely state that they are writing about immigrant health, sometimes specifically about recent immigrants, and data are typically collected in the two national languages. For CCHS data may be collected in other languages (Gee et al., 2004), but is principally collected in English or French. This may be less of an issue for economic class immigrants, whose entry to Canada requires the ability to speak one of the national languages (Albiom & Cohl, 2012). Individuals who enter Canada as refugees and through family reunification streams are less likely to speak one of the national languages, and are surely under-represented in these large national data sets. These critiques do not apply to the LSIC, which relied primarily on face-to-face interviews, was conducted in 15 languages, and included participants from all immigration streams (i.e., economic, family reunification, and refugee).

Newbold’s analyses of the NPHS (2005a, 2005b) offered “mixed support” (2005b, p.1366) for the healthy immigrant effect, but clear support for its effect on recent immigrants (Newbold, 2005b) and those immigrants with chronic conditions (e.g., heart disease, asthma, arthritis, diabetes) (2006). Newbold (2006) found that immigrants typically arrive with fewer chronic conditions, but over time this increased relative to the Canadian-born population. Newbold (2005b) also found that race, not necessarily immigration status, was important, with “blacks” being 76% more likely than all other racial groups to go from “healthy” to “unhealthy” over two waves of data collection (1994/95-2000/01).

Consistent with the health disparities literature, those in the lowest income groups and those without a high school education were more likely to experience a decline in health status. Low-income immigrants are most at risk for hospitalization (Newbold, 2005a). Women were also at a higher risk for transitioning from healthy to unhealthy. Although Newbold (2005b)
found similar health-decline patterns for both the Canadian and foreign-born populations, the time of immigration played an important role.

1.2.1.1 Time of immigration and country of origin

Newbold’s analyses (2005a, 2005b) demonstrated that “recent immigrants” experience a much more rapid and notable decline in self-reported health status, compared to longer-term immigrants and Canadian-born individuals (see working definitions and Table 1.1 for a summary of the term “Recent immigrant”).
Table 1-1 “Recent immigrant”—use of the term, by years

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Data Source &amp; Date of Data Collection</th>
<th>Definition of “Recent Immigrant”</th>
<th>“Recent immigrant” -time since arrival to Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newbold (2005b)</td>
<td>National Population Health Survey- Longitudinal Data (NPHS), 1994/95 &amp; 2000/01</td>
<td>Recent Immigrant are those who came to Canada after 1970</td>
<td>24–31 years</td>
</tr>
<tr>
<td>Newbold (2006)</td>
<td>NPHS, 1994/95 &amp; 2000/01</td>
<td>“Most recent immigrants” are those who came in or after 1990</td>
<td>4–11 years</td>
</tr>
<tr>
<td>Zhao, Xue &amp; Gilkson (2010)</td>
<td>Longitudinal Study of Immigrants to Canada—3 waves, 2000/01, 2002/03, &amp; 2004/05</td>
<td>This study only included “Recent immigrants,” or those who arrived up to 4 years before the first wave of data collection in 2000 (i.e., anyone who came to Canada after 1996)</td>
<td>4–9 years</td>
</tr>
</tbody>
</table>

In Newbold (2005b), this group of recent immigrants included anyone who moved to Canada after 1970. While not stated in his discussion, this date also coincides with major shifts in Canadian immigration policies in the 1960s and 1970s, which resulted in fewer immigrants from Europe and a greater proportion of immigrants from Asia. This group of “recent immigrants” is likely more ethnically, linguistically, and culturally diverse than the longer-term immigrants, most of whom would have originated from Europe.

Ng et al. (2006), also used NPHS data and found that “non-European immigrants” were more likely than Canadian-born peers to report a decline in self-assessed health status. Non-European immigrants were twice as likely to experience a decline, and this was “particularly pronounced among recent non-European immigrants” (Ng et al., 2006, p.3–4). Recent non-
European immigrants were also more likely to have gained a significant amount of weight (more than 10% of their body weight), and recent immigrants (European and non-European) were more likely than their Canadian-born peers to have experienced a decline in PA in their leisure time, although this was only statistically significant for the recent European immigrants. In spite of “mixed support” for the healthy immigrant effect, analyses of NPHS data demonstrated that recent immigrants, European and non-European, were more likely to experience a health decline.

One of the unique features of the LSIC is that it focused on recent immigrants—that is, those who moved to Canada less than four years before the first wave of data collection. The first wave of data collection was in 2000/01, and the survey was repeated in 2002/03 and 2004/05. De Maio and Kemp (2010), and Zhao et al. (2010) supported the healthy immigrant effect using LSIC data. Consistent with Newbold’s (2005b) findings, recent immigrants were more likely to experience declines associated with the healthy immigrant effect. Looking at all three waves of the LSIC, de Maio & Kemp (2010) found that visible minorities (assessed using two questions from the Canadian census) and individuals who experienced discrimination in Canada were the most likely to experience a health decline. Although the variable “visible minority” is problematic (see de Maio & Kemp, 2010, and the working definitions for this dissertation), these findings are similar to those of Ng et al. (2006) who found, using NPHS data, that non-European immigrants were more likely to experience a decline in self-reported health status. Zhao et al. (2010) also focused on recent immigrants. They found support for the healthy immigrant effect, but it was most pronounced among those who had recently arrived. Consistent with other analyses, the healthy immigrant effect appeared to diminish over time.

Given the nature of these surveys, and the types of data collected, we know a fair bit about general health trends in the immigrant population. It is clear that the time of immigration
impacts health, with recent immigrants facing more dramatic declines in health status. Analyses from various data sets also suggest that non-Europeans and visible minorities experience worse declines in health status in Canada. From national data sets, however, we still know very little about specific ethnocultural groups. Some data sets do not allow for analysis of specific variables (e.g., country of origin and ethnicity) in their public data files, and the small sample sizes of ethnocultural groups can also be problematic (Kobayashi et al., 2008). NPHS data captures immigration status (Canadian-born/foreign-born) and race (usually collapsed to White/Non-White), but not ethnicity or country of birth. When McDonald and Kennedy (2005) combined CCHS and NPHS data, they adjusted the weighting of smaller ethnic groups to better reflect the ethnocultural composition of the Canadian population. The Joint Canadian/US Survey of Health collects data on race and immigration status, but not country of origin or date of immigration (Lasser et al., 2006). CCHS collects data on immigration status and ethnicity, and allows researchers to compare people across ethnicities and with different immigrant status (e.g., Kobayashi et al., 2008). Compared to NPHS data, the CCHS data provides a more diverse sample of immigrants, allowing more robust analyses of these groups (Halli & Anchan, 2005).

Using cross-sectional CCHS data, Kobayashi et al. (2008) studied the healthy immigrant effect in different ethnocultural groups. They also compared the health of Canadian-born and foreign-born peers from the same ethnocultural group. For example, they were able to compare the health of Canadian-born Chinese people to the health of foreign-born Chinese people. This allowed for an examination of both ethnicity and immigrant status, and how they impact health. Health was measured with three variables: self-rated health, the self-reported Health Utilities Index, and self-reported activity restrictions. They found that in the two largest ethnocultural minority groups in Canada, Chinese and South Asian, those who are Canadian-born are healthier
than those who are foreign-born. The suggestion is that for Chinese and South Asians, immigration status impacts self-rated and self-reported health. However, once Kobayashi et al. (2008) controlled for social and lifestyle variables, the differences were statistically insignificant. Controlling for variables such as education, drinking, and fruit and vegetable consumption, the health status of visible minorities and non-visible minorities were similar, irrespective of immigration status. The authors concluded that, “these results lend support to the argument that health disparities between ethnocultural groups are at least partly attributable to structural and behavioural environments” (Kobayashi et al. 2008, p.140).

1.2.1.2 Considering social variables

In addition to the standard analyses of health variables, demographics, and measures of SES, a few studies examined variables that reflect some features of respondents’ social milieu. De Maio and Kemp (2009) found that the experience of racism or unfair treatment in Canada was strongly associated with declines in health status amongst recent immigrants surveyed in the LSIC. Also using LSIC data, Zhao et al. (2010) found that the strength and ethnic diversity of respondents’ personal and organizational networks were positively associated with self-assessed health. This was true for all classes of immigrants: refugees, family reunification, and economic class. Combining data from NPHS and CCHS, McDonald and Kennedy (2005) found that for ethnic minority groups, the ethnic composition of one’s neighbourhood has an impact on their chances of being overweight or obese. For example: “a Chinese immigrant woman is almost twice as likely to be overweight if she lives in an area with a relatively small local Chinese community, than if she lives in an area with a relatively large Chinese community” (McDonald & Kennedy, 2005, p.478).
Although not as robust as the general healthy immigrant effect literature, this small sample of studies examined social variables. Together they suggest that how an immigrant is treated, who they establish relationships with, and who their neighbours are all have an impact on health status.

1.2.1.2.1 The healthy immigrant effect—older adults

The age of a foreign-born person may impact their experience of the healthy immigrant effect. Dunn and Dyck (2000) found that older adults in the NPHS were more likely to report a chronic condition. Foreign-born older adults were twice as likely as their Canadian-born peers to report a chronic condition. Consistent with the healthy immigrant effect, immigrants who have lived in Canada for more than 10 years were also more likely to report a chronic condition. However, in Dunn and Dyck’s (2000) study there were no statistically significant differences between self-rated health status of those born in Canada and those born in other countries.

Conversely, in their analysis of 2003 CCHS data, Turcotte and Schellenberg (2006) found statistically significant differences in health status between immigrant groups, but no differences in the number of reported chronic conditions. Immigrant seniors, especially recent seniors, reported worse health status than Canadian-born older adults. This is distinct from younger cohorts, in which recent immigrants are expected to have a better health status closer to their time of arrival. Authors noted that this was unexpected, as recent immigrant seniors were, on average, younger than long-term immigrants and Canadian-born respondents; one would expect younger, recent immigrant seniors to report better, not worse, health status. Authors believed that results were predominantly explained by underlying socioeconomic variables, including reported lower incomes among recent immigrants. This echoes the health disparities.
literature and the multiple-hierarchy stratification approach—both argue that it is the intersection of immigration status, ethnicity, age, gender, and socioeconomic variables that influence health.

Looking at mid- and late-life cohorts assessed for 2000/01 CCHS, Newbold and Filice (2006), and Gee, Kobayashi, and Prus (2004) found differences in health status between Canadian-born and foreign-born populations. These differences, however, were largely explained by differences in socio-demographics, socioeconomics, and health behaviours. Newbold and Filice (2006) concluded that in those older than age 55, there appeared to be little difference between older Canadians and older foreign-born persons, after controlling for other factors associated with health disparities. Similarly, Gee et al. (2004) found that those over 65 reported worse health status, but “this disadvantage largely disappears” once other factors were controlled (55).

Analyses of both the NPHS and the CCHS data suggest that most important factors driving differences in health status among older adults aren’t immigration status, but rather are related to socioeconomics (e.g., income), socio-demographics (e.g., education), and health behaviours (e.g., smoking and heavy drinking). Irrespective of the root causes, Gee et al. (2004) concluded that older adult immigrants over age 65 had poorer reported health status, and frequently required increased support from health services and health supporting interventions. This is consistent with Rudner’s (2011; in Ng et al., 2012) analysis of 2009 CCHS data which showed that immigrants over age 65 reported worse health than their Canadian-born peers.

While immigrant status does not fully explain differences in health status among older adults, an analysis of Joint Canada/United States Survey of Health data provides evidence for racial disparities. Non-White older Canadians, both immigrants and non-immigrants, reported significantly worse health outcomes. This finding is consistent once adjusted for socioeconomic,
socio-demographic, and health behaviours. This same group of non-White older Canadians were also more likely to report cognitive problems. Collectively, these association studies provide rationale for assessing both nativity (where one was born) and visible minority status among older adults. However they are hypothesis generating rather than definitive in their findings and speak to the need for more comprehensive trials that address the health of Canada’s immigrant population.

1.2.1.2.2 The health of older adults from specific ethnocultural groups

Analyses of foreign-born, visible minority seniors are relatively scarce, especially given the high proportion of foreign-born and visible minority persons in Canada. In Ng et al.’s (2012) report “What do We Know About Immigrant Seniors Aging in Canada? A Demographic, Socio-economic and Health profile,” the focus is on one of the largest visible minority groups in Canada: the Chinese. Analyses of other ethnocultural groups are very limited, and often focus on discrete sets of health-related issues, such as caregiving in Japanese-Canadian families (Kobayashi & Funk, 2010); dietary and activity profiles of Vietnamese, Cambodian, and Latin American older adults (Johnson & Garcia, 2003); and Alzheimer’s awareness among older Spanish-speaking women (Fornazzari, Fischer, Hansen, & Ringer, 2009). The only review article in this area, Koehn et al.’s (2013) scoping review, identified 183 documents in the academic and “grey literature” (i.e., unpublished literature on websites, reports, etc.) pertaining to the health and health care of “ethnocultural minority older adults” in Canada. This is a paltry number of studies given the size of Canada’s immigrant population. Further, the scoping review included studies pertaining to all aspects of health and health care provision, for all non-indigenous ethnocultural minority groups in Canada. As Koehn et al. noted, there is “no academic programme or advocacy in Canada that focuses on and has consolidated research on this topic”
(2013, p.438); furthermore, studies are difficult to locate, and consequently decision-makers cannot make evidence-based decisions regarding the health care needs of this sizeable and highly heterogenous group of older adults. Most of the 183 studies in Koehn et al.’s review focused on the two largest immigrant groups in Canada: Chinese and South Asian older adults.

The literature on the health of Chinese older adults living in Canada has notably developed over the last 15 years (e.g., Chi, Chappell, & Lubben, 2001; Gee, 2000; Jette & Vertinsky, 2011; Lai & Chau, 2007; Lai et al., 2007; Ng et al., 2012). Examination of Chinese older adults typically includes people from Mainland China and Hong Kong. This grouping may also include people of Chinese origin from Taiwan, Vietnam, South East Asia, and those born in Canada (e.g., Chau & Lai, 2011). Published literature on the health of Chinese older adults does not focus solely on those who are foreign-born. ‘Chinese older adults’ is a broad category, and authors in this area remind us not to overgeneralize the experiences of a highly diverse group of older adults (Lai, Tsang, Chappell, Lai, & Chau, 2007).

In a survey of 830 Chinese older adults in two cities, Chappell and Lai (1998) found that respondents had worse perceptions of health, a higher number of chronic conditions, and greater difficulties with IADLs than did the general Canadian population. Similarly, a larger, multi-site study compared the health of more than 2,000 Chinese seniors in seven Canadian cities with data from the National Population Health Survey, Lai et al. (2003). They found that older Chinese respondents reported worse self-rated health, a higher number of health conditions, and required more assistance with IADLs. However, when these data from Chinese participants were compared with a sample of older Canadians who were participants in the Canadian Multicentre Osteoporosis Study (CaMos), Chinese-Canadians appeared to have better overall physical health (Lai, 2004). Overall physical health was assessed using the Medical Outcomes Study 36-item
Short Form (SF-36), which was translated and validated to generate a culturally appropriate Chinese version. In their scoping review, Ng et al. concluded that findings were inconsistent, but “some findings points to a less favourable health status for specific ethno-cultural minority immigrants” (2012, p.25).

Chi, Chappell, and Lubben remind us that a biomedical conception of health and wellbeing is insufficient, and “social support and social integration are central to understanding aging within a Chinese context” (2001, p.x). Indeed, many studies on the health of older Chinese persons in Canada focus on social supports, cultural values, and ethnocultural communities as they impact health status (e.g., Chau & Lai, 2011; Lai & Chau, 2007; Lai et al., 2007). Lai et al. (2007) found that older adults who reported strong traditional Chinese cultural values and health beliefs had worse health outcomes. The authors hypothesized that this was related to greater acculturation and adaptation difficulties, and/or challenges in accessing services, on account of a cultural gap. It is rare to systematically measure cultural values and beliefs as they relate to health. To do so, the authors referred to the literature and consultations with independent Traditional Chinese Medicine (TCM) practitioners and community partners to develop their scales. To assess Chinese Health Beliefs, participants were asked to rate their agreement with statements such as: “traditional Chinese herbal medicine could cure the root of the disease.” To assess Chinese Cultural Beliefs, participants rated statements like: “it should be the responsibility of adult children to take care of aging parents” (Lai et al., 2007, p.176).

South Asians recently became the largest visible minority group in Canada (Statistics Canada, 2011a). South Asia encompasses Afghanistan, Pakistan, India, Nepal, Bhutan, Sri Lanka, Bangladesh, and the Maldives (World Bank, 2013). The majority of South Asian immigrants to Canada come from India (Tran, Kaddatz, & Allard, 2005). People who identify as
“South Asian” might also come from outside of Asia. Due to global migration patterns and networks in the 20th century, foreign-born people who identify as South Asian might also come from the United Kingdom, East Africa, and some Latin American and Caribbean nations (Tran et al., 2005). Presently, the literature on South Asian older adults is much less developed than that of Chinese older adults.

We know very little about the health of older South Asians living in Canada, in part because the literature on FBOAs and ethnocultural minority older adults (EMOAs) is highly fragmented (Koehn & Badger, 2015). The few studies that exist in this area examine health behaviours, rather than health status or objective assessments of health. An ethnographic study of older adult Punjabi men suggested some unhealthy dietary and lifestyles practices, which are related to expressions of masculinity through the consumption of particular foods and alcohol (Oliffe et al., 2010). Lai and Surood (2008) conducted telephone surveys in multiple South Asian languages. They found that older South Asian women were more likely than men to report depressive symptoms (e.g., quitting activities that they enjoy). They observed a positive association between South Asian “cultural values” and depression. To assess “cultural values,” authors asked a series of questions about family and marriage arrangements, the birth of sons, conceptions of community, and the role of religion, fate, and the stars. Using the same telephone survey methods, Lai and Surood (2010) also examined health service usage and barriers to use of 55 South Asian older adults in Calgary. This study provided important insights into this aging community. Barriers to accessing health services included: cultural incompatibility (e.g., incompatible language or religion, professionals who don’t understand their culture), personal attitudes (e.g., feeling ashamed, not wanting to ask for help), administrative problems (e.g., long wait lists, office hours), and circumstantial problems (e.g., no transportation, cold weather,
services too expensive). Cultural incompatibility was the greatest barrier. However, it is important to recognize three other categories of barriers. It is often assumed that “ethnic” seniors experience health-related challenges on account of cultural differences, but researchers have highlighted an overreliance on cultural explanations and a failure to highlight other variables (Koehn et al., 2013).

1.2.1.3 Culture and health

Scholars have increasingly questioned culture as the only key explanatory variable in immigrant health research (Koehn et al., 2013; Viruell-Fuentes, Miranda, & Abdulrahim, 2012). Notwithstanding, culture is perceived as a significant driver of health behaviours, as evidenced by the Lancet’s lengthy commission on Culture and Health (Napier et al., 2014). The Lancet Commission argued that, “the systematic neglect of culture in health and health care is the single biggest barrier to the advancement of the highest standard of health worldwide” (2014, p.610). Culture is believed to impact health in wide-ranging ways, including but not limited to: the production/re-production of health disparities in “sick” and higher-risk populations; the creation and preservation of indigenous knowledge; diverse understandings of illness; different understandings of health between patients and clinicians; diverse, culturally informed models of care; and diverse, including non-biomedical, constructs of health and wellbeing (Napier et al., 2014).

Conceptually, “culture,” and its impact on health, is extremely broad, defined and measured in myriad ways (Viruell-Fuentes et al., 2012). Further complicating matters, “race,” “ethnicity,” and “culture” are often used interchangeably in ageing research (Koehn et al., 2013; Torres, 2015). As outlined in the glossary (see page xxi), and as per recommendations of
Statistics Canada (2012), I do not use the term race in my research. Torres distinguished between ethnicity and culture:

when aiming to differentiate between ethnicity and culture, it may be helpful to think of ethnicity as a background variable often used to denote the social group to which a person “belongs” and to think of culture as the diverse ways that make this type of “belonging” meaningful. (Torres, 2015, p.936)

The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines culture as “that complex whole which includes knowledge, beliefs, arts, morals, laws, customs, and any other capabilities and habits acquired by [a human] as a member of society” (UNESCO, 2016). Lai et al. (2007), in their work with Canadian older adults, offered the following definition: culture “is the common set of values, beliefs, and behavioural norms common to a given group of individuals” (p.172). Torres offered a similar definition, and reflection specific to cross-cultural gerontology:

if the definition of culture includes the distinctive way of life, beliefs, values and shared meanings of people, then this will inevitably shape the ways in which they approach and interpret their lives. Understanding of ageing-related constructs are therefore inevitably shaped by the culture in which these are constituted. (Torres, 2013, p.39)

I utilize the definitions of culture provided by Lai et al. (2007) and Torres (2013), as these are specific to gerontological research. Collectively, these underscore the need for researchers to examine the role of culture as it impacts the health of older individuals. Culture is distinct from ethnicity, and I am mindful not to conflate the two in this dissertation.
1.2.2 Mobility and physical activity: older adults

The healthy immigrant literature suggests that some FBOAs are at a higher-risk of negative health transitions, and several studies confirm that FBOAs report high numbers of chronic conditions, worse self-rated health, and greater difficulties with IADLs than their Canadian-born peers (e.g., Dyck & Dunn, 2000; Lai et al., 2003). Rather than ethnicity, factors that appear to drive these health disadvantages are: socioeconomics (e.g., income), socio-demographics (e.g., gender, education, length of time in Canada), and health behaviours (e.g., smoking and heavy drinking). As Gee et al. (2004) concluded, FBOAs might require increased health services and health intervention support.

We know relatively little about the health and wellbeing of FBOAs. However, we know that Chinese older women living in Canada tend to report poorer health than their male peers (Lai, 2004). Further, South Asian older adults are at higher risk for developing certain comorbidities, such as diabetes and heart disease (Anand et al., 2000). Just by immigrating to Canada, irrespective of ethnicity or country of origin, immigrants are at greater risk for developing high cholesterol and late onset diabetes (Creatore et al., 2010). These conditions are modifiable with physical activity, yet we know very little about the mobility and activity levels of FBOAs.

1.2.3 Mobility in older adults

The term mobility is defined, conceptualized, and operationalized in many different ways, across a number of disciplines. Mobility can refer to movement within the home and outside the home (Stalvey, Owsley, Sloane, & Ball, 1999). It can also refer to moving oneself with or without the assistance of a mobility aid, public transportation, or a vehicle (Webber et al., 2010). Within the immigration literature, mobility typically refers to moving across international
borders (e.g., Litwak & Longino, 1987), or “social mobility,” which implies transitions in socioeconomic status (e.g., Borjas, 2006). In immigration studies, mobility rarely refers to daily trips or the physical movement of one’s body over a relatively small distance (e.g., a walk from home to the grocery store.) With a focus on health, as is the focus of this dissertation, the term mobility typically refers to the movement on one’s body across a given distance (e.g., Peel, Baker, Roth, Brown, & Allman, 2005). In their examination of older adults’ mobility, Webber et al. defined mobility as “the ability to move oneself (e.g., by walking, by using assistive devices, or by using transportation) within community environments that expand from one’s home, to the neighborhood, and to regions beyond” (2010, p.443). Stalvey et al., also focusing on older adults, broadly defined mobility as “a person’s purposeful movement through the environment from one place to another” (1999, p.460). The World Health Organization’s (WHO’s) International Classification of Functioning defines mobility as “moving by changing body position or location or by transferring from one place to another, by carrying, moving or manipulating objects, by walking, running or climbing, and by using various forms of transportation” (WHO, 2013). Across all definitions, mobility is about moving one’s body from place to place, using a variety of modes.

Functional mobility, “the means by which an individual moves within the environment to achieve day-to-day interaction with family and society” (Graham, Harvey, Rodda, Nattrass, & Pirpiris, 2004, p.514), is frequently assessed in older adult populations. Operationalized, the measurement of functional mobility tends to narrowly focus on physical function and the ability to move one’s body to perform specific functions. In older adults, functional mobility is measured with a number of tests, such as the “timed-up-and-go” (Podsiadlo & Richardson, 1991), the six-minute walk test (Harada, Chiu & Stewart, 1999), and various measures of gait,
balance, stability, walk speed, the motion of sitting to standing, and stair climbing (e.g., Butler, Menant, Tiedemann, & Lord, 2009). A disconnect exists between the definition and measurement of functional mobility. Stalvey et al. emphasized that mobility is not just the physical execution of tasks, “mobility as a construct is more than performance manoeuvres, motoric activities, and adverse outcomes: it also encompasses travel in, around, and outside the home as one conducts the business and social aspects of everyday life” (1999, p.461). A comprehensive understanding of older adults’ mobility requires an examination of their travel, both within and outside the home, as it intersects with meaningful and necessary activities.

For the purpose of this dissertation, I draw upon the mobility definitions of Webber et al. (2010), Stelvey et al. (1999), and the WHO (2013), who all emphasize the movement of the body, through space, using a variety of modes. I contend that we must also understand mobility as: the movement of the body through space, using a variety of modes, in a way that is meaningful to the individual. I determine ways that mobility is meaningful to the individual through in-depth interviews with participants.

Maintaining mobility is vital for the overall health and wellbeing of older adults. Limited mobility, or a mobility disability, can harm an older adult in a number of ways: decreased PA and associated health effects, social isolation, and limited access to health and community resources (Rosso, Auchincloss, & Micheal, 2011). Hirvensalo et al. (2000) conducted an eight-year follow-up of 1,109 older adults. They found that those with mobility disabilities were more likely to die and/or become dependent on others for care, either in a facility or through publicly funded help (i.e., home support or home care). Participants with a mobility disability and sedentary behaviours fared worse, as they were three times more likely to die than their mobile and physically active counterparts.
1.2.3.1 The impact of the built environment

A growing body of literature suggests an association between the mobility of older adults and their local built environments. However, studies that represent higher levels of evidence (e.g. RCTs) are expensive and challenging to perform and therefore virtually absent from the literature. Van Cawenburg et al.’s systematic review (2011) of the physical environment and older adults’ physical activity included 31 relevant studies, all association studies. The review found that environmental factors were not associated with PA. Conversely, Rosso et al.’s systematic review (2011) included 17 studies (four longitudinal, thirteen that examined cross-sectional associations). They found that transportation systems, land-use patterns, and the design of the urban environment impacted the mobility of older adults. As Rosso et al.’s (2011) review highlighted, the term “mobility” is measured in a number of ways, with some studies assessing disability, and others assessing walking, which is more closely related to PA than mobility, per se. Much of the literature focused on walking rather than global mobility (the total movement through space, irrespective of the mode), possibly because walking is a form of PA with greater associated health benefits than, for example, driving.

1.2.3.2 Walkability

In the aging and mobility literature, there is notable focus on “walkable environments” (Berke, Gottlieb, Moudon, & Larson, 2007; Chaudhury et al., 2011; Hanibuchi, Kondo, Shirai, Hirai, & Kawachi, 2012; Montemurro, Berry, Spence, Nykiforuk, Blanchard, & Cutumisu, 2011). It is accepted that a walkable environment facilitates a specific behaviour: walking. Walking is one form of being mobile. A walkable environment can mean many different things, including: closeness/proximity; being barrier-free; being safe in terms of crime and traffic; a space complete with pedestrian-friendly infrastructure, such as benches; and to some, a walkable
environment is “upscale, leafy, or cosmopolitan . . . pleasant for upper middle-class professionals” (Forsyth & Southworth, 2008, p.2). Mehta (2008) employed the “hierarchy of walking needs” model, similar to Maslow’s hierarchy of human needs, which suggests that people are motivated to walk in a given space if it provides: feasibility, accessibility, usefulness, safety, comfort, sensory pleasure, and a sense of belonging (Alfonzo, 2005). Walkability is often measured using a global walkability tool (WalkScore, 2016) that generates a walkability score that ranges from 1 (not walkable) to 100 (walker’s paradise) using an established set of urban form evaluation criteria.

Although not specific to older adults, one of most comprehensive and cohesive conceptual models of walkability was developed by Ewing and Handy (2009), who, like Bronfenbrenner (1979), argued that how one perceives the environment is more important for their own mobility than an objective assessment of said environment. This is because an individual’s perception of the environment mediates their walking behaviour. Perception is “a result of interplays between past experiences, one’s culture and the interpretation of the perceived” (Ewing & Handy, 2009, p.67). In short, how an individual perceives an environment will impact how they engage with it, including whether or not they will walk in it.

1.2.3.3 The impact of the social environment

In addition to the built environment, the social environment also impacts the mobility of older adults. For example, opportunities for social interactions (Gardner, 2011) and positive social networks (Lord, Després, & Ramadier, 2011; Walker & Hiller, 2007) promote mobility. The term “social environment” (SE) is nebulous and there is little consensus within the social science community regarding its definition and operationalization (McNeill, Kreuter, & Subramanian, 2006). McNeill et al. (2006) define the social environment as “social relationships
and cultural milieus within which defined groups of people function and interact” (p. 1011). The social environment is often used to encapsulate anything that is not built or part of the natural landscape, ranging from the perceived safety of a walkway to the social cohesion of a neighbourhood (Hanson et al., 2012). In their evidence review of 33 studies on older adults’ mobility, and the impact of the built and social environments, Hanson et al. (2012) called for research that more fully examines the intersection of the older adult (their health, community engagement, and mobility), the built environment, and the social environment, as these three elements work together to support or impede mobility. Levasseur et al.’s (2015) scoping review considered both built and social environments, as they impact the mobility and social participation of older adults. Drawing on 50 studies, they found that older adults’ mobility and social participation was positively influenced by: proximity to resources and recreational facilities, social support, driver’s licence/Car, public transit, and neighbourhood security. Neighbourhood insecurity and unwalkable environments were negatively associated with older adults’ mobility and social participation. Although conceptually much broader (it simultaneously looked at mobility and social participation), Levasseur et al.’s scoping review highlighted the importance of mobility. Mobility isn’t just about movement to and from; it is also about “active engagement with life” (Torres, 2013, p.48).

1.2.3.4 The role of the neighbourhood environment

Many variables considered in Levasseur et al.’s (2015) scoping review were related to “neighbourhood.” The local neighbourhood context is especially important for older adults. Neighbourhoods “are important physical and social places of aging” (Gardner, 2011, p.263). A positive neighbourhood context is crucial for the wellbeing of older adults, especially if health challenges, financial limitations, or driving cessation impede their ability to travel outside their
immediate area (Gardner, 2011; Rosso et al., 2011). The immediate neighbourhood environment is important because,

older adults may be more vulnerable to influence of their residential environment as they tend to travel outside their own neighborhoods less often than do younger adults and children who travel for work and school and tend to have a longer duration of exposure to neighbourhood influences than younger individuals (Rosso et al., 2011, 2).

The concept of neighbourhood can be defined in many ways. In quantitative studies, the term neighbourhood is often pre-defined using national census boundaries (Yen, Michael, & Perdue, 2009). The University of Alabama at Birmingham Study of Aging Life-Space Assessment (LSA) tool asks older adults to define their neighbourhood using three options: “within half a mile/5-6 city blocks,” “within town/5 miles,” or “outside of town/10 miles” (Baker, Bodner, & Allman, 2003). Gardner did not pre-define or ask older adult participants to define the neighbourhood, but rather, sought to explore the neighbourhood as a “material place where public life occurs. . . . And examine how these neighbourhoods . . . influence the experience of aging” (Gardner, 2011, p.264). In their systematic review on neighbourhood environment and the health of older adults, Yen et al. (2009) concluded: “Aging research has documented various racial/ethnic and SES disparities in health among older adults. . . . It is valuable to do more studies with racially/ethnically diverse communities, perhaps incorporating community-based participatory research (CBPR) methods . . .” (Yen, Michael, & Purdue, 2009, p.460). My dissertation will contribute to filling this identified gap in the literature.
1.2.3.5 Measuring mobility in older adults

In addition to the functional mobility measurements briefly outlined above, many other methods were employed to assess the mobility of older adults. Studies examined the “life-spaces” in which older adults move (Peel et al., 2005; Stalvey, Owsley, Sloane, & Ball, 1999; Tsai et al., 2015), and time-space and travel diaries captured self-reported travel patterns (e.g. Chudyk, Winters, Moniruzzaman, Ashe, Gould, & McKay, 2015). Recognizing the limitations of travel diaries, which rely on the faithful and ongoing recordings of participants throughout the experiment, researchers have more recently used Global Positioning System (GPS) units to objectively measure movement through space over a specified period of time (e.g., Shoval et al., 2011; Webber & Porter, 2009).

While travel diaries, tabulating trips, and GPS units quantify mobility, “the meaning individuals attribute to mobility and their experiences when venturing out are only scarcely assessed” (Mollenkopf et al., 2017, p.268). Qualitative methods provide additional insights toward capturing the lived experience of mobility. As a multi-faceted and experiential phenomena, researchers employed qualitative methods to tease apart and assess mobility. Qualitative examinations of mobility used focus groups, interviews, visual and digital prompts, and observational methods.

Several studies utilized one-on-one interviews and focus groups to assess the relationship between older adults’ mobility and their local environments—both the social (e.g., presence of friendly neighbours) and built (e.g., the accessibility of transit) (e.g., Lord et al., 2011; Montemurro et al., 2011; Ottoni, Sims-Gould, Winters, Heijnen, & McKay, 2016; Walker & Hiller, 2007; Wilcox, Oberrechet, Boop, Kammermann, & McElmurray, 2005) environments. Some studies were labelled “mixed-method”, as they combined qualitative data (e.g., interview
transcripts) with data that were more quantitative in nature (e.g., questionnaires or travel diaries) to answer their research questions (e.g., Stathi, Gilbert, Fox, Coulson, Davis, & Thompson, 2012; Zeitler, Buys, Aird, & Miller, 2012). Zeitler et al. (2012), and Rosenberg, Huang, Simonovich, and Belza (2012), used in-depth interviews in combination with person-based GPS tracking to obtain both subjective and objective measures of where people travelled outside their homes. Only one study (Lord et al., 2011) employed a longitudinal design; they reported changes in mobility over a 10-year period.

Collectively, these studies provided important insights about the mobility of older adults, and the impact of their local built and social environments. Several studies demonstrated the importance of social networks, neighbours, family members, and friends in supporting, encouraging, or maintaining mobility (Lord et al., 2011; Walker & Hiller, 2007). Similarly, a lack of companions was a barrier to neighbourhood activity (Stathi et al., 2012). With respect to the built environment, Montemurro et al. (2011) found that street connectivity, traffic, weather, and the presence of paths influenced walking behaviours. In a study with older adults with mobility disabilities, participants identified similar macro-scale built environment features, such as transit systems and street connectivity, but also discussed micro-scale features such as the presence and condition of curbs, crosswalks, sidewalks, and places for resting. Proximity to amenities and facilities enabled walking (Stathi et al., 2012; Wilcox et al., 2005). Walker and Hiller identified pollution and traffic noise as “detracting from the neighbourhood environment” (2007, p.154).

To facilitate and enrich discussions about the impact of the environment on older adults’ mobility, researchers used a number of visual and digital media tools, such as maps, photos and video footage of neighbourhoods. To discuss where people travelled, printed maps with roads,
parks, and shops were provided during the interview to facilitate a discussion on walking behaviours (Smith, Gidlow, Davey, & Foster, 2010). Older adults were asked to watch pre-recorded video footage of local neighbourhoods (Walford, Samarasundera, Phillips, Hockey, and Foreman (2011). While watching videos, participants recorded their “oral narratives,” which were then used to assess the quality of the built environment for older pedestrians (Walford et al., 2011, p.163). By using maps or videos, researchers were able to bring the outdoor environment inside, to their seated one-on-one interviews with participants. Taking an alternative approach, Lockett, Willis, and Edwards (2005) asked 13 older adults to head out into their local neighbourhoods with cameras, to take photos of things they identified as environmental barriers and facilitators of walking. These photos were then used at a later time to guide focus group discussions with a larger group of older adults. A study that uses this method of data collection is described as “photovoice” (Novek, Morris-Oswald, & Menec, 2012). Street connectivity, safe routes, benches, and washrooms were identified as environmental features that facilitated older adults’ walking. Similar results were obtained in a photovoice study of local environments (n=66 older adults in Metro Vancouver, British Columbia, and Portland, Oregon) (Chaudhury, Mahmood, Micheal, Campo, & Hay, 2012; Mahmood, Chaudhury, Michael, Campo, Hay, & Sarte, 2012). Mahmood et al.’s (2012) work highlighted the impact of the social environment. Community-based programs, peer-support, and volunteer activities were cited as factors that supported older adults’ physical activity in their local neighbourhoods.

Most studies involved researchers engaging with participants in their homes, neighbourhoods, and communities to collect data, yet few incorporated a formal observational component in their data collection. The simple action of meeting an older adult in their home or neighbourhood to conduct an interview provides a rich opportunity for the researcher to observe
the environment in which the older adult lives and moves. With a focus on neighbourhood safety and accessibility, older adult participants with functional limitations were asked to join researchers on a short walk of participants’ residential areas (Stahl, Carlsson, Hovbrandt, & Iwarsson, 2008). Participant and researcher walked a short route, selected by the participant, in which “critical incidents” were recorded. The researcher then walked the route for a second time on their own, to systematically identify and record any environmental barriers (e.g., uneven sidewalks, or long distances between resting places). Gardner (2011), in a grounded theory study, sought to understand how social networks in neighbourhoods impacted the health and wellbeing of older adult residents. Over an eight-month period, Gardner regularly visited six older adults in their homes. During each visit, they engaged in “go along” interviews. The go along interview, developed by Kusenbach (2003), and refined for health research by Carpiano (2009), involves unstructured walks around participants’ neighbourhoods and living spaces. During these walks, participants were provided with the opportunity to discuss the features of their environment, and were given “power” to guide the walk and the discussion. In this sense, go along interviews fundamentally alter the interviewer-interviewee relationships, providing more decision-making power to the research participant (Carpiano, 2009).

Gardner found that her participants’ sense of wellbeing and health were positively impacted by the presence of third spaces that allowed for interpersonal relationships to form. Third spaces are public spaces that function as the “gateways to the outside world” for older adults, such as cafés and main streets (Gardner, 2011, p.267). Gardner (2011) and Stahl et al.’s (2008) work is unique and appropriate, as they took their research to the street and into the immediate environments they sought to understand. These studies are more than environmental audits; they allow the researcher to observe, first hand, how older adults are interacting with their
built and social environments. This approach allows the researcher to see the ecological equation \((P+E=B)\) in action: behaviours (B), such as walking, are the product of people (P) interacting with their environments (E). Observing these interactions would be difficult, if not impossible, without the first-hand observational component, in a natural setting. The go-along method allows for this. Go-along studies, however, (e.g., Brown & Durrheim, 2009; Carpiano, 2009; Garcia et al., 2012; Gardner, 2011; Kusenbach, 2003; Stahl et al., 2008) did not offer advice on how to implement this approach in a multilingual context. My research fills this gap in the published literature and research practice through development of a go-along method that can be conducted with a multilingual FBOA sample.

1.2.4 The relationship between mobility and physical activity

Mobility is the movement of the body through space, using a variety of modes, while PA is movement of the body. These are closely related concepts. For example, the Canadian Institutes of Health Research (CIHR) definition of mobility includes both terms: “mobility encompasses not only participation in society (e.g., ability to drive and having accessible public transportation) and PA of older adults, but also the performance of specific manoeuvres such as walking or climbing stairs and the carrying out of instrumental activities of daily living” (CIHR, 2013). But while closely related, the precise relationship between the two concepts is not well articulated in the literature (Hirvensalo et al., 2000; Tsia et al., 2015).

With an emphasis on functional mobility, Hirvensalo et al. (2000) defined mobility as being able to walk two kilometres and climb one flight of stairs without difficulty. They articulated that one can be “mobile” and still be inactive, and vice versa. As such, they stratified their participants into four groups: Mobile-Active, Mobile-Sedentary, (mobility) Impaired-Active, and Impaired-Inactive. Conceptually, the design of their study and the stratification of
participants suggested that mobility is not synonymous with PA. That is, possessing intact mobility does not necessarily result in adequate PA. Conversely, one can be mobility-impaired and still obtain adequate levels of PA; the relationship is not directional. Consistent with the general PA literature, they found that PA has a protective factor. Specifically, PA protected those with mobility impairments from further disability and physical decline (Hirvensalo et al., 2000). Tsai et al. (2015) focused on the relationship between PA and life-spaces mobility. Life-spaces mobility was assessed using the self-report Life Spaces Assessment (LSA) (Stalvey et al., 1999), which captures participants’ movements through nine spaces (from one’s bedroom to outside of one’s country). Physical activity was assessed using accelerometers. Tsai et al. (2015) found a positive association between higher life-space mobility and objectively measured PA. Those with limited mobility (i.e., a restricted life space as assessed with the LSA) had “exceptionally low” daily step counts (Tsai et al., 2015, p. 5). They hypothesized that facilitating independent mobility may promote higher levels of PA, but again the directionality of this relationship has not been empirically demonstrated.

Recent data from the Lifestyle Interventions and Independence for Elders (LIFE) study suggests that PA can lead to better mobility (Pahor et al., 2014). With a home and centre-based exercise intervention, participants experienced a significant reduction in major mobility disability (measured using a 400-metre walk test) (Pahor et al., 2014). The positive effects of the intervention remained statistically significant 2.5 years after the formal delivery of the intervention ceased. This persistent effect supports that increasing PA among older adults can lead to improved mobility, when mobility is assessed using one reliable measure of physical function.
The few studies that empirically tested the relationship between PA and mobility focused on one aspect of mobility: functional mobility (Hirvensalo et al., 2000; Pahor et al., 2014) and movement through life-spaces (Tsai et al., 2015). But mobility is more than simply moving one’s body or moving one’s body through space. It is equally important to understand how one perceives and interacts with one’s environment [Ewing and Handy (2009)]. This speaks to a subjective, experiential component to mobility, which is important to examine. Study design should endeavour to capture the multifaceted nature of mobility, but this cannot be obtained by simply assessing one outcome, such as walking, number of trips, or a measure of mobility function or mobility disability. Mixed-methods studies, which capture both the metrics of mobility and the experiential nature of mobility, can provide a more comprehensive understanding. I use a mixed-method approach in studies that comprise my dissertation to provide a robust characterization of FBOAs’ mobility and PA.

1.2.5 Physical activity in older adults

Similar to mobility, there was a relationship between built and social environments and PA levels of older adults (McNeill et al., 2006; Van Cauwenberg et al., 2011). The WHO defines PA as “any bodily movement produced by skeletal muscles that requires energy expenditure” (WHO, 2015a). Physical activity includes exercise, which is planned, structured, and done with the intention of maintaining one’s fitness; but PA is broader than exercise in that it encompasses any bodily movement, including movement engaged in during work, chores, and activities (WHO, 2015a). PA can also include what Matthews et al. (2007) call “nonexercise.” Nonexercise includes activities such as housework and moving around the home, can offer significant health benefits. In a study of 1,019 Chinese women, regular engagement in nonexercise resulted in a 25–50% reduction in mortality risk (Matthews et al., 2007).
Among older adults, PA is decidedly health enhancing. An abundance of research (Paterson, Jones, & Rice, 2007) now demonstrates that specific kinds of PA reduces the risk for many chronic diseases, preserves physical function as individuals age, and can even restore function in those who were previously sedentary (Chodzko-Zajko et al., 2009). In publicly funded health care systems, moderate to vigorous PA reduced the risk of some of the most costly and impactful chronic diseases, including “cardiovascular disease, stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, cognitive impairment, anxiety and depression” (Chodzko-Zajko et al., 2009, p. 1,515). Similarly, strength and balance exercises reduced the rate of falls and falls related fracture (Chang et al., 2004) and enhanced the cognitive function of older adults (Nagamatsu et al., 2013). Of particular relevance to older adults who have mobility impairments, the benefits of light PA are just now coming to light (Fuzeki et al., 2017).

In spite of the well-documented benefits of PA, in 2005, 62% of Canadian older adults were inactive (NACA, 2006). Inactivity is higher among older women—67% of those over 65, and 75% of those over 75 did not engage in the recommended 150 minutes per week of PA (NACA, 2006). Supporting PA of older adults, the most inactive segment of Canada’s population (Moran, Van Cauwenberg, Hercky-Linnewiel, Cerin, Deforche, & Plaut, 2014), is a public health imperative.

1.2.5.1 Physical activity in older adults: measurement

Physical activity among older adults can be measured in a number of ways. These include: the frequency of self-report trips (e.g., Davis et al., 2011), self-reported PA by amount (min/week) and perceived intensity (e.g., Hirvensalo et al., 2000; Stewart, Mills, King, Haskell, Gillis, & Ritter, 2001), daily step counts (e.g., Cavanaugh, Coleman, Gaines, Laing, & Morey,
2007), and total PA across intensities (light, moderate vigorous (Copeland & Esliger, 2009)) using accelerometers (Buman et al., 2010; Copeland & Esliger, 2009). While self-reported measures of PA are reliable and adequately assess frequency, it is hypothesized that older adults may incorrectly report the intensity of their physical activities (Hirvensalo et al., 2000). This is especially true for individuals with mobility impairments, as their perceived effort may not coincide with the actual intensity of PA measured objectively (Hirvensalo et al., 2000). Self-reported measures of PA can also suffer from recall bias (Sallis & Saelens, 2000).

Accelerometers are commonly used to objectively assess PA and allow researchers to overcome issues of perception and recall bias. Accelerometers are small units worn on the body (commonly the hip or wrist) that independently calculate activity counts for the entire time that the unit is worn (Chen & Bassett, 2005). They provide an estimate of the acceleration of the body’s centre of mass, therefore, they are unable to assess activities such as cycling or swimming, or in older adults shuffling movements with no vertical acceleration (Chen & Bassett, 2005) or the increased energy expenditure associated with walking uphill or carrying a load. Accelerometers allow researchers to capture “free living” activity, as participants go about their everyday lives and activities in natural settings (Troiano, McLain, Brychta, & Chen, 2014). Accelerometers have been widely used to capture the PA of older adults, in both intervention and cross-sectional studies (Gorman, Hanson, Yang, Khan, Liu-Ambrose, & Ashe, 2014).

Accelerometers report activity counts for a pre-specified amount of time (the “epoch”). Cut points are established to differentiate activity counts (e.g., counts/minute) that represent light, moderate, and vigorous PA, and sedentary time (Copeland & Esliger, 2009). Cut points are not standardized, and in the older adult accelerometry literature a range of cut points have been used (Gorman et al., 2014). Moderate to vigorous physical activity (MVPA) cut points ranged
from 574 to 3,250 counts/min, and 50 to 500 counts/min for sedentary time (Gorman et al., 2014). The most commonly used cut point for MVPA was 1,952 counts/min, and the most commonly used cut point for sedentary time was <100 (Gorman et al.’s (2014). Light activity falls between these two, at 101-1,951 counts/min. Copeland and Esliger (2009) conducted laboratory calibration tests with 38 older adults aged 64–77 and established a cut point of 1,041 counts/min to denote MVPA for older adults (Copeland & Esliger, 2009). Objective measurements of PA, using accelerometers, focused almost exclusively on MVPA. Although relatively little is known about the health benefits of light levels of PA for older adults (Buman et al., 2010), a positive association has begun to emerge (e.g., Füzéki, Engeroff, & Banzer, 2017). In a systematic review of 59 studies of PA assessed using accelerometers among older adults, 54 studies reported MVPA (Gorman et al., 2014). A range of cut points were used to define levels of MVPA. This is of concern as, if different intensity cut points are used, levels of PA among older adults will be represented differently and cannot be compared across studies. Reporting MVPA is likely driven by national guidelines embedded in the well-documented relation between MVPA and cardiovascular health. Canadian guidelines call for 150 minutes/week of MVPA for all adults (Tremblay et al., 2011), and the American Heart Association similarly emphasizes “moderate intensity aerobic activity,” in addition to strength training, for older adults as a means of enhancing cardiovascular health (Haskell et al., 2007). Therefore, in keeping with the focus on national guidelines, most research reported MVPA (Gorman et al., 2014).

Very little is known about the role or importance of physical activity at the “lighter” end of the spectrum (Lee and Shiroma (2014). Further, a focus on hard cut points and MVPA limits our understanding of the full spectrum of PA, and its impact on overall health and wellbeing. In adult populations, a systematic review of 37 cross-sectional and 3 longitudinal studies that used
National Health and Nutrition Examination Survey (NHANES) accelerometer data demonstrates that light activity has a positive effect on obesity and mortality (Füzéki et al., 2017). In an older adult population, Buman et al. (2010) analyzed the Neighbourhood Quality of Life Study for Seniors (SNQLS). They assessed seven days of PA, by accelerometry, in 862 older adults aged 75.4 (SD 6.8 years) who lived in Baltimore, Maryland and Seattle, Washington. They employed the commonly used cut points of <100/min for sedentary and >1,952/min for MVPA; they used Copeland’s threshold of 1,041/min to distinguish between low–light activity (101-1,040/min) and high–light activity (1041-1951). They found that light levels of PA were positively associated with self-reported physical health and wellbeing. For older adults, who may spend more of their day engaged in physical activity at the lighter end of the spectrum, it is essential that future studies capture and report their full range of activity.

Community-dwelling older adults who are inactive, may wish to increase their PA but do not have sufficient opportunities to do so [Rantakokko et al. (2010)]. Further, local environments that do not support older adults’ mobility may decrease opportunities for adequate PA required to maintain health benefits [Rantakokko et al. (2010)]. Once again, this speaks to the socio-ecological model—there are multiple levels of influence on behaviour, and it is key to better understand the intersection of human behaviours and environments where people live.

1.2.6 Mobility and physical activity: FBOAs

1.2.6.1 The physical activity of FBOAs

Physical activity and mobility are essential elements that contribute to older adult health. Despite this, only a handful of studies provide any insights into the mobility and PA of FBOAs. Canadian (Garcia & Johnson, 2003; Jette & Vertinsky, 2011; Koehn, Habib, & Bukhari, 2016; Oliffe et al., 2010; Taylor et al., 2008; Wang et al., 2013) and international studies focused on
As observed in outcomes from NPHS and numerous cycles of CCHS, the longer an immigrant lives in Canada, the higher their risk of having a chronic disease (Tremblay, Bryan, Perez, Ardern, & Katzmarzyk, 2006). Researchers attempted to discern how different factors—including time since immigration, ethnicity, changes in nutrition, and changes in PA—impacted the health of immigrants as they aged in Canada (see Dogra, Meisner, & Ardern, 2010; Garcia & Da, 2011; Johnson & Garcia, 2003; Tremblay et al., 2006). Immigrants tended to engage in less PA (Dogra et al., 2010) and visible minority immigrants were less likely to engage in PA than Caucasian immigrants (Tremblay et al., 2006).

While our understanding of the PA patterns of immigrants has advanced in recent years, research specific to FBOAs remains scarce. Two studies, one using a qualitative and one a mixed-method approach, provided some insight as to the patterns and preferences of PA for older adult immigrants (Garcia & Da, 2011; Johnson & Garcia, 2003). For example, for older adult Chinese immigrants walking was the preferred form of PA (Garcia & Da, 2011). There were also key differences between physical activities that men and women engaged in. Chinese men were more likely to walk and play ping pong, while women were more likely to do house/yard work, climb stairs, and follow exercise programs on TV. Both men and women reported participating in Tai Chi and other traditional Chinese “body movement” practices. All participants reported engaging in less PA in Canada than in their country of origin; this was linked to supportive built and social environments in their country of origin. As one participant explained, “[where I am from] our parks are equipped with exercise beams or bicycles, walking
pathways, and huge spaces for group exercises” (Garcia & Da, 2011, p.77). However, all of these studies were cross-sectional or exploratory in nature. Thus, once again they comprise relatively low levels of evidence and to my knowledge, there are no systematic reviews, controlled trials pertaining to, long term prospective trials or conceptual models guiding our understanding of the PA of FBOAs in Canada.

In a study of 54 Cambodian, Latin American, Vietnamese, and Polish older adult immigrants, the vast majority (83.3%) reported being physically active at less than “optimal levels” (a mean frequency of 4.6 days per week and a mean duration of 30 minutes per day) (Johnson & Garcia, 2003). The most frequently reported type of activity was walking, followed by yard and housework. Consistent with Tremblay et al. (2006), we see differences in PA preferences between groups of participants categorized by their ethnicity. Cambodian and Vietnamese participants were the most likely to walk (approximately 70% reported walking), while Latin American participants were least likely to walk (40%) but most likely to participate in aerobics (33%). This suggests that foreign-born older adults of different ethnicities have different perceptions and practices related to PA.

1.2.6.2 Culturally informed physical activity

It is widely recognized that culture has a profound impact on health and health behaviours (Napier et al., 2014). As noted above, I adopt the definition that culture “is the common set of values, beliefs, and behavioural norms common to a given group of individuals” (Lai, Tsang, Chappell, Lai, & Chau, 2007, p.172). At present, we do not have a comprehensive understanding of if/how culture impacts the PA behaviours of FBOAs. Taylor et al.’s (2008) analysis of a PA education curriculum, which included Chinese adults from Vancouver, suggested that Chinese older adults have “culturally specific beliefs concerning the
appropriateness” of vigorous physical activity for elders (p.386). Chinese older adults in their study emphasized the need for slow and “soft” activities. Participants also stressed the importance of completing household activities and maintaining harmonious family relationships above acquiring formal PA. In a study of South Asian older women and their access to health promotion programs in Metro Vancouver, participants were keen to acquire exercise but also prioritized domestic activities (e.g., caregiving, cooking, etc.) (Koehn et al., 2016). The prioritization of family over self-care was especially salient for South Asian older women who “tend to put the care of their family members ahead of their own needs” (Koehn et al., 2016, p.96). We have a limited understanding of if/how cultural norms and familial roles impact the acquisition of PA and the mobility of FBOAs; my research seeks to partially fill this gap in the literature.

1.2.6.3 FBOAs and the built environment

Systematic reviews, which mostly included cross-sectional studies, demonstrated that neighbourhood characteristics and the built environment impact the health and wellbeing of local older residents (Rosso et al., 2011; Levasseur et al., 2015; Van Cawenberg et al., 2011; Yen et al., 2009). However, there is virtually no evidence to support whether FBAOs’ health is similarly affected. Rosso et al. (2011) conducted a systematic review of the impact of the built environment on the mobility of different groups. Minority older adults, women, and those with lower income may more acutely experience the impact of their social and built environments, in part because they are more likely to reside in disadvantaged neighbourhoods.

In the United States, research was conducted with FBOA Latinos to assess the impact of the neighbourhood built environment and architectural features on their physical functioning. Architectural features that promoted social engagement between residents (e.g. porches, stoops,
street-front entrances, and stairways) were significantly associated with older adults’ physical functioning (Brown et al., 2009). Authors hypothesized that having “eyes on the street” promoted a feeling of safety for older adults while walking around the neighbourhood. Further, they reported that some built environment features directly promoted mobility (by encouraging residents to walk up stairs or walk across a street to see or visit a neighbour who was out on their porch or stoop). Brown et al. suggested an important intersection between built and social environments whereby both work in tandem to support the mobility of older residents. While this provides unique insight into how the built environment promotes physical functioning among older adults, what Brown et al. (2008) failed to explore was if or how culture, cultural norms, language, immigrant status, or ethnicity also played a role. We know that their study was conducted in a neighbourhood of predominately Latino immigrants. However, we do not know if, using a comparable design, similar results would be found in a neighbourhood with different demographic characteristics. Similarly, research on the built environment and older adults was conducted in Hong Kong (Cerin, Sit, Cheung, Lee, & Chan, 2010), Japan (Hanibuchi, Kawachi, Nakaya, Hirai, & Kondo 2011; Hanibuchi et al., 2012), and Colombia (Parra, Gomez, Fleischer, & Pinzon, 2010), yet no studies meaningfully explored if or how culture, cultural norms regarding physical and social activities, ethnic identity, and/or issues related to immigration impacted how older adults engaged with these spaces.

Preliminary research from Australia attempted to answer some of these questions. Bird et al. (2011) sought to understand how the built environment impacts the PA levels of older women from different ethnic communities (Italian, Vietnamese, and Anglo-Celtic). Using measures of neighbourhood walkability, PA, and environmental supports for PA, they too found differences according to ethnic-group categories. For example, Italian women were more likely to identify
personal barriers to PA (e.g., poor health, lack of energy, lack of enthusiasm for exercise), while Vietnamese women were more likely to identify their physical environment as a barrier (e.g., neighbourhood safety, aesthetics, and design). Vietnamese women were more likely to live with family and reported fewer social barriers to PA (e.g., having someone to exercise with). Although Vietnamese women had more negative perceptions of the built environment, they reported levels of PA similar to those of the other participants. We do not know why these women were able to overcome their negative perceptions of the built environment, but it is possible that their reported social enablers (e.g., having someone to exercise with) played a role.

It would be advantageous to couple Bird et al.’s (2011) study design with qualitative approaches, such as in-depth interview questions, to probe more deeply into results generated using quantitative tools. Bird et al.’s study design would also be strengthened by measuring PA objectively to overcome the problems associated with self-reporting and recall bias inherent in subjective PA measures (Chen & Bassett, 2005). In my research, I will couple objective measures of PA with in-depth interviews to comprehensively characterize the PA of FBOAs.

1.2.6.4 FBOAs and the social environment

The social environment, and social supports nested within these environments, enabled PA among several foreign-born and visible minority groups (Mathews et al., 2010). The social environment is comprised of interpersonal relationships, immediate physical surroundings, and the “cultural milieus within which defined groups of people function and interact” (Barnett & Casper, 2001, p.465). Both the process of aging and the process of immigration can profoundly alter an individual’s social environment. For example, Wu and Hart (2002) found that foreign-born older adults experienced less social support as their physical health declined.
1.2.6.5 The suprapersonal social environment

In Lawton’s (1982) taxonomy of the environment, one of the four types of environments that need to be considered is the suprapersonal. The suprapersonal environment includes the predominant ethnicity, age, or socioeconomic status of other people in a person’s neighbourhood. Similarly, McNeill et al.’s (2006) taxonomy of the social environment includes the presence of any racial discrimination. Research conducted in the United States examined the question: “Are immigrant enclaves healthy places to live?” (Osypuk, Roux, Hadley, & Kandula, 2009). Immigrant enclaves (i.e., neighbourhoods with a high proportion of immigrants) can be specific to one or inclusive to several ethnic groups. In Canada, a “visible minority enclave” (a term that includes Canadian and foreign-born visible minority persons) is defined as a census tract with more than 30% of residents who identify as members of a visible minority group. Vancouver is home to numerous multi- and mono-ethnic enclaves. For example, in the City of Vancouver, 52% of Chinese residents and 29% of South Asian residents live in a visible minority enclave (Hou & Picot, 2003). South Vancouver, where I conducted my dissertation research, is considered one of Vancouver’s “Indo-Canadian hubs,” although it is also home to many other ethnocultural groups (City of Vancouver, 2012).

Enclaves offer residents a distinct social environment, where culturally specific services, shops, and mechanisms for socializing and congregating may be available (see Portes, 1996; Portes, Kyle, & Eaton, 1992; Zhou & Bankston, 1996). However, Hispanic and Chinese enclaves had “worse environments related to PA (safety, walkability, presence of recreational exercise facilities) and worse social environments (social cohesion and neighborhood-based civic participation)” than nearby neighbourhoods with lower proportions of immigrants and visible minorities (Osypuk et al. 2009, p.115). These findings were drawn from data collected in four
cities across the United States: Los Angeles, New York, Chicago, and St. Paul (Minnesota). There is a perceived need for tailored health promotion in immigrant enclaves, especially among women and older adult residents who may have fewer resources, fewer opportunities to move outside their immediate neighbourhood, and greater linguistic barriers (Saunders, Garber, & Martins, 2002). One caveat is that the bulk of this research was conducted in the United States, where there was a tendency to highlight the negative features of immigrant enclaves (Hou & Picott, 2003). Canadian research tended to focus on the more positive roles of these neighbourhoods (Hou & Picott, 2003). In the context of my dissertation research, I describe and contextualize the neighbourhoods in which data collection takes place and participants reside.

1.2.6.6 FBOAs and mobility

We know very little about the PA of FBOAs residing in Canada, and we know even less about the overall mobility of these individuals. Wu and Hart (2002) found that mobility problems were negatively associated with social involvement (i.e., participation in group activities and events outside the home). The root causes of these mobility challenges are not well understood, but appear to be highly varied and multi-faceted. A study of visible minority older adults in Vancouver used focus groups to assess access to health care, and found that familial obligations, including caring for grandchildren, limited movement outside the home (Koehn, 2006). A study of Korean American older adults demonstrated that linguistic barriers, limited resources, and limited access to information compounded mobility problems (Yum & Nakashima, 2006; as cited in Yum, 2007). Finally, the intersection of immigration status (a biographical influence), ethnicity, cultural norms regarding PA, and in some cases gender, appear to collectively influence the health of FBOAs. However, in Canada we know virtually nothing about the mobility of this group.
1.3 Guiding Theoretical Models

In this section, I present the theoretical models that guide my characterization and conceptualization of FBOAs’ mobility. These models are: 1) the socio-ecological model (Bronfenbrenner, 1979), including Lawon’s ecological model of aging; and 2) the Webber (2010) model of mobility in older adults. I also highlight some limitations of these models, and identify areas where my research will help to expand our current conceptualization of FBOAs’ mobility.

The dominant theories that drive the study of aging and the environment are rooted in an ecological framework. Ecology is the study of “the relation of organisms or groups of organisms to their environment” (Moos, 1976, p.9). In the last four decades, advancements in the fields of human development, psychology, and more recently gerontology and environmental gerontology have rendered myriad conceptual frameworks and approaches to understanding how humans interact with their built and sociocultural environments. In the last decade we have seen more explicit efforts to conceptually link older person, their environment, their health, and their wellbeing.

1.3.1 The socio-ecological model

One of the most influential conceptual models to guide contemporary environmental gerontology was established in the field of child psychology and development. Urie Bronfenbrenner’s ground-breaking book *The Ecology of Human Development* (1979) presented key concepts that guide our understanding of how humans relate to their environments. The key concepts presented in Bronfenbrenner (1979) continue to be used today under the rubric of “socio-ecological models,” for research throughout the life course (e.g., Kowal & Fortier, 2007; Milligan, Gatrell, & Bingley, 2004; Richard, Gauvin, & Raine, 2011; Robinson, 2008).
Socio-ecological models seek to explain how people react, develop, and adapt in relation to the various environments that they encounter. Bronfenbrenner (1979) proposed that the environments in which we live and operate consist of multiple layers, with each layer impacting our actions, reactions, and behaviours. He described these layers like a series of Russian dolls nested together, with the innermost layer being that of the individual. The layer closest to the individual is the microsystem; the mesosystem is a combination of two or more microsystems; the exosystem is the second layer; and the outermost layer is the macrosystem, which is the total combination of micro, meso, and exosystems.

The microsystem consists of interpersonal relationships, roles, and activities experienced by an individual in a given setting. Bronfenbrenner emphasized the term “experience” in the definition, because he argued that the subjective experience of a particular environment is more important than the objective assessment of that same environment. In Bronfenbrenner’s view, the perception of the environment is paramount: “the aspects of the environment that are most powerful . . . are those that have meaning to the person in a given situation” (1979, p.22). The mesosystem is any combination of one or more microsystems in which an individual participates. For an older adult, a mesosystem might consist of their family and volunteer life. The exosystem is one or more settings that an individual does not directly participate in, but is still impacted by. For an older adult, an exosystem might be the office in which their caregiver works. Finally, the outermost ring, the macrosystem, is a constellation of all of the lower-level systems (the micro, meso and exo). The macrosystem represents a “subculture, or the culture as a whole, along with any belief systems or [underlying] ideologies” (Bronfenbrenner, 1979, p.26).

When Bronfenbrenner developed this model, the bulk of research focused on microsystems, and tended to neglect the meso, exo and macrosystems. These layers need to be
considered as a whole, and the bi-directional arrows in the model represent the need to not only understand each layer individually, but to also understand how the various layers interact with one another to impact the individual. For example, it is difficult to understand the eating habits of an older person (the micro level) without understanding how they get to the grocery store (mesosystem), what fruits and vegetables are in season and consequently less expensive (exosystem), and what food preferences and preparation techniques are predominant in their ethnocultural group (macrosystem). The ecological environment proposed by Bronfenbrenner has multiple, interacting layers, which consist of places, settings, and the relationships between animate and inanimate objects. In this sense, Bronfenbrenner’s model captured features of both the built and the social environment, but it did not conceptually distinguish between these two types of environments. Rather than dividing the built and the social environments, they are viewed as intimately interconnected and intertwined features of the total environment in which an individual lives.

Moos (1976) is also credited with developing the social ecological approach (see Wahl, 2001); however, it was Bronfenbrenner (1979) who first presented the nested series of layers (the micro, meso, exo, and macro) that constitute an ecological environment. While Moos also discussed a socio-ecological approach, his work is more clearly situated in the field of environmental determinants. Moos’ approach can be summarized as follows: “You and I cannot change the physical environment of New York City or San Francisco . . . only small ‘bits and pieces’ of the environment are under the personal control of a single individual” (1976, p.28). The central premise of his book is that the environment drives the behaviour of individuals, and it is incumbent upon the individual to cope with the environment. These environmental determinants include weather, architectural features, population and density, pollution, and
various social features of the environment, such as groups, organizations, and the “social climate” (Moos, 1976, p.329).

1.3.2 Environmental gerontology and Lawton

While classical ecological theories continue to guide and shape research today, the work of Bronfenbrenner and Moss was never specifically applied to older adults. In the field of environmental gerontology, the work of M. Powell Lawton defined an era of research. Lawton wrote the first textbook on environment and aging (1980), and extended the man-environment relations (MER) literature, later referred to as person-environment relations (PER), to focus specifically on older adults. Like Bronfenbrenner and Moos, Lawton’s approach to the environment is also described as “ecological” (e.g., Rantakokko, 2011), in that he sought to understand the relationship between humans and their environments. Contemporary researchers situate their work in a “post-Lawton era” (e.g., Scheidt & Windley, 2011), and Lawton’s influence cannot be overlooked.

1.3.2.1 The competence press model: “an ecological model of aging”

Developed in conjunction with Nahemow (Lawton & Nahemow, 1973; Nahemow & Lawton, 1973), Lawton’s “competence press model” sought to conceptually link the features of the physical environment with the behaviours of an older adult (Lawton, 1982). Lawton described this model as “an ecological model of aging,” guided by the ecological equation: $B = f(P, E)$, “behaviour is a function of the person and the environment” (Lawton, 1982, p.35). The competence press model examined the competence of an individual, personal characteristics, and abilities that would allow someone to manage and adapt to a given environment. In the ecological equation, $P$ is equivalent to competence, and can include biological health, sensory and perceptual capacities, motor skills, and cognitive capacity (Lawton, 1982). $E$ represents
environmental press, which are environmental stimuli or forces that demand particular behaviours of individuals or groups. Lawton (1982) provided the following example of an environmental press: the distance between a seniors’ centre and an individual’s home, which is a major predictor of attendance. A behaviour \( (B) \) for example attending events at the seniors’ centre, the environmental press is the distance to be travelled to the centre \( (E) \), personal competence \( (P) \) might be the ability to walk or drive that distance, and according to Lawton and Nahemow’s (1973) model, behaviours of older adults were determined by the combination of personal competence and the various environmental presses with which they are confronted.

Figure 1-1 Competence press model
The model posits that if an environmental press is too strong, and an individual’s competence is too low, they will not be able to execute the desired or beneficial behaviour. Similarly, if a person has high competence, but the environment does not demand, or press, sufficiently, they will also fail to engage in desired or beneficial behaviours. As demonstrated in the middle of the model, there is a zone of maximum comfort, where an individual is somewhat pressed by their environment; when the environment presses just a little bit more, individuals are then located in the zone of maximum performance.

Curiously, many facets of the “person,” or the P in the model, appear to be overlooked by this model. In this model, competence is equated with the person, and is the amalgamation of physiological features that tend to decline with age (biological health, sensory and perceptual capacities, motor skills, and cognitive capacity) (Lawton, 1982). Competence is a very narrow conception of a whole person. There is little attention given to characteristics that we now know influence healthy behaviours and wellbeing, such as resiliency, self-efficacy, and social engagement (de Leon, Glass, & Berkman, 2003; McAuley, Blissmer, Katula, Duncan, & Mihalko, 2000; Montross et al., 2006).

In the introduction to the competence press model, Lawton posited that individual “deprivations” must be examined because “few older persons exhibit no deprivation in the biological, psychological, or social spheres” (1982, p.35). Lawton proposed that deprivations are key to predicting behaviours of older adults. Perhaps this focus on deprivations led to the emphasis on skills or features that typically decline with age (e.g., motor skills), rather than an emphasis on the whole older person. This model presents a narrow conceptualization of a person,
and an even narrower conceptualization of the aging process, with a primary focus on deprivations and decline. As Wahl and Oswald (2010) have noted, this model also renders an older person a passive, reactive recipient of the various presses that environments exert. The actions, or agency – the process of creating change in one’s life through the intentional and proactive behaviours or actions (Wahl, Iwarsson, & Oswald, 2012) – of the older person are overlooked. In spite of these limitations, the competence press model continues to be used as a guiding framework for environmental gerontology researchers (e.g., Diehl & Willis, 2003; Rantakokko, 2011). As Lawton himself recognized in a 1983 lecture, “the world is full of older people who live in very stressful or very deprived environments, yet manage to remain ‘up’ in every other way” (p.356).

1.3.2.2 Classification of environments

In developing the competence press model, Lawton also introduced a way of classifying different environments. Recognizing that the term environment can be defined and interpreted in many ways, Lawton (1982, 1983) provided the following taxonomy for four different environments:
Table 1-2 Lawton’s environmental taxonomy

<table>
<thead>
<tr>
<th>Environment</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>The non-personal, non-social aspects of the environment (both natural and man-made)</td>
</tr>
<tr>
<td>Personal</td>
<td>The significant others constituting the major one-to-one social relationships of an individual (e.g., family members, friends, colleagues)</td>
</tr>
<tr>
<td>Suprapersonal</td>
<td>The modal characteristics of all the people in physical proximity to an individual (e.g., the predominant ethnicity, age, or socioeconomic status of other people in a person’s neighbourhood)</td>
</tr>
<tr>
<td>Social</td>
<td>The norms, values, and institutions operating in the individual’s subgroup, society, or culture.</td>
</tr>
</tbody>
</table>


This classification of environments is useful, in the sense that it forces researchers to think beyond the dichotomy of “physical” and “social” environments. Bronfenbrenner (1979) called for the study of both physical and social environments. More than two decades later, Wahl (2001) observed that:

The need to consider the physical and social environment with equal strengths in ecological theorizing has always been emphasized by the “big names” in social ecology, environmental psychology, and gerontology. . . . However, much empirical work gives precedence to the physical environment over the social environment.” (p.229)
Moos (1976) referred to the social climate, or the “personality of the environment” (p. 320). Lawton’s taxonomy presented us with a way to classify and distinguish between different layers and levels of the social environment. The personal environment includes the most significant, one-to-one relationships an individual has; the suprapersonal (also referred to as the “small group”) environment includes the relationships and individuals that physically share a given space (e.g., a neighbourhood); and the social environment includes not only relationships, but cultural norms and collective social features that may impact an individual.

1.3.2.3 A post-Lawton era

*The Handbook of the Psychology of Aging*, now in its seventh edition, has included a chapter on environments or ecology since its inception. However, in the fourth and seventh editions this chapter was absent. In the fourth edition, this chapter was intentionally omitted due to a lack of theoretical or empirical development in the 1990s. In the fifth edition, Wahl (2001) was invited to write an overview of advancements in the field, and to articulate a vision for future research.

In Wahl’s (2001) overview of the empirical research and theories driving environmental gerontology, he presented key settings where most research has taken place: the private home, the institution setting, and the transitions between the two (e.g., the decisions and processes regarding a move from the private home to a residential setting). There was notable emphasis on the most immediate environments: the home, or the room, and those environments immediately surrounding the place of residence. While many of the theories presented in Wahl’s (2001) overview considered a range of environments (e.g., Lawton & Nahemow, 1973; Moos, 1976), the empirical research neglected environments beyond the front door. Borrowing from the life-spaces literature (Peel et al., 2005), life-spaces zero through two (the bedroom, home, and
outside the home) have been more thoroughly examined, while life-spaces three through five (the
neighbourhood, town, and “unlimited”) have been comparatively understudied.

Figure 1-2 *Conceptual model of the life-spaces in which older adults are mobile*

Source: Peel et al., 2005, pg. 1010
In the “post-Lawton” era, many researchers endeavoured to deepen our understanding of environmental gerontology theory; many conceptual and theoretical approaches are available. For the purposes of my research, I focus on those conceptual models that are amenable to both interior and exterior environments. Referring again to the Life-Spaces concept, I am interested in theories and conceptual frameworks that are inclusive, or applicable, to life-spaces zero through five.

What is commonly referred to as “person-environment fit” (e.g., Oswald, Hieber, Wahl, & Mollenkopf, 2005) is conceptually rooted in Carp & Carp’s (1984) “complementary/congruence model.” These approaches posited that the wellbeing of older adults is the product of their environment(s), their individual needs, and how well their needs and environment(s) match. Here the focus is on the wellbeing of an older adult, rather than specific behaviours, coping, or adaptations, which were the focus of the earlier conceptual models (e.g., Bronfenbrenner, 1979; Lawton, 1982; Moos, 1976). Rubenstein and De Medeiros (2003) noted that the complementary/congruence model is limited, as it originated in nursing home settings; however, the person-environment fit model was successfully applied in community settings (e.g., Oswald et al., 2005). Oswald et al. used the person-environment fit to assess the “micro and meso-levels of indoor and outdoor environments” for community-dwelling older adults (2005, p. 88). In this sense, they utilized a person-environment fit model, and organized their investigations based on socio-ecological frameworks.

One noted limitation of the person-environment fit model is that is overlooks the lived experience of an environment (Rubinstein & De Medeiros, 2003). This harkens back to Bronfenbrenner’s (1979) proposition that an individual’s perception and experience of an environment is far more important than any objective assessment. The experience of an
environment is something that changes and evolves with time. Interacting with the environment, at any age, is a process. One of the significant limitations of the ecological models, like the competence press model, is the limited focus on *processes and time* (Scheidt, & Norris-Baker, 2003; Nahemow, 2000).

Golant argued that the temporal dimension has been significantly overlooked and underused in the development of environmental gerontology theory (Golant, 2003). He reminded us that older adults have “past environmental and life experiences that they can vicariously activate and concretely and abstractly interpret to shape their current subjective environmental experiences and their sense of who they are” (2003, p. 640). Referencing Elder’s life course theory (1998), individuals present lived experiences and behaviours cannot be divorced or understood independent of their entire life course trajectory. Golant proposed three temporal elements relevant to aging and the environment: 1) older persons have unique past environmental experiences, and have unique expectations regarding the environment in the future, as they age; 2) change over time, such a relocating or losing one’s ability to drive, can impact an older person’s conception of “self”; and 3) individual competence, such as one’s health or cognitive capabilities, change over time (Golant, 2003). Temporal constructs must be included in future theoretical contributions to the aging and environment literature (Golant, 2003).

### 1.3.3 The Webber “comprehensive framework of mobility in older adults”

The first model to comprehensively conceptualize older adult mobility was developed by Webber et al. (2010). The ‘Webber’ model simultaneously captured many of the concepts presented in earlier models: the environments in which older adults live and move are organized according to a life-spaces approach (e.g., Peel et al., 2005), ranging from a room to the world; echoing the earlier work of Bronfrenbrenner (1979) and Moos (1976), the environment is a key
determinant of behaviour; akin to Lawton’s work, the physical and cognitive competencies of an older person are accounted for. Reflecting more recent work, financial and psychosocial features are included in the list of mobility determinants (Pruchno, Wilson-Genderson, & Cartwright, 2012; McNeill, Kreuter, & Subramanian, 2006). The authors noted that while other models related to older adults’ mobility exist, they tended to be discipline-specific (e.g., planning, transportation) or focused on one mode of travel (e.g., walking or automobiles). The Webber model aimed to capture mobility in all its forms, including walking, public transit, automobiles, and assisted mobility aids (e.g., scooters, wheelchairs). The model also aimed to capture mobility in a range of spaces, from the bedroom and home to the neighbourhood and world.
A life-spaces approach (e.g. Peel et al., 2005) is used to represent spaces in which older adults move. This cross-sectional model demonstrates that the farther one is from their home, the greater the influence of other factors. For example, cognitive factors may have less of an impact on mobility within one’s room or home, but may have a greater impact on mobility in the
neighbourhood or surrounding area. The conical model visually demonstrates this increasing influence the farther a person is from their home.

The key determinants of mobility—financial, psychosocial, environmental, physical, and cognitive—are based on the authors’ review of the literature. Psychosocial factors are individual factors, such as coping behaviours, self-efficacy, personal motivation to be mobile, fear, and relationships to others. This is an important contribution as earlier theories, such as Lawton’s, tended to overlook psychosocial factors, and overly emphasized physiological characteristics that decline with age. Although each determinant of mobility is visually represented with a different colour, the authors emphasized that determinants of mobility overlap and intersect to influence mobility. For example, limited finances may limit one’s ability to maintain relationships (psychosocial), collectively decreasing mobility when an individual cannot afford to maintain the relationships that motivated them to leave the home and be mobile.

Authors alluded to definitions of physical and environmental determinants, and both terms can be interpreted in many different ways. Through their discussion, physical determinants are related to the physical abilities and health of an individual, and the environmental determinants encompass physical (i.e., built and natural) and seasonal (i.e. weather) factors. There is a need to conceptually distinguish between the built and social environment, and to assess them in tandem (Wahl, 2001; Hanson, Ashe, McKay, & Winters, 2012). Furthermore, both Lawton (1982) and McNeill et al. (2006) have developed comprehensive classifications and definitions of different aspects of the environment. Webbers model should reflect the multi-layered, multi-faceted nature of the term ‘environment’.

The outermost ring encircles the entire model, as “Gender, Cultural, and Biographical Influences” are hypothesized to influence key mobility determinants. “Gender, culture and
biography (personal life history) each fundamentally shapes individuals’ experiences, opportunities, and behaviours and therefore acts as crosscutting influences on mobility” (Webber et al., 2010, p.446). Gender is included because women are at a greater risk for disabilities and limitations impacting their mobility. Although the term gender is not specific to the experiences of women—gender refers to both sexes—examples provided by authors focus on the mobility of women, specifically their mobility limitations and deficits. Women form the bulk of those in “deep old age,” are more likely to develop disabilities and consequently spend their later years with health limitations (Twigg, 2004, p.65). Culture is included because it may impact social networks and relationships, opportunities earlier in the life course (e.g., education or employment), and PA practices and norms. The authors did not explicitly mention why personal life history is included, or how it is believed to influence mobility, but it is conceptually similar to Wahl et al.’s (2012) assessment that “individual life course” is a temporal element which must be considered in relation to individual mobility.

The Webber model alluded to temporal elements and posited that environments change over time, according to the seasons, and this may impact the mobility of an older adult (Webber et al., 2010). The model also alludes to a person’s individual life course, with the inclusion of “personal life history,” or biographical influences, in its outermost ring. Wahl et al. (2012) and Golant (2003) clearly articulated that temporal elements must be more fully incorporated into conceptual models or theories guiding environmental gerontology. Mobility occurs, shifts, and may dramatically change over time. Wahl et al. distinguished between two temporal elements: individual life course and historical change. The individual life course is like biographical influences in Webber model. Historical change largely relates to cohort effects: an individual who has lived through a particular time period may have distinct health or mobility challenges
later in life. For example, many North American women born in the first half of the 20th century might not have learned to drive early, as it was less common for women to do so during that period. This might have an impact on their mobility in later life. Time occurs on a continuum. As Golant (2003) proposed, both past experiences and future expectations can impact the behaviours of older adults.

More recently, concept mapping with a group of 174 stakeholders identified a range of concepts related to older adults’ mobility (e.g., community supports, safety, the built environment, policy, housing, and accessibility) (Anderson et al., 2014). However, the “framework” failed to identify any relationships between these concepts. While I am aware of and informed by the temporal concepts proposed by Golant (2003) and Wahl et al. (2012), and the foundational work of Lawton (1982), I chose the Webber model to frame my study, as it is the most comprehensive and interdisciplinary model related to older adults and the movement of their bodies through various environments.

1.3.3.1 Critiques of the Webber model

1.3.3.1.1 Where is the person?

At the heart of socio-ecological models is the person, the individual nested within a series of environments or settings (Bronfenbrenner, 1979). According to the classic ecological equation (Lawton, 1982), it is the interaction of the person with the environment that produces a given behaviour or action. One of my critiques of Lawton’s competence press model is the very narrow conceptualization of the individual, with an overemphasis on physiological features of an aging person. Webber et al. (2010) did an excellent job outlining the various mobility determinants, all of which are related to the individual: an individual’s physical and cognitive health, their psychosocial and financial wellbeing, and the cultural and biographical influences that shape
their lives. However, I question: Where is the person in this model? Where is the individual interacting with their environment, as we see in the classic ecological models of Lawton or Bronfenbrenner? Mobility, like all behaviours, is the product of a person interacting with various environments or settings.

1.3.3.1.2  Reconceptualizing the meaning of ‘environment’

Webber et al. used the general term environment within their model. After four decades of work on person-environment interactions, a more specific conceptualization of the environment is warranted. I am borrowing from Lawton’s classification of environments (1982), and in my work I distinguish between the physical (i.e., built and natural) environment and the social environment (i.e., the environment as it pertains to interpersonal interactions).

1.3.3.1.3  What determines mobility?

Another question that I pose related to the Webber (2010) model is presentation of the five key determinants of mobility. Each determinant is of equal size, visually suggesting that the influence of each determinant on mobility of the individual is equal. Although authors recognized that the key determinants overlap and intersect to influence mobility, I propose that weighting of key determinants shift, expand and contract based on individual circumstances. Key determinants will also shift as an individual moves across the time continuum. For example, a low-income older adult who can no longer afford to own a vehicle may cite finances as the greatest determinant of their mobility. Conversely, a middle-income older adult who recently acquired a walker may cite their physical health, or their local built environment, as the determinant that exerts the greatest influence on their mobility. When using this model to guide interview questions or to approach analysis of data, I will allow for morphing, expansion, and contraction of the key mobility determinants.
Although efforts were made to conceptually link the older person, their environment(s), and health and wellbeing, the outermost ring of the Webber model is presently under-developed. The outermost ring, representing gender, cultural, and biographical influences, is believed to “exert influence on all [emphasis added] mobility determinants” (Webber et al., 2010, p. 446), and as such must be more fully examined. Researchers (e.g., Prucho et al., 2012; Meyer, Janke, & Beaujean, 2014) are just beginning to tease apart exactly how, and under what circumstances, gender, cultural, and biographical influences impact the mobility and PA levels of older adults. For example, when the Webber model was applied to data from 6,112 older adults, age and marital status, both markers of personal biography predicted personal and community mobility (Meyer et al., 2014). Webber et al.’s emphasis on the crosscutting impact of gender and personal biography (e.g., age, immigration status, education, marital status, etc.) also echoed the healthy immigrant literature, which highlighted intersecting markers of personal biography and social identity as impacting health (Hankivsy, 2011). By applying the Webber model within my research on FBOAs, I further extend our understanding of the outermost ring.
1.4 Research Questions and Objectives

1.4.1 Research questions

Physical activity (PA) and mobility are intimately linked to the wellbeing of an older person (e.g., McAuley, Blissmer, Katula, Duncan, & Mihalko, 2000; Mollenkopf, Hieber, & Wahl, 2011). In spite of the well-documented benefits of PA, in 2005 62% of Canadian seniors were inactive (NACA, 2006). Guided by Torres (2013), I focus on PA not only because of its relation to lower rates of disease and better physical function, but also because PA facilitates “active engagement with life” (Torres, 2013, p. 48). As my literature review demonstrates, we know very little about the PA of foreign-born older adults (FBOAs), and even less about their mobility.

The mobility of an older adult is inextricably linked to his or her built and social environments (Hanson, Ashe, McKay, & Winters, 2012; Rosso, Auchincloss, & Micheal, 2011), yet there is a greater need for us to better understand how environments influence the PA and mobility of older adults (Trost, Owen, Bauman, Sallis, & Brown, 2002). In this dissertation, I draw upon mixed-methodologies and an ethnographic approach to examine the PA and mobility of FBOAs who reside in Metro Vancouver. The question(s) that guide my dissertation are:
1. What are the PA levels of foreign-born, visible minority older adults who reside in South Vancouver, British Columbia?

2. What features of the neighbourhood environment, both built and social, promote or inhibit the PA and mobility of FBOAs?

3. How do issues of gender, culture, and biography, as suggested by the Webber model of mobility in older adults (Webber et al., 2010), impact the mobility and PA of FBOAs?

1.4.2 Research objectives

The primary objective of my research is to characterize the mobility of a mixed-ethnicity group of foreign-born older adults (FBOAs) who reside in South Vancouver.

The secondary objectives of my research are to:

- assess the amount of physical activity (PA) of which FBOAs partake;
- identify factors, both individual and environmental, that impact the mobility and PA of FBOAs;
- expand on the model put forth by Webber et al. (2010), which suggests that gender, culture, and biography have a crosscutting impact on older adults’ mobility.
Chapter 2: Methodological Background

In this chapter, I outline the methodological approach that guides my research. As Morse and Richards (2002) noted, in order to select an appropriate research approach there must be methodological congruence between the research questions, objectives, and selected methodology. My research questions and objectives are fundamentally ecological, in that they seek to understand how individuals react and interact with their environment(s). Bronfenbrenner (1979) posited that ecological studies must be conducted in natural settings, over an extended period of time, and ideally include an observational component; drawing on multiple data sources is preferable. The principles of ethnographic data collection are closely aligned with Bronfenbrenner’s criteria. As my research questions focus on one factor of health, the mobility and PA of FBOAs, a focused, or microethnographic, or focused ethnographic approach is most appropriate. In this chapter, I also share my positionality statement and clarify the use of voice in this dissertation (I vs. we, sole authorship vs. co-constructed knowledge).

2.1 Ecological Studies and Appropriate Methodologies

Urie Bronfenbrenner’s seminal work, The Ecology of Human Development (1979), presented the key concepts guiding our understanding of how humans relate to their environments. The concepts presented in Bronfenbrenner (1979) continue to be used today under the rubric of “socio-ecological models,” for research throughout the life course (e.g., Kowal & Fortier, 2007; Milligan, Gatrell, & Bingley, 2004; Richard, Gauvin, & Raine, 2011; Robinson, 2008).

Bronfenbrenner explicitly and emphatically outlined the most appropriate methods for examining ecological research questions. Ecological research must examine the “properties of the person and the environment, the structure of environmental settings, and the processes taking
place within and between them” (Bronfenbrenner, 1979, p.41). To do so, he argued, data collection must take place in the actual environments in which people live, not laboratory or clinical settings. Ideally, data collection should also take place over longer periods of time, with familiar individuals. That is, the researcher must endeavour to establish a relationship, or some degree of familiarity, with potential participants. Otherwise, Bronfenbrenner cautioned, the result is “the science of strange behaviour . . . in strange situations, with strangers [people/researchers], for the briefest possible periods of time” (1979, p.19).

Bronfenbrenner recognized that it can be incredibly challenging to interrogate person-environment interactions. In order to do so, individuals must be observed in their natural settings. However, natural settings are difficult to control, and may not be ideal settings for “hypothesis testing,” or more traditional experimental research designs. Rather, “from this perspective . . . the primary purpose of ecological experiment becomes not hypothesis testing but discovery—the identification of those systems, properties and processes that affect and are affected by the behaviour and development of human beings” as they engage with their environments (Bronfenbrenner, 1979, p.37). The observational approach that Bronfenbrenner proposed is amenable to research both exploratory and inductive in nature.

2.2 An Ethnographic Approach

Ethnography seeks to understand the practices, beliefs, or actions of a “culture-sharing group” of individuals (Creswell, 2007, p.93), and is done so by collecting multiple types of data and observing the group in a natural setting, typically over an extended period of time. An ethnographic approach responds to all of the requirements outlined by Bronfenbrenner (1979) for an ecological research study: human beings are observed in their natural settings by researchers
who, over time, have endeavoured to create a certain degree of familiarity with the participants or group. For the research presented in this dissertation, I used a focused ethnography approach.

2.2.1 Philosophical underpinnings

In addition to numerous qualitative approaches (e.g., ethnography), researchers must also be explicit about the qualitative paradigms driving their research. A qualitative paradigm encapsulates both the ontological and epistemological positions of the researcher. Ontology is a “philosophical belief system about the nature of social reality—what can be known and how,” and epistemology “is a philosophical belief system about who can be a knower” (Hesse-Biber & Leavy, 2011, p.4). A qualitative paradigm guides a researcher’s understanding of the nature of knowledge, the aim of scientific research, and the role of the researcher. Qualitative paradigms can roughly be divided into four overarching categories: positivism, post-positivism, critical theory, and constructivism (Guba & Lincoln, 1994). Positivism served as the dominant paradigm for social and physical research for more than 400 years (Guba & Lincoln, 1994). Positivism is reflected in the scientific method, which seeks to predict and control. Originating in the natural sciences, the scientific method emphasizes hypothesis- and theory-testing research. A positivist paradigm emphasizes replicable experiments, the development of universal or statistical laws, and gives “priority to phenomena that are directly observable, or that can be logically inferred from what is observable” (Hammersley & Atkinson, 2007, p.5).

Post-positivism, while still in the positivist tradition, recognizes that not all phenomena can be observed, or even fully comprehended by human beings (Guba & Lincoln, 1994). Positivists argue that researchers must be objective observers; post-positivists recognize that researchers are never fully neutral observers—we all bring past experiences and biases to our
research. Similar to positivists, post-positivists emphasize prediction, control, and explanation as the objectives of research (Guba & Lincoln, 1994).

Conversely, the central aim of critical theory paradigms is to critique, challenge, and transform existing forms of knowledge. Researchers working in a critical theory paradigm function as advocates and activists (Guba & Lincoln, 1994), and are forthright about their inherent biases. They are not neutral, unbiased observers.

Finally, constructivism’s aim is to uncover meaning and to understand how groups or individuals interpret and experience socially constructed phenomena. Social constructions are not viewed as “true” or “untrue”; they are not controllable or predictable. Constructivists emphasize how phenomena are experienced by groups or individuals; they are “passionate participants” in their research and, similar to critical theorists, are not assumed to be neutral observers.

There is no one paradigm assigned to ethnographic research, and there is limited consensus among ethnographers regarding which paradigm underpins their approach (Savage, 2000). As Hammersley has argued, ethnographic research is particularly challenged because the nature of ethnographic data collection and analysis allows for the “imposition of the researcher’s assumptions about the social world and consequently reduces the chances of discovering evidence discrepant with those assumption” (1992, p.11). Therefore, it is essential for ethnographers to understand, and to be forthright, about the paradigm and assumptions guiding their research.

2.2.2 Breaking from positivist traditions

The development of ethnography in the early 20th century marked a fundamental shift away from positivist traditions. “Ethnography, and many kinds of qualitative research, do not
match . . . positivist canons” (Hammersley & Atkinson, 2007, p.6). Auguste Comte, an early champion of positivism in the social sciences, “asserted that human societies could be studied for universal laws, comparable to gravity” (Okely, 2012, p.10). Ethnographers, on the other hand, seek to deeply examine the behaviours or actions of a particular culture-sharing group. The primary scientific aim of ethnography “should be to describe what happens, how the people involved seek and talk about their own actions and those of others, the contexts in which the actions take place, and what follows from it” (Hammersley & Atkinson, 2007, 7). Hammersley and Atkinson (2007) proposed that as ethnography broke from a positivist tradition it embraced a **naturalist** paradigm. Similar to what Bronfenbrenner (1979) said of ecological studies, **naturalism** argues that the actions of human beings must be examined in their natural state. Naturalism is “the philosophical view that remains true to the nature of the phenomenon under study. This is contrasted with the positivists’ primary and prior commitment to a conception of scientific method reconstructed from the experience of natural scientists” (Hammersley & Atkinson, 2007, p.7).

In addition to the four paradigms outlined by Guba and Lincoln (1994), Guba and Lincoln (1985) also dedicated an entire monograph to naturalistic inquiry, as an alternative to the dominant positivist paradigm. Naturalism rejects the central tenets of positivism because “human actions are based upon, or infused by, social or cultural meanings: that is, by intentions, motives, beliefs, rules, discourses and values” (Hammersley & Atkinson, 2007, p.7). A naturalism paradigm has a number of conceptually similar, although somewhat distinct, aliases: postpositivistic, phenomenological, subjective, humanist, hermeneutic, etc. (Guba & Lincoln, 1985). Employing a naturalist paradigm, ethnographic studies seek to understand the actions of humans, as they are informed by social or cultural meaning.
2.2.3 Classic ethnography

Since its inception in the early 20th century, ethnography has been a dominant methodological approach in the fields of cultural and social anthropology (Hammersley, 1992). Classic ethnographic studies were initially developed in the colonial era (Okely, 2012), and typically involved anthropological researchers travelling to exotic locations in order to observe “primitive” culture-sharing groups in their natural settings (Creswell, 2007, p.69). These studies observed the beliefs, practices, customs, and language systems of culture-sharing groups, and required the researcher to fully immerse themselves in the daily lives of the group, in order to conduct observations over an extended period of time. There is no shortage of famous classical ethnographies. A few well-known examples include Margaret Mead’s (1954) examination of adolescence in Samoa, and Napoleon Chagnon’s (1968) highly controversial examination of the “fierce” Yanomami tribes that straddle the border of Venezuela and Brazil.

This full immersion into a culture-sharing group that is distinct from one’s own can be a physically, emotionally, and psychologically challenging experience. As Okely (2012) has outlined, when ethnographers immerse themselves in the daily lives of others, they do more than collect data or conduct research: they prepare food according to traditional methods, cry with people who are grieving, and put their own comfort and safety at risk for the sake of building relationships or trust. Through active participation and participant observation, “knowledge comes through the skin and all of the senses” (Okely, 2012, p.1).

2.2.4 Ethnography in health research

The examination of a culture-sharing group does not, necessarily, require the group under examination to be an “other”—a group that is exotic, primitive, or from a far-off land. As Okely noted, “place cannot be equated with culture” (2012, p.27). Contemporary ethnographic research
can take place in “a small tribal community, in an exotic land, or a classroom in middle-class suburbia” (Fetterman, 1998, p.1). In his description of ethnographic research, Agar (1996) proposed that a culture-sharing group could be a group of nurses or physicians. Savage (2000) argued that ethnographic studies have been underutilized in health research, and should be better utilized to provide important insights regarding the experience of health and illness, and the experience of receiving or delivering health care services. But ethnographic research has increasingly been applied in health research; Charmaz and Olesen (1997) reviewed the application of ethnographic studies in the field of medical sociology. These ethnographies focused on disability and illness, caring, aging research, the socialization among health care professionals, and ethical issues (Charmaz & Olesen, 1997). Health ethnographies can take place in traditional medical settings, such as hospitals and clinics, but they may also take place in the community, participants’ private homes, and semi-private locations such as churches (Charmaz & Olesen, 1997). However, ethnographic research with older adults has tended to focus on institutional settings, as older adults are “major consumers of medical care and the focus of national health policy” (Charmaz & Olesen, 1997, p.469). They reference *Living and Dying in Murray Manor*, by Jaber Gubrium (1975), one of the most famous ethnographies focused on older adults and issues of health and wellbeing. This is classical ethnography, as the author fully immersed himself in the community of Murray Manor over a prolonged period of time.

2.2.5 **Focused ethnography: strengths & limitations**

examining and participating in communities for an extended period of time. Roper and Shapira provided the example of an anthropologist who lived in a small Texan town, among Mexican immigrants, in order to understand the health practices and behaviours that were specific to this culture-sharing group. Focused ethnographies, also known as mini- and microethnographies (Knoblauch, 2005; Roper & Shapira, 2000), are more discrete studies, which tend to focus on a smaller group (i.e., not an entire community), with a specific health question or problem as the foci. For example, a focused ethnography may observe birthing practices in an indigenous community, the dietary habits of an ethnocultural minority group in a hospital setting, or an HIV hotel as a location of care and community support (Roper & Shapira, 2000). These studies tend to be more focused, and may take place over a shorter period of time when compared to classic ethnographies. This brevity may be attributed to the fact that health professionals and experts engaging in this sort of research are assumed to have prior professional knowledge and experience. This existing knowledge base contributes to their initial understanding and conceptualization of the research questions, prior to commencing data collection (Roper & Shapira, 2000). Focused ethnographies are characterized by briefer periods of fieldwork, though these periods of fieldwork are time and data intensive (Knoblauch, 2005).

For the purposes of my research, I chose a focused ethnographic approach. Rather than seeking to develop a deep understanding of this group of FBOAs in South Vancouver, in its entirety, my research questions are explicitly focused on one aspect of health: physical activity and mobility. While a classic ethnography would more fully examine the behaviours a culture sharing group, a focus ethnography collects data on a particular topic or theme. In this sense, my methodological approach was more focused on physical activity and mobility, and less so on the cultural norms shared by this group of older adults in South Vancouver.
2.2.6 Principles of ethnographic data collection

Collecting data in a natural setting, where the culture-sharing group lives or works, is referred to as fieldwork (Wolcott, 1999). Fieldwork is an important period not only for collecting data but also for refining the research questions and beginning the analysis. Ethnographers typically take a somewhat open-ended approach to their data collection and analysis. Free from the tenets of a positivist paradigm, ethnographers have the flexibility to conduct studies that are exploratory and hypothesis- or theory-generating. Ethnographers may start with general research questions and assumptions rooted in the literature, by they must be open to uncovering new, and sometimes unexpected, findings. Okely (2012) dedicated an entire chapter to “Choice or Change of Topic,” providing ethnographers with permission to adapt and shape their research as needed over time. As Hammersley and Atkinson (2007) noted:

It is expected that the initial interests and questions that motivated the research will be refined, and perhaps even transformed, over the course of the research; that is this may take a considerable amount of time. Eventually, through this process, the inquiry will become progressively more clearly focused on a specific set of research questions, and this will then allow the strategic collection of data to pursue answers to those questions more effectively, and to test these against evidence. (p.3–4)

As this quote demonstrates, data collection, analysis, and the ongoing development and refinement of research questions are iterative processes, and not a series of sequential phases.

2.2.6.1 Gatekeepers, key informants and sampling

Michael Agar refers to the ethnographer as “the professional stranger” (1996), and indeed most researchers approach their fieldwork as an unknown individual, an outsider. One of the first and most essential steps when conducting an ethnography is to locate and meaningfully engage
with the “gatekeepers.” Gatekeepers are those individuals who may or may not grant researchers access to a community or group that might constitute the research participants. In an indigenous community the gatekeeper may be a local group of elders; in a hospital setting, they may be administrative staff, or the head nurse. Gatekeepers are often the first point of contact between the researcher and potential group of participants; but as Hammersley and Atkinson (2007) have cautioned, locating the appropriate gatekeepers can be a time-consuming and confusing process. Gatekeepers might also be concerned about how their groups are portrayed in the research, and consequently exert a certain degree of surveillance over the research process (Hammersley & Atkinson, 2007). Similar to gatekeepers, ethnographers will also encounter key informants. Key informants may be the same individuals as the gatekeepers, though they may also be different. While gatekeepers will grant access, key informants are “willing to help by explaining the customs and beliefs of the identified cultural group” (Roper & Shapira, 2000). Both gatekeepers and key informants are essential allies when embarking upon an ethnographic study.

It is only by engaging with gatekeepers and key informants that ethnographers gain meaningful access to their desired sample. Classic ethnographies typically observed entire communities as a unit of analysis—a total population sample—whereas focused ethnographies typically concentrate their efforts on smaller groups of individuals (Roper & Shapira, 2000). Focused ethnographies have a number of sampling techniques at their disposal. These techniques can roughly be divided into three categories: convenience, snowball, and opportunistic sampling; purposeful or theoretical sampling; and solicited sampling (Roper & Shapira, 2000). Snowball and opportunistic samples rely on word-of-mouth among participants, key informants, and gatekeepers, all of who help the researcher to locate additional participants. In situations where the ethnographer is an unknown or untrusted entity, these convenience-sampling methods may
be the only way to reach potential participants. Theoretical and purposeful samples seek out participants for their assumed knowledge or expertise of a particular phenomenon related to the research questions. Using solicited sampling, participants who are otherwise unknown to the researcher are recruited through existing, organized groups promoting the study (e.g., a mass mailout to a nurses union). Irrespective of the chosen sampling method, the objective is to “convince yourself and your readers that you spoke with a variety of members of the group” (Roper & Shapira, 2000, p.78).

2.2.6.2 Participant observation

As Roper and Shapira (2000) noted, ethnography is “a research process of learning about people by learning from them” (p.1). One of the most common ethnographic tools used to learn from people is participant observation. Researchers can engage in participant observations through: covert observations, where participants are unaware of the investigators presence or “researcher” status (Hammersley & Atkinson, 2007); active participation in activities, alongside participants (Okely, 2012); and through informal and formal oral accounts, such as interviews (Hammersley & Atkinson, 2007). Contemporary ethnographers may also use virtual participant observation methods, observing the behaviours of individuals and groups in online, web-based settings (Sade-Beck, 2004).

Participant observations must be systematically documented, and researchers must be mindful to record that which is extraordinary or unusual, and that which seems meaningless, inconsequential, or benign (Okely, 2012). Participant observations can be documented through photographs, film, audio recordings, and field notes. Collecting field notes is one of the most common and traditional forms of documenting observations; they can be handwritten, typed into a computer, or digitally recorded for later transcription. Both Roper and Shapira (2000), and
Hammersley and Atkinson (2007) provide in-depth, practical descriptions on how to write field notes. These how-to guides are useful, as the composition of field notes is more than simply jotting down what one observes (Hammersley & Atkinson, 2007). As Hammersley and Atkinson advised, “field notes are always selective; it is not possible to capture everything” (2007, p.142); the practice of writing field notes takes practice, and is a skill that develops over time.

A form of participant observation is interviewing and relying on oral accounts to provide insights into what, how, and why members of a culture-sharing group engage in particular behaviours. Interviewing allows the researcher to actively question and probe their research participants about the phenomena that they observe. Oral accounts can be informal, and even unsolicited (Hammersley & Atkinson, 2007); for example, an informal oral account might be captured while waiting alongside someone at the bus stop or in a doctor’s office. For this type of oral account, it would be most appropriate to record field notes after the encounter. Formal oral accounts might also be captured through focus groups or one-on-one interviews, which are typically pre-arranged between the researcher and participant. These sorts of oral accounts are more amenable to the use of digital recorders (audio or film) and in-situ note taking.

2.2.6.3 Reflexivity and journaling

An ethnographic approach emphasizes that while the researcher is watching and listening to others, they must also make the effort to look within. As the researcher observes others, they must also make time to observe themselves—to create space for introspection and self-reflection. While a positivist paradigm requires the researcher to function as neutrally as possible, Okely (2012) noted that neutrality is virtually impossible in ethnographic research: “the participant observer must either be involved or perish” (Okely, 2012, p.14). Ethnographers do run the risk of becoming over involved in the culture-sharing groups that they are studying; in the colonial
period in which classical ethnography was developed, this was referred to as “going native” (Okely, 2012). In ethnographic studies, the researcher is the “instrument of observation” (Kaplan, 1984, p.34), yet human beings will always function as flawed instruments, replete with internal inconsistencies and biases (Watson, 1987). During fieldwork, it is essential that researchers make the time to personally reflect on their experiences, their interactions, and developing relationships with participants. This process of introspection and self-reflection is referred to as reflexivity (Davies, 2008). Researchers are encouraged to reflect on: their potential biases; how past experiences, values, and beliefs may impact their interpretation of participant observations; their strong reactions to particular events or individuals; lessons learned; and personal or professional challenges faced during fieldwork (Roper & Shapira, 2000). The most common way to engage in reflexivity is through journaling. A personal journal should be kept during data collection, as a place to systematically and privately record these reflections. Journaling is distinct from maintaining field notes; a journal is a place for private thoughts and reflections on the data collection process. An ethnographer’s journal may or may not be used as data for the final analysis; field notes, on the other hand, are key pieces of data, which must be incorporated into the final analysis.

2.2.6.4 Insider/outsider status

A common issue for ethnographers to reflect on is their insider-outside status in relation to the group that they are studying. Often, a researcher will come to straddle the two categories: insider and outside. As Roper and Shapira noted, “ideally, a strategy is found that allows the investigator to participate fully in activities as an insider while consciously and objectively describing and analysing the events as an outsider” (2000, p.116). In cross-cultural research, insider/outsider status was traditionally based on cultural or racial attributes, but researchers may
also be deemed insiders/outsiders on account of their gender, age, professional status, religious beliefs, or any other number of attributes (Liamputtong, 2010). Many cross-cultural researchers have argued that one must arrive to their research as an insider; that is, they must have shared linguistic, cultural, or socio-historical characteristics that reinforce a “cultural commonality” with participants (Ramji, 2008; in Liamputtong, 2010). Similarly, the editor of *Qualitative Health Research* makes the case for insiders, arguing that qualitative researchers without a clinical background face additional challenges (Morse, 2010). Morse (2010) argued, for example, that a researcher without clinical training may not know how to react to or be of assistance in the event of a medical crisis, or may not understand basic medical terminology. Morse’s claims are based on professional experiences in traditional health settings, such as hospitals. For community-based health research, professional insider/outsider status may be less relevant. Cross-cultural researchers have also conceded that in some instances, insider status is not necessary, and outsider status may even carry some advantages—an outsider may scrutinize phenomena that would otherwise be overlooked by insiders, which may lend itself to the generation of new knowledge (e.g., see Liamputtong, 2010). Both insider and outsider researchers have reflected on their status and role, and made the effort to record how they believe that their status impacts their ability to do fieldwork. It is more important to reflect on one’s status than it is to have a particular status at the outset.

2.2.6.5 **Principles of ethnographic analysis**

The term ethnography describes both the process of data collection and fieldwork, and the final product, such as a written account (Savage, 2000). Savage describes this lack of distinction as “confusing” (2000, p.1,400), yet in an ethnographic study, data collection, analysis,
refinement of the research question, and presentation of findings are intimately intertwined.

Ethnographic research and analysis are iterative and inductive processes. Qualitative research is typically inductive, meaning that researchers developed their results from the “bottom-up” using an iterative process to engage with and learn from their data and their participants, in order to answer their research questions (Creswell, 2007). Going back and forth between the research questions, the participants, the data, the ongoing analysis, and existing literature and theories is referred to as an iterative process. Iterative processes are most fully developed in the grounded theory approach, which explicitly states that the researcher must continue to involve participants throughout analysis and theory-development phases (Glaser & Strauss, 1967). In the initial phases of analysis, which may start during data collection and fieldwork, the ethnographer builds from the bottom up by familiarizing him or herself with the data.

2.2.6.6 Analysis processes

Ethnographic studies typically produce “copious” amounts of data (Roper & Shapira, 2000, p.92). These data come in numerous forms, including field notes, digital recordings, transcripts, and perhaps photos, videos, or archival records (Hammersley & Atkinson, 2007). The ethnographer’s journal may also reveal some of their early hunches, and help to guide the initial analysis. In an effort to make sense of these copious data, the researcher will endeavour to sort their data in broad categories or themes. Sorting data into general categories and themes is referred to as coding, and can be done manually or with the aid of various software programs (Hammersley & Atkinson, 2007).

This process can be daunting and, like writing field notes, requires time, practice, and patience. Ethnographies collect various types of data, and employ different approaches. As such,
there is no single method for analyzing ethnographic data. Roper and Shapira (2000) briefly described a general, three-step analysis process: code the data for descriptive labels; search for patterns within the data and reorganize descriptive labels into a smaller number of themes or labels; finally, examine your data for outliers—that is, cases, behaviours or accounts that do not fit into the current organization of the data. As required, these steps may be repeated. Throughout this process, researchers are encouraged to write memos, which are similar to field notes and journals in that they provide a place for the researcher to write and systematically record their observations, assumptions, procedures, and reactions to the data. Although not specific to ethnographic research, the most comprehensive guide to this type of analysis is Lyn Richards’ (2009) book, *Handling Qualitative Data: A Practical Guide*, which provided a detailed description and practical suggestions for each phase of analysis.

**2.2.6.7 Triangulation of data**

Ethnographies rely on various data sources (Creswell, 2007), and ethnographies can be “mixed-methods” (Savage, 2000), integrating both quantitative and qualitative data sources to answer their research questions (Kinn & Curzio, 2005). A positivist paradigm emphasizes the importance of reliability and validity when collecting and interpreting data. The validity and reliability of the research instruments and study design should ensure that researchers are able to confidently answer their research questions. Validity means that data collection methods measured what they were designed to measure; accuracy means the degree to which a measurement represented the true value of something and reliability means that data collection methods were consistent and repeatable (Roper & Shapira, 2000). In ethnographic data collection, the researcher is also the instrument of data collection, replete with internal inconsistencies and biases that compromise reliability. Data are collected in natural settings and
real-world social contexts, and as such are rarely repeatable. Carefully executed ethnographic studies can be valid and accurate, but by their very nature cannot be considered reliable (Roper & Shapira, 2000). Validity and accuracy may be enhanced when the researcher spends extended periods of time with participants, engages in reflexivity, systematically records field notes, and utilizes neutrally worded phrasing for interviews and collections of informal oral accounts.

While ethnographic researchers cannot rely on the positivist concepts of reliability and validity, confidence in their findings can be supported by triangulation. The language of triangulation comes from navigation and geographic survey practice. As Hammersley and Atkinson (2007) explained:

> For someone who wishes to locate their position on the map, a single landmark only provides the information that they are situated somewhere along a line in a particular direction from that landmark. With two landmarks, however, the person’s exact position can be pinpointed by taking the bearings on both; one’s position is at the point on the map where the two lines cross. (p.183)

The concept of triangulation, applied to qualitative analysis, suggests that we are more likely to correctly interpret our data if we are able to draw on multiple accounts, like the multiple points on a map. One of the strengths of the ethnographic approach is that it encourages the collection of multiple forms of data (e.g., observations, oral accounts, field notes), which may be analyzed in concert to tell a more complete story.

### 2.2.6.8 Generalizability of findings

When an ethnographer conducts research in a field driven by a positivist paradigm, such as the health sciences, they will inevitably be questioned about the generalizability of their findings. From a positivist paradigm, which seeks to predict and control, generalizability is a
goal. Researchers intentionally design their studies so that the phenomena observed in a smaller
group of participants could conceivably apply to a much wider group of individuals.
Ethnographers, along with most researchers, seek to “provide information that is not only true,
but which is also of relevance to issues of human concern” (Hammersley, 1992, p.85). Yet,
etnographic research, with its detailed accounts of very specific communities or groups, is
rarely generalizable (Hammersley, 1992; Savage, 2000). Rather, the aim of ethnographic
research is to provide a rich, in-depth, “thick description” (Geertz, 1973) of behaviours,
practices, beliefs, and customs of a culture-sharing group (Creswell, 2007).

Rather than focus on generalizability, Hammersley encourages researchers to consider
empirical generalization, the claim that “the particular setting investigated is typical of some
larger whole or aggregate” (1992, p.86). Empirical generalization encourages researchers to be
explicit about the specific temporal, historical, and social contexts in which their research was
conducted. By clearly outlining the context in which data were collected, it may be possible to
infer one’s findings, and suggest that they are applicable to other, similar contexts. For example,
with careful documentation, it may be possible to conduct an ethnographic study in one nursing
home, and infer those findings in other nursing home settings of similar size, with similar
management systems, services, staffing levels, and residents, in a country or province with
similar socio-political systems. Ethnographers may also improve the empirical generalizability of
their findings by comparing and contrasting findings among similar studies, by coordinating
with other ethnographers across multiple sites, and/or by increasing collaborative efforts with
survey researchers examining similar questions using more traditional, positivist sampling and
statistical methods (Hammersley, 1992).
2.2.6.9 Presenting the findings: representation and reciprocity

As analyses progress, the researcher will begin to formally synthesize their findings. Findings are typically synthesized in presentations, reports, academic journals, and books. As Okely noted, the ethnographer becomes “the collector and walking archive” of the study, and the researcher most intimately involved in data collection and analysis is also charged with writing up their results (2012, p.25). But the ethnographer must not develop or present their findings in isolation. As outlined at the outset of this section, gatekeepers and key informants typically have a vested interest in the study. They may also be concerned about how their group is presented. Before the findings are ready for a wider audience, they must first be vetted and reviewed by the gatekeepers, key informants, and/or participants. Providing the findings or preliminary findings to the group for their review is referred to as respondent validation (Hammersley & Atkinson, 2007). Respondent validation provides participants with the opportunity to review the findings and understand how their stories will be presented to the world. This process may also enrich the study, providing participants with another chance to clarify a concept or behaviour that the ethnographer may not have fully understood. However, this is not only a question of how the culture-sharing group is represented; it is also a question of research reciprocity. Reciprocity is a guiding concept in both ethnographic and cross-cultural research. Reciprocity is the act of giving something back to participants, and groups, in recognition of their valuable time and efforts (Liamputtong, 2010). Reciprocity is more than just providing participants with financial compensation for their time. A reciprocal act might be the provision of useful information, an accessible summary of the research findings in the appropriate language, or assistance navigating bureaucratic forms or systems. From start to finish, ethnographic research actively involves the researcher and the researched, working together to a mutually respectful and reciprocal fashion.
2.3 Positionality Statement

Ethnographic research is not a neutral, unbiased process. As the instrument of data collection, the ethnographer invariably impacts the research process. A positionality statement, often included in monographs and dissertations with a qualitative research focus, is an opportunity for the researcher to be forthcoming and reflective on their role, identity, and values, as these issues impact the research process (Bourke, 2014). Guided by Davies (2008), I engaged in a process of introspection and self-reflection during fieldwork and the writing of this dissertation. The most salient themes from my reflective memos are introduced here, and are revisited in the integrated discussion in Chapter 7.

2.3.1 Research topic

The selection of a research topic is not a neutral decision, and is guided by intellectual and scholarly goals. Personal interests and goals can also play a profound role in the selection of a research topic (Maxwell, 2005). I believe that immigrants have inherently interesting personal biographies, and have always been keen to hear their stories. I lived overseas on two occasions (one year in Venezuela, two years in extremely remote Honduras). This small taste of culture shock, alongside struggles with integration and communication, and the personal enrichment that comes with exposure to different cultures and a shared humanity, left me in awe of immigrants who have packed up their lives and families to start a new life in another part of the world. I want to hear and learn more about their journeys, and feel immensely privileged that FBOAs were willing to share some of their experiences with me for this dissertation.

2.3.2 Academic background

Upon joining the Centre for Hip Health & Mobility (CHHM), where I conducted my doctoral research, I experienced a very strong case of academic imposter syndrome. While most
of my colleagues and fellow trainees had science or engineering backgrounds, I completed a bachelor’s degree in Spanish and a master’s degree in Latin American Studies. I have a lifelong passion for intercultural communication, foreign languages, and the complex art of translation and interpretation. In one of my work contracts in Honduras I served as the field school coordinator for a course on “intercultural communication in health care” for Canadian nursing students. The possibility of executing a research study in multiple languages was exciting for me, drawing on my skills and interests in communicating health needs and health behaviours across linguistic barriers. I also saw the need for more linguistically inclusive research designs for studies with older adults.

Prior to commencing my doctoral studies, I worked as a research coordinator for the Nexus Home Care Project (e.g., Martin-Matthews, Sims-Gould, & Tong, 2012) at the University of British Columbia, and it is through this work experience that I “became a gerontologist.” Unlike many of my colleagues at CHHM and my co-supervisor Dr. Heather McKay, I am not a physical activity researcher. My focus on physical activity for this dissertation is not solely because of PA’s well-reported impact on the reduction of disease and reduced burden on the health care system. While these are noble public health goals, as a gerontologist I am excited by the prospect of PA helping older adults to live healthy, engaged lives (Torres, 2013) in their homes and communities.

2.3.3 Identity

Part of the qualitative researcher’s self-reflection includes “a self-conscious awareness of the relationship between the researcher and an ‘other’” (Bourke, 2014, p.2). In ethnicity research, it is vital that the researcher reflects on their own social construction of ethnic “otherness” in relation to participants (Torres, 2015). Although my last name suggests that I am Chinese, I am
not. Tong is my married name. I am a young, blonde, Caucasian woman who speaks only very limited Cantonese. I do spend a significant chunk of my personal time with Chinese older adults who make up my extended family. When corresponding with potential research participants and community partners, I would often add “I will be wearing a bright green jacket and have blonde curly hair” prior to our meeting, hoping that the mention of my hair would cue them to the fact that I might not be Chinese. Some colleagues mentioned that my name seems to add legitimacy to my research on paper, while others have rather plainly stated that my name is “deceptive.” I am not a cultural insider (Liamputtong, 2010) with any of the foreign-born older adults who participated in this study, and was highly cognizant of this. Research assistants, professional interpreters, and older adult volunteers at our community partner, South Vancouver Neighbourhood House (SVNH), are “insiders” in that they share the same ethnicity and speak the same languages. I made a conscious effort to invoke their insider reflections and feedback throughout the research process.

2.4 A Note on Authorship and Voice- I vs. We

While a dissertation is meant to demonstrate the scholarship of the graduate student, dissertations also include the guidance and written contributions of supervisors, committee members, and, in many cases, research collaborators and lab colleagues (as implied in UBC, 2013). In the case of community-based research, numerous individuals may be involved in the co-construction of knowledge, including research participants (van Schalkwyk & D’Amato, 2015). A dissertation derived from community-based research is “messy work, best done in collaboration, reflection and conversation. New insights and knowledge are arrived at through action and research done in relationship with others” (Maguire, 2015, p.iii, preface to Herr & Anderson, 2015).
A tension arises when graduate students doing collaborative, community-based research confront the post-positivist “culture of dissertations (that) demands individual demonstration of competence” (Herr & Anderson, 2015, p.2). Graduate students have taken various approaches to recognizing the contributions of others, while still emphasizing their own thinking and research in their dissertations. For example, in his study of acculturation and post-immigration physical activity patterns, Michele Vitale chose to list his supervisor as a co-author of the entire dissertation (Vitale & Doherty, 2016).

The research on which my dissertation is based includes the contributions of many: thesis committee members, community partners at SVNH, fellow graduate students at the CHHM, and the multilingual research assistants, professional interpreters, and participants involved in the Active Streets Active People (ASAP) Foreign-Born study. Even from a communication perspective, conducting a study in five languages would have been impossible to execute on my own, as I do not speak four of these languages. In the composition of this dissertation, I have struggled with when to use “I” vs. “we,” establishing the boundary between knowledge and work that is “mine,” and that which is, in the words of Maguire, the product of “research done in relationship with others” (2015, p.iii).

In the Preface I outlined my contributions to each results chapter, and provided the citations for all co-authored manuscripts derived from my dissertation research. I have written the introductory chapters (Chapters 1–3) using “I,” as these chapters are my reflections on the existing literature, theoretical frameworks, and methodological approaches that guided my research. The Global Methods chapter clearly distinguishes between work that I completed (e.g., I conducted community observations and composed field notes) and work that others completed (e.g., multilingual research participants who telephoned potential research participants for
recruitment). The results chapters are the product of a multi-faceted, mixed-method, multilingual study, which could not possibly have been executed by me alone. I have written the results chapters and summative discussion predominately using “we,” reflecting this collaborative approach. Criteria for authorship (e.g., ICMJE Recommendations, 2013) do not allow me to fully recognize the many contributions of those who are not listed in the citations as co-authors for the results chapters and associated manuscripts. At the beginning of each results chapter I have included a citation listing co-authors and chapter-specific acknowledgement sections, highlighting the many individuals who have made each chapter possible.
Chapter 3: Methods

In this chapter, I provide a comprehensive overview of the mixed-method, cross-sectional study that comprises my dissertation. The study, Active Streets Active People- Foreign-Born (ASAP-FB) draws on ethnographic and micro/focused ethnographic methods (Knoblauch, 2005). In this chapter, I provide details that pertain to data collection and analysis.

3.1 ASAP-FB- Study Design and Overview

My dissertation centres around a large mixed-method cross-sectional study, ASAP-FB, which was designed to assess the health and mobility of foreign-born older adults (FBOAs) who reside in the catchment of South Vancouver, British Columbia, Canada (Principal Investigator: Dr. Joanie Sims-Gould, Vancouver Foundation Grant 20R07558). The study consisted of two waves of data collection:

Wave 1. The first wave aimed to characterize the cohort, and assess their self-reported PA and health. These data were collected during a two-hour measurement session with each participant. In addition to self-reported PA, we objectively assessed participants’ PA levels across seven days using accelerometers.

Wave 2. For the second wave, I drew upon ethnographic methods and sought to further examine the mobility of FBOAs. I used in-depth interviews and participant observations to assess how FBOAs engage with and move around their residential neighbourhoods. This was a mixed-method project study (Tashakkori & Teddlie, 2010): in the first wave we adopted collected quantitative methods to determine participant’s demographic characteristics, self-rated health, levels and types of PA, and habitual physical activity assessed by accelerometers. In the second wave we collected applied qualitative data methodologies to assess how and why participants are moving their bodies. This sequential mixed-method approach (Creswell, Plano
Clark, Gutmann & Hanson, 2003) allowed us to collect comprehensive information about individual participants health and physical activity in Wave 1, which we then incorporated into the interviews in Wave 2.

My role. Under the leadership of Principal Investigator Dr. Sims-Gould and study co-investigators, I took an active role in designing, developing, and implementing the ASAP-FB study. At the outset, I contributed to a successful grant proposal, actively engaged the FB community and other community partners, and informed the study design. I led and trained the multilingual data collection team, oversaw recruitment, served as the project coordinator for study implementation, and conducted all interviews and participant observations. I oversaw all aspects of data management. I led the analyses presented in the subsequent chapters, along with contributors and co-authors listed at the beginning of each results chapter, and in the Preface.

Our lab. The ASAP-FB study is one of several studies at CHHM focused on the mobility and physical activity of older adults, and the impact of the local built and social environments. During my training at CHHM, I also served as a research assistant on the Walk the Talk study (Principal Investigator: Dr. Heather McKay; Chudyk et al., 2016, 2017) and Active streets Active people- Senior (ASAP-Sr) study (Principal Investigator: Dr. Heather McKay; Ottoni et al., 2016). Through my work on these studies, I gained interviewing experience and familiarity with the health, demographic and PA measures that we also used in the ASAP-FB study.

3.2 Setting and Context

3.2.1 Community participation

The ASAP-FB study would not have been possible without our community research partner, South Vancouver Neighbourhood House (SVNH) (Appendix A lists community partners and advisors). With an emphasis on knowledge translation, we collaborated with SVNH for more
than four years. Prior to commencing my doctoral studies in 2011, I began working with the SVNH Seniors Hub Council (SHC). SHC is a group of local older adult volunteers who work to improve the lives of seniors in South Vancouver through advocacy, awareness campaigns, and programming.

Figure 3-1 Working with the Seniors Hub Council (SHC)

My involvement with the SHC facilitated a meaningful connection to the community in South Vancouver, echoing the ethnographic principle of prolonged community participation. Between March 2012 and April 2015, I spent approximately 446 hours actively engaged with
older adults in South Vancouver. This included participation in monthly council meetings, community forums, evaluation research on behalf of the SHC (see Tong, Franke, Larcombe, & Sims-Gould, 2017), and data collection for the study presented here (See Table 3.1). My involvement in South Vancouver exposed me to the most pressing informational and service needs for local seniors, facilitated recruitment, sensitized me to my research topic, enriched my analysis of qualitative data (Wave 2), and helped establish trust with participants and local stakeholders. My involvement with the SHC, as a participant and not just an external scientist, helped transformed me from an outsider to an insider (Roper & Shapira, 2000).

Table 3-1 Community participation in South Vancouver (2012–2015)

<table>
<thead>
<tr>
<th>Activity</th>
<th>My Role</th>
<th>Total Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHC monthly meetings and focus groups</td>
<td>Evaluator</td>
<td>77 hours</td>
</tr>
<tr>
<td>Seniors Hub program activities (community forums, health, &amp; wellness activities, etc.)</td>
<td>Evaluator</td>
<td>24 hours</td>
</tr>
<tr>
<td>Community centre stakeholder interviews and observations</td>
<td>Evaluator</td>
<td>25 hours</td>
</tr>
<tr>
<td>Community centre observations, during ASAP-FB data collection</td>
<td>Doctoral trainee</td>
<td>210 hours</td>
</tr>
<tr>
<td>Neighbourhood observations, during ASAP-FB data collection</td>
<td>Doctoral trainee</td>
<td>110 hours</td>
</tr>
</tbody>
</table>

3.2.2  South Vancouver

South Vancouver was the ideal location to conduct my research. South Vancouver Neighbourhood House (SVNH) defines the neighbourhood with the following Vancouver streets as boundaries: North, 41st Ave.; East, Boundary Rd.; South, the Fraser River/Marine Drive; and West, Main Street (see Figures 3.2 and 3.3). According to the 2011 Census (Statistics Canada,
2012), South Vancouver has an older adult population of approximately 16,000 residents over
the age of 65. Almost all census tracts in South Vancouver have 56% of the population reporting
a first language other than English or French
Figure 3-2 Map of South Vancouver catchment

Source: Google maps
South Vancouver is home to three community centres and SVNH. These organizations program for older adults in a number of languages (see Site Map, Figure 3.3). The area also has 18 public parks of varying sizes, a number of churches and temples, several shopping plazas, and two ethnic shopping districts; a small “Chinatown” on Victoria Street and the “Punjab Market” on Main Street both extend approximately 10 city blocks (see Site Map, Figure 3.3). Businesses and organizations advertise the languages that they serve, reflecting a diverse local population.
Figure 3-3 Data collection site map

Source: Google maps
3.3 Ethics and Consent

This study received institutional approval from the University of British Columbia Behavioural Research Ethics Board (BREB, H12-01809, H13-00862). Consent forms were written in plain English and professionally translated by a local non-profit agency, MOSAIC Interpretation & Translation Services. Consent forms were made available in English, Chinese Text (Traditional), Punjabi, and Hindi, reflecting the major languages spoken by older adults living in South Vancouver. Copies of the translated consent forms can be found in Appendix C. Potential participants received consent forms in their first language and English, allowing them to share and review the consent forms with family members who may only read English. Participants were required to provide informed consent prior to commencing the measurement session (Sugarman, McCrory, & Hubal, 1998).

3.4 Target Sample

We sought to include older men and women who are foreign-born, of a visible minority, and reside in the South Vancouver catchment. Foreign-born, visible minority older adults from all ethnocultural communities were welcome to participate. I provide detailed inclusion and exclusion criteria for participation in this study, below. When referring to my sample, I use the term FBOA (foreign-born older adults), but all participants are also visible minorities; for example, a Caucasian older adult who was foreign-born in Europe would not be eligible to participate.

3.5 Recruitment: Wave 1

We designed the study to facilitate participation of individuals from the two major ethnocultural groups in South Vancouver. We provided research forms (e.g., consents forms and
letters of introduction) and data collection translation in the following languages: Hindi, Punjabi, Chinese Text (traditional), and English. This list of target languages was developed in consultation with the SHC.

Working in conjunction with the SHC, older adult volunteers were provided with a 45-minute training session regarding recruitment. These diverse and multilingual volunteers were provided with information about study objectives, inclusion and exclusion criteria for participation, and were provided with multilingual information kits and “sign-up” sheets. Volunteers then had two months to gather names, telephone numbers, and mailing addresses of individuals who were interested in participating. SHC volunteers endorsed and promoted our study within their respective ethnocultural communities, and functioned as important “gatekeepers” (Hammersley & Atkinson, 2007). Names were collected at community centres, exercise and dance classes, ethno-specific group activities, English as a Second Language (ESL) classes, and places of worship. The recruitment pool for this study was approximately 500–600 foreign-born older adults who participated in activities where recruitment took place. In total, eight older adult volunteers collected the names of 113 individuals who expressed interest in the study. As Roper and Shapira (2000) noted, for research in some communities, solicited sampling within existing groups and organizations is one of the only ways to reach potential participants. Multilingual research assistants (RAs) from our research team then followed up with telephone calls to confirm participants met inclusion and exclusion criteria. If participants were eligible and wanted to participate in the study after speaking with a member of our team, we mailed them a copy of the consent form in the language of their choice, in addition to an English copy. Participants received the consent form in the mail at least one week prior to the scheduled
measurement sessions, allowing ample time for their review and consideration. The inclusion and exclusion criteria were:

_Inclusion Criteria:_

- Participants must be men or women over the age of 65
- Participants must be of a foreign-born visible minority (FBVM)
- Participants must reside in the South Vancouver catchment
- Participants must be community-dwelling seniors who do not reside in residential care facilities
- Participants must be able to participate in an interview in: Hindi, Punjabi, Mandarin, Cantonese, or English
- Participants must be able to walk at least 10 metres with or without a mobility aid, such as a cane or walker (determined by self-report)
- Participants must report leaving the home at least once/week on an average week
- Participants must not have been diagnosed by a doctor with any significant memory problems (determined by self-report)

These criteria are outlined in the recruitment package and consent forms (Appendices C & D).

_Exclusion Criteria:_

- People who are Canadian-born
- People who are not visible minorities (e.g., Caucasian older adults)
- People who live outside the South Vancouver catchment
- People unable to complete an interview in: Hindi, Punjabi, Mandarin, Cantonese, or English
People who cannot walk 10 metres with or without a mobility aid, such as a cane or walker (determined by self-report)

- People who do not leave the home at least once/week on an average week

- People who have been diagnosed with a significant memory problem (determined by self-report)

### 3.6 Recruitment: Wave 2

For the qualitative component of the study, participants were recruited from the sample of n=49 older adults who completed the first wave of ASAP-FB. We sought to recruit from the same pool of participants, allowing us to match and potentially triangulate quantitative and qualitative data (Olsen, 2004). Our target sample for the second wave was 20 participants, consistent with previous qualitative studies on older adults’ mobility in Vancouver (e.g., Franke et al., 2013; Ottoni, Sims-Gould, Winters, Heijnen, & McKay, 2016). Upon departure from the initial measurement session, participants were provided with an introductory letter and consent form for these “Voluntary Follow-Up Interviews” (see Appendix C). As noted in the introductory letter, a member of our team followed-up with a telephone call within approximately two to three weeks of the initial session. Of the 49 older adults who participated in the ASAP-FB quantitative study, 47 indicated that they would be interested in a follow-up interview. This list of potential participants was divided among two RAs. One assistant was assigned the Cantonese, Mandarin, and English language recruitment calls, while the other was assigned the Hindi and Punjabi language calls. Participants were called in the order that they appeared on the original recruitment lists from Wave 1. A total of 20 appointment slots (four English, eight Cantonese/Mandarin, and eight Hindi/Punjabi) were available, and slots were
filled on a first-come basis. Four English-language spots were made available as during the first wave we noted that several participants spoke excellent English; some emphatically indicated that they “did not need a translator!” In total, 20 participants signed up to participate in the follow-up interviews; 19 completed said interviews.

Figure 3-4 Recruitment flowchart
3.7 Data Collection Team and Training

We utilized the same multilingual team for both waves of data collection. This maximized reproducibility during data collection and provided a more seamless research experience for participants.

3.7.1 Translation team

It was essential to offer our study in major languages spoken in South Vancouver, reflecting the multilingual nature of our intended participants, and recognizing the paucity of literature examining FBOA health and mobility in multiple languages. We required a team of multilingual researchers and support staff. Our team consisted of two multilingual RAs, two professional interpreters, and two professional translators. Translation refers to the production of a written product, moving from one language to another, and interpretation the production of an oral product in another language (Nicholson, 1995). The data collection team is summarized in Table 3.2.
<table>
<thead>
<tr>
<th>Team member</th>
<th>Languages spoken with native or near-native fluency</th>
<th>Roles &amp; responsibilities</th>
<th>Training, Education, or relevant experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Assistant A</td>
<td>Cantonese, Mandarin, &amp; English</td>
<td>Recruitment phone calls, Scheduling measurement sessions, Data collection, Follow-up calls regarding accelerometers, Quality assurance for interview transcripts</td>
<td>BSc, Worked on 2 previous studies with similar data collection methods, with older adults</td>
</tr>
<tr>
<td>Research Assistant B</td>
<td>Hindi, Punjabi, Urdu, &amp; English</td>
<td>Recruitment phone calls, Scheduling measurement sessions, Data collection, Follow-up calls regarding accelerometers, Quality assurance for interview transcripts</td>
<td>PhD, Worked on 2 previous studies with FBOAs</td>
</tr>
<tr>
<td>Interpreter A</td>
<td>Cantonese, Mandarin, &amp; English</td>
<td>Interpreter for all Chinese language interviews and walking interviews</td>
<td>10 years+ of professional interpretation experience, including verbatim law court interpretation</td>
</tr>
<tr>
<td>Interpreter B</td>
<td>Punjabi, Hindi, &amp; English</td>
<td>Interpreter for all South Asian interviews and walking interviews</td>
<td>10 years+ of professional interpretation experience, including verbatim law court and medical translation</td>
</tr>
<tr>
<td>Translators A &amp; B</td>
<td>Write in: English, Chinese Text (traditional)</td>
<td>Translated the recruitment materials and consent forms, Translated the take-home booklets, accelerometer logs, data collection signage, &amp; labels (No interface with the participants)</td>
<td>Certified professional translators</td>
</tr>
<tr>
<td>Study coordinator (Catherine Tong)</td>
<td>English, Spanish, French, basic Cantonese</td>
<td>Led the team and oversaw all aspects of the study implementation, Conducted interviews and walking interviews, with assistance from interpreters</td>
<td>Doctoral Trainee, Worked on 4 previous studies with FBOAs, expertise in multilingual, community-based research</td>
</tr>
</tbody>
</table>
Team members who worked with participants, as well as RAs, interpreters, and I, were all women with prior experience working with older adults and/or vulnerable populations. All team members signed a confidentiality agreement prior to commencing the study, and RAs and I completed the Canadian Tri Council online Course on Research Ethics (CORE). (http://www.pre.ethics.gc.ca/eng/education/tutorial-didacticiel/).

Research assistants conducted recruitment calls, appointment reminder calls, and provided *in situ* translation during quantitative data collection. MOSAIC Interpretation & Translation Services translated all written communications with participants (e.g., consent forms, introductory letters). Every aspect of our study was translated either verbally or in writing. For example, way-finding signs directing participants to the research study within community centres were translated, as well as labels on letters of introduction stating, “please open and read.”

**3.7.2 Measurement team training**

**3.7.2.1 Overview of the study**

Research assistants completed a two-day intensive training session at CHHM, which I led. At the intensive training session, we reviewed study objectives, recruitment procedures, how to obtain informed consent, and implications of the signed confidentiality agreements and consent forms. We also reviewed the data to be collected during measurement sessions for Waves 1 and 2. Principal Investigator Joanie Sims-Gould provided a two-hour training session on how to maximize the comfort, physical safety, and emotional safety of participants. Team members were provided with a list of community resources, to assist participants if they expressed unmet physical or emotional needs. The list of community resources was compiled in consultation with the SHC.
3.7.2.2 Height and weight

An experienced research operations assistant at CHHM provided a one-hour session on anthropometry protocol (height (cm) and weight (kg). They also trained the measurement team regarding how to instruct participants to correctly wear accelerometers (outlined in the Participant Take-Home booklet and Accelerometer Log; see Appendix F).

3.7.2.3 Questionnaires

The questionnaire booklet sought to determine: perceptions of one’s neighbourhood, self-reported PA patterns, self-reported health, and key demographic information. As a team we carefully reviewed each questionnaire and survey item to ensure clarity and consistency among the team members. Prior to the second day of training, the RAs practiced administering the entire measurement booklet with a volunteer who spoke the same language as them, giving them an opportunity to identify any problematic sections when translated and completed with a participant. On the second day, we reviewed any questions or concerns. We reviewed team expectations for precise and rigorous data collection, and reviewed standards for data entry:
Table 3-3 Data entry standards

<table>
<thead>
<tr>
<th>Utilize the cover page to ensure all questionnaires are complete</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use the following codes for data collection:</strong></td>
</tr>
<tr>
<td>UKN Unknown</td>
</tr>
<tr>
<td>DK Don’t Know</td>
</tr>
<tr>
<td>REF Refused</td>
</tr>
<tr>
<td>NA Not Applicable</td>
</tr>
<tr>
<td>ND Not Done (with reason why)</td>
</tr>
<tr>
<td>SH Sent Home</td>
</tr>
<tr>
<td>INC Incomplete</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mistake should be corrected using a single line crossing through the error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When in doubt, document</strong></td>
</tr>
</tbody>
</table>

Source: CHHM Standards, document created by Dr. Heather Hanson

3.7.2.4 Translator training

Professional interpreters assisted with Wave 2. They were provided copies of consent forms and interview guides one week prior to the interviews. They were allocated one hour of paid time to review materials prior to commencing data collection. I then met with each interpreter one hour prior to their first interview to review study objectives and answer any questions. During this session we reviewed concepts that may be difficult to translate (e.g., “walkability”/”walkable”), to ensure that all team members had a consistent understanding of
these terms. We scheduled paid “debriefing” time after each interview, in which the interpreters and I again reviewed any concerns related to translation.

3.8 Data Collection: Wave 1

Data collection took place from May–June 2013. Data collection for both waves occurred in quick succession, capitalizing on the multilingual research team that we had in place for both components of the study.

In the first wave we used questionnaires to assess four domains: self-reported PA, self-reported health, height and weight, and demographics. We conducted two-hour survey sessions in large rooms at local community centres and neighbourhood houses in South Vancouver. Data collection sites included SVNH, Sunset Community Centre, and Killarney Community Centre (see the Site Map, Figure 3.3). Participants selected the location that best suited their needs and were offered either a morning or afternoon session to accommodate their schedule. We had at most two participants in the room during any measurement session. This allowed us ample space to complete measurement sessions with a degree of privacy. One-on-one measurement sessions were conducted at SVNH for those who requested it. In total, we offered 34 two-hour measurement sessions. Measurement booklets were printed and collected in English, with the multilingual RAs going through each question with the participants verbally, in the language of the participant’s choosing. Many participants completed assessments in two languages, alternating their responses between English and a first language(s).

One participant was unable to complete the measurement session. This individual exhibited heightened confusion during measurement, possibly due to cognitive impairment. In the recruitment phone call, the participant did not self-report cognitive impairment, which is an exclusion criteria for this study. Approximately 45 minutes into the measurement session we
suspended the session and contacted the participant’s next of kin to help the participant return home. Incomplete data for this participant are not included in any analyses.

We worked closely with the SHC to determine the appropriate honoraria for participants. Participants chose either a $25 gift card for a local grocery chain or a local pharmacy. For participants who took public transit to measurement sessions, we provided bus tickets to cover the return fare. We did not compensate other travel-related expenses, such as parking and gas.

3.8.1 Measurement

The healthy immigrant literature relies on self-reported measures of health, and highlights the importance of collecting comprehensive demographic information. Measurement sessions aimed to capture information in four domains: 1) self-reported PA, 2) self-reported health, 3) height and weight, and 4) demographics.

3.8.1.1 Physical activity (self-report)

To capture participants’ self-reported PA patterns in the last month, we used the Community Healthy Activities Model Program for Seniors (CHAMPS) physical activity questionnaire for older adults (Stewart et al., 2001). This questionnaire differentiates light-, moderate-, and high-intensity activities. By assessing a wide range of activities, CHAMPS also allowed us to identify the types of physical activities that participants engaged in.

3.8.1.2 Health (self-report and perceived)

To capture participants’ self-reported health, we used the functional co-morbidity index (FCI). The FCI is an 18-item, standardized, highly used measure that tabulates an individual’s self-reported, co-morbid conditions (e.g., Groll, Bombardier, & Wright, 2005). We selected the FCI, opposed to other indices of chronic conditions, as the clinical emphasis of this tool is on assessing physical function rather than morbidity or mortality (Groll et al., 2005).
3.8.1.3 Height and weight

The final item of the FCI is “obesity.” We measured participants’ height and weight to calculate body mass index (BMI, kg/m²), which was then used to categorize a participant as obese (this is further outlined in the analysis section). Height (cm) and weight (kg) were assessed using the anthropometry protocol developed and implemented by a number of studies at CHHM (e.g., MacDonald, 2006). Standing height, without shoes, was measured to the nearest millimetre using a freestanding, portable stadiometer (Seca, model 242). Weight, while fully clothed, was measured to the nearest .1 kilogram using a calibrated digital scale (TANITA, model BWB-800). Height and weight were both measured twice by the same RA; the mean of the two values was used for analysis.

3.8.1.4 Demographics

The healthy immigrant effect literature emphasized the need to capture comprehensive demographic information. We developed a demographics questionnaire in consultation with the SHC and ASAP-FB co-investigators. The demographics questionnaire (see Appendix E) asked questions about age, sex, gender, household income, living arrangements, current paid and unpaid work, and questions pertaining to the immigration experience (e.g., age at immigration, length of time in Canada, reason for immigration, etc.). We used questions from the LSIC to ascertain participants’ perceived English language capabilities and immigration experiences in Canada. Specific to mobility, we asked about primary modes of transit—bus passes, car ownership, and drivers’ licences.
3.9 Analysis: Wave 1

3.9.1 Data entry and management

Original hard copies of data are stored in locked cabinets at CHHM and scanned digital files on a secure server, also at CHHM. Survey data were entered by a professional data entry company in Vancouver, Data Express. Upon receipt of the entered data, an RA checked and cleaned the data, utilizing the approach outlined by van den Broeck and colleagues (van den Broeck, Cunningham, Eeckels & Herbst, 2005). Ten percent of digital data were cross-checked with the original paper copies and all missing values were double-checked. Missing data, which were confirmed missing by checking original hard copies, were labelled 999 in digital versions.
of data files. Survey data were uploaded to SPSS software (Version 22, IBM) for analysis. I used box and scatterplots to check for outliers (see Appendix J). Outliers were retained for analyses unless further investigation deemed the data spurious or physiologically improbable.

3.9.2  Scoring protocols and statistical analysis

3.9.2.1  FCI

The FCI, or functional co-morbidities index, is an 18-item measure, with a higher total score indicating a greater number of co-morbid conditions. To obtain a total score for each participant, I summed responses across the 18 items. The FCI’s final item lists obesity as a co-morbid condition. I determined whether or not a participant was obese by calculating their BMI, using height and weight data from the measurement session. A person’s BMI is calculated using the following formula: BMI= wt (kg)/ht (m²). We use WHO cut points for BMI classification of adults. These are: <18.50=underweight, 18.50-24.99=normal range, > 25.00= overweight, > 30.00=obese (WHO, 2006).

3.9.2.2  Demographic data

I report mean and standard deviations for scaled variables and frequencies for categorical variables; in Chapter 4 I stratify by gender and ethnicity.

3.9.3  Measurement of physical activity

3.9.3.1  Subjective measure—CHAMPS questionnaire

I scored the CHAMPS questionnaire using the protocol outlined by Stewart et al. (2001). This questionnaire captures the types of activities participants engage in and total minutes spent in each type of activity in a typical week. I provide frequencies for each listed physical activity and time spent in each PA (average minutes/week).
3.9.3.2 Objective measure—accelerometry

In addition to the survey session, we sought to capture participants’ PA patterns objectively, using accelerometers. We asked participants to wear an accelerometer for seven days following their measurement. Accelerometers are small devices, worn at the waist, ideally over the right hip bone, that measure the PA (counts) and sedentary behaviour of the wearer. Accelerometers utilize an internal sensor to detect, and then digitally record, movement on three planes (anteroposterior, mediolateral and vertical), which can then provide an estimate of the PA of the wearer (Chen & Bassett, 2005). In our study, we used the triaxial accelerometer ActiGraph GT3X (ActiGraph GT3X+, ActiGraph LLC, Pensacola, FL, USA). This device tells us how much (minutes/day) and using age specific cut points, with what intensity (light, moderate, vigorous) participants engaged in PA. Accelerometers can also estimate sedentary behaviour by indicating a lack of movement below an age-specific cut point (Chen & Bassett, 2005).

However, accelerometers are not able to capture all types and forms of PA (Welk, 2002); for example, they do not account for increased load (e.g., carrying a bag of groceries) or topography (e.g., walking uphill). As the Actigraph accelerometer that we used is not waterproof we were not able to assess activities such as swimming. We were also not able to capture leg movements during cycling.

Research assistants distributed accelerometers at the end of the measurement session, and provided a 10-minute demonstration on how to use the device. Participants were asked to wear the unit on an elastic waistband, placed over the right hip. They were then asked to attach the unit when they woke up in the morning, and detach it again when they went to bed at night. Accelerometers were removed for showering, swimming, etc. Translated take-home booklets provided written and pictorial instructions on how to wear the accelerometer. Participants
recorded their accelerometer wear time in the Accelerometer Log, including all on/off times throughout the day (see Appendix F). Research assistants translated the completed accelerometer logs to English and entered these data into Microsoft Office Excel files for analysis.

3.9.3.3 Accelerometer compliance

Participants were keen to wear their accelerometers correctly. To facilitate open and ongoing communication with our research participants in the language of their choosing, all their study documentation included contact telephone numbers to connect participants with an RA who spoke the appropriate language. With this direct line of communication, RAs received daily calls from participants. These telephone calls were often queries on how to correctly wear the accelerometers, what the lights on the accelerometers indicated, if they should still be wearing the units, etc. This line of questioning led to a very high level of compliance, as reported in Chapter 4.

3.9.3.4 Accelerometer analysis

Raw accelerometer data, or counts (Chen & Bassett, 2005), were uploaded to the ActiLife software program (v. 6.5.4; ActiGraph LLC, Pensacola, FL, USA) for analysis. Accelerometers were initialized to collect and summarize counts for a 60-second period (epoch). Shorter epochs (e.g. 15 seconds) were used in studies with children (e.g., Nettlefold, McKay, Naylor, Bredin, & Warburton, 2012), to more fully capture short, intensive bursts of PA that might be lost if averaged over a 60-second period. Studies with older adults, however, consistently used 60-second epochs to summarize activity counts (see Gorman et al., 2014). Individual participant data were first uploaded to Microsoft Office Excel files. An RA checked each file for physiologically improbable outputs (e.g. extremely high values over a long period of time, extended periods of the same value). The maximum value for Actigraph is 32,767 counts per
minute (CPM), but anything over 20,000 is recognized as biologically implausible (Colley, Gorber, & Tremblay, 2010).

*Treatment of consecutive zeros.* Consecutive zeros of more than 120 minutes, allowing for one to two minutes of counts zero to 100, were deemed “non-wear” time, and not included in the analysis. This is distinguished from consecutive zeros that represent actual sedentary time. Previous studies with older adults have varied in their treatment of consecutive zeros; our 120-minute approach was guided by the validation study by Hutto et al. (2013), which called for a minimum of 120 minutes of consecutive zeros when measuring the physical activity of older adults.

*Minimum wear time.* To be included in the analysis, participants wore their accelerometer for a minimum of six 10-hour days.
Figure 3-5 Sample daily accelerometer output in ActiGraph

Cut Points. For this dissertation, I report participants’ light, moderate, and vigorous PA, total activity, and sedentary time. This is consistent with Lee and Shiroma’s (2014) argument that researchers must move away from an exclusive focus on moderate to vigorous physical activity (MVPA). Gorman’s (2014) systematic review of accelerometer use in studies with older adults demonstrates this emphasis on MVPA. The intensity of PA is determined by applying standardized cut points to the counts per minute (CPM) (see literature review for more information). Consistent with other studies with older adults (e.g., Winters et al., 2015), I use Freedson, Melanson, and Sirard (1998) cut points to categorize CPM values as light, moderate and vigorous. Freedson et. al. cut points are: light = ≤ 1951, moderate = 1952-5724, and vigorous ≥ 5725.
Sedentary Time. Counts of zero to 50 were considered sedentary, as per Eslinger, Copeland, Barnes, and Tremblay (2005). Sedentary time is presented as the percentage of the day spent in non-movement; this is consistent with Gorman’s systematic review (2014), in which the sedentary time of older adults wearing accelerometers was most often reported as a percentage of the day.

3.10 Data Collection: Wave 2

Within weeks of completing their measurement session, 19 participants completed the second wave of data collection, consisting of a traditional sit-down interview and an observational walking interview.

3.10.1 Traditional sit-down interview

I conducted in-depth, semi-structured interviews to explore a variety of thematic areas. To provide structure to the interviews, and to ensure consistency across all interviews, the ASAP-FB team developed an interview guide. Colleagues, including members of the CHHM Qualitative Writing Workshop team, provided extensive feedback on the interview guide, and we piloted this interview guide with two FBOA older adult volunteers from the SHC. Having worked with the SHC for more than three years at the time of data collection, I felt comfortable asking the SHC how to best phrase potentially difficult questions and what specific terms to use. The Integrated Conceptual Framework (presented in Chapter 3) guided the development of the interview guide (See Appendix I). Utilizing Webber et al.’s (2010) comprehensive framework on “Mobility in Older Adults” as a starting point, the guide specifically asked questions about the factors theorized to impact mobility: financial, psychosocial, environmental, physical, and “gender, cultural, and biographical influences.” The Webber model (2010) also includes cognitive factors; however, as we excluded those unable to independently provide informed
consent, we did not include participants with low cognitive abilities. Given that empirical and theoretical literature highlights the role of the environment on individual mobility (see Chapters 2 and 3), the interview guide included a large section of questions pertaining to both built and social environments. To better understand the outermost ring of the Webber model, a portion of the interview guide was also used to examine the biographical, gendered, and cultural influences that may impact mobility.

In total, 18 participants completed the qualitative component of the study: 10 South Asian and eight Chinese. I conducted all 18 interviews, with the assistance of professional interpreters in 16 of the interviews. Two participants were comfortable conducting their interviews in English, which I completed independently. Interviews ranged from approximately 30–120 minutes. All Wave 2 participants were asked to complete a traditional sit-down interview. I also incorporated descriptive data from Wave 1 into the interviews in Wave 2. For example, the interview packet included a summary of descriptive data on each participant, which I reviewed prior to the interview. What we learned about the participant’s health and mobility in the first wave was incorporated into the second wave. This sequential mixed-method approach was intended to reduce participant burden and provide depth and context to the interview. Traditional sit-down interviews, held in private locations, provided an appropriate format for a lengthy discussion. Sixteen interviews were conducted in participants’ homes, and the remaining three were completed in private rooms at local community centres, at the request of the participants. Participants were provided with an honorarium as per Wave 1: an additional $25 gift card to either a local grocery chain or pharmacy.
3.10.2 Walking interviews and participant observations

Upon completion of the traditional sit-down interview, participants were then invited to complete an optional walking interview. Ethnographers have long used this “practice on foot” to explore how participants engage with their built and social environments while walking (Kusenbach, 2003). As Lee and Ingold noted, “shared walking . . . results in a fieldwork sensitive to the richness and reality of people’s mobility in the world” (2006, p.83). As such, walking interviews are an ideal method for understanding how people “prepare and set out, and how do they carry on through places in which, for any number of reasons, it may be difficult to walk” (Ingold & Vergunst, 2008, p.3). More recently, this method was utilized in qualitative health research (e.g., Carpiano, 2009). In total, 13 participants completed a walking interview. Reasons for not completing the walking interview included: time constraints (N=2), health (N=2), and weather (N=2).

I developed an open-ended walking interview guide to help steer the conversation and focus the conversation on topics relevant to the research questions. The walking interview guide included questions on mobility, and built and social environments (see Appendix J for the walking interview guide). Walking interviews lasted approximately 15–50 minutes. Participants were asked to select a route in their local neighbourhood that they would normally use. I wrote comprehensive participant observation notes upon completion of each walking interview, ranging from approximately 750–2,000 words per note. These notes included: the route, who/what was present along the route, a visual description of a particular spot along the route (e.g. a spot that the participant liked/disliked), how the participant engaged with the built and social environments, micro-scale features of the built environment that the participant mentioned/used, challenges they faced along the route (traffic, hills, weather), and how they
reacted to or overcame these challenges. Coupled with traditional interviews, walking interviews and observations were designed to provide a more complete understanding of each participant’s mobility and the role of the local built and social environments.

3.10.3 Journaling and reflexivity

Consistent with ethnographic fieldwork practice, I also maintained an individual journal to reflect on my thoughts, potential biases, observations, and experiences during the data collection process. I completed a journal entry each day during data collection for both waves. Journal entries were much longer and more detailed during Wave 2, as I was more intimately involved in conversations and observations with participants. Journal entries ranged from 200–1,000 words, and were written in a notebook and then later transcribed into digital files. I scheduled one hour of reflection and journaling after each interview, which allowed for immediate reflections and composition. We never scheduled more than two interviews per day, and this allowed ample time for data collection and reflection. I typically composed journal entries in the neighbourhoods where the participants lived, often in a local park or community centre. Writing these notes in situ also afforded me additional time spent in local built and social environments that were the focus of the interviews.

3.11 Analysis: Wave 2

3.11.1 Transcription and data management.

Audio files were transcribed verbatim by a professional transcription agency in the Lower Mainland, OnLine & OnTime. The transcriber was instructed to only transcribe sections of the audio file that we recorded in English. Professional interpreters translated both my questions and participants’ responses into English. To ensure the quality of these transcripts, multilingual RAs, who were not present during the interviews, were asked to review a random selection of
transcripts (five interviews per assistant). Research assistants listened to the original audio files and compared them to final interview transcripts to ensure both faithful translation of the interview and faithful transcription of the English text. No major issues were reported. Minor omissions were recorded on the checked transcripts, and largely consisted of a missing word. One lengthy discussion about the divorce of one participant’s daughter was not fully translated. This was discussed with the interpreter at the time—they felt that the information was sensitive and not pertinent to the research questions. This was the only noted significant omission from interpretations and transcriptions.

After checking transcripts for quality and completeness, identifiable information was replaced with anonymous codes, such as [name of brother] and [address of doctor]. With guidance from the multilingual RAs, age and culturally appropriate pseudonyms were assigned to each participant in Wave 2. The titles of Mr. and Mrs. were used as pseudonyms to identify the married couples who participated in the study together, and who were interviewed together. First names were used for individual participants. Text and audio files were entered in the qualitative analysis software program NVivo 9. I analyzed the transcripts in concert with the field notes, participant observations, and my data collection journal. Details pertaining to each individual NVivo analysis are included in the results chapters.

3.11.2 Strategies for rigour

I employed various strategies to enhance the rigour of this study (Cohen & Crabtree, 2008), including: cross-checking full transcripts against the original audio files for quality and completeness; member checking through circulation of summary reports and ongoing engagement with our research participants (see Chapter 9 for the full knowledge translation component of this research); reflexive memoing and journaling throughout the data collection
and data analysis processes; team-based analysis, including team meetings and memos with both
the data collection team and the ASAP-FB co-investigators, to discuss salient themes that I
identified in the data; and the identification and thoughtful examination of “outliers” or “deviant
cases” (i.e., those participants and themes that don’t fit within the overarching coding structure
and the overall “story” created by myself, the participants, and the ASAP-FB research team)
(Seale & Silverman, 1997). I also maintained audit trails for each analysis, a systematic record of
all key procedural and analytical decisions (Koch, 2006).

As noted by Morse, Barrett, Mayan, Olson, and Spiers (2008), the validity and reliability
of qualitative data cannot be ensured through the application of post-hoc strategies. Through a
three-year engagement with participants and the SHC (see Tong et al., 2017) I enhanced the
validity and reliability of study data by providing same-language summary reports after Waves 1
and 2, sharing preliminary findings at SHC meetings, and maintaining open and ongoing
communication with participants during the analysis portion of the study. I coordinated a half-
day community forum in April 2015, to share and discuss findings with participants and
community research partners. Eleven older adults, four staff members from SVNH, and five
scientists from the ASAP-FB team attended the event. At the forum, we shared our findings
through a two-page summary report (see Appendix L) and a 20-minute PowerPoint presentation,
after which participants discussed our findings as a group. Discussions and participant reflections
were audio recorded, allowing me to invoke their reflections in my analysis and interpretation of
the data. The community forum was conducted in English, with volunteers from the SHC
assisting with interpretation as needed.
Chapter 4: Physical Activity Among Foreign-born Alder Adults in Canada: A Mixed-Method Study Conducted in Five Languages

Co-authors for the peer-reviewed manuscript associated with this chapter: Joanie Sims-Gould & Heather A. McKay

Contributor acknowledgements: The results presented in this chapter would not have been possible without the assistance and contributions of: volunteers at the Seniors Hub Council (SHC) in South Vancouver; multilingual research assistants Brigid Wong and Syeda Bukhari, who collected data in four languages; our research participants, who so willingly wore their accelerometers for the requested timeframe; my dissertation committee members Anne Martin-Matthews and Atiya Mahmood; and the anonymous peer reviewers who provided feedback on the associated manuscript (see Preface).

4.1 Introduction

The longer an immigrant lives in Canada, the higher their risk of having a chronic disease (Tremblay et al., 2006). Similar to the populations in many high-income countries, one third of older adults in Canada are foreign-born (Ng et al., 2012). The self-reported health of FBOAs is poor compared to their Canadian-born peers (Ng et al., 2012). Several studies confirm that FBOAs report a high prevalence of chronic conditions, poor self-rated health, and greater difficulties with instrumental activities of daily living (IADLs) when compared with their Canadian-born peers (e.g., Dunn & Dyck, 2000; Lai et al., 2007).

To promote and sustain the health of all older adults in Canada, engaging in adequate PA is vital (Hanson et al., 2012); among older adults, PA enhances health. An abundance of research
(Paterson, Jones, & Rice, 2007) has demonstrated that PA reduces the risk for many chronic
diseases, preserves physical function as individuals age, and restores function in those who were
previously sedentary (Chodzko-Zajko et al., 2009). In publicly funded health care systems, PA
can reduce the risk of some of the most costly and impactful chronic diseases, including
“cardiovascular disease, stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity,
colon cancer, breast cancer, cognitive impairment, anxiety and depression” (Chodzko-Zajko et
al., 2009, p.1,515). In addition to lower rates of disease and better physical function, PA also
facilitates “active engagement with life” (Torres, 2013, p.48). In spite of the well-documented
benefits of PA, only 13.1% of older Canadians (ages 60–79) meet the World Health
Organization’s guideline of 150 minutes/week of moderate to vigorous physical activity
(MVPA) (Colley et al., 2011). Older women have higher levels of physical activity (NACA,
2006), and lower counts of MVPA and daily steps compared to older men (Colley et al., 2011).
Supporting the PA of older adults, the most inactive segment of the population (Moran et al.,
2014), is a public health imperative.

We know very little about the PA habits of FBOAs in Canada. While our understanding
of immigrant PA patterns has improved in recent years, studies that assess FBOAs are few.
FBOAs who are unable to participate in research conducted in Canada’s two national languages,
English and French, have largely been excluded from such research (Koehn et al., 2015). Two
studies, one using a qualitative approach and the other a mixed-method, provided some insights
into the PA habits of FBOAs (Garcia & Da, 2011; Johnson & Garcia, 2003). Of 54 Cambodian,
Latin-American, Vietnamese, and Polish older adult immigrants, the vast majority (83.3%)
reported being physically active with a mean frequency of 4.6 days per week and a mean
duration of 30 minutes per day (Johnson & Garcia, 2003). The most frequently reported type of
activity was walking, followed by yard and housework. A study of older adult Chinese immigrants also found that walking was the preferred form of PA (Garcia & Da, 2011). All participants reported engaging in less PA in Canada than in their country of origin. Canadian (Garcia & Johnson, 2003; Jette & Vertinsky, 2011; Koehn, Habib, & Bukhari, 2016; Oliffe et al., 2010; Taylor et al., 2008; Wang et al., 2013) and international studies have focused on FBOAs’ beliefs and perspectives related to PA (Belza et al., 2004; Koo, 2011; Lim, Kayser-Jones, Waters, & Yoo, 2007; Lin, Huang, Young, & Chen, 2007; Maxwell, Bastani, Vida, & Warda, 2002; Wong, Dixon, Gilbride, Kwan, & Stein, 2013). It is widely recognized that culture has a profound impact on health and health behaviours (Napier et al., 2014). For our study, we adopt the definition that culture is “the set of values, beliefs, and behavioural norms common to a given group of individuals” (Lai et al., 2007, p.172). At present, we do not have a comprehensive understanding of if/how culture impacts the PA behaviours of FBOAs. Taylor et al.’s (2008) analysis of a PA education curriculum, which included Chinese adults from Vancouver, suggested that Chinese older adults have “culturally specific beliefs concerning the appropriateness” of vigorous physical activity for elders (Taylor et al., 2008, p.386); Chinese older adults in their study emphasized the need for slow and “soft” activities, or gentle physical activity. Participants also stressed the importance of completing household activities and maintaining harmonious family relationships above acquiring formal PA. In a study of South Asian older women and their access to health promotion programs in Metro Vancouver, Koehn et al. (2016) found that participants were keen to acquire exercise but also prioritized domestic activities (e.g., caregiving, cooking, etc.). The prioritization of family over self-care was especially salient for the South Asian older women in Koehn’s study, who “tend to put the care of their family members ahead of their own needs” (Koehn et al., 2016, p.96).
While these studies offered important insights regarding FBOAs’ PA, none of these studies assessed PA using objective measures, and only one (Wong et al., 2013) used a self-reported measure of PA. To support the health and PA of FBOAs, the crucial first step is to provide a valid, reliable, objective characterization of their PA levels. We conducted a mixed-method study (Active Streets Active People- Foreign-Born; ASAP-FB) to characterize the physical activity habits of multilingual and non-English speaking FBOAs residing in South Vancouver, British Columbia, Canada. In Chapter 6, we will look more closely at the factors that impact participants’ PA and mobility, conceptually grounded in the Webber (2010) framework of older adults’ mobility.

4.2 Methods

I have provided detailed methods in Chapter 3 of this dissertation. The methods we used for both waves of the study are briefly described here.

4.2.1 Setting and context

The South Vancouver neighbourhood is home to approximately 16,000 older adults, and is also a linguistically diverse neighbourhood; more than half of residents speak a language other than English and French (Statistics Canada, 2012). South Vancouver is home to large residential areas, parks, community centres, a small Chinatown, and a Punjab market and shopping district. The area is relatively well served by public transit, with a Transit Score of 61 out of a possible 100 (Walkscore, 2016). The neighbourhood Walk Score is 63 out a possible 100, making it “somewhat walkable” (Walkscore, 2016).

4.2.2 Recruitment

Our long-standing partnership (see Tong et al., 2017) with the executive and seniors’ committees at South Vancouver Neighbourhood House (SVNH) enabled us to access a diverse
group of FBOAs. The Seniors Hub Council (SHC) at SVNH assisted with development and implementation of the ASAP-FB study. Eight peer volunteers from SHC gathered names and contact information for 113 individuals who expressed interest in participating in our study; they gathered these names at community centres, exercise and dance classes, ethno-specific group activities, English as a Second Language (ESL) classes, and places of worship. Multilingual research assistants telephoned these 113 individuals to further explain the study. Eligible participants: were over 65 years of age, resided in the South Vancouver catchment, self-identified as foreign-born and a visible minority, reported leaving the home at least once a week, and had not been diagnosed with significant cognitive impairment. Ineligible participants were those who resided in long-term care facilities or were unable to complete the interview in one of the offered languages: Hindi, Punjabi, Cantonese, Mandarin, or English. We offered all aspects of the study in these five languages: study documents were professionally translated (recruitment letters, consent forms, accelerometer logs, and instruction manuals), and we employed professional interpreters and multilingual research assistants for data collection.

4.2.3 Data collection and analysis

Fifty-one FBOAs volunteered to participate; 49 attended the measurement sessions and provided informed consent. This study received approval from the University of British Columbia’s Behavioural Ethics Review Board. Participants completed a comprehensive survey assessment and wore accelerometers for seven days (Chen & Bassett, 2005) to track their physical activity patterns. Of these participants, 18 completed in-depth qualitative interviews. Data collection took place during May–June, 2013. Data collection for both waves occurred in quick succession, capitalizing on the multilingual research team that we had in place for both components of the study.
4.2.3.1 Measurement sessions

We conducted two-hour survey sessions in large rooms at local community centres and neighbourhood houses in South Vancouver. Measurement booklets were printed and collected in English. Multilingual RAs went through each question verbally with participants, in the language of participants’ choosing. Many participants completed assessments in two languages, alternating their responses between English and other language(s). As honoraria, participants chose a $25 gift card for a local grocery chain or a local pharmacy. We also provided bus passes for those who took public transit to attend the sessions.

Measurement sessions aimed to capture information in four domains: 1) self-reported PA, 2) self-reported health, 3) height and weight, and 4) participant demographics.

Physical activity—self report: To assess participants’ self-reported PA patterns in the last month, we used the CHAMPS physical activity questionnaire for older adults (Stewart et al., 2001). The CHAMPS questionnaire evaluates the wide range of physical activities in which participants engage.

Health—self report. We used the functional co-morbidity index (FCI) to tabulate participants’ self-reported co-morbid conditions (e.g., Groll et al., 2005).

Height and Weight. Height and weight were measured using the anthropometry protocol developed and implemented by a number of studies at CHHM (e.g., MacDonald, 2006). Standing height, without shoes, was measured to the nearest millimetre using a freestanding, portable stadiometer (Seca, model 242). Weight, while fully clothed, was measured to the nearest .1
kilogram using a calibrated digital scale (TANITA, model BWB-800). Height and weight were both measured two times by the same RA; the mean of the two values was used for analyses. If there was a difference of four millimetres or 0.2 kilograms, respectively, between the first two measures, a third measurement was taken; when three measurements were taken, we then used the median of the three for analysis.

**Demographics.** The demographics questionnaire asked questions about age, sex, gender, household income, living arrangements, current paid and unpaid work, and questions pertaining to the immigration experience (Table 4.1). Participants struggled to report household income; in multi-generational homes and in situations where other family members assisted participants with their finances, many participants were unable to answer questions about household income. Given the high proportion of missing data, we do not report income.

### 4.2.3.2 Statistical analysis

Survey data were entered by a professional data entry company, and an RA checked and cleaned the data (van den Broeck et al., 2005). Ten percent of digital data were cross-checked with the original paper copies, and all discrepant or missing values were double-checked. Survey data were uploaded to the SPSS software (Version 22, IBM) for analysis. For the CHAMPS survey we reported means for time spent in and frequency of the most commonly reported physical activities. The Functional co-morbidities index’s final item lists obesity as a co-morbid condition. To determine obesity we calculated participant’s body mass index (BMI=wt/ht2) using measured height (cm) and weight (kg), and WHO cut points for BMI classification of adults. Asian adults develop weight-related diseases at lower BMIs (Lowe et al., 2009), therefore some researchers have proposed lowering BMI cut points for this group. The WHO, however, has not
yet endorsed or adopted ethnic-specific BMI cut points, citing a lack of consensus in the literature (WHO Expert Consultation, 2004). For demographic data we report mean and standard deviations for scaled variables and frequencies for categorical variables.

4.2.3.3 Objective measurement of physical activity- accelerometers

In addition to the survey session, we sought to capture participants’ PA patterns objectively, using accelerometers. We asked participants to wear an accelerometer for seven days following their measurement. Research assistants distributed accelerometers at the end of the measurement session, and provided a 10-minute demonstration on how to wear the accelerometer: on an elastic waistband, placed over the right hip. Participants attached the unit when they woke up in the morning and detached it again when they went to bed at night. Accelerometers were removed for showering, swimming, etc. Translated take-home booklets provided written and pictorial instructions on how to wear the accelerometer. Participants recorded their accelerometer wear time in the Accelerometer Log, including all on/off times throughout the day. The SHC cautioned that some participants could not read or write in English or their first languages. Creating an inclusive study was not simply about translation; it was also about literacy. We used photographs and graphics to make the take-home booklets and accelerometer logs easier to understand. In the take-home packages, we included translated and English versions of all documents, so that younger relatives (e.g., children or grandchildren who do not read Hindi, Punjabi, or Chinese script) could provide assistance in English. The booklets also included the specific telephone number connecting each individual participant to the RA that spoke their language. Research assistants fielded daily phone calls from participants with queries about how to wear the unit, how to fill out the log, etc. Research assistants translated the
completed accelerometer logs to English, where necessary, and entered these data into Microsoft
Office Excel files for analysis.

4.2.3.4 Accelerometer analysis

Accelerometer counts (Chen & Bassett, 2005) were uploaded to the ActiLife software
program (v. 6.5.4; ActiGraph LLC, Pensacola, FL, USA) for analysis. Accelerometers were
initialized to collect and summarize counts for a 60-second epoch. Studies with older adults
consistently used 60-second epochs to summarize activity counts (see Gorman et al., 2014).
Individual participant data were first uploaded to Microsoft Office Excel files. The
accelerometers did not capture any counts greater than 15,000/min, which are regarded to be
physiologically improbable (Esliger et al., 2005).

Consecutive zeros of more than 120 minutes, allowing for one to two minutes of counts
zero to 100, were deemed “non-wear” time, and not included in the analysis. This is
distinguished from consecutive zeros representing actual sedentary time. Previous studies with
older adults have varied in their treatment of consecutive zeros; our 120-minute approach was
guided by the validation study by Hutto et al. (2013), which calls for a minimum of 120 minutes
of consecutive zeros when measuring the physical activity of older adults. We report
participants’ light, lifestyle, moderate, and vigorous PA, and sedentary time. Consistent with our
other studies with older adults (e.g., Winters et al., 2015), we use Freedson’s adult cut points
(Freedson et al., 1998) to categorize CPM values as light, lifestyle, moderate, and vigorous.
Counts of zero to 50 were considered sedentary (Eslinger et al., 2005). To be included in the
analysis, participants wore their accelerometers for a minimum of six 10-hour days.
Accelerometry results are presented by gender (women and men) and ethnicity (Chinese and
South Asian), as the scant FBOA PA literature suggests differences amongst these groups (Johnson & Garcia, 2003; Garcia & Da, 2011). Ethnicity and gender were both determined by self-report in the demographics survey.

4.2.3.5 In-depth interviews

We completed in-depth interviews at a private location of each participant’s choosing, either their home or a room in a local community centre. Of the 49 participants who completed surveys, 47 agreed to be contacted for a follow-up interview. We aimed to conduct 20 interviews, and filled these spots on a first-come basis. In total, I completed interviews with 18 participants. I used a semi-structured interview guide to ask questions about daily routines and physical activity patterns. The goal of these interviews was to discuss participants’ PA habits, their mobility (i.e., movement around their homes and communities), and examine the impact of the local environment. The development of the interview guide and subsequent analyses were guided by the Webber (2010) model of mobility in older adults. This framework highlighted five mobility determinants (Finances, Pyschosocial, Environment, Physical, and Cognition), the crosscutting impact of “Gender, Cultural, and Biographical Influences,” and the “life-spaces” (bedroom/home/outside/neighbourhood/service community/surrounding area/world) in which mobility takes place. We used this framework to develop a comprehensive interview guide. Key discussion prompts included: “Tell me about a typical day? Where do you go, what do you do, who do you see,” “What gets you out the door?” and “What gets you moving your body? How do you move your body?” (See Chapter 3 for further details about the interviews; the interview guide is included in Appendix I.)

Fifteen interviews included a professional interpreter to facilitate communication between the participants and I, while three participants indicated that they were comfortable
completing theirs in English. Interpreters, one working in Hindi and Punjabi, the other in Cantonese and Mandarin, each had more than 10 years of interpretation experience in the health care setting. I met with each interpreter prior to their first interview to review study objectives and the interview guide, and answer any questions. During this session we reviewed concepts that may be difficult to translate (e.g., “walkability”/”walkable”), to ensure that all team members had a consistent understanding of these terms. We also scheduled paid “debriefing” time after each interview, in which the interpreters and I again reviewed any concerns related to translation. Interview participants were provided with additional $25 gift card honorarium.

4.2.3.6 Qualitative analysis and strategies for rigour

Interview audio files were transcribed verbatim by a professional transcription agency. The transcriber was instructed to only transcribe sections of the audio file that we recorded in English. Professional interpreters translated both my questions and participants’ responses into English. To ensure the quality of these transcripts, multilingual RAs, who were not present at the interviews, were asked to review a random selection of transcripts (five interviews per assistant). Research assistants listened to the original audio files and compared them to final interview transcripts to ensure both faithful interpretation of the interview and faithful transcription of the English text. No major issues were reported. Transcripts were then assigned pseudonyms, anonymized, and entered into NVivo 10, a qualitative analysis software program. I engaged in line-by-line coding of transcripts. For this analysis, I used open coding to focus on the types of PA that participants engaged in and the life-spaces in which their activity takes place. The codes for types of PA included: caregiving (adults and grandchildren), exercise classes or groups, exercise at home, gardening, housework and home maintenance, running errands on foot/combination of modes, swimming and walking for pleasure/fitness. The life-spaces
included: home, garden/yard, neighbourhood/parks, Main Street and Victoria St (the two key shopping districts), community centres, and SVNH. Strategies for rigour included reflexive memoing and team meetings throughout the data collection and analysis process, the maintenance of an audit trail (Koch, 2006), thoughtful examination of outliers and deviant cases (Seale & Silverman, 1997), and sharing preliminary findings with our community partners in the SHC.

4.3 Results

We captured total PA acquisition, measured by accelerometers, and the types of PA engaged in, measured with the CHAMPS survey and through in-depth interviews. Most participants are married women, average age of 74 years (SD: 6), managing three co-morbid conditions, and are either a healthy weight or overweight. Most do not drive, but possess a valid public transit pass. Participants are all long-term immigrants; only one has lived in Canada for less than a decade. Establishing socioeconomic status (SES) is difficult in immigrant populations, as some variables do not apply in the same way that they would to non-immigrant peers. For example, education credentials may not be recognized in the receiving country, household income may be impacted by remittances sent to the home country, etc. (Acevedo-Garcia & Aleida, 2012). Three quarters of the sample have a high school education or lower. More than half of the participants were unable to provide an estimate of household income therefore we did not include this variable. The majority, 70%, are home owners, and all arrived as economic- or family-class migrants. There are no refugees in this sample.
### Table 4-1 Participant characteristics.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Total Sample (N=49)</th>
<th>Accelerometry Sample (N=46)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Women</td>
<td>37 (75.5 %)</td>
<td>34 (73.9 %)</td>
</tr>
<tr>
<td>Men</td>
<td>12 (24.5 %)</td>
<td>12 (26.1 %)</td>
</tr>
<tr>
<td>Age—mean # of years</td>
<td>73.78 (SD: 6.05)</td>
<td>73.91 (SD: 6.16)</td>
</tr>
<tr>
<td></td>
<td>Min: 66 Max: 91</td>
<td>Min: 66 Max: 91</td>
</tr>
<tr>
<td>Marital Status</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Married</td>
<td>33 (67.3%)</td>
<td>32 (69.6%)</td>
</tr>
<tr>
<td>Widowed</td>
<td>11 (22.4%)</td>
<td>9 (19.6%)</td>
</tr>
<tr>
<td>Separated or Divorced</td>
<td>5 (10.2%)</td>
<td>5 (10.8%)</td>
</tr>
<tr>
<td>Living Arrangement</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>With spouse/partner</td>
<td>24 (49.0%)</td>
<td>23 (50.0%)</td>
</tr>
<tr>
<td>Multi-generational household</td>
<td>15 (30.6%)</td>
<td>14 (30.4%)</td>
</tr>
<tr>
<td>Alone</td>
<td>10 (20.4%)</td>
<td>9 (19.6%)</td>
</tr>
<tr>
<td>Immigration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County of Birth</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>China</td>
<td>28 (57.1%)</td>
<td>28 (60.9%)</td>
</tr>
<tr>
<td>India</td>
<td>16 (32.7%)</td>
<td>14 (30.4%)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>3 (6.1%)</td>
<td>2 (4.3%)</td>
</tr>
<tr>
<td>Fiji</td>
<td>1 (2.0%)</td>
<td>1 (2.2%)</td>
</tr>
<tr>
<td>Vietnam</td>
<td>1 (2.0%)</td>
<td>1 (2.2%)</td>
</tr>
<tr>
<td>Self-identified Ethnicity</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Chinese</td>
<td>29 (59.2%)</td>
<td>29 (63.0%)</td>
</tr>
<tr>
<td>South Asian</td>
<td>20 (40.8%)</td>
<td>17 (37.0%)</td>
</tr>
<tr>
<td>Years in Canada—mean</td>
<td>28.26 (SD: 13.55)</td>
<td>27.83 (SD: 13.33)</td>
</tr>
<tr>
<td></td>
<td>Min: 8 Max: 55</td>
<td>Min: 8 Max: 55</td>
</tr>
<tr>
<td></td>
<td>Total Sample (N=49)</td>
<td>Accelerometry Sample (N=46)</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td><strong>Socioeconomic Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Highest level of Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>17 (34.7%)</td>
<td>17 (37.0%)</td>
</tr>
<tr>
<td>Some Secondary</td>
<td>10 (20.4%)</td>
<td>9 (19.6%)</td>
</tr>
<tr>
<td>Completed Secondary</td>
<td>10 (20.4%)</td>
<td>10 (21.7%)</td>
</tr>
<tr>
<td>Some/completed technical school</td>
<td>6 (12.3%)</td>
<td>5 (11.1%)</td>
</tr>
<tr>
<td>Some/completed university</td>
<td>2 (4.0%)</td>
<td>2 (4.4%)</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>1 (2.0%)</td>
<td>1 (2.2%)</td>
</tr>
<tr>
<td><strong>Home Ownership</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own</td>
<td>35 (71.4%)</td>
<td>32 (69.6%)</td>
</tr>
<tr>
<td>Live in home owned by family</td>
<td>11 (22.4%)</td>
<td>11 (23.9%)</td>
</tr>
<tr>
<td>Rent</td>
<td>3 (6.1%)</td>
<td>3 (6.5%)</td>
</tr>
<tr>
<td><strong>Health &amp; Mobility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total # of Co-morbidities—mean</td>
<td>3.10 (SD: 2.58)</td>
<td>2.97 (SD: 2.61)</td>
</tr>
<tr>
<td></td>
<td>Min: 0 Max: 11</td>
<td>Min: 0 Max:11</td>
</tr>
<tr>
<td><strong>BMI – mean</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26.29 (SD: 4.53)</td>
<td>25.98 (SD: 4.39)</td>
</tr>
<tr>
<td></td>
<td>Min: 19.1 Max: 39.3</td>
<td>Min: 19.1 Max: 39.3</td>
</tr>
<tr>
<td><strong>WHO BMI Classifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal weight</td>
<td>21 (42.9%)</td>
<td>21 (45.7%)</td>
</tr>
<tr>
<td>Overweight/Pre-obesity</td>
<td>21 (42.9%)</td>
<td>20 (43.5%)</td>
</tr>
<tr>
<td>Obesity Class I</td>
<td>2 (4.1%)</td>
<td>1 (2.2%)</td>
</tr>
<tr>
<td>Obesity Class II</td>
<td>5 (10.2%)</td>
<td>4 (8.7%)</td>
</tr>
<tr>
<td><strong>Use of Mobility Aids</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11 (22.4%)</td>
<td>9 (19.6%)</td>
</tr>
<tr>
<td>No</td>
<td>38 (77.6%)</td>
<td>37 (80.4%)</td>
</tr>
<tr>
<td><strong>Possess Valid Drivers Licence</strong></td>
<td>13 (26.5%)</td>
<td>11 (23.9%)</td>
</tr>
<tr>
<td>Yes</td>
<td>13 (26.5%)</td>
<td>11 (23.9%)</td>
</tr>
<tr>
<td>No</td>
<td>36 (73.5%)</td>
<td>35 (76.1%)</td>
</tr>
<tr>
<td><strong>Possess Public Transit Pass</strong></td>
<td>41 (83.7%)</td>
<td>39 (84.8%)</td>
</tr>
<tr>
<td>Yes</td>
<td>41 (83.7%)</td>
<td>39 (84.8%)</td>
</tr>
<tr>
<td>No</td>
<td>8 (16.3%)</td>
<td>7 (15.2%)</td>
</tr>
</tbody>
</table>
4.3.1 Total physical activity acquisition—measured by accelerometers

4.3.1.1 Accelerometer compliance and wear time

Forty-six of the 49 participants met the inclusion criteria for the accelerometer analysis. Of these 46 participants, 45 provided us with seven days of data. The average wear time was 14 hours per day (839 minutes/day; min: 11.4 hours/day, max: 16.8 hours/day). Two participants did not wear the monitors they were provided, and one participant did not meet the wear time inclusion criteria. The three participants excluded from accelerometry analysis were all South Asian women, mean age 71.6 years, five co-morbidities, and with a BMI of 31.06. Two of the excluded participants used mobility aids. Compared to the total sample (N=49), these three participants were younger, but with poorer health indicators.

Table 4.2 and Figures 4.1 and 4.2 show daily step counts (mean; SD) for participants, with women and Chinese participants engaged in more than 8,000 steps/day. A high proportion of each day was spent being sedentary, on average. However, nearly a third of each day was spent in light and lifestyle activity (see Table 4.3 and Figure 4.3). Consistent with the daily steps, women and Chinese participants engaged in less sedentary time than men and South Asian participants. Participants’ acquisition of vigorous activity is almost nil: 41 participants engaged in no vigorous activity, and the remaining five participants’ vigorous activity accounted for 0.10% of their total activity.
Table 4-2 Participants’ daily step counts (7,876.53, (3,675.78)) across seven days of wear time, on average (range 1,939.14-16,590.14) by gender and ethnicity.

<table>
<thead>
<tr>
<th></th>
<th>Mean Daily Step Count (SD)</th>
<th>Min/Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Sample (N=46)</strong></td>
<td>7876.53 (3675.78)</td>
<td>1939.14/16590.14</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women (34)</td>
<td>8127.70 (3921.66)</td>
<td>1939.14/16590.14</td>
</tr>
<tr>
<td>Men (12)</td>
<td>7164.87 (2896.20)</td>
<td>3172.57/12187.71</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese (29)</td>
<td>8291.05 (3569.78)</td>
<td>3929.00/16590.14</td>
</tr>
<tr>
<td>South Asian (17)</td>
<td>7196.40 (3854.49)</td>
<td>1939.14/16290.86</td>
</tr>
</tbody>
</table>
Figure 4-1 Participants’ individual, absolute daily step counts across seven days of wear time, on average (range 1,939.14–16,590.14) by gender. Solid horizontal line indicates the mean for the whole group.
Figure 4-2 Participants’ individual, absolute daily step counts across seven days of wear time, on average (range 1,939.14-16,590.14), by ethnicity. Solid horizontal line indicates the mean for the whole group.
Table 4-3 Participants’ engagement in sedentary, light, lifestyle, moderate, and vigorous physical activity (PA), by gender and ethnicity.

<table>
<thead>
<tr>
<th>Time spent in different activity intensities</th>
<th>Sedentary Time</th>
<th>Light PA</th>
<th>Lifestyle PA</th>
<th>Moderate PA</th>
<th>Vigorous PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample (N=46)</td>
<td>66.67 (8.46)</td>
<td>23.77 (6.64)</td>
<td>6.43 (2.14)</td>
<td>3.02 (2.55)</td>
<td>0.03 (0.03)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women (34)</td>
<td>65.66 (8.46)</td>
<td>24.67 (6.61)</td>
<td>6.57 (2.61)</td>
<td>3.10 (2.53)</td>
<td>0.03 (0.03)</td>
</tr>
<tr>
<td>Men (12)</td>
<td>69.88 (7.97)</td>
<td>21.21 (6.27)</td>
<td>6.05 (1.70)</td>
<td>2.83 (2.68)</td>
<td>0.03 (0.03)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese (29)</td>
<td>66.27 (7.93)</td>
<td>24.40 (6.75)</td>
<td>6.18 (2.44)</td>
<td>3.13 (2.68)</td>
<td>0.03 (0.03)</td>
</tr>
<tr>
<td>South Asian (17)</td>
<td>67.90 (9.50)</td>
<td>22.69 (6.50)</td>
<td>6.86 (2.34)</td>
<td>2.81 (2.35)</td>
<td>0.03 (0.02)</td>
</tr>
</tbody>
</table>
Figure 4-3 A schematic that represents the proportion of total wear time older adults spent in sedentary behaviours, light, lifestyle, and moderate physical activities.
4.3.2 How is physical activity acquired?

Both the CHAMPS questionnaire and our in-depth interviews show that walking to perform errands and work performed in and around the home are the most common forms of PA in which participants regularly engaged.

Table 4-4 Types of physical activity (PA) that participants engage in as per the CHAMPS questionnaire (N=46).

<table>
<thead>
<tr>
<th>Type of physical activity</th>
<th>Participants who have done so in past month (total #)</th>
<th>Times in a typical week [mean (SD)]</th>
<th>Total hours in a typical week [mean (SD)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk fast or briskly for exercise</td>
<td>9</td>
<td>4.56 (2.51)</td>
<td>2.56 (1.23)</td>
</tr>
<tr>
<td>Yoga or tai chi</td>
<td>18</td>
<td>4.56 (2.55)</td>
<td>3.06 (1.21)</td>
</tr>
<tr>
<td>Stretching or flexibility exercises</td>
<td>20</td>
<td>5.05 (2.32)</td>
<td>3.20 (1.64)</td>
</tr>
<tr>
<td>Walk leisurely for exercise or pleasure</td>
<td>29</td>
<td>5.69 (2.12)</td>
<td>3.66 (1.50)</td>
</tr>
<tr>
<td>Light gardening</td>
<td>34</td>
<td>4.48 (2.57)</td>
<td>2.29 (0.94)</td>
</tr>
<tr>
<td>Light work around the house</td>
<td>37</td>
<td>4.78 (2.73)</td>
<td>3.46 (1.56)</td>
</tr>
<tr>
<td>Walking to do errands</td>
<td>43</td>
<td>3.81 (2.78)</td>
<td>2.81 (1.33)</td>
</tr>
</tbody>
</table>
4.3.2.1 Quotidian physical activity

Rather than engaging in formal exercise or recreation, many participants recounted busy, active daily lives. Consistent with results from the CHAMPS questionnaire (Table 4.4), in their interviews participants described daily routines that are filled with work in and around the home, and walking for errands.

We asked Simrita, who lives in a large, multi-generational home, “What gets you moving your body?” She responded:

*Mopping, cleaning the house, you know, fixing the bedrooms, going downstairs and doing gardening. I cook for everyone . . . I cook in the morning, but in the evening my daughter-in-law helps. I clean everything, then I make food for my children. That’s all. Then I go for a walk. I go out for walk and bring some things home to eat. That’s my typical day.*

Simrita, 66, widowed, South Asian, 7,625 steps/day

Figure 4-4 A schematic that represents the proportion of total wear time Simrita spent in sedentary behaviours, light, lifestyle, and moderate physical activities.
Similarly, Raveena recounted her housekeeping efforts:

Together, my husband and me, yeah both, clean the house . . . This is three stories, I can’t [do it without help]. Twice a week, it’s three to four hours. My kitchen and that other side and this one. Three, four hours. . . . When I tire I say, no, enough, not too much. It’s exercise, you know, it’s good.

Raveena, 67, married, South Asian, no accelerometer

Mr. and Mrs. Lam described how they share the housework and both move their bodies while executing different tasks:

Mr. Lam: Well, work in the garden. And what else I do. Sometimes housework. Repair work in the house, whatever is needed, you know. She doesn’t touch my garden. I grow—most of them is Chinese stuff like bok choy, gai choy . . . tomato and beans and all these things.

Mrs. Lam: I do housework, clean the floor . . . I just do cooking. Cooking, dusting, iron, laundry.

Mrs. Lam (71 yrs) & Mr. Lam (73 yrs), married, Chinese, 13,696 & 12,127 steps/day, respectively
Figure 4-5 A schematic that represents the proportion of total wear time Mrs. and Mr. Lam spent in sedentary behaviours, light, lifestyle, and moderate physical activities.

These examples highlighted the types of bodily movement that occur in and around the home, and emphasize this life space as a key location for acquiring PA. These participants are not necessarily travelling far from their homes to acquire PA.

4.3.2.2 Quotidian activities not captured by accelerometers

The accelerometry literature recognizes the limitations of the devices, which do not capture PA acquired through cycling, swimming, shuffling without vertical changes, and walking with a load or walking as the topography changes (e.g., walking uphill with an increased physical effort, but potentially a slower pace) (Murphy, 2009; Welk, 2002). Through in-depth interviews and the CHAMPS questionnaire, we found that participants were not regularly cycling or
swimming. The majority, 16 of the 18 interviewees, discussed walking with a load as a regular part of their routine. In these instances, the load was groceries or other items purchased at local shops, with the participants transporting their goods home in backpacks, shopping bags, and/or in a pull-along shopping cart. South Vancouver is home to two shopping districts, a mini Chinatown on Victoria Street and the Punjab market on Main St./Fraser St. Outside of the home and immediate surroundings, travel to and from these shopping districts, often with a load, provides participants with another opportunity for PA.

Vivian explained how she used her walker to help get her groceries home:

*So during the day I do groceries there [pointing to a newspaper advertisement for a local grocery store], and I use this [pointing to her walker]. Then I don’t need to carry. I’ll just push—I’ll put the grocery there and push this cart back.*

Vivian, 76, widowed, Chinese, 3,978 steps/day

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Figure 4-6 A schematic that represents the proportion of total wear time that Vivian spent in sedentary behaviours, light, lifestyle, and moderate physical activities.

In many instances participants explained that they would carry smaller and lighter loads of groceries home while walking, and for larger shops and/or heavier items they would enlist the
help of family members with vehicles or take public transit. Salma explained her morning route, and walking to the Punjabi shopping district to purchase small amounts of groceries:

*I’m doing some stretching in the morning, or I walk to the stores, get some groceries, little bit not too much because I can’t carry too much. [I go to] the shops on Fraser Street. But I don’t carry those milk cans. My kids bring them in the car . . . my husband brings the heavier stuff like flour and other heavy grocery stuff, milk, in the car.*

Salma, 76, married, South Asian, 5,129 steps/day

Figure 4-7 A schematic that represents the proportion of total wear time Salma spent in sedentary behaviours, light, lifestyle, and moderate physical activities.

Topography and walking uphill were frequently cited, but rather than walking up hills, participants often described strategies for avoiding walking uphill. For example, several participants described walking downhill to get to a store or temple, and then taking the bus to return home.

4.4 Discussion

The scant international literature on PA among FBOAs, older (im)migrants, and “culturally and linguistically diverse” (CALD) older adults largely operates on the assumption
that FBOAs are engaging in less PA than their non-immigrant peers (e.g., Bird et al., 2009; Borschmann et al., 2010; Mathews et al., 2010; Stewart et al., 2006), but this assumption is not yet supported by population-based studies or objectively measured PA. Our South Asian and Chinese-Canadian participants’ PA levels were consistent with the recommended 7,000-10,000 steps per day for older adults without mobility problems (Tudor-Locke et al., 2011). Women and Chinese participants in our sample acquired an average of 8,000-plus steps/day. Participants’ daily steps are consistent with Canadian-born older adult peers in the Canadian Health Measures Survey (CHMS) (Colley et al., 2011). Accelerometer-assessed PA in the CHMS found that Canadian men ages 60–79 take an average of 7,869 steps/day, and women 6,970 steps/day. Foreign-born older adult participants are in this range; however, the men in our study took fewer steps than the women. The assumption that those who are foreign-born engage in less PA doesn’t necessarily hold true in this relatively healthy sample of FBOAs in South Vancouver. This is consistent with Koehn et al.’s (2016) study with South Asian older women: their qualitative findings challenged the assumption that South Asian older women do not wish to acquire PA, when in fact they are keen to do so.

While foreign-born, visible minority older adults may confront a host of barriers (e.g., language, discrimination) (Koehn et al., 2015), this doesn’t preclude them from acquiring PA. Similar to other studies of PA in Canada, the majority of participants in our study were female, reported having had at least one chronic disease, and did not report a mobility problem or use a mobility aid (Ashe et al., 2009; Dogra & Stathokostas, 2014). There exist two key characteristics that distinguish the participants in our study: education and BMI. The FBOAs in our study had lower education levels, with far fewer having completed secondary school or higher when compared to their Canadian-born peers (Dogra & Stathokostas, 2014). Participants also tended to
have healthier BMIs than their Canadian-born peers: no participants were underweight, and only 11% were obese. Approximately 30% of Canadian adults aged 60–79 are obese (Colley et al., 2011). The healthy immigrant literature demonstrated that recent immigrants are most at risk for negative health transitions (Newbold, 2005a, 2005b). Participants in our study were all longer-term immigrants. Given their length of residency in Canada, it is perhaps not surprising that their PA levels were like those of their Canadian-born peers.

The CHAMPS questionnaire and our in-depth interviews provided a thorough description of participants’ regular PA patterns. Rather than engaging in formal exercise or recreational activities, the bulk of PA acquisition came from *quotidien activities*, or what Matthews et al. (2007) called “nonexercise.” Nonexercise, including activities such as housework and moving around the home, can offer significant health benefits. In a study of 1,019 Chinese women, regular engagement in nonexercise resulted in a 25–50% reduction in mortality risk (Matthews et al., 2007). Incorporating nonexercise into the daily routines of older adults has the potential to promote long-term engagement in PA (Murphy, 2009). Among Chinese (Taylor et al., 2008) and South Asian (Koehn et al., 2016) older adults, qualitative analyses have demonstrated that some FBOAs prioritize familial harmony and service to the family unit above individual self-care needs. Physical activity acquired through nonexercise and domestic tasks simultaneously meets individual activity needs and allows for the care of the family unit and home.

The FBOAs in our study acquired the bulk of their PA through walking for errands, housework, and gardening; this isn’t dissimilar from older adults in the CCHS, who report walking, gardening, and home exercises as the most common types of PA (Ashe et al., 2009). The bulk of participants’ PA occurred in three of the life-spaces identified in the Webber (2010) framework: the home, immediately outside the home (i.e., the yard and gardens), and the local
service community (i.e., the local shopping districts). From a policy and practice perspective, this finding highlighted the importance of promoting PA in spaces beyond community centres and exercise classes. The FBOAs in our study acquired the bulk of their PA in and around the home.

Consistent with Lee and Shiroma (2014), our results supported a shift away from focusing solely on MVPA. Epidemiological studies have tended to focus on MVPA. National and international PA guidelines stipulate recommended amounts of moderate and vigorous weekly activity, but do not make any recommendations pertaining to low-intensity PA (Lee & Shiroma, 2014). It is crucial that we report all levels of PA, in particular PA at the lower end of the intensity continuum (i.e. light). In our study, most participants’ activity was low. Using the term MVPA would be a misnomer in this sample, as vigorous PA only accounts for 0.03% of participants’ total daily activity. While the participants in our sample were not acquiring the MVPA necessary for cardiovascular health and disease prevention (Warburton, Katzmarzyk, Rhodes, & Shephard, 2007), older adults’ participation in low-intensity PA offers a protective factor. Feinglass et al. found that low-intensity PA protects against the loss of one’s ability to execute activities of daily living (ADLs), such as bathing and climbing stairs (Feinglass et al., 2005). Similarly, low-intensity PA interventions with older adults can reduce frailty, improve gait speed, balance, and strength (Brown et al., 2000), and improve participants’ self-assessed quality of life (Rejeski & Mihalko, 2001). Engagement in low-intensity PA can improve functional status and contribute to a “disability-free life expectancy” (Feinglass et al., 2005, p.879). This emphasis on low-intensity PA is consistent with Taylor et al.’s finding that Chinese older adults have “culturally specific beliefs” that emphasize “soft” and “slow” activities (2008, p.386).
While accelerometers allow researchers to objectively assess free-living PA over an extended period of time, solely focusing on PA measured by accelerometers also has its limitations (Welk, 2002). Participants frequently reported activities that are not fully captured with accelerometers. Sixteen of our 18 interview participants reported regularly walking while carrying a load of groceries; the added intensity posed by these loads were not captured with accelerometers. A mixed-method approach, coupling accelerometers with surveys and in-depth interviews, allowed us to provide a more comprehensive assessment of FBOAs’ total PA acquisition. Our compliance for this study was excellent, with 45 of the 49 participants (92%) providing the requested seven days of data (average wear time of 14 hours per day). For comparison, Copeland and Esliger’s (2009) accelerometer study of 38 healthy older adults had a compliance rate of 90%, which was deemed high. Our approach to collecting accelerometry data in five languages offered some best practices: we provided translated, pictorial take-home booklets, a direct line of communication with same-language RAs, and all project documentation was shared in each participant’s first language and in English, so that other family members, who may not read Chinese/Hindi/Punjabi script, could provide assistance if required.

4.4.1 Limitations and future research

A limitation of our study is that recruitment was limited to those individuals who were connected enough with the community to know about the study; our community partners in the SHC estimate that the neighbourhood is home to thousands of older adults who are not connecting with the activities and services available to them. Future studies, working in concert with community-based outreach organizations, should endeavour to recruit from these highly difficult to access populations. Future studies should also seek to recruit more recently arrived
FBOAs, as recent immigrants are known to be more at risk for negative health transitions upon arrival to Canada (Newbold 2005a, 2005b).

Our community partners encouraged us to conduct this study in the spring months, citing poor weather and holidays as barriers to participation in the fall and winter months, and the international travel of potential participants as a barrier in the summer months. The data collected is specific to spring in Vancouver, BC. Seven interview participants indicated that fall and winter weather (rain, frost, wind) limit their outdoor PA. Our study did not capture seasonal variation and its impact on the PA of FBOAs. Future studies should endeavour to collect data at multiple time points throughout the year, to better understand the impact of seasonal variation in FBOA samples.

This study is descriptive and exploratory in nature. The results are not transferable to larger FBOA populations in Canada. Our findings do, however, provide a springboard for future research, and call into the question the oft-cited notion that immigration status is a driver of lower PA levels. Finally, we need a better understanding, and targeted recruitment, of FBOA men. While we know that many of the women in our sample obtain PA through work around the home (e.g., cooking for multi-generational families, housekeeping, gardening), we don’t know to what extent men are engaging in these activities or if they substitute with other types of PA. With lower daily step counts and lower levels of moderate intensity PA, our small sample of men suggested that they may be more at risk for the ill-effects associated with lower levels of PA.

4.5 Conclusion

Employing a mixed-method study design in five languages, our study: challenges the assumption that FBOAs are less active than their non-immigrant peers; confirms the key role of nonexercise in older adults’ total PA acquisition; urges a shift away from solely focusing on
MVPA in older adult samples; and highlights the utility of mixed-method approaches to capturing total physical activity.
Chapter 5: InterACTIVE Interpreted Interviews (13): A Multilingual, Mobile Method to Examine the Neighbourhood Environment with Older Adults

Co-authors for the peer-reviewed manuscript associated with this chapter: Joanie Sims-Gould & Heather A. McKay

Contributor acknowledgements: The results presented in this chapter would not have been possible without the assistance and contributions of: volunteers at the Seniors Hub Council (SHC) in South Vancouver; multilingual research assistants Brigid Wong and Syeda Bukhari; the professional interpreters from MOSAIC; our research participants who fully engaged in the InterACTIVE interviews; my dissertation committee members Anne Martin-Matthews and Atiya Mahmood; and the anonymous peer reviewers who provided feedback on the associated manuscript (see Preface).

5.1 Introduction

The global population is aging (WHO, 2010) and older adults overwhelmingly wish to age in place—that is, to remain in their homes and communities for as long as possible (Wiles et al., 2012). A positive neighbourhood context is crucial for the wellbeing of older adults, in particular if health challenges, financial limitations, or driving cessation impede their ability to travel outside their immediate area (Gardner, 2011). The ability to age in place is predicated on mobility (Hirvensalo et al., 2000); mobility is the capacity to move oneself around the home and community using a variety of modes (Webber et al., 2010). Cross-sectional studies that employed a variety of methodological approaches demonstrated a strong association between the design of the local built environment and mobility, health, and PA levels of local residents (McCormack & Shiell, 2011; Sealens & Handy, 2008).
Segments of the population have been entirely overlooked within the mobility and built environment literature. While a growing body of research has focused on older adults (Carlson et al., 2012; Chudyk et al., 2015; Li et al., 2005; Nagel et al., 2008; Rosso et al., 2011; van Cauwenberg et al., 2011; Yen et al., 2009), we know surprisingly little about “ethnic and ethnocultural minority older adults” (Koehn et al., 2015). Similar to the populations in many high-income countries, one third of Canadians, aged 65-plus are foreign-born (Ng et al., 2012), yet there is a dearth of literature on this population, and what does exist is fragmented and underdeveloped (Koehn et al., 2015). The self-reported health of foreign-born older adults (FBOAs) is worse than their Canadian-born peers (Ng et al., 2012).

We sought to further understand the impact of the neighbourhood environment on the mobility and physical activity of FBOAs. To do so, we endeavoured to develop an interview tool that would allow us to interact with the environment alongside, or through the eyes of, participants. Therefore, the purpose of this study is to outline lessons learned following design and implementation of an interview approach that we conducted with FBOAs—“InterACTIVE Interpreted Interviews (I3)” (herein referred to as InterACTIVE interviews).

5.1.1 Theoretical framework: the socio-ecological model

The socio-ecological model, which guided our study, seeks to explain how people experience, develop, and adapt in relation to the various environments that they encounter. Bronfenbrenner, the scholar credited with creating the original socio-ecological model, emphasized the term “experience.” He argued that the subjective experience of a particular environment is more important than the objective assessment of that same environment (1979). Studies relying on GPS, travel diaries, or surveys (e.g., Chudyk et al., 2015; Tsai et al., 2015; Webber & Porter, 2009) were not able to capture the experiential nature of mobility or the ways
that individuals derive meaning from spaces with which they engage (Cresswell, 2004). True ecological studies collect data in environments where people live and include an observational component (Bronfenbrenner, 1979). Aligned with these criteria, our interview approach was largely informed by the observational go-along interview method.

5.1.2 The “go-along” interview technique

With an overwhelming emphasis on traditional interview formats, social science research has tended toward “a-mobile” (Sheller & Urry, 2006). A-mobile refers to a research paradigm that has neglected the “spatialities of social life,” and has failed to fully examine the movement of people from place to place (Sheller & Urry, 2006, p.208). In an effort to redress this gap, the go-along method was introduced to integrate interviewers with participants as participants move through their local environments (e.g., Brown & Durrheim, 2009; Carpiano, 2009; Garcia, Eisenberg, Frerich, Lechner, & Lust, 2012; Kusenbach, 2003). This technique captures “the knowledge that is being constructed in and through mobile interactivity” (Brown & Durrheim, 2009, p.916). Most go-along interviews were conducted while walking or in vehicles (e.g., Carpiano, 2009).

Kusenbach (2003) provided a comprehensive guide to walking interviews, which consist of unstructured conversations while walking. While unstructured, conversations tend to have a central focus, such as the location of health resources on campus (Garcia et al., 2012), health risks and assets in a neighbourhood (Cannuscio et al., 2009), or the social capital of a specific locale (Carpaino, 2009). The go-along method is ethnographic (Kusenbach, 2003) and draws upon participant observations, using different senses to understand how individuals experience their environments (Trell & Van Hoven, 2010). Documentation of these interviews includes audio-recordings (Carpiano, 2009), photographs (Cannuscio et al., 2009), comprehensive field
notes (Kusenbach, 2003), or a combination of these methods (e.g., Trell & Van Hoven, 2010). Kusenbach (2003) emphasized that the method of documentation is less important than the immediate composition of in-depth field notes, capturing what the researcher witnessed, experienced, and analyzed during their time with participants. To develop the interACTIVE interview method, we drew heavily upon key elements of the go-along tradition; however, we extended this approach to meet the unique needs of a multilingual sample of older adults.

5.2 Methods

I provided detailed methods in Chapter 5 of this dissertation; the ones we used are briefly described here. We used the interACTIVE interview approach in a large mixed-method study (Active Streets Active People- Foreign-Born; ASAP-FB) to characterize the mobility and PA of FBOAs who lived in South Vancouver, British Columbia, Canada. The South Vancouver neighbourhood is home to approximately 16,000 older adults, and is also a linguistically diverse neighbourhood; more than half of the local residents speak a language other than English and French (Statistics Canada, 2012). South Vancouver is home to large residential areas, parks, community centres, a small Chinatown, and a Punjab market and shopping district. The area is relatively well served by public transit, with a Transit Score of 61 out of a possible 100 (Walkscore, 2016).

5.2.1 Recruitment

Our long-standing partnership with the executive and seniors’ committees at South Vancouver Neighbourhood House (SVNH) enabled us to access a diverse group of FBOAs. The Seniors Hub Council (SHC) at SVNH assisted with development and implementation of the ASAP-FB study. Eight peer volunteers from SHC gathered names and contact information for 113 individuals who expressed interest in participating in our study; they gathered these names at
community centres, exercise and dance classes, ethno-specific group activities, English as a Second Language (ESL) classes, and places of worship. Multilingual RAs telephoned these 113 individuals to further explain the study. For more information on recruitment, please see Chapter 3.

5.2.2 Data collection

Forty-nine FBOAs volunteered to participate in the larger, quantitative component of the study, and provided informed consent. This study received approval from the University of British Columbia’s Behavioural Ethics Review Board. Participants completed a comprehensive survey assessment and wore accelerometers for seven days (Chen & Bassett, 2005) to track their physical activity patterns. Of these participants, 19 completed the in-depth qualitative assessments. For the qualitative assessments, we paired traditional, seated interviews with an optional interACTIVE interview. We completed the seated interviews indoors. Upon completion of each seated interview we asked participants if they were interested in joining us for a neighbourhood walk. Thirteen participants volunteered to complete an interACTIVE interview. Others declined due to time limitations (N=1), health challenges (N=2), inclement weather on the day of the interview (N=2), or did not provide a reason (N=2). Seated indoor interviews were conducted at participants’ homes, or in a private room at the community centre closest to their home. I conducted all of the interviews; seated interviews were digitally recorded. Of the 13 interACTIVE interviews, nine included a professional interpreter to facilitate communication between participants and I. Interpreters, one working in Hindi and Punjabi, the other in Cantonese and Mandarin, were women with more than 10 years of interpretation experience. “Neighbourhood” and route choice.
For the interACTIVE interview, we asked participants to guide us on a walk of their neighbourhood “using a route that they would normally take.” Our recruitment strategy and community partners defined the neighbourhood of South Vancouver by particular streets; however, for the interview we were open to walking beyond these boundaries, if participants resided in South Vancouver but conceived of their neighbourhood more broadly than we had originally defined. Participants, not the research team, defined what constituted a neighbourhood. Participants often expressed discomfort when we asked them to guide the interACTIVE interview and select the route. They would ask us, “Where do you want to go?” “What do you want to see?” It was essential to reiterate our purpose: We verbally told participants, during recruitment and again immediately before commencing the walk that we wished to see their neighbourhood through their eyes, to see first-hand how the neighbourhood works for them. Destinations, chosen by participants, included utilitarian destinations like supermarkets and shopping districts, and more leisurely destinations such as local parks and gardens. InterACTIVE interviews averaged 20 minutes, ranging from 10 to 60. The shortest walk was limited to sidewalks and a courtyard that surrounded one participant’s building. The longest walk was approximately 14 city blocks, a roundtrip from the participant’s home to a nearby park.

5.2.3 Documentation

For the interACTIVE interview we intentionally created a less formal context than for the seated interview. We digitally recorded the seated interviews and used an interview guide to shape conversation, but for the interACTIVE interviews we chose to forgo audio recorders. As per Kusenbach (2003), we composed comprehensive ethnographic field notes as our primary source of documentation. To aide composition of field notes, I carried a small note pad to jot down key words and phrases while walking. I also took photographs to serve as visual reminders
or visual supplements to field notes. I travelled to interviews using a combination of public transit and pedestrian travel, allowing me to familiarize herself with local surroundings prior to the interview. The extent to which I examined the local surroundings on foot depended on the interview location’s proximity to the nearest bus stop. I composed field notes immediately following the interview. For 10 of the 13 interviews, I wrote field notes while physically in places participants had highlighted during their walk (e.g., local parks, local community spaces). This immersive experience further enriched the field notes. The average field note is approximately 1,900 words in length (range: 1,450-2,600).
**Participant:** Mukundi, 66 years, from India, 38 years in Canada, widowed, lives with extended family, does not use mobility aid  
**InterACTIVE interview length:** 25 minutes  
**Interpreter:** Yes, Punjabi/English

*We depart from Mukundi’s three-storey home through the back driveway. The driveway connects to a back alley, which joins to the adjacent streets. She says that she uses the back alley [pictured below] because the street in front of her home is very noisy, with a lot of traffic. In this section of [street name] there are four lanes of traffic, and I too noticed the noise and dust as I used the sidewalk to approach the participant’s home for our interview. We walk down the alley, which is flat, clean, quiet, and wide/open, and it about half a block until we reach the sidewalk at [# of avenue]. As we turn the corner, onto the sidewalk, she comments that it is “so quiet on the inside streets.” She is taking us on the route that she normally uses to meet up with her friend, who lives nearby, and they continue on to Winona Park.*
5.2.4 Role of the interpreters

In all interACTIVE interviews, the interpreter’s role evolved from that of translator to that of co-interviewer. In the seated interviews, the interpreters maintained their formal interpretation role. Both interpreters had experience working in health care and legal settings, and were accustomed to scenarios in which their primary role is to find approximate word equivalence between two languages. The interACTIVE interviews, however, provided a less prescribed format, and allowed the interpreters the opportunity to contribute to the discussion in different ways. In the dynamic mobile interviews, interpreters posed their own questions, initiated conversations, and contributed to group discussions. As often happens in multilingual contexts (Myers-Scotton, 1993), these conversations were typically conducted in several languages, sometimes combining English and the participant’s other languages in a single sentence. Participants’ English language abilities were highly varied, and consequently the role of the interpreter varied from interview to interview. For participants with very limited English, the interACTIVE interview still required thorough translation. Participants with stronger English skills were able to combine physical and visual cues in the environment—some English words or sentences, and some verbally translated discussions to convey their impressions of the local environment and their interactions with said space. After each interview, the interpreter and I (CT) had a 15 to 20 minute debriefing. In the debriefing, the interpreter and I verbally reviewed the verbal content of the interACTIVE interview, co-reviewed the rough field notes for completeness, and the interpreters then offered their impressions of the interview. The content of the debriefing was added to the field notes. As the interpreters became more accustomed to this method, and more familiar with our research objectives, they increased their level of
participation beyond that of translator. At the end of the study, both interpreters expressed their appreciation for the opportunity to add their voices and questions to the interview.

5.2.5 Analysis

Field notes served as the first phase of analysis. They provided me with a place to document emergent themes and elaborate on potential biases and initial hunches (Emerson, Fretz, & Shaw, 2011). I also used field notes to reflect on the interACTIVE interview process and lessons learned as I implemented this method. I digitized field notes, assigned culturally and age-appropriate pseudonyms, and removed potentially identifying information. Our research team met on a weekly basis to review the seated interview transcripts and field notes. These team meetings were audio-recorded, and the key objective was to identify and discuss emerging themes. We also used these meetings to identify outliers, or “deviant cases” (Seale & Silverman, 1997). I uploaded all materials to NVivo 10, a software program for analyzing qualitative data, and maintained an audit trail for each analysis—a systematic record of all key procedural and analytical decisions (Koch, 2006). Data that inform this manuscript were taken from field notes and photos acquired through interACTIVE interviews.

5.3 Results: Implementing InterACTIVE Interviews with Foreign-born Older Adults

Carpiano (2009), Kusenbach (2003), Brown and Durrheim (2009), and others informed our interACTIVE interview method; however, we gleaned new insights as we developed a tool that met the needs of a FBOA sample. With the exception of Gardner (2011), few studies used a walking interview approach with a cohort of older adults. Here we present safety considerations and protocols that reflect the needs of older adults. Previous studies made little mention of privacy although data are collected largely in the public realm. Privacy was a salient theme for community research partners and participants. Thus, we present privacy considerations below.
Finally, to our knowledge, our study was the first of its kind to conduct in situ interpretation. Using interACTIVE interviews, we overcame many challenges common to traditional seated interviews (e.g., difficulties speaking about the outdoor environment while seated indoors) and those associated with interpretation (e.g., participants’ voices being “lost in translation,” stilted and static conversations). As such, this multisensorial method (Pink, 2008) integrated elements of participant observation, researcher participation, and unstructured interviewing to enrich discussions with participants.

5.3.1 Safety and comfort

Our foremost concern when designing interACTIVE interviews was participant safety, specifically the likelihood of trips and falls. The go-along method was more widely used with youth (e.g., Ross, Renold, Holland, & Hillman, 2009; Trell & Van Hoven, 2010), where mobility issues would be of less concern than with older adults. However, all participants walked in their neighbourhoods on at least a weekly basis. Therefore, our approach to the interACTIVE interview reflected their usual walking habits in terms of route, pace, and destination(s). To ensure safety: all team members were certified in first aid, each team member carried a fully charged cell phone during the walk, and we completed check-in/check-out phone calls with our research office before and after each interview. Participants set the pace, and we adjusted the pace if a participant appeared to be out of breath or physically struggling to walk or talk. We also took frequent breaks at benches and/or transit stops. While other researchers referred to this as “talking whilst walking” (Anderson, 2004), in our experience interviews were more often “walking, then talking whilst stopping.”

We were very intentional about making the interACTIVE interview an optional component of the study. The telephone script for RAs who recruited participants, and the written
guide for the seated interviews, emphasized that the walking portion of the interview was completely optional. While the interACTIVE interview provided rich insights and opportunities for participant observation, we intentionally downplayed its importance in our description of the overall study. There were three instances at recruitment where participants agreed to the walk only to decline on the day of the interview, on account of their health or inclement weather.

5.3.2 Privacy

At the outset of our study, community research partners and our university ethics board expressed concerns about participant privacy. Our community partners at SVNH cautioned that some older participants might be wary of opening their doors and homes to researchers. The University of British Columbia’s behavioural research ethics board queried how we would ensure the privacy of participants while walking and talking in the public domain. Of special concern was whether individuals (i.e., the research team) might be identifiable as community outsiders or scientists collecting data. For many participants, however, the interACTIVE interview provided them with an unexpected degree of privacy. Approximately half of the participants live in multi-generational households, and during four seated interviews adult children joined the interview or interjected with comments from another room. Younger family members tended to have stronger English-speaking skills. While family members were welcome, they would sometimes speak directly to me, rather than allowing participants to respond for themselves, with the aid of an interpreter. The interpreters and I intentionally re-directed the questions back to the participants. The voices of family members are captured in the audio recordings and transcripts, but the analysis focuses solely on the participant’s responses. Family members never accompanied participants on the walk; importantly, this provided participants an opportunity to share their thoughts independently and with more privacy than they had at home.
If lines of inquiry were interrupted in the home, I re-introduced the same questions while on the walk.

Five participants requested that we complete the interview at a community centre rather than in their home. We were happy to grant this request, yet feared that it would limit our ability to observe the environment in their homes, where they lived and most often moved. However, we adapted our interACTIVE interviews to create an opportunity to conduct observations in a different way. That is, four of the five participants, upon meeting and spending time with us at the community centre, were keen to walk home and have us accompany them. Upon arrival at their homes, we were often given a tour of outdoor gardens or the immediate neighbourhood. In this sense, interACTIVE interviews allowed us to establish mutual comfort—we maintained participants’ in-home privacy, yet we were still able to observe environments where participants lived and moved.

5.3.3 Enriched discussions

The dynamic between interviewer and participant changed during the interACTIVE interview as compared to the didactic nature of a seated interview where an interviewer poses questions and an interviewee responds. That is, as bodies turn outwards, away from each other and toward the local environment, verbal exchanges and movement cues more closely resemble a fluid conversation rather than a didactic interview (Brown & Durrheim, 2009). Experiencing the local neighbourhood with a participant creates an opportunity for dynamic conversations, where visual cues and the physicality of sharing space inform the discussion. As the environment changes, so do topics of conversation. These “walking probes” (De Leon & Cohen, 2005) helped participants (rather than researchers) guide the conversation. Walking probes also prompted participants to identify seemingly mundane objects that to them were imbued with meaning. For
example, during the seated interview Amardeep conveyed that he felt his local built environment was meeting his needs. However, his perspective changed during the interACTIVE interview. As we walked around the neighbourhood we decided to stop and take a rest. Amardeep explained that park benches were too low for him to sit on as they made it difficult for him to stand up from a low-sitting position. Alternatively, we sat on bleachers near a soccer field, his regular resting spot. For him, these bleachers were a place of significance. He enjoyed sitting in them to observe the coming and goings on the field, but was frustrated by the physical limitations of his aging body.

Interpretation isn’t the only way to facilitate communication between the interviewer and interviewee. Interviews with interpreters may feel static, as simultaneous interpretation greatly interrupts the natural flow of conversation; however, we overcame this with interACTIVE interviews. When interviews were conducted outside, participants called upon visual cues that existed in surrounding environments, and their body language, to share their stories. Thus, participants with stronger English skills relied less upon interpreters to tell their personal stories. Exemplifying this, two participants used an interpreter during the seated interview, but felt that they could conduct the interACTIVE interview on their own. Participants pointed to places that they walked, showed off their gardens with pride, smelled local flowers and herbs, touched raindrops on benches, scoffed at the high market food prices, sniffed the exhaust from heavy traffic, and frowned at cracks in the sidewalk. None of these actions required interpretation, yet all clearly revealed how individuals moved through and experienced their local neighbourhoods. The presence of an interpreter sometimes meant crowding another person onto already narrow sidewalks. To overcome this, we frequently stopped to talk at street corners or benches. These frequent stops helped to transform the dynamic between the interpreter, participant, and
interviewer. In a seated interview, the interpreter translated between two parties, with few opportunities to insert their own lines of enquiry. In these group conversations on corners and benches, interpreters had the opportunity to add or clarify a question, or contribute personal commentary to the discussion. Interpreters were all members of the same ethnocultural communities as the participant being interviewed. Thus, they also provided important cultural commentary to the conversation. For example, we joined Simrita for a walk on an overcast day. When it suddenly started to rain Simrita broke into a fast run, heading toward her home. None of us carried jackets or umbrellas. The interpreter explained as we rushed back toward Simrita’s house that, “in our culture, it isn’t good to let rain fall on the head.” Simrita shook her head in agreement. The interpreter sensed that I, being from a different ethnocultural background, might benefit from this sort of insight.

5.4 Discussion

There are many novel components to our study. Our interACTIVE interview approach was tailored to meet the needs of a multilingual, FBOA sample. Thus it extends the go-along interview literature that served as the foundation upon which we built our approach (e.g., Carpiano, 2009; Kusenbach, 2003). We note three salient points should future researchers wish to consider an interACTIVE interview approach. First, for older adults we recommend that interACTIVE interviews be an optional part of a multi-pronged study. This eliminates any pressure for a participant to conduct an interview while walking. Weather or health reasons may prevent participants from completing the walk, therefore a back-up plan should include opportunities on the same day that provide participants with a way to meaningfully contribute to the study (e.g., a seated interview indoors).
Second, interACTIVE interviews overcame privacy concerns regarding collecting data in the public realm, as they provided nine participants with more privacy than they were afforded in traditional seated interviews. This was particularly true if interviews were conducted in the home, and if participants lived in multi-generational homes. Although we acknowledge that privacy is of utmost importance, interACTIVE interviews provided unforeseen opportunities for more private conversations to occur away from the home and “off the record,” if the interACTIVE interview isn’t audio-recorded.

Finally, for multilingual studies that pair researchers and participants who speak different languages, an interpreter is an essential and valuable addition. When interpreters joined the interACTIVE interviews they were more fully invoked as “co-researchers” (Larkin, de Casterlé, & Schotsmans, 2007), rather than professionals who sought word equivalence (Temple & Young, 2004). Traditional question-answer interview formats may feel static (Hall, Lashua, & Coffey, 2006), and adding an interpreter to the process might exacerbate the feeling of it being a stilted and static exchange, as they disrupt the natural flow of a conversation. During walks outside, participants used physical and visual cues from local natural, social, and built environments to help tell their stories. In this sense, these environments served as pseudo or assistant interpreters. Hall (2009) similarly suggested that place becomes the third (or in our case fourth) participant in an interview. We found it easier for people to speak tangibly about their local environment while physically exploring it, as did Evans and Jones (2011). Participants’ discussions of the local environment are more fully examined in Chapter 6.

5.4.1 Limitations and considerations for future research

We also acknowledge that our study has several limitations. First, we should more appropriately have referred to walking interviews as interACTIVE or mobile interviews (e.g.,
Carpiano, 2009) that were open to any mode of travel. Although we emphasize physical activity and mobility in our program of research, exploring the built environment is not limited to pedestrian activity. Future studies may wish to de-emphasize travel modes while emphasizing the mobile nature of the interview (e.g., allowing for an interview that combines bus and pedestrian travel). Second, we chose not to audio record the interACTIVE interview. Thus, verbatim quotes could not be back translated or reviewed by a second interpreter. We overcame this limitation somewhat as dialogue traditionally confirmed through back translation was alternatively confirmed through physical cues, visual aids, and body language afforded by the interACTIVE interview. Kusenbach (2003) argued that interviews must be executed in as natural a setting as possible. We achieved this by accommodating the route, time, and mode of travel that participants would have chosen were researchers not present. However, as we scheduled walks based on availability of translators, we may also have altered a participant’s usual routine. For example, we may have scheduled an afternoon neighbourhood walk when a participant typically went for a morning walk. As environments differ by time of day (e.g. visibility, foot and vehicle traffic), this may have impacted our conversations. Although we overcame many limitations, working in multiple languages is a complex task. As it demands a skilled team of RAs and interpreters, it may not be possible to offer a completely natural interview experience to participants. Finally, the reflections presented here are largely those of the research team, and in particular mine, as I led the walking interviews. While the interpreters’ impressions were shared in the debriefing sessions that followed each walk, we did not discuss our data collection approach with participants. We witnessed a phenomenon similar to that of Carpiano, in which participants took on the more active interviewee role of local “tour guide” while helping to direct
the walking interview (Carpiano, 2009). Future studies would benefit from discussing and
documenting participants’ impressions of their interACTIVE interview experience.

5.5 Conclusion

“Their story begins on ground level, with footsteps. . . surveys of routes miss what was:
the act itself of passing by” (1984, p.97). This statement by De Certeau referred to urban walkers
and captures the essence of interACTIVE interviews. By joining individuals, witnessing the
interaction of place and person “as it happens” (Trell & Van Hoven, 2010, p.95), we were truly
able to fully represent participants’ knowledge of the spaces they inhabit. The design and
application of a mobile, interACTIVE interview method with FBOAs enriched our discussions,
deepened our understanding of neighbourhood context, and, crucially, allowed researchers and
participants to overcome issues inherent in interpretation. While authors such as Kusenbach
(2003) and Carpiano (2009) provided ample guidance for the execution of same-language
walking interviews, our interACTIVE approach specifically focused on work in multilingual
contexts. Our recommendations related to safety, privacy, and comfort are applicable to older
adults in both same-language and multilingual settings, but the interACTIVE approach is
emphatically focused on those instances in which interpreters play a role. In a transnational
world, and one in which older adults are increasingly “aging in foreign-lands” (Martin-
Matthews, Tong, Rosenthal, & McDonald, 2013), tailored methodological approaches are
required. We recommend this observational tool as an attractive, alternative approach for those
conducting studies with foreign-born older adults.
Chapter 6: What Promotes the Physical Activity and Mobility of Foreign-born Older Adults? A Focused-ethnography in Vancouver, Canada

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6.1 Introduction

Physical activity (PA), the movement of one’s body (WHO, 2015a), and mobility, moving one’s body through space using a variety of modes (Webber et al., 2010), allow older adults to participate in their communities (Gardner, 2011; Levasseur et al., 2015), cultivate social connections (Hurley et al., 2003; Kohn et al., 2016), actively participate in the maintenance of their health (Hirvensalo et al., 2000; Paterson & Warburton, 2010) and access services and resources (Shigematsu et al., 2009; van Cawenberg et al., 2011). Physical activity and mobility play a vital role in supporting community-dwelling older adults who overwhelmingly wish to age in place—that is, to remain in their homes and communities for as long as possible (Wiles et al., 2012). A supportive neighbourhood context is crucial for the wellbeing of older adults, in particular if health challenges, financial limitations, or driving cessation impede their ability to
travel outside their immediate area (Gardner, 2011). Cross-sectional studies demonstrate strong association between the design of the local built environment and mobility, health, and physical activity levels of local residents (McCormack & Shiell, 2011; Sealens & Handy, 2008). Levassuer et al.’s (2015) scoping review of the neighbourhood environment and its impact on the mobility of older adults also emphasized the role of the social environment; they concluded that, “it is necessary to consider both physical and social neighborhood attributes and not only the built environment” (Levasseur et al., 2015, p.3).

The self-reported health of foreign-born older adults (FBOAs) is poor compared with their Canadian-born peers (Ng et al., 2012). In their systematic review on neighbourhood environment and the health of older adults, Yen et al. (2009) concluded: “Aging research has documented various racial/ethnic and SES disparities in health among older adults. . . . It is valuable to do more studies with racially/ethnically diverse communities, perhaps incorporating community-based participatory research (CBPR) methods . . .” (p.460). With a focus on the mobility and PA of visible minority FBOAs in South Vancouver, this study contributes to filling this identified gap in the literature.

6.2 Research Question

As reported in Chapter 5 (Tong et al. (2017), FBOAs engage in adequate levels of PA, taking 7,876 steps/day, on average. In this focused-ethnography (Knoblauch, 2005), I seek to extend the findings reported in Chapter 5 and to do so address the following three questions; 1. What factors facilitate levels of physical activity in FBOAs? 2. What is the role of local built and social environments in FBOAs engagement in PA? Guided by the theoretical models of Lawton (1982) and Webber et al. (2010); 3. How do gender, culture, and personal biography impact participants’ mobility?
6.3 Guiding Theoretical Frameworks

Our study adopts a socio-ecological perspective rooted in the understanding that individuals and their health-related behaviours cannot be divorced from the context and environments in which they live (Bronfenbrenner, 1969). This study integrates Lawton’s foundational work in the field of environmental gerontology (1982) and the socio-ecological model put forth by Webber et al. (2010).

6.3.1 Lawton’s ecological model of aging

Developed in conjunction with Nahemow (Lawton & Nahemow, 1973; Nahemow & Lawton, 1973), Lawton’s competence press model (see Chapter 1, and Figure 1.1) seeks to conceptually link features of the physical environment with the behaviours of an older adult (Lawton, 1982). Lawton describes this model as “an ecological model of aging,” guided by the ecological equation: \( B = f(P,E) \), “behaviour is a function of the person and the environment” (Lawton, 1982, 35). The competence press model examines the competence of an individual, personal characteristics, and abilities that would allow someone to manage and adapt to a given environment. In the ecological equation, \( P \) is equivalent to competence, and can include biological health, sensory and perceptual capacities, motor skills, and cognitive capacity (Lawton, 1982). \( E \) represents environmental press, which are environmental stimuli or forces that demand particular behaviours of individuals or groups. While the physical environment (natural and man-made) is the focus of this model, Lawton’s equation also incorporates the social environment (including the personal relationships and the broader social characteristic and norms of those in proximity to the individual). This framework calls on us to consider both individual and environmental factors when analyzing the health behaviours of older adults.
6.3.2 The Webber model of mobility in older adults

The Webber model, which examines the mobility of older adults, is comprised of three components: first, the concentric life-spaces (represented in a cone format), ranging from the home to the larger city and the world, is the context within which older people are mobile (see Chapter 1, Figure 1.2); second, the key determinants of mobility (financial, psychosocial, environmental, physical, and cognitive) are shown as integral to all levels of life space and represented as wedges of the cone; and finally, the outermost ring encircling the entire cone represents the crosscutting influence that gender, culture, and biography have on mobility. These three crosscutting factors are hypothesized as influencing all of the key mobility determinants. As Webber et al. argued, “gender, culture and biography (personal life history) each fundamentally shapes individuals’ experiences, opportunities, and behaviours and therefore acts as crosscutting influences on mobility” (2010, p.446). Gender is included because women are at a greater risk for disabilities and limitations impacting their mobility. Although the term gender is not specific to the experiences of women—gender refers to both sexes—the examples provided by the authors focus on the mobility of women, specifically the mobility limitations and deficits of women. Women form the bulk of those in “deep old age,” are more likely to develop disabilities, and consequently spend their later years with health limitations (Twigg, 2004, p.65). Culture is included because it may impact social networks and relationships, opportunities earlier in the “life course” (e.g., education or employment), and PA practices and norms. The authors do not explicitly mention why personal life history is included, or how it is believed to influence mobility; however, it is conceptually similar to Wahl et al.’s (2012) assessment that “individual life course” (Elder, 1985) is a temporal element which must be considered in relation to individual mobility.
Although efforts were made to conceptually link the older person, their environments, and health and wellbeing, the outermost ring of the Webber model is presently under-developed. Other researchers are working on issues more closely related to the wedges of the cone that represent various mobility determinants. For example: Chudyk et al. (2017) on the financial and environmental; Franke et al. (2013) on the psychosocial; Fleig et al. (2016) on the psychosocial and environmental; Shumway-Cook et al., (2003) on the physical; and Liu Ambrose et al. (2008) on the cognitive. The outermost ring, representing gender, cultural, and biographical influences, is believed to “exert influence on all of the mobility determinants” (Webber et al., 2010, p.446), and as such, must be more fully examined. Researchers (e.g., Prucho et al., 2012; Meyer, Janke, & Beaujean, 2014) are just beginning to tease apart exactly how, and under what circumstances, gender, cultural, and biographical influences impact the mobility and PA levels of older adults. For example, in their application of the Webber model to data from 6,112 older adults, Meyer et al. (2014) found age and marital status, both markers of personal biography, to be predictive of personal and community mobility. Webber and colleagues’ emphasis on the crosscutting impact of gender (in their article they focus on women) and personal biography (age, immigration status, education, marital status, etc.) also echoes the healthy immigrant literature, which highlights that intersecting markers of personal biography and social identity impact health (Hankivsy, 2011). The present analysis will contribute to a deeper understanding of the outermost ring (See Webber et al.’s comprehensive framework in Chapter 1, Figure 1.2).

6.4 Methods

I provide detailed methods in Chapter 3 of this dissertation. The mixed-method, focused ethnographic approach we used for the Active Streets Active People- Foreign Born study (ASAP-FB) is briefly described here.
6.4.1 Study site

The South Vancouver neighbourhood is home to approximately 16,000 older adults, and is a linguistically diverse neighbourhood; more than half of local residents speak a language other than English and French (Statistics Canada, 2012). South Vancouver is home to large residential areas, parks, community centres, a small Chinatown, and a Punjab (South Asian) market and shopping district. The area is relatively well served by public transit, with a Transit Score of 61 out of a possible 100 (Walkscore, 2016). The neighbourhood Walk Score is 63 out a possible 100, making it “somewhat walkable” (Walkscore, 2016).

6.4.2 Sample and recruitment

Our long-standing partnership (see, Tong et al., 2017) with the executive and seniors committees at SVNH enabled us to access a diverse group of FBOAs. The Seniors Hub Council (SHC) at SVNH assisted with development and implementation of the ASAP-FB study. Eight peer volunteers from SHC gathered names and contact information for 113 individuals who expressed interest in participating in our study. Multilingual research assistants telephoned 113 individuals and recruited 49 participants. Forty-nine participants completed wave 1, and 18 participants completed wave 2. For eligibility criteria, please see Chatper 3. All study documents (recruitment letters, consent forms, participant summary reports) were professionally translated in the above-mentioned five languages, and we employed professional interpreters and multilingual research assistants for data collection.

6.4.3 Data collection and analysis

This study received approval from the University of British Columbia’s Behavioural Ethics Review Board. Data collection involved a measurement session where a comprehensive survey assessment was done via face-to-face format; we collected demographic information, and
measured participants’ height, weight, self-reported health, and self-reported PA. Participants also wore accelerometers for seven days (Chen & Bassett, 2005) to track their physical activity patterns. Of these participants, 18 completed in-depth qualitative interviews. Of these 18, 12 also completed a neighbourhood interACTIVE interview (see Chapter 5). The interACTIVE interview (Tong et al., 2016) is a multilingual walking interview method, developed by our team, in which participants, interpreters, and researchers took a neighbourhood walk, taking and discussing a route that participants regularly used. Data collection took place during May–June, 2013.

### 6.4.3.1 Measurement sessions and statistical analysis

At measurement sessions (see Tong et al., 2017 and Chapter 3 for details), multilingual research assistants helped participants complete their surveys. Survey data included demographic and self-reported health information (presented in Table 6.1) as well as questions on perceived English language capabilities and immigration experiences in Canada, taken from the *Longitudinal Survey of Immigrants to Canada* (Pottie, Ng, Spitzer, Mohammed, & Glazier, 2008).

SPSS software (Version 22, IBM) was used for data analysis, and a professional data-entry company entered all data. To ensure accuracy, a RA from our team rechecked and cleaned the data (van den Broeck, Cunningham, Eeckels, & Herbst, 2005). During the measurement sessions, we also collected information on each participant’s height (cm) and weight (kg), to enable us to calculate their body mass index (BMI;wt/ht²) to determine the healthy weight to obese classification of every participant. The functional co-morbidities index’s final item lists obesity as a co-morbid condition (Groll et al., 2005). For demographic and language data, we
reported mean and standard deviations for scaled variables and frequencies for categorical variables. Participant characteristics are presented in Table 6.

Table 6-1 *Participant characteristics*

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Total Sample (N=49)</th>
<th>Interviewee sample (N= 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>37 (75.5 %)</td>
<td>14 (77.8%)</td>
</tr>
<tr>
<td>Men</td>
<td>12 (24.5 %)</td>
<td>4 (22.2%)</td>
</tr>
<tr>
<td><strong>Age—mean # of years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>73.78 (SD: 6.05)</td>
<td>72.56 (SD:4.81)</td>
</tr>
<tr>
<td></td>
<td>Min: 66 Max: 91</td>
<td>Min: 66 Max: 81</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>33 (67.3%)</td>
<td>10 (55.6%)</td>
</tr>
<tr>
<td>Widowed</td>
<td>11 (22.4%)</td>
<td>6 (33.3%)</td>
</tr>
<tr>
<td>Separated or Divorced</td>
<td>5 (10.2%)</td>
<td>2 (11.1%)</td>
</tr>
<tr>
<td><strong>Living Arrangement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With spouse/partner</td>
<td>24 (49.0%)</td>
<td>8 (44.5%)</td>
</tr>
<tr>
<td>Multi-generational household</td>
<td>15 (30.6%)</td>
<td>4 (22.2%)</td>
</tr>
<tr>
<td>Alone</td>
<td>10 (20.4%)</td>
<td>6 (33.3%)</td>
</tr>
<tr>
<td><strong>Immigration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>County of Birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>28 (57.1%)</td>
<td>8 (44.5%)</td>
</tr>
<tr>
<td>India</td>
<td>16 (32.7%)</td>
<td>7 (38.9%)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>3 (6.1%)</td>
<td>2 (11.1%)</td>
</tr>
<tr>
<td>Fiji</td>
<td>1 (2.0%)</td>
<td>1 (  5.5%)</td>
</tr>
<tr>
<td>Vietnam</td>
<td>1 (2.0%)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Self-identified Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>29 (59.2%)</td>
<td>8 (44.5%)</td>
</tr>
<tr>
<td>South Asian</td>
<td>20 (40.8%)</td>
<td>10 (55.5%)</td>
</tr>
<tr>
<td><strong>Years in Canada—mean</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28.26 (SD: 13.55)</td>
<td>31.61 (SD:14.07)</td>
</tr>
<tr>
<td></td>
<td>Min: 8 Max: 55</td>
<td>Min: 11 Max: 55</td>
</tr>
<tr>
<td></td>
<td>Total Sample</td>
<td>Interviewee Sample</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------</td>
<td>--------------------</td>
</tr>
<tr>
<td></td>
<td>(N=49)</td>
<td>(N= 18)</td>
</tr>
<tr>
<td><strong>Socioeconomic Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest Level of Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>17 (34.7%)</td>
<td>3 (16.7%)</td>
</tr>
<tr>
<td>Some Secondary</td>
<td>10 (20.4%)</td>
<td>6 (33.3%)</td>
</tr>
<tr>
<td>Completed Secondary</td>
<td>10 (20.4%)</td>
<td>2 (11.1%)</td>
</tr>
<tr>
<td>Some/completed technical school</td>
<td>6 (12.3%)</td>
<td>3 (16.7%)</td>
</tr>
<tr>
<td>Some/completed university</td>
<td>2 (4.0%)</td>
<td>2 (11.1%)</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>1 (2.0%)</td>
<td>1¹ ( 5.5%)</td>
</tr>
<tr>
<td>Home Ownership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own</td>
<td>35 (71.4%)</td>
<td>13 (72.2%)</td>
</tr>
<tr>
<td>Live in home owned by family</td>
<td>11 (22.4%)</td>
<td>2 (11.1%)</td>
</tr>
<tr>
<td>Rent</td>
<td>3 (6.1%)</td>
<td>3 (16.7%)</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total # of Co-morbidities—mean</td>
<td>3.10 (SD: 2.58)</td>
<td>2.78 (SD:2.34)</td>
</tr>
<tr>
<td></td>
<td>Min: 0 Max: 11</td>
<td>Min: 0 Max: 10</td>
</tr>
<tr>
<td>BMI—mean</td>
<td>26.29 (SD: 4.53)</td>
<td>27.96 (SD:5.71)</td>
</tr>
<tr>
<td></td>
<td>Min: 19.1 Max: 39.3</td>
<td>Min: 20.3 Max: 39.3</td>
</tr>
<tr>
<td>WHO BMI Classifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal weight</td>
<td>21 (42.9%)</td>
<td>7 (38.9%)</td>
</tr>
<tr>
<td>Overweight/Pre-obesity</td>
<td>21 (42.9%)</td>
<td>6 (33.3%)</td>
</tr>
<tr>
<td>Obesity Class I</td>
<td>2 (4.1%)</td>
<td>1 (  5.5%)</td>
</tr>
<tr>
<td>Obesity Class II</td>
<td>5 (10.2%)</td>
<td>4 (22.2%)</td>
</tr>
<tr>
<td>Use of Mobility Aids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11 (22.4%)</td>
<td>7 (38.9%)</td>
</tr>
<tr>
<td>No</td>
<td>38 (77.6%)</td>
<td>11 (61.1%)</td>
</tr>
<tr>
<td>Possess Valid Drivers Licence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13 (26.5%)</td>
<td>6 (33.3%)</td>
</tr>
<tr>
<td>No</td>
<td>36 (73.5%)</td>
<td>12 (66.7%)</td>
</tr>
<tr>
<td>Possess Public Transit Pass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>41 (83.7%)</td>
<td>13 (72.2%)</td>
</tr>
<tr>
<td>No</td>
<td>8 (16.3%)</td>
<td>5 (27.8%)</td>
</tr>
</tbody>
</table>

¹1 participant did not report education
6.4.3.2 In-depth interviews

We completed in-depth interviews at a private location chosen by participants, either in their home or in a room in a local community centre. Of 49 participants who completed surveys, 47 agreed to be contacted for an in-depth follow-up interview. We recruited 18 participants from this group, on a first-come basis, to complete the in-depth interviews, which I conducted with the aid of a professional interpreter for most of the participants (n=15). Three participants completed this interview in English.

A semi-structured interview guide was used to inquire about daily routines and PA patterns of participants. I provide sample interview questions in Table 6.2. Interpreters, one working in Hindi and Punjabi, the other in Cantonese and Mandarin, each had more than 10 years of interpretation experience in health care settings. Interview participants were provided an honorarium in recognition of their time.

<table>
<thead>
<tr>
<th>Sample Questions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Please describe your typical day. Where do you go and what do you do?</td>
<td></td>
</tr>
<tr>
<td>What gets you moving your body? What gets you out the door?</td>
<td></td>
</tr>
<tr>
<td>Do you think that your neighbourhood is walkable? Why/Why not?</td>
<td></td>
</tr>
<tr>
<td>Do you think that you get enough physical activity? Why/Why not?</td>
<td></td>
</tr>
<tr>
<td>What does healthy mean to you? Do you consider yourself healthy?</td>
<td></td>
</tr>
</tbody>
</table>
6.4.3.3 InterACTIVE interviews and community observations

Of the 18 participants who completed the in-depth interview, 12 also completed an interACTIVE interview, which is a form of walking or go-along interview (see Chapter 4 and Tong et al., 2016 for more details). The objective of the interACTIVE interviews was to experience and discuss the local environment alongside the participants, in situ. We asked participants to guide us on a walk of their neighbourhood “using a route that they would normally take.” The interACTIVE interviews ranged from less than one block to 14 blocks. I jotted notes while walking, and composed in-depth field notes immediately following each interview. I also took photos of scenes and neighbourhood features that participants highlighted. Professional interpreters accompanied and participated in nine of the walking interviews; three interviews were conducted in English, at the request of the participants.

During data collection, I completed 330 hours of community observations (see Table 3.1). I composed ethnographic field notes at events for local FBOAs, at South Asian wellness groups, observing TCE classes, at three local community centres, and at monthly meetings with the SHC. I used multi-mode transportation (walking and public transit) to move around South Vancouver, travelling to activities and participants’ homes. This immersive experience helped me to familiarize myself with the routes, destinations, and transit systems that participants often referred to in their interviews.

6.4.3.4 Qualitative analysis and strategies for rigour

Simultaneous translation method was used during both types of interviews with professional interpreters translated my questions into the participant’s preferred language and participant’s responses into English. Interview audio files were transcribed verbatim by a
professional transcription agency. The transcriber was instructed to only transcribe sections of
the audio file that were recorded in English. To ensure the quality of these transcripts,
multilingual RAs, who were not present during the interviews, were asked to review a random
selection of the transcripts (five interviews per assistant). Research assistants listened to the
original audio files and compared them to final interview transcripts to ensure both faithful
translation of the interview and faithful transcription of the English text. No major issues were
reported. Transcripts were then assigned pseudonyms, anonymized, and entered into NVivo 10, a
qualitative analysis software program. Field notes from the interACTIVE interviews and
community observations were also entered into NVivo, alongside the photographs taken.
Transcripts and field notes where initially coded using line-by-line coding, and framework
analysis strategy was used to organize and present the data (Gale et al., 2013). A framework
analysis includes the following steps: transcribing interviews, familiarization with interview(s),
coding (i.e., organizing data into thematic nodes), developing and applying an analytic
framework, and interpreting the data). Concepts from the Webber model (e.g., life-spaces,
“gender, cultural, and biographical influences,” and mobility determinants) guided our initial
coding structure. We also used open coding, allowing for classification of elements that emerged
beyond the concepts highlighted in the Webber model. Additional coding nodes included: “why
is/isn’t mobility obtained (each with several sub-nodes),” “weather and seasonal impacts,” and
“language/translated activities.” Strategies for rigour included reflexive memoing and team
meetings throughout the data collection and analysis process, the maintenance of an audit trail
(Koch, 2006), thoughtful examination of outliers and deviant cases (Seale & Silverman, 1997)
and sharing preliminary findings with our community partners as a form of member checking.
Our knowledge translation strategy included: mailing personalized, translated reports to each
participant; sharing our preliminary findings with the SHC; and sharing our results with participants and other stakeholders at a half-day community forum at SVNH. The community forum was conducted in English, with multilingual RAs and volunteers from the SHC assisting with interpretation.

6.5 Results

Through a combination of community observations, in-depth seated interviews, interACTIVE neighbourhood walking interviews, and prolonged engagement with the local SHC, we identified three dominant factors that promoted the physical activity and mobility of FBOAs in South Vancouver. These factors are: 1) participants walk for wellbeing and socialization; 2) participants have access to a supportive social environment, which includes culturally familiar and linguistically accessible shops and services; and 3) gender and personal biography, including work history and family context, impact their physical activity and mobility behaviours.

6.5.1 Factor 1: “I want to happy myself”: walking for wellbeing

The most common form of physical activity that participants described was walking around their neighbourhoods, either for errands or explicitly for exercise (also, see Chapter 4). The first factor promoting mobility/physical activity was walking for their wellbeing, and the satisfaction derived from walking both for health and social reasons. It highlighted their perception of what they gained from their walking activity and why they walked. Raveena explained why she enjoys her neighbourhood strolls:

Oh, I’m going for the fresh air and I want to meet the peoples and I want to make my feelings better. There are lots of flowers there and trees . . . I like the flowers and trees
and weathers. And I want to happy myself, you know, yeah. It’s good. And it’s good because, you walk and your heart will be strong and your brain. Then you get thinking about that . . . the brain is fresh all the time when you go out. If you sit there at home, you are sleeping and you will be lazy. (Source: seated interview)

This quote from Raveena aptly summarized one of the most salient factors motivating participants to get out the door and move their bodies: participants described both the mental and physical benefits, an overall sense of wellbeing, that comes from getting outside and moving their bodies. Participants listed a range of benefits associated with their neighbourhood walks: keeping the heart strong, keeping the brain fit, reducing stress, raising their spirits, maintaining their weight, and preventing disease. Mrs. Shum, who walks extensively with her husband, shared the following in our interACTIVE interview:

Mrs. Shum explained that her siblings all have significant chronic diseases that have either killed them or directly and profoundly impacted their quality of life. Two of her siblings have had heart surgery, “so, this is why I have to stay strong, fit, and exercise.”

(Source: interACTIVE interview fieldnote)

In Raveena’s first quote, she also noted, “I want to meet the peoples,” and she went on to explain that she enjoys chatting with the 90-year-old Chinese widow who lives across the street, and takes pleasure in hearing the laughter of children playing at the nearby playground. In addition to the physical benefits, participants described the psychosocial benefits of getting out to see others on their walks, be it passersby, neighbours, or friends with whom they walk. Walking itself was also considered more pleasant with company. Mrs. and Mr. Lam complete most of their errands on foot, together (See Figure 6.1). During their interACTIVE interview, Mrs. Lam shared, “walking with a friend allows you to go farther.” Mukundi does regular afternoon walks
with a friend who lives nearby, in addition to a longer Sunday walk with another friend after they attend temple; she explained the benefits of walking with others:

*I feel stressed sometimes. But when I go out meet people, I forget about it. Talking to someone about here or India relaxes the mind. . . . So walking alone, I don’t want to walk too long, I’m quiet. With friend it’s—we are chatting and we—I don’t even realize we’ve gone so far. That’s how it happened, there’s the difference.* (Source: Seated interview).

Figure 6-1 *Photograph of Mr and Mrs Lam walking from the local community centre to their home.*

(Source: interACTIVE interview)

The role of walking for participants was multi-faceted. It included walking for wellbeing and health, but was often accompanied by a sense of joy, and aspects of socialization and companionship. This shows us that walking is more than just a form of physical activity to
promote health. It is also a form of socialization, and a means to connect with the community and stay engaged.

6.5.2 Factor 2: “These few blocks, these are my village”: a supportive social environment

When we asked Jasmeet what she liked best about her neighbourhood, she explained, “These few blocks, these are my village. Because I know those people. [The] bus is near. And my temple is near. I’m not feeling good I go there. And on Sunday I go and volunteer there. . . . When we bought this house, we thought the gurdwara (temple) should be near—every weekend we should go.” Jasmeet’s summary of her neighbourhood is just one example of what many of the participants told us: They get out the door and engage with their local community because they have access to activities, shops, services, and social or religious gatherings that are culturally familiar. Cultural familiarity can be derived from objects, activities, songs, dances, foods, clothing, etc. that provide older immigrants with a sense of belonging, and promote both physical and psychological comfort (Son & Kim, 2006). Participants repeatedly cited getting out the door for culturally familiar shops (e.g., the local Punjab—South Asian—market and mini Chinatown), restaurants, religious gatherings (e.g., Christian churches and the local Sikh temples, Gurdwaras), and social gatherings (see Figure 6.2). All South Asian women who participated in our interviews attend wellness groups and formal gatherings at three of the local community centres. These wellness groups are facilitated by local community centres and immigrant service organizations, but are principally peer led—by FBOA women, for FBOA women.

Amita described her Monday morning wellness group, which primarily consists of older South Asian women:

They make the tea and everybody do something, any song, any stories, what happen
there. They tell stories or sometimes sing songs. Functions for Mother’s Day. We celebrate the Diwali there and Vaisakhi. [The interpreter added, These are festivals. Indian festivals that they celebrate there.] (Source: seated interview)

Figure 6-2 Photograph of community members attending an event at South Vancouver Neighbourhood House.

Participants also engaged in culturally familiar physical activities; more than 65% of Chinese participants reported regularly doing tai chi, qigong/shigong and/or Luk Tung Kuen, all forms of traditional Chinese exercise (TCE) (Shen et al., 2016). Through our community observations, we saw hundreds of FBOAs, men and women, participating in these wellness groups and TCE classes. Like wellness groups, these TCE classes are also facilitated by local service agencies, but led by peer volunteers. The wellness groups and TCE classes are no cost or participants are charged a very minimal fee for the provision of refreshments. These activities are funded or heavily subsidized through neighbourhood house and SHC fundraising.
An added benefit of these culturally familiar activities, gatherings, shops, and services is that they are typically linguistically accessible. Linguistic accessibility (Agrawal et al., 2007) means that participants can participate in community activities or access services in the language of their choosing, be it through formal translation, ad hoc peer interpretation, or if it is offered in their first language. Ka-Lee, who has voluntarily run a Luk Tung Kuen class, in Cantonese, for more than 20 years, stated:

According to my experience that’s [have an active life without speaking English] doable. That’s why I also encourage people, I say, look at me, I don’t even speak English but I can still be active and do the volunteer work and you can speak different languages. You can also do that, too. And I’m also volunteering for Red Cross right now. (Source: seated interview)

Most of the wellness groups, TCE classes, and social gatherings that participants cited as “getting them out the door” are conducted in a language other than English. Linguistic accessibility is crucial for this sample. English is not the dominant language in participants’ home lives. Forty-six participants reported speaking languages other than English at home, and three reported speaking a combination of Punjabi and English at home. As shown in Table 6.3, participants’ self-assessed English skills were not strong, with nearly two thirds reporting difficulties in comprehension, speaking, and reading.
Table 6-3  *Participants’ self-assessed English language skills.*

<table>
<thead>
<tr>
<th></th>
<th>Total Sample (N=49)</th>
<th>Interviewee Sample (N= 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Ability to Understand English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot/poor</td>
<td>29 59.2%</td>
<td>4 22.2%</td>
</tr>
<tr>
<td>Fairly well</td>
<td>10 20.4%</td>
<td>7 38.9%</td>
</tr>
<tr>
<td>Well/very well</td>
<td>10 20.4%</td>
<td>7 38.9%</td>
</tr>
<tr>
<td>Ability to Speak English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot/poor</td>
<td>32 65.3%</td>
<td>6 33.3%</td>
</tr>
<tr>
<td>Fairly well</td>
<td>12 24.5%</td>
<td>8 44.5%</td>
</tr>
<tr>
<td>Well/very well</td>
<td>5 10.2%</td>
<td>4 22.2%</td>
</tr>
<tr>
<td>Ability to Read English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot/poor</td>
<td>33 67.3%</td>
<td>5 27.8%</td>
</tr>
<tr>
<td>Fairly well</td>
<td>7 14.3%</td>
<td>6 33.3%</td>
</tr>
<tr>
<td>Well/very well</td>
<td>9 18.4%</td>
<td>7 38.9%</td>
</tr>
</tbody>
</table>

Participants were getting out of their homes, moving their bodies, and engaging with the local social environment. This engagement was largely facilitated by the presence and availability of services, shops, and activities that are peer led, culturally familiar, and linguistically accessible.

6.5.3  **Factor 3: The impact of gendered identity and personal biography on mobility and physical activity**

Webber et al. (2010) posited that gender, culture, and personal biography impact the mobility of community-dwelling older adults. In addition to cultural familiarity, as described above, we found gender and personal biography, including family context, to be salient themes. First, we discuss the aspect of gender, and then we discuss themes related to personal biographies and family context.
6.5.3.1 “He can’t drive me everywhere”: gendered transportation

For participants, gender impacted their physical activity and mobility both inside the home and around the neighbourhood. The overwhelming majority of participants, including 14 of 18 interviewees, were women. Therefore, for this analysis, we focused on women and their gendered experiences (Sullivan, 1997) of mobility and physical activity.

Out of the home mobility is largely impacted by the fact that only 22% of our female participants possessed driver’s licences, and many reported never having driven. Siren and Hakamies-Blomqvist (2013) referred to gendered differences in automobile access and mode choice as “gendered mobility,” with older women relying on walking and the assistance of others to get around. Ka-Lee wished that she’d had access to more activities at the community centre closest to her home because she does not drive. Her husband drives but, she explained, “he can’t drive me everywhere . . . it’s too much for the old man, over 80 years. If [activities] were here then I would have the freedom to come anytime.” While a few participants reported getting rides from their spouses and children, the majority relied on walking and public transit for their daily outings. When I completed community observations at two of the South Asian women’s wellness groups, I composed the following field note regarding the women’s physical activity and journeys to these wellness groups:

As I walked toward the community centre, I ran into three South Asian women who had participated in our measurement sessions. From the street to the community centre—it’s a good seven-to-eight-minute walk if you’re going slowly, as these ladies were. . . . The walk to the community centre with these ladies also corrected a mis-assumption that I had made: although they were travelling to a meeting at the community centre, where they would be seated, singing songs, and chatting, getting there actually involved a fair
bit of walking. They all walked from their homes to the bus stop, to the bus, then walked to the community centre. To get home, they would have to do the same thing. Depending on how close they lived to the bus stop near their home, this one outing would easily help them meet the target of 30 mins. of daily walking. I wouldn’t have realized this, had I not been travelling the neighbourhood by bus and on foot, immersing myself in the neighbourhood, collecting data on-site, in the locations where participants lived and moved. I had incorrectly assumed that because the wellness groups were primarily sedentary, that they were “worse” than the more active dance and TCE classes that I observed. I had not taken into account the active transportation that these ladies engaged in to get to and from their wellness groups. (Source: CT Field notes)

6.5.3.2 “I can’t go [walking] every day... first I want to finish the work at home”: domestic work

In addition to gendered transportation, participants also shared their experiences of “women’s work” and “family work” (Thompson, 1991) in the home. Work completed in the home included: housework; cooking for large, multi-generational households; and gardening. Participants’ homes were immaculate, and when asked who did the cleaning, our female participants often described an entire weekday spent deep cleaning their homes (See quotes in Chapter 4). In the following exchange, Amita described how housework takes priority over more formal exercise:

I make the vegetable for night dinner and clean the kitchen and here, hall and everything. Once a week I vacuum. Two, three days after [vacuuming] I do the washing clothes,
laundry . . .She [doctor] said go for a walk and—walking is good for seniors. Every day. I can’t go every day . . .First I want to finish the work at home. (Source: seated interview)

Even if the women participants could not go out for formal walks, several met their PA goals through gardening at home (home gardening involves cultivating vegetables, flowers, and herbs). This was also true for male participants. Ten of 18 interviewees showed us their impressive gardens (see Figure 6.3 for one example). The gardens often included ingredients used in Chinese and South Asian cooking—for example, Mr. and Mrs. Lam grow assorted Chinese vegetables (see also, Chapter 4), and Jasmeet grows and dries many herbs used in Indian cooking. In her interACTIVE interview, Jasmeet took us to a community garden where she volunteers and helped to establish a free herb garden (see Figure 6.4). Aside from gardening and yard maintenance, the household work largely seemed to be the domain of the women we interviewed; the four men who participated in our interviews, all married, reported having fewer household duties. These four men took 6,633 steps/day, on average; this is fewer compared the 7,657 steps, on average for the 14 female interviewees. These men are taking thirteen percent fewer steps/day, and are not meeting the recommended 7,000 threshold for healthy older adults.
**Figure 6.3** Photograph of Man-Yee and her husband’s garden.

(Source: interACTIVE interview)

**Figure 6.4** A free community herb garden that Jasmeet helped establish.

(Source: interACTIVE interview)
6.5.3.3 “If I can still walk, then I will help them out”: personal biography and family context

A participant’s personal biography and family context often influenced why they wanted to go out of their homes and be mobile. Participants with a history of PA through their life course, either through their own work or through helping family members, tended to remain active. This is consistent with continuity theory (Atchley, 1982), which posits that older adults extend life patterns and activities from middle age into older age, and this continuity reinforces their life satisfaction and personal fulfillment. Also underlying this activity and mobility is the desire to stay independent as long as possible without help from other family members.

When we asked Manpreet what motivated her to leave the home, to get out for short walks, she brought up the role of PA in her work history: “The fresh air. When I stay inside, I don’t get so much fresh air. And in Fiji I would work in the farm, taking care of cows, or doing gardening, taking care of vegetables.” For many participants, a lifelong history of outdoor work, farming, and moving their bodies compelled them to continue seeking opportunities to be active and outdoors in retirement. Many recounted a life course of moving their bodies through physical labour. In their younger years in their home countries, and then in Canada, participants worked as farmers, members of the army, dishwashers, household cleaners, food processors, and factory workers. Participants also described a life course of physical activity, including nonexercise, through their hobbies and active lifestyles, including running, hiking around the mountains of Hong Kong, walking to work, and walking children and grandchildren to school.

Underlying this continuation of being active throughout the life course is also, often, the desire to remain independent. When we asked participants what motivated them to keep active, many expressed a desire to stay active, and therefore healthy, in order to maintain their
independence. Maintaining mobility kept participants independent, and less dependent on their family members. Simrita explained:

[I take the] bus when I go to Fraser. When I go to any other place I go to by bus. I don’t take ride. I don’t disturb my kids to give me ride. I’m okay to go anywhere. . . . It’s so easy. It’s so easy to travel in the bus, SkyTrain. I love it.

Several participants also explicitly shared a desire to be independent and “not be a burden” to their family members. Vivian, who has been carefully tracking her steps with a pedometer and personal fitness diary, shared the following reflection:

It doesn’t matter how many steps it records as long as I keep doing my own exercise: swimming, cycling, and have to put some efforts on it. I have a lot of chronic illness except diabetes. I have to rely on myself. My sons can’t help me . . . I’m just helping the other son—he has two kids, seven and 10. So when there was no school [in the summertime] I still help out. If I can still walk, then I will help them out. So I pray that I will have no pain and I will be able to walk so that—I will not become a burden to other people but I can also help other people.

6.5.4 Extending the Webber framework: articulating the impact of “gender, cultural and biographical influences” on mobility

Our research questions and analysis were, in part, guided by Webber et al.’s (2010) framework of mobility in older adults. We chose the Webber model to frame this study, as it is a comprehensive and interdisciplinary framework related to older adults and the movement of their bodies through various environments. We were guided by the notion that “gender, cultural and biographical influences” have a crosscutting impact on all mobility determinants, in all of the
life-spaces noted by Webber et al. Though Webber et al. mentioned the importance of these concepts in older adults’ mobility in space, they did not provide any empirical evidence. In this study, we had the opportunity to expand on the crosscutting influences of gender, cultural, and biographical influences using data-driven examples. Participants tended to stay close to home and their community while being mobile. The life-spaces they mentioned ranged from the home environment to service community (e.g., banks, shops, health care facilities); they did not mention their bedrooms, or environments farther in the city or outside of the city as their daily mobility zones. This is similar to the range of mobility reported for native-born older adults (OA) (Gardner, 2011). Older adults’ daily mobility tends to geographically cluster near their homes and within their immediate neighbourhood (Gardner, 2011).

Our analysis identified five themes related to “gender, cultural, and biographical influences.” These individual concepts (gender, culture, biography) were not clearly defined in the Webber model. The five themes we identified were: gendered transportation (gender), domestic work (gender), a history of active hobbies and work (biographical), a desire for independence (biographical), and cultural familiarity (cultural). Crosscutting influences impacted the mobility of FBOAs in a variety of life-spaces. Gendered transportation impacted our predominately female participants as they travelled around their neighbourhood and accessed the local service community. A history of active work and hobbies motivated participants to continue moving their bodies in a variety of locales such as: gardening outside the home, choosing to walk in their neighbourhoods in an effort to stay active, and attending TCE classes in the local service community. Domestic work within the home was largely the domain of our female participants, who described cooking for large multi-generational families on a regular basis, and dedicating entire days to housework; domestic work outside the home (e.g. gardening)
was described as an activity that both men and women engaged in. A desire for independence impacted FBOAs in two ways: first, it encouraged participants to stay active, walk in their neighbourhoods and access health-promoting opportunities in the local service community, so that they could stay healthy. Second, a desire for independence, and a desire “not to burden others,” impacted participants’ decision making regarding their chosen modes of transportation within their neighbourhood and service community. Participants would use a combination of walking and public transit rather than rely upon the assistance of others to get around. Finally, cultural familiarity within the neighbourhood (e.g., the Chinese and Punjabi shopping districts), and the local service community (e.g., TCE exercise classes and South Asian wellness groups) motivated participants to get out the door and be socially and physically active in these spaces. Our findings highlighted two life-space domains in which participants acquired most of their PA and mobility: 1) the areas inside and immediately outside the home (e.g., yards, gardens), and 2) the local neighbourhood and service community.

Our data-driven examples help articulate some of the ways that “gender, cultural and biographical influences” impacted mobility and PA. Our analysis does not intend to alter the Webber model, rather to articulate the ways in which participants experience “gender, biographical and cultural influences” in relation to their mobility.
6.6 Discussion

Our findings highlight themes specific to the immigrant experience, as well as those applicable to different groups of older adults, irrespective of their provenance (or country of origin). In doing so we extend the scant literature that seeks to better understand factors that promote or inhibit PA and mobility of immigrants. Given that [what proportion] of older adults are immigrants to Canada, for health-focused interventions to be effective it seems imperative to acknowledge and respect cultural identity, norms and beliefs.

That said, when we shared our preliminary findings with participants and community members at a South Vancouver forum, a participant shared the following reflection: “We aren’t all friends because we came from somewhere else, because we’re immigrants, we’re friends because we’re all old.” This was a sentiment also shared by the Seniors Advisory Council. Our community partners reminded us not to overemphasize or essentialize culture in our analysis and examination of FBOAs—an all too common shortcoming of this type of qualitative health research (Koehn et al., 2013).

Participants walked for wellbeing and were motivated by social engagements to get out and be active. This finding is consistent with the broader PA literature that focused on non-immigrants/native-born OA. Indeed, friendships, human interactions, and engagement with the local social environment, promote PA and the mobility of community-dwelling OA regardless of culture (e.g., Gardner, 2011; Lord et al., 2007). Ultimately, OAs across genders, cultures and geographies want to stay active and mobile to maintain their independence (Schwanen & Ziegler, 2011).
However, what is specific to our participants is the important role played by culturally familiar (Son & Kim, 2006) and linguistically accessible (Agrawal et al., 2007) services and activities that promote physical activity and mobility of FBOAs. Participants’ self-assessed language skills, and their participation and attendance in same-language activities, are crucial to their acquisition of physical activity. Participants expressed a desire and willingness to interact with people from other cultures—this was emphasized at our community forum. However, their own language capabilities and the appeal of cultural familiarity also dictated that they overwhelmingly attended activities in their first language. The concept of “linguistic accessibility” is not new. but as Agrawal et al. (2007) noted, the provision of linguistically accessible services needs to be systematized. At present, it often falls on volunteers, peers, and front-line staff to provide ad hoc interpretation for community members (Agrawal et al., 2007).

As the aging population grows and becomes more diverse (Statistics Canada, 2011b), there will be an increased need for multilingual seniors services. This is even true for longer-term immigrants; although participants in our study have lived in Canada for three decades, on average, they cite linguistic accessibility as key to their ability to engage with the community. Supporting peer-led activities, those run by and for FBOAs, would foster linguistic accessibility and cultural familiarity for OAs seeking opportunities to “get out the door.” Fostering opportunities to engage in physical activity also creates opportunities for older adults to socially connect (Hurley, Mitchell, & Walsh, 2003; Kohn, Belza, Petrescu-Prahova, & Miyawaki, 2016). Linguistic accessibility isn’t just about telling participants when to turn left or breathe as they move their bodies; it’s about creating places where social connections for FBOAs can flourish.

The relatively healthy participants in our study acquired PA in the home, working in the garden, and taking neighbourhood strolls with a friend who speaks the same language and lives
nearby. In more formal settings, such as the wellness groups and TCE classes, these activities are typically peer led by fellow FBOAs. Peer leadership facilitates both linguistic accessibility and cultural familiarity, and perhaps helps participants overcome systemic, institutionalized challenges that they would otherwise face without the presence of a peer. In Buman et al.’s (2011) randomized control trial with older adults, they found that volunteer, peer-led activity programs helped to promote moderate to vigorous PA amongst participants (e.g., Buman et al., 2011). But the acquisition of PA, and being mobile in the community, is not exclusive to those who don workout gear and attend fitness classes. As we observed, the very act of getting to community events, even if the events themselves are sedentary, requires some physical exertion. Participants, predominantly women, are travelling on foot and via public transit to access a range of culturally familiar and linguistically accessible activities.

Gendered transportation is one of many activities where we observed the impact of three crosscutting factors identified in the Webber model: gender, personal biography, and culture. Webber and colleagues’ model (2010) has only recently been tested. Only age and marital status, markers of personal biography, predicted respondents’ mobility (Meyer et al., 2013). The four men in our study, all married, did not report household duties (e.g., entire days spent cleaning) in the same way that the women did. These men took about 1,000 fewer steps per day than the women interviewees. While we did not have any widowed or unmarried men in our study, married men acquired less PA than did married and unmarried women. Marital status and the gendered division of household duties is important given this pushes women above, while men remain below, the recommended daily threshold of PA to maintain health. Importantly, we extend the Webber model, by identifying specific ways and locations/life-spaces where gender and personal biography promote mobility and PA amongst FBOAs.
6.6.1 Culture

In the Webber model, culture is not defined. Culture is included because “culture also influences mobility through its effect on social relationships, educational and occupational opportunities, and physical activity habits” (2010, p.446). Scholars have increasingly questioned the over-reliance on culture, and acculturation, as key explanatory variables in immigrant health research (Koehn et al., 2013; Viruell-Fuentes, Miranda, & Abdulrahim, 2012). Notwithstanding, culture is still perceived as a significant driver of health behaviours, as evidenced by the Lancet’s lengthy commission on Culture and Health (Napier et al., 2014). Conceptually, culture and its impact on health is extremely broad, defined and measured in myriad ways (Viruell-Fuentes et al., 2012).

In our analysis, it was clear that cultural familiarity (Son & Kim, 2006), a very specific concept, and linguistic accessibility, a factor more closely related to immigration trajectories than culture, were more salient. At the very least they were more clearly articulated than cultural norms or beliefs regarding health, physical activity, and the aging body. The impact of culture on participants’ mobility was difficult to disentangle from other issues of age, immigration status, linguistic abilities, health issues and health awareness, personal physical activity habits, etc. In this sense, details related to an individual’s personal biography seemed to be more relevant than their culture, per se.

6.6.2 Personal biography and family context

Age and marital status, both markers of personal biography and family context, impact the mobility of OAs (e.g., Meyer et al., 2013). Our study highlights two additional features of participants’ personal biographies that drive mobility: a lifetime of moving the body, and a desire for independence. Many participants described a life course of physical activity and moving the
body, which persisted in older age; this finding was consistent with Franke et al.’s research (2013) with active, non-immigrant OAs in Vancouver. Also, a desire for personal independence motivates FBOAs to stay active and be independently mobile. Research on older Asian immigrants shattered the persistent notion that older adults rely on children’s filial piety, co-family dwelling (Gee, 2000), and the “myth of shared care” (Chui & Yu, 2001) in their later years. We too found that many participants overwhelmingly desired independence from their families, and saw physical activity and community mobility as a means to maintain health and independence as they aged.

6.6.3 Gender

In the transportation literature, access to automobiles has been largely presented in gender-neutral terms (Siren & Hakamies-Blomqvist, 2006). However, Siren and Hakamies-Blomqvist (20016) found that gendered driving among older adults results in gendered mobility:

The results showed that older women did not have the option to drive as often as men did. They consequently had poorer overall mobility and were more dependent on being in good health and on getting help from other people for their personal mobility. The results imply that the intersection of both gender and age regimes create different standards for personal mobility for older women than for older men. (Siren & Hakamies-Blomqvist, 2006, p.374)

Participants in our study also presented gendered mobility; women relied on public transportation and walking to move around the community and attend events, partake in activities, and execute tasks that are meaningful to them. Women use public transportation more than men, but this phenomenon is rarely explored or critically examined outside of transportation-planning literature (Uteng & Cresswell, 2008). Older minority women in the
United States had the highest levels of transportation deficiencies. That is, they were most likely to miss activities due to a lack of transportation (Kim, 2011). In South Vancouver, where our study took place, older female participants accessed a range of services and activities through active transit, typically using a combination of foot and bus travel. More than 80% of participants held a public transit pass; OAs are eligible for means-tested transit pass subsidies. Clustering of community, service, and commercial activities (Kim, 2011) in South Vancouver, coupled with access to public transit, resulted in a group of older minority women who present a gendered mobility not tied to the automobile, but not necessarily one of deficiencies. This gendered transportation intersects with family context; participants also expressed a desire to not burden others, namely family members, with their mobility needs. This illustrates two features of the built environment that contribute to the PA of participants: public transportation and land use. Clustering of community, service, commercial, and residential areas allowed OA residents to reach destinations they require and desire. This is consistent with Rosso et al.’s (2011) comprehensive review; they identified three key built environment factors that influenced the mobility of older adults: transportation systems, land use patterns, and safety of the urban form.

Participants did not cite many concerns regarding the built environment, including microscale features of the built environment such as benches and lighting, even when explicitly probed. In my research, the local environment seemed to function as a passive, unobtrusive backdrop to participants’ PA—neither an impediment nor a support. The exception to this trend was public transit, a feature of the local built environment that was most clearly associated with participants’ PA and mobility outside the home.

Gendered domestic work also increased participants’ daily and weekly PA patterns, especially hours dedicated to cleaning and cooking. The potentially negative aspect of this
gendered work within the home is that it may limit women’s opportunities and time to more fully participate in the community (Koehn et al., 2016). The four men who participated in our interviews—all married—reported fewer household duties. These four took an average of 6,633 steps/day, compared to an average of 7,657 for the 14 female interviewees. While the women in our study appeared to balance their roles within home and community, the SHC cautioned that we may have missed recruiting individuals with domestic roles and familial expectations that limit their ability to participate fully.

6.6.4 Strengths and limitations

Our study had a number of strengths: we conducted in-depth multilingual interviews with a difficult to access population, employed a sequential mixed-method study design to describe participants’ mobility, and extended the Webber model with data-driven examples. We also acknowledge that our study had a number of limitations. First, recruitment was limited to those individuals who were connected enough with the community to know about the study; our community partners in the SHC estimate that the neighbourhood is home to thousands of older adults who are not connecting with the activities and services available to them. Future studies, working in concert with community-based outreach organizations, should endeavour to recruit from these highly difficult to access populations. Second, seasonal variation is not captured in our analysis. We chose to complete data collection during the spring months, to enhance participation and safety. Third, studies on neighbourhood environment and mobility generally overlook the experiences of those who are disabled and those who use mobility aids (Levasseaur et al., 2015). In our study, no participants used a wheelchair, and only one fifth required a walker or cane. Future studies should more explicitly consider experiences of those who have significant mobility-disability and who may be further impacted by the design and accessibility of the local
built environment. When the built environment is working relatively well for individuals, such as participants in our study, they are less likely to notice it as a barrier or facilitator (Lawton, 1982).

6.7 Conclusion

At the outset of this chapter, we noted that a nascent body of literature suggests that FBOAs experience their local neighbourhoods in ways that are distinct and not well understood. Our analysis provides a deeper level of understanding: FBOAs in our sample rely on neighbourhoods that are well served by public transit, and provide formal and informal activities and services that are culturally familiar and linguistically accessible. In future, design of programs for FBOAs can be informed by the three key factors that emerged as important to promote the physical activity and mobility of FBOAs in South Vancouver: 1) walking for wellbeing and socialization; 2) engagement with, and access to, activities that are culturally familiar, linguistically accessible, and often peer led; and 3) gendered nature of transportation and domestic work; the biographical history of active hobbies and work and a desire for independence and cultural familiarity.

The Canadian OA population is projected to become increasingly diverse in coming decades, with 26% of OAs identifying as a visible minority by 2032, and 44% by 2062 (Carriere, Martel, Legare, & Picard, 2016). As FBOA and visible minority older populations continue to grow (Statistics Canada, 2011b; Carriere et al., 2016), Canadian communities will need to continue to invest in and support physical and social activities that are culturally familiar and linguistically accessible. It behooves us to be mindful of the distinct need and opportunities that arise from questions of gender, personal biography, and family context. We caution scholars and practitioners to not equate foreign-born and minority status with deficits. In our cohort, when
provided a supportive neighbourhood context, participants engaged in enough PA to sustain their health and meaningfully engaged with their communities while contributing to the broader social fabric.

Table 6-4 Biographical and physical activity information for participants quoted in results.

<table>
<thead>
<tr>
<th>Participant Pseudonym</th>
<th>Participant Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raveena</td>
<td>67 yrs woman, South Asian, widowed, uses a cane (no step count)</td>
</tr>
<tr>
<td>Mrs. Shum</td>
<td>67 yrs woman, Chinese, married, no mobility aid (8092 steps/day)</td>
</tr>
<tr>
<td>Mrs. Lam</td>
<td>71 yrs woman, Chinese, married, no mobility aid (13,696 steps/day)</td>
</tr>
<tr>
<td>Mukundi</td>
<td>66 yrs woman, South Asian, widowed, no mobility aid (13354 steps/day)</td>
</tr>
<tr>
<td>Jasmeet</td>
<td>78 yrs woman, South Asian, widowed, uses a cane and walker (6906 steps/day)</td>
</tr>
<tr>
<td>Amita</td>
<td>78 yrs woman, South Asian, married, no mobility aid (5520 steps/day)</td>
</tr>
<tr>
<td>Man-Yee</td>
<td>77 yrs woman, Chinese, married, no mobility aid (7181 steps/day)</td>
</tr>
<tr>
<td>Ka-Lee</td>
<td>81 yrs woman, Chinese, widowed, no mobility aid (5179 steps/day)</td>
</tr>
<tr>
<td>Mr. Shum</td>
<td>71 yrs man, Chinese, married, uses a cane (3929 steps/day)</td>
</tr>
<tr>
<td>Mr. Lam</td>
<td>73 yrs man, Chinese, married, no mobility aid (12127 steps/day)</td>
</tr>
<tr>
<td>Manpreet</td>
<td>70 yrs woman, South Asian, widowed, no mobility aid (4251 steps/day)</td>
</tr>
<tr>
<td>Simrita</td>
<td>66 yrs woman, South Asian, widowed, no mobility aid (7625 steps/day)</td>
</tr>
<tr>
<td>Vivian</td>
<td>76 yrs woman, Chinese, widowed, uses a cane and walker (3978 steps/day)</td>
</tr>
</tbody>
</table>
Chapter 7: Integrated Discussion

In this Chapter, I provide an overview of key findings reported in my dissertation; highlight implications for research practice and policy, and note the theoretical contributions of my work. I acknowledge the limitations of my work, identify directions for future research, share some key reflections from my ethnographic fieldwork, and close this section with conclusions.

7.1 Context for My Research

I began this dissertation with a focus on the healthy immigrant effect literature. It was this body of literature that initially spurred my interest in the health of FBOAs, and provided a strong rationale for focusing on this segment of the population. The healthy immigrant effect literature emphasised that certain segments of the FBOA population are at a higher risk for negative health transitions as they age in Canada: recent immigrants (Newbold, 2005a, 2005b); non-European immigrants (Ng et al., 2006); visible minorities and those who have experienced discrimination (de Maio & Kemp, 2009); and OAs who have socio-demographic and socioeconomic disadvantages (Gee et al., 2004; Newbold & Filice, 2006). However, the healthy immigrant effect literature is focused on health status, not protective health behaviours. While foreign-born, visible minority OAs confront a host of health-related barriers (e.g., language, discrimination, difficulty accessing care (Koehn et al., 2015; Lai & Chau, 2007)), my research suggested that this doesn’t preclude them from acquiring sufficient PA.

The primary objective of my dissertation was to characterize the mobility and PA of visible minority FBOAs residing in South Vancouver, Canada. There is an abundance of evidence that demonstrates the value of PA and the crucial role that PA plays to sustain or enhance mobility in older age. However, in my literature review I identified only six Canadian studies that describe the PA of visible minority FBOAs (Garcia & Johnson, 2003; Jette &
Vertinsky, 2011; Koehn et al., 2016; Oliffe et al., 2010; Taylor et al., 2008; Wang et al., 2013), and none of these studies used objective measures to assess PA. Thus, there is very limited published, objective data on the PA of FBOAs. My research contributes to filling this gap in the literature.

A growing body of evidence suggests that local built and social environments impact the PA and mobility of older adults (Hanson et al., 2012; Rosso et al., 2011). However, there is a great need to advance our understanding in this regard by conducting mixed methods, prospective and intervention studies that comprise higher levels of evidence (Trost et al., 2002). In their systematic review on neighbourhood environment and the health of older adults, Yen et al. (2009) concluded: “Aging research has documented various racial/ethnic and SES disparities in health among older adults. . . . It is valuable to do more studies with racially/ethnically diverse communities, perhaps incorporating community-based participatory research (CBPR) methods . . .” (p.460). As outlined in Chapter 3, for my research I adopted a community-based approach, and worked closely with a local advisory board (the SHC) to conduct my work with an ethnically diverse community in South Vancouver. Given my focus on the neighbourhood environment, it was essential to draw on ethnographic techniques to observe and engage with FBOAs in the spaces in which they are physically active and mobile. In my literature review, I highlighted the observational go-along method (Carpiano, 2009; Kusenbach, 2003). While Carpiano and Kusenbach’s articles provided a comprehensive theoretical foundation and practical instructions for the implementation of a mobile interview, the go-along studies (e.g., Brown & Durrheim, 2009; Carpiano, 2009; Garcia et al., 2012; Gardner, 2011; Kusenbach, 2003; Stahl et al., 2008) did not offer advice on how to implement this approach in a multilingual context. In Chapter 5, I
documented my development and implementation of an interACTIVE interpreted interview (I3), and offered lessons for researchers who aim to conduct multilingual studies.

7.1.1 **Overview of chapter 4: a mixed-method assessment of FBOAs’ PA**

In Chapter 4, I used a mixed-method approach to assess the physical activity of FBOAs in South Vancouver. One of the secondary objectives of this dissertation was to assess the amount of PA of which FBOAs partake. In total, 49 participants completed surveys; of these 49, 46 wore accelerometers and 18 completed in-depth interviews.

### 7.1.1.1 Daily steps

The scant international literature on PA among FBOAs, older (im)migrants, and culturally and linguistically diverse (CALD) OAs largely operated on the *assumption* that FBOAs are engaging in less PA than their non-immigrant peers (e.g., Bird et al., 2009; Borschmann et al., 2010; Mathews et al., 2010; Stewart et al., 2006), but this assumption is not yet supported by population-based studies or objectively measured PA. My research findings challenge this assumption. ASAP-FB participants’ mean daily step count was 7,876 (women: 8,172; men: 7,164; Chinese: 8,291; South Asian: 7,196). These PA levels are consistent with the recommended 7,000-10,000 steps per day for older adults without mobility problems (Tudor-Locke et al., 2011). Women and Chinese participants in my sample acquired 8000-plus steps per day, on average. Participants’ daily steps were consistent with Canadian-born older adult peers in the Canadian Health Measures Survey (CHMS) (Colley et al., 2011). Thus, my findings directly counter previous reports as the relatively healthy sample of FBOAs in South Vancouver that I studied, engaged in as much PA as their non immigrant peers.
7.1.1.2 Types and intensity of PA

Similar to other older Canadians, participants’ spent most of their time in light physical activity or being sedentary. Physical activity was principally acquired through walking for errands and work performed in and around the home. The CHAMPS questionnaire and my in-depth interviews provided a robust description of participants’ regular PA patterns. Rather than engage in formal exercise or recreational activities, the bulk of PA acquisition came from quotidian activities, or what Matthews et al. (2007) called nonexercise. Nonexercise, including activities such as housework and moving around the home, can offer significant health benefits, including a reduction in mortality risk (Matthews et al., 2007). Incorporating nonexercise into the daily routines of older adults has the potential to promote long-term engagement in PA (Murphy, 2009).

7.1.1.3 Time to shift away from a sole focus on MVPA for older adults

Consistent with Lee and Shiroma (2014), my results supported a shift away from focusing solely on MVPA when evaluating the health of older adults. For a number of reasons, epidemiological studies, that have since informed guidelines, tended to focus on MVPA. National and international PA guidelines stipulate recommended amounts of moderate and vigorous weekly activity, but do not make any recommendations pertaining to low-intensity PA (Lee & Shiroma, 2014).

In my research, most participants’ activity is low, and there is room for improvement. Some participants could and should increase the intensity of their physical activity. Using the term MVPA, however, would be a misnomer in this sample; vigorous PA only accounts for 0.03% of participants’ total daily activity. Given the mobility capacity of many older Canadians it is crucial that we acknowledge the role of all levels of PA, including those at the lower end of
the PA intensity spectrum. Participation in low-intensity PA provides substantial benefit: it can safeguard one’s ability to execute ADLs (Feinglass et al., 2005); reduce frailty, improve gait speed, balance, and strength (Brown et al., 2000); improve one’s self-assessed quality of life (Rejeski & Mihalko, 2001); and improve rates of obesity and mortality (Füzéki et al., 2017). As I have done in Chapter 4, it is important that future PA studies with OAs report and emphasize the value of low-intensity physical activity, in addition to MVPA, to the health, mobility and social connectedness of older people.

7.1.2 Overview of chapter 5: development of the interACTIVE method

In Chapter 5, I built on Kusenbach (2003) and Carpiano’s (2009) go-along interview method and extended it with a focus on the unique needs of a multilingual FBOA sample. I referred to this method as the interACTIVE interpreted interview. To my knowledge, this was the first interview method of its kind to conduct in situ interpretation. I noted three salient points should future researchers wish to consider an interACTIVE interview approach.

7.1.2.1 Safety and comfort

For OAs I recommend that interACTIVE interviews be an optional part of a multi-pronged study. This approach eliminated pressure for a participant to conduct an interview while walking, as weather or health reasons may prevent participants from completing the walk. Therefore, a back-up plan should include opportunities on the same day that provide participants with a way to meaningfully contribute to the study (e.g., a seated interview indoors).

7.1.2.2 Privacy

InterACTIVE interviews overcame privacy concerns about collecting data in the public realm, and provided nine participants more privacy than they were afforded in traditional seated interviews. This was particularly true if interviews were conducted in the home, and if
participants lived in multi-generational homes where other family members might have been present or nearby during the seated interview. Although I acknowledge that privacy is of utmost importance, interACTIVE interviews provided unforeseen opportunities for more private conversations to occur away from the home and off the record, if the interACTIVE interview isn’t audio-recorded.

7.1.2.3 Interpretation

Finally, for multilingual studies that pair researchers and participants who speak different languages, an interpreter is an essential and valuable addition. To my knowledge, no other go-along interview has used interpreters. At the outset of this study, I did not know how, or if, this approach would work. When interpreters joined the interACTIVE interviews they were more fully invoked as “co-researchers” (Larkin et al., 2007), rather than professionals who sought word equivalence (Temple & Young, 2004). Traditional question-answer interview formats can feel static (Hall et al., 2006). Adding an interpreter to the process might exacerbate the feeling of a stilted and static exchange as they disrupt the natural flow of a conversation. During walks outside, participants used physical and visual cues from local natural, social, and built environments to help tell their stories. In this sense, these environments served as pseudo, or assistant interpreters. Hall (2009) similarly suggested that place becomes the third (or in our case, fourth) participant in the interview. I found it was easier for people to speak tangibly about their local environment while physically exploring it, as did Evans and Jones (2011).

7.1.3 Overview of chapter 6: identifying factors that contribute to mobility and PA

Another secondary objective of my research was to identify factors, both individual and environmental, that impact the mobility and PA of FBOAs. As outlined in the literature review, when I speak of the environment I am referring to both the built and social environments (Wahl,
In Chapter 6, I identified three key factors that promote the PA of FBOAs in the ASAP-FB sample. These factors are: 1) participants walk for wellbeing and socialization; 2) participants have access to a supportive social environment, which includes culturally familiar and linguistically accessible shops and services; and 3) gender and personal biography, including work history and family context, impact their physical activity and mobility behaviours.

**7.1.3.1 Walking for wellbeing and socialization**

My findings highlighted themes specific to the immigrant experience, as well as those applicable to different groups of OAs, irrespective of their provenance (or country of origin). For example, the findings that participants walk for their wellbeing, and that social engagement motivates them to get out the door, are not novel or unique to this sample of FBOAs. This is consistent with the broader PA literature with non-immigrants/native-born OAs, which has demonstrated that friendships, human interactions, and engagement with the local social environment promote PA and the mobility of community-dwelling OAs (e.g., Gardner, 2011; Lord et al., 2007). This also echoes the healthy immigrant effect literature, which reported that foreign-born individuals with a positive social environment and social experiences have better health outcomes (de Maio & Kemp, 2009; McDonald & Kennedy, 2005; Zhao et al., 2010).

**7.1.3.2 Cultural familiarity and linguistic accessibility**

Cultural familiarity and linguistic accessibility are two positive features of the social environment in South Vancouver, and are also factors that promote participants’ mobility. Cultural familiarity can be derived from objects, activities, songs, dances, foods, clothing, etc. that provide older immigrants with a sense of belonging, and promote both physical and psychological comfort (Son & Kim, 2006). Participants repeatedly cited getting out the door for culturally familiar shops (e.g., the local Punjab (South Asian) market and mini Chinatown),
restaurants, religious gatherings (e.g., Christian churches, the local Sikh temples, Gurdwaras), and social gatherings. An added benefit of these culturally familiar activities, gatherings, shops, and services is that they are typically linguistically accessible. Linguistic accessibility (Agrawal et al., 2007) means that participants can engage in community activities or access services in the language of their choosing, be it through formal translation, ad hoc peer interpretation, or if it is offered in their first language.

The third theme, related to gender and personal biography, is further outlined in the section below on theoretical contributions.

7.2 Theoretical Contributions

A secondary objective of this dissertation was to expand on the model of Webber et al. (2012), which suggested that gender, culture, and biography have a crosscutting impact on OAs’ mobility. Other researchers are working on issues more closely related to the mobility determinants, the wedges of the cone in the Webber model. For example, from our team, Chudyk et al. (2017) focussed on socioeconomic status and environmental factors; Franke et al. (2013) on the psychosocial factors and Fleig et al. (2016) on psychosocial and environmental factors. Elsewhere, Shumway-Cook et al., (2003) studied physical parameters and Liu Ambrose et al. (2008) on cognitive outcomes. In the Webber model, the outermost ring, encircling the cone, represents gender, cultural, and biographical influences. These factors are believed to “exert influence on all [emphasis added] of the mobility determinants” (Webber et al., 2010, p.446), and as such, merit further examination. I used data-driven examples from the ASAP-FB study to contribute to a deeper understanding of the outermost ring.

My analysis, presented in Chapter 6, identifies five themes related to gender, cultural, and biographical influences. They are: transportation (gender), domestic work (gender), a history of
active hobbies and work (biographical), a desire for independence (biographical), and cultural familiarity (cultural). These crosscutting influences impacted the mobility of FBOAs in a variety of life-spaces. Gendered transportation impacted our predominately female participants as they endeavoured to get around their neighbourhood and access the local service community. A history of active work and hobbies motivated participants to continue moving their bodies in a variety of locales; examples included gardening outside the home, choosing to walk in their neighbourhoods in an effort to stay active, and attending TCE classes in the local service community.

Domestic work within the home appeared to be largely the domain of our female participants. They described cooking for large multi-generational families on a regular basis, and dedicating entire days to housework; both men and women described domestic work outside the home (e.g., gardening) as an activity in which they engaged. A desire for independence impacted FBOAs in two ways: first, it encouraged participants to stay active, walking in their neighbourhoods and accessing health-promoting opportunities in the local service community, so that they could stay healthy and maintain their independence; second, a desire for independence, and a desire to not burden others, impacted participants’ decision making regarding their chosen modes of transportation within their neighbourhood and service community. Participants would use a combination of walking and public transit rather than rely upon the assistance of others to get around. Finally, cultural familiarity within the neighbourhood (e.g., the Chinese and Punjabi shopping districts) and the local service community (e.g., TCE exercise classes and South Asian wellness groups) motivated participants to get out the door and be socially and physically active in these spaces. These findings also highlighted two life-space domains (Peel et al., 2005; Webber et al., 2010) in which participants obtained the bulk of their PA and mobility: 1) the
areas inside and immediately outside the home (e.g., yards, gardens), and 2) the local
neighbourhood and service community.

These data-driven examples helped to further articulate some of the ways in which
gender, cultural, and biographical influences impacted mobility and PA. This analysis does not
intend to alter Webber et al.’s model; rather it articulates the ways in which participants
experience gender, biographical, and cultural influences in relation to their mobility. The Webber
model did not define the terms gender, biographical, and cultural, and their presence in the
model’s outermost ring was relegated to one brief paragraph. Here, I have used in-depth
examples to provide a more comprehensive conceptualization of the ways in which gender,
biography, and culture impact the mobility of OAs.

7.3 Implications for Research Practice and Policy

7.3.1 Implications for research practice

My research offers three key implications for research practice. First, the interACTIVE
interview was the first of its kind, as an observational walking interview, to use in situ
interpretation. As outlined above and in Chapter 5, involving interpreters in the walking
interviews was an essential and valuable addition, and I recommend the interACTIVE approach
to researchers who conduct research with a sample of older adults who speak numerous
languages. Second, as outlined in Chapter 4, my mixed-method approach provided a more
comprehensive assessment of PA than accelerometers, interviews, or walking interviews alone
would have been able to accomplish. For researchers seeking to provide a comprehensive
assessment of PA in OA samples, I recommend drawing on both objective (e.g., accelerometers)
and subjective/self-reported measures of physical activity (e.g., interviews and questionnaires
like CHAMPS). This mixed-method approach is a strength of my dissertation. Finally,
compliance with the accelerometry portion of my study was excellent, with 45 of 49 participants (92%) providing the requested seven days of data (average wear time of 14 hours per day). Our approach to collecting accelerometry data in five languages offered some best practices: we provided translated, pictorial take-home booklets, a direct line of communication with a same-language RA, and all project documentation was shared in participants’ first language and English, so that other family members, who may not read Chinese/Hindi/Punjabi script, could provide assistance if required. These are techniques that I would strongly recommend to researchers seeking to collect accelerometry data with a sample of multilingual older adults.

7.3.2 Policy Recommendations

My dissertation offers several findings that will be of interest to those developing policies, planning activities, and making decisions regarding the health and wellbeing of older residents in South Vancouver—and potentially other communities with similar needs, demographics, and characteristics.

7.3.2.1 Linguistic accessibility

The concept of linguistic accessibility is not new, but as Agrawal et al. (2007) noted, the provision of linguistically accessible services needs to be systematized. At present, it often falls on volunteers, peers, and front-line staff to provide ad hoc interpretation for community members (Agrawal et al., 2007). As the aging population grows and becomes more diverse (Statistics Canada, 2011b), there will be an increased need for multilingual seniors’ services. This is even true for longer-term immigrants; the participants in our study have lived in Canada for an average of three decades, yet still cite linguistic accessibility as key to their ability to engage (or not) with the community. Supporting peer-led activities, those run by and for FBOAs, would also help to foster linguistic accessibility and cultural familiarity for OAs seeking
opportunities to “get out the door.”” Fostering opportunities to engage in physical activity also creates opportunities for OAs to socially connect (Hurley et al., 2003; Kohn et al., 2016).

Linguistic accessibility isn’t just about telling participants when to turn left or breathe as they move their bodies; it is about creating places where social connections for FBOAs can flourish.

7.3.2.2 Public transit and active transportation

The acquisition of PA, and being mobile in the community, is not exclusive to those who don workout gear and attend fitness classes. As I observed and participants described, the very act of attending community events, even if while at the events themselves attendees are sedentary, requires some physical exertion. Participants, predominantly women, travelled on foot and via public transit to access a range of culturally familiar and linguistically accessible activities, shops, and services. The availability of public transit allowed participants to reach destinations, social activities, and organized physical activities that contributed to their wellbeing. This simultaneously promoted PA through the walking required to move between home, transit stops, and destinations. As the Canadian population continues to age, greater investments in the accessibility and availability of public transit will be required (Echenberg, 2012). The WHO’s “age friendly cities” guide identifies public transit as “a key factor influencing active ageing” (WHO, 2007, p.20). Approximately one third of older adults residing in Canada’s large census metropolitan areas (CMAs)—Toronto, Vancouver, and Montreal—use public transit every month (Turcotte, 2012). While future large-scale infrastructure investments will be prudent, the SHC in South Vancouver also identified two smaller-scale solutions to immediately improve the accessibility of public transit for urban-dwelling OAs. First, the SHC offers workshops and volunteer peer support to ensure that OAs who are eligible for transit subsidies know how to access this benefit. Older adults in some areas of British Columbia who
live below an income threshold are eligible for a heavily subsidised annual transit pass (British Columbia, 2017). This includes lower-income FBOAs who have not yet met the 10-year residency requirement in order to qualify for the guaranteed income supplement (GIS). Second, the SHC has partnered with the local public transit authority on several occasions to offer multilingual transit festivals. At these transit festivals, an off-duty bus visits an open space (e.g., a community centre parking lot) where transit staff and OA volunteers show their peers how to use bus passes, interpret transit maps, understand the fares, ring the bell to disembark, and identify the designated seating for OAs and those with mobility challenges or using mobility aids.

### 7.3.2.3 The role of community centres

The older adults in this study consistently cited the activities and services available to them in the three community centres in South Vancouver. These centres provide a range of culturally familiar and linguistically accessible activities for FBOAs. These activities are also free or low-cost. These findings are consistent with those of the Centre for Civic Governance, which has emphasized the vital role of municipally funded seniors programming: “senior centre programs play a key role in keeping seniors healthy and independent. This can delay/prevent seniors from requiring more costly health care services” (Levi & Kadawaki, 2016, p. 5). Municipal governments can play a vital role in maintaining the health of residents, through continued investments in seniors programming at community centres, and dedicated senior centres.

### 7.3.2.4 South Vancouver: a multi-ethnic enclave that supports PA?

In my literature review, I noted the questions surrounding the health status of individuals living in ethnic enclaves: Osypuk et al. (2009) asked, “Are immigrant enclaves a healthy place to
live?” Enclaves offer residents a distinct social environment, where culturally specific services, shops, and mechanisms for socializing and congregating may be available (see Portes, 1996; Portes et al., 1992; Zhou & Bankston, 1996). In this sense, my findings on the importance of cultural familiarity and linguistic accessibility echo the findings of those conducting research specific to ethnic enclaves. South Vancouver is a multi-ethnic enclave. In American ethnic enclaves, Osypuk et al. (2009) found that these neighbourhoods had worse social environments and poorer environments related to PA (e.g., safety, walkability, presence of recreational exercise facilities). In contrast, South Vancouver appears to be an example of a multi-ethnic enclave that is “working” to support the PA of local FBOAs. I observed, and participants described, an abundance of culturally familiar and linguistically accessible activities designed and made accessible for OAs. The local public transportation network further supports mobility and PA, as it connects FBOAs to places that are meaningful, enjoyable, and necessary to their wellbeing.

7.4 Reflexivity

As outlined in my positionality statement (Chapter 2), I approached this research with an interest in immigrants and a passion for intercultural communications. I embarked on data collection with a close working relationship with the SHC at SVNH and a host of stakeholders in the South Vancouver community. Consistent with the ethnographic practice of reflexivity, in this section I share some of my reflections regarding the research process.

7.4.1 Translation approach

In our original grant application, we had initially planned to have peer OA volunteers from the SHC to assist with translation, or to receive training to conduct in-depth interviews
themselves. Upon further discussions with the SHC, and the UBC Behavioural Research Ethics Board, we concluded that the inclusion of community peers could impede a sense of privacy and confidentiality during data collection. Consequently, we decided to use professional interpreters to assist me with the in-depth interviews. My passion for intercultural communication, and my prolonged engagement with the SHC and South Vancouver community led me to conduct the interviews myself. I’ve wondered if it would have been more prudent to train multilingual research assistants to conduct the interviews, thereby removing the static and halting nature of interpreted interviews. However, if we had used research assistants to conduct the interviews, I would have been more divorced from the data collection process and would not have been in a position to reflect on the data collection, begin the process of analysis, and refine the semi-structured interview guide.

7.4.2 Insider/outsider status?

At one of our final meetings with the SHC, I shared my research findings and mused about being an outsider, and what the implications of that may be. Much to my surprise, the Executive Director of SVNH responded, “but Catherine, you are an insider.” I was myopically focused on my outsider status in terms of demographic categories (Torres, 2015)—the fact that I am different from participants in age, ethnicity, and immigration status. I had not recognized that through four years as a community participant, I had become part of the local service/non-profit community in South Vancouver. In his dissertation on interracial student issues, Brian Bourke concluded: “I am both insider and outsider” (Bourke, 2014, p. 7). In this respect, I feel like Bourke. Insider/outsider status isn’t just about the ethnic categories that we assign others and ourselves; ethnographic studies provide the researcher with opportunities to cultivate person-to-person relationships with participants and community stakeholders. While I am an outsider,
relative to participants, in the social identity categories of age and ethnicity, through prolonged engagement with the SHC/SVNHI cultivated working relationships and became an insider in the South Vancouver senior services community. This prolonged engagement is reflective of Yen et al.’s assertion that it will be “valuable to do more studies with racially/ethnically diverse communities, perhaps incorporating community-based participatory research (CBPR) methods . . .” (Yen et al., 2009, p.460). My participatory approach allowed me to conduct this study from within, as an insider within the local service community. My investment in substantial face-time within the South Vancouver community allowed me to build relationships and rapport with the local FBOA population, and allowed me to commence interviews and observations with a comprehensive understanding of the local neighborhood, context, and service community. This is a strength of my research.

7.5 Limitations and Directions for Future Research

My dissertation has many strengths: it provides a comprehensive characterization of the PA and mobility of FBOAs; offers insights for those wishing to conduct multilingual studies using accelerometers; presents a walking interview methodology that meets the unique needs of a FBOA sample; and extends the Webber model of mobility in older adults by providing data-driven examples of the impact of gender, biographical, and cultural influences. Notwithstanding, my research has its limitations. In this section I acknowledge these limitations, and use them to highlight directions for future research.

7.5.1 Recent immigrants

The healthy immigrant literature stated that recent immigrants were at a higher risk for negative health transitions (Newbold 2005a, 2005b). We did not recruit many new immigrants;
only one ASAP-FB participant has lived in Canada for less than a decade. Future studies may wish to exclusively focus on the PA and mobility of those who recently arrived.

7.5.2 Isolated FBOAs

South Vancouver is home to more than 16,000 OAs, and the SHC knows that there is a segment of this population that is incredibly difficult to access. Volunteers and staff at SVNH report that it is difficult to connect with the most isolated members of the OA public, even when they offer free immigrant services, same-language activities, and peer “friendly callers.” Given the difficulties that the SHC has had in offering free services and activities to the most isolated OAs, it would be even more difficult to get these highly isolated individuals involved in a programme of research. Social isolation is one of the most pressing issues facing community-dwelling OAs in the industrialized world, as it has a profoundly negative impact on health and wellbeing (Findlay, 2003; Nicholson, 2012). Foreign-born older adults, in some contexts, may be at an increased risk of isolation due to linguistic and cultural barriers (e.g., Tam & Neysmith, 2006). Recruiting the most socially isolated and homebound OAs is a challenge (Nicholson, 2012). In his scoping review of studies related to the social isolation of older adults, Nicholson (2012) concluded that public health professionals and paraprofessionals—those who enter the homes of potentially isolated OAs—are in an ideal position to conduct this sort of research. Tam and Neysmith (2006) used this approach to examine the role of isolation and abuse among older Chinese Canadians, by conducting focus groups with home care workers who provided in-home care to isolated individuals. Future studies may wish to employ a community-engagement approach, as I did with the SHC and SVNH, and coordinate with local organizations that provide home-based health care and/or non-medical, in-home support services to reach those who are most isolated.
7.5.3 Selectivity bias & sample size

Based on our engagement with the SHC, we knew when we commenced the ASAP-FB study that we would likely be unable to recruit some of the most socially isolated FBOAs in the catchment. In addition, it had been established in the OA PA literature (e.g., Harris, Victor, Carey, Adams, & Cook, 2008) that those who are more physically active might more readily self-select to participate in studies on PA. This “healthy volunteer effect” (Harris et al., 2008) is a known bias in the PA literature, and I suspect that our study was susceptible to this bias as well. The sample size is also limited, with only 49 older adults representing two distinct cultural groups. Future research should endeavour to recruit larger samples from each group, as this would allow researchers to determine trends and characteristics that might be more transferable and generalizable to FBOAs in Vancouver, Canada.

7.5.4 Seasonality

The SHC encouraged us to conduct this study in the spring months, citing poor weather and holidays as barriers to participation in fall and winter, and the international travel of potential participants as a barrier in the summer. Thus data we collected is specific to Vancouver’s spring months. My research did not capture seasonal variation and its impact on the PA of FBOAs. Seven interview participants indicated that Vancouver’s fall and winter weather (e.g., rain, frost, wind) limit their outdoor PA. This is consistent with Tucker and Gilliland’s (2007) systematic review of 37 studies, which demonstrated that inclement weather impeded the acquisition of PA. Future studies should endeavour to collect data at multiple time points throughout the year, to better understand the impact of seasonal variation in FBOA samples. Participants are meeting recommended criteria of 7,100 steps/day (Tudor Locke, 2011). However, as this figure was derived from data collected in the Spring months, it is possible that participants in my study
would not meet this criteria in the cooler months. Future studies should aim to collect data at multiple time points throughout one calendar year, to more fully examine the impact of the seasons on the PA of FBOAs.

7.5.5 Measuring SES

The healthy immigrant effect literature emphasized the role of SES, and studies with OAs clearly demonstrated that those of lower socioeconomic status (SES) are more likely to experience negative health transitions as they age in Canada (e.g., Gee et al., 2004; Newbold & Filice, 2006). However, establishing SES is difficult in immigrant populations, as some variables do not apply in the same way that they would to non-immigrant peers. For example, education credentials may not be recognized in the receiving country, household income may be impacted by remittances sent to the home country, and the assessment of household income may differ when considering large, multi-generational homes (Acevedo-Garcia & Aleida, 2012). Three quarters of the ASAP-FB sample have a high school education or lower. More than half of participants were unable to provide an estimate of household income therefore we did not include this variable. The majority (70%) are homeowners, and all arrived as family or economic-class migrants. It was difficult to ascertain the SES of this sample, and therefore I was unable to determine to what extent SES impacted their PA and mobility. Given the well documented impact of SES on the health of individuals (Oakes & Rossi, 2003) it seems imperative to consider thoughtful assessment of SES in FBOA samples. Additional variables to consider may include: “work grade,” or type of profession prior to retirement (Marmot & Shipley, 1996), and subjective social status (SSS). Subjective social status is one’s perceived position within the social hierarchy, and may be more appropriate than SES with OAs, as “a more sensitive measure of socioeconomic position than traditional indicators that typically assess
one point in time” (Wolff, Acevedo-Garcia, Subramanian, Weber, & Kawachi, 2010, p. 561). Rather than asking for a dollar value related to household income, as I did, researchers may wish to set aside time to more meaningfully discuss the different sources of household income (e.g., retirement income from overseas, Canadian pensions, and the financial contributions of other individuals living in the home—especially in the case of multi-generational homes).

7.5.6 Men

A relatively small sample of men (n=12) in the ASAP-FB study took fewer steps per day than did women (Chapter 4). An even smaller sample of men completed interviews (n=4). These men reported being engaged in fewer in-home tasks, a significant source of PA for women (Chapter 6). In Chapter 6, I also note that women in our study experienced a “gendered mobility” (Hakamies-Blomqvist (2013). That is, older women rely on walking and the assistance of others to get around, while men make more autonomous and motorized mobility decisions. Older Canadian men are more likely to rely on the automobile to get around, even in densely populated areas where public transit is available (56% of men, compared with 26% of women, reported the car as their main mode of travel in Canadian Metropolitan Areas CMAs) (Turcotte, 2012). My study raised as many questions pertaining to men as it answered. For example, how does gendered mobility impact FBOA men, and what is the impact of this on their overall PA and mobility? At our community forum, the SHC also stated that fewer men participated in the assorted PA activities offered in South Vancouver. Future PA studies should more explicitly focus their recruitment efforts on male participants so as to adequately represent them and to address the gendered nature of PA. A better understanding of the PA habits of FBOA men are needed to create appropriate opportunities for focussed intervention.
7.6 Final Conclusions

FBOAs represent a meaningful part of the tapestry of Canada’s population. However, they are woefully underrepresented in research studies conducted in Canada. To address this deficit I provided rich, descriptive, and objective data to characterize FBOAs’ PA; developed an interACTIVE interview method that meets the unique needs of a FBOA sample and underscored key factors that support FBOA’s PA and mobility. I also enriched theory relevant to a growing body of research on the mobility of OAs. My findings urge scholars and practitioners not to equate foreign-born and minority status with deficits in positive health behaviours such as PA. While health challenges and disparities faced by visible minority FBOAs are well documented, my results suggest that FBOAs engage in protective health behaviours similar to that of other older Canadians. Given the right context and neighbourhood supports, FBOAs can reap benefits associated with engaging in PA which, importantly, includes engaging with their communities and contributing to the broader social fabric.
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Appendices

Appendix A  Advisory committee membership

I met with the advisory committee monthly, from September 2011 through April 2016, either at South Vancouver Neighbourhood House (SVNH) or the Centre for Hip Health & Mobility. We discussed both the evaluation research that we were completing with the Seniors’ Hub (see Tong et al., 2017), and the ASAP-FB research project, on which this dissertation is based. Collectively we planned these research projects, applied for and were awarded funding, conducted the studies, and worked together to the implement the findings at the community-level.

Advisory Committee Members:

Dr. Joanie Sims-Gould (Associate Professor, UBC Faculty of Medicine)
Karen Larcombe (Executive Director, SVNH)
Niveria D’Oliviera (Grants Officer, Vancouver Foundation)
Joan Wright (Director of Seniors’ Programs, SVNH)
Shelly Jorde (Director of Seniors’ Program, SVNH)
Catherine Tong (Doctoral Trainee, CHHM)
Rotating volunteer representatives from the Seniors’ Hub at SVNH
Appendix B  Recruitment documents

Recruitment poster

Active Streets, Active People

What gets you out your door? What would make your neighbourhood better for activity and social interaction?

You are invited to join the Centre for Hip Health and Mobility and South Vancouver Neighbourhood House in an exciting opportunity!

WHO: We are looking for older adults, aged 60 years and older, who were born outside of Canada to take part in our study.

WHAT: The study involves one visit to South Vancouver Neighbourhood House for about 1.5 hours whenever it is convenient for you. We will ask you questionnaire about your medical history, current physical activity level, your neighbourhood and your daily journeys.

* FREE food and refreshments will be provided *

You will receive a $25 gift card to thank you for your time and a $10 travel reimbursement to cover transportation to and from South Vancouver Neighbourhood House.

For more information, please contact: [Contact Information]

You can also visit the South Vancouver Neighbourhood House reception desk to sign up or inquire about the study.

The Centre for Hip Health and Mobility is a University of British Columbia and Vancouver Coastal Health research centre.

Principal Investigator: Joanie Sims-Gould, PhD, RSW
Research Associate: [Name]
Knowledge Translation: [Name]
Centre for Hip Health and Mobility: [Name]
Dear participant,

Thank you so much for your participation in the assessment today. You are receiving this letter because you are a participant in the Active Streets Active People Foreign Born research study.

As a follow-up to the Active Streets Active People Foreign Born study, we would like to interview approximately 25 older adults in order to learn even more about their mobility and perceptions of their neighbourhoods. Participation in these follow-up interviews is voluntary. As a participant in the Active Streets Active People study, you are NOT required or expected to participate in a follow-up interview.

If, however, you are interested in completing a follow-up interview, you will be asked to participate in a final 2 hour in-person interview in a private location of your choice (for example, your home or a room in a local community center or library), and in the language of your choice (English, Hindi, Punjabi, Cantonese or Mandarin). A member of our research team, in addition to a professional interpreter, will be present at the interview. You will also be invited to complete an optional 15 minute walk around your neighbourhood, so that we can see first-hand how your local area promotes or inhibits mobility for seniors. During this walk our interviewer will observe how you move in your local neighbourhood, and will take notes on where you went, what route you chose, what was seen along the route and how the local area impacts your mobility. We seek to identify factors that promote mobility (e.g. places to go, even sidewalks, well-marked crosswalks, slow traffic, shade and benches for resting) and factors that impede mobility (e.g. traffic signals that don’t provide enough time to cross, a lack of shops or services, speeding or busy traffic and a lack of ramps).

Ms. Brigid Wong, a research assistant at the Centre for Hip Health and Mobility will be contacting you to explain more about the project and to see if you are interested in being part of these follow-up interviews. Included in this package is more information on the study and a consent form. If you agree to take part in the study we will ask you to return the signed consent form. Please note that this study may be used by Catherine Craven’s, a research trainee at the Centre for Hip Health and Mobility, for her doctoral dissertation; data from your interview may be included in published journal articles and presentations as a result of this research.

If you would like to find out more about the study, please contact [email] If you have any concerns about this research or your rights as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598.

Thank you for considering being part of these follow-up interviews. Best Regards,

Dr Joanie Sims-Gould, RSW
Research Associate, Knowledge Translation Faculty of Medicine
Centre for Hip Health and Mobility University of British Columbia
604-875-4111 ext 21715
Appendix C Consent forms

Consent form- Wave 1- English

Translated versions (Cantonese, Mandarin, Hindi, Punjabi) available upon request

THE UNIVERSITY OF BRITISH COLUMBIA AND SIMON FRASER UNIVERSITY

Active Streets, Active People Foreign-Born (ASAP FB):
A community engagement strategy to enhance foreign-born, older adult health and mobility

Consent form

Introduction
You are being invited to take part in this research study because you meet participation requirements.

Your participation in this study is entirely voluntary, so it is up to you to decide whether or not to take part in this study. Before you decide, it is important for you to understand what the research involves. This consent form will tell you about the study, why the research is being done, what will happen to you during the study and the possible benefits, risk and discomforts.

If you wish to participate, you will be asked to sign this form. If you do decide to take part in this study, you are still free to withdraw at any time and without giving any reasons for your decision. If you do not wish to participate, you do not have to provide any reasons for your decision not to participate nor will you lose the benefit of any medical care to which you are entitled or are presently receiving.

Please take time to read the following information carefully before you decide.
Who is conducting this study?
This study is being conducted by Dr. Joanie Sims-Gould and Dr. Heather McKay at the University of British Columbia and Dr. Meghan Winters and Dr. Atiya Mahmood at Simon Fraser University.

Background
Foreign-born older adults residing in Canada are confronted with multiple health-related challenges, including social isolation and limited access to programs and services. A better understanding of the impact of both social and physical environments on one’s ability to move about in their neighbourhood and feel connected is needed to enhance opportunities to improve the health and mobility of foreign-born older adults.

What is the purpose of the study?
The main objective of this study is to evaluate mobility and social interactions of foreign-born older adults who live in the South Vancouver Neighbourhood House area.

Who can participate in this study?
You can participate in this study if you are a foreign-born man or woman aged 65 years and older, and live within the South Vancouver Neighbourhood House catchment area. We can accommodate assessments in English, Hindi, Punjabi, Cantonese or Mandarin.

The written questionnaires will be in English. If you are able to read English, you may complete the questionnaires on your own. If, however, you do not read English, a multilingual research assistant will be available to assist you.

South Vancouver Neighbourhood House serves the community within the boundaries of East 41st Avenue to the north, Main Street and beyond to the west, Boundary Road to the east, and the Fraser River to the south (see map next page)
Who should not participate in this study?
You should not participate in this study if you are unable to leave your residence; and/or cannot consent to be involved in research.

What does the study involve?
This study is taking place in neighbourhoods within the South Vancouver Neighbourhood House catchment area. We plan to enroll 50 participants. It will take approximately 7 days to complete the study from the time you agree to participate.
South Vancouver Neighbourhood House Catchment Area
Assessments
You will be asked to attend a two hour measurement session. During this time you will be asked questions about your medical history, current physical activity level, your neighbourhood and your daily journeys and we will measure your height and weight. We will also ask you to wear an accelerometer for 7 days. Accelerometers are small devices worn at the waist. The accelerometer tells us how active you are (i.e. sitting, walking) as well as the number of steps you take per day.
You will also be asked to carry a small Global Positioning System (GPS) device with you for up to 7 days. A GPS device helps us understand where you participate in physical activity and how you travel around your neighbourhood. The GPS device is a small device that can be worn on a keychain. The GPS device will continually monitor and record where you are and your movements at all times that you are wearing the device.

You do not have to answer any questions at the appointments if you are not comfortable with them.

How much of my time is required?
If you agree to participate in this study, the following amount of your time is required:
- Two hours total for the measurement session.
- Approximately 15 minutes each day for seven days to complete the travel diary and physical activity information over the course of one week.

Therefore, the total amount of time required is approximately 3 hours for the interviews and travel behavior measurements.

What are the possible harms and side effects of participating?
During the study period you will be asked to carry the GPS device and accelerometer with you wherever you travel. Information recorded by the GPS device can include personal locations (i.e. home), however confidentiality is of upmost concern and no information that discloses your
identity will be released. There are no physical harms or side effects associated with either device.

**What are the benefits of participating in this study?**
No one knows whether or not you will benefit from this study. There may or may not be direct benefits to you from taking part in this study. We hope that the new knowledge we obtain from this study can be used in the future to help promote and enable the mobility of older adults.

**What happens if I decide to withdraw my consent to participate?**
Your participation in this research is entirely voluntary. You may withdraw from this study at any time and no reason for withdrawal needs to be provided. If you decide to enter the study and to withdraw at any time in the future, there will be no penalty or loss of benefits to which you are otherwise entitled, and your future medical care will not be affected. If you choose to enter the study and then decide to withdraw at a later time, all data collected about you during your enrolment in the study will be retained for analysis. **You do not waive any of your legal rights by signing this consent form. If you wish to withdraw please contact Brigid Wong, at (604) 649-0844**

**What happens after the study is finished?**
Once your participation in the study is concluded, you will be provided with a one page summary of the general study findings. No personal feedback will be provided.

**What will the study cost me?**
You will not incur any personal expenses as a result of participating in the study. You will receive a $25 gift card as compensation for your time.

**Will my taking part in this study be kept confidential?**
Your confidentiality will be respected. No information that discloses your identity will be released or published without your specific consent to this
disclosure. However, research records identifying may be inspected in the presence of the investigator or his or her designate by representatives of the SFU or UBC Research Ethics Board for the purpose of monitoring the research. For the purpose of research analysis, de-identified GPS and accelerometer records may be temporarily stored or accessed outside Canada. The study coordinator will have access to your name and phone number for the purposes of contacting you to set up an appointment. However, no records which identify you by name or initials will be allowed to leave the investigators’ offices. By consenting to participate in a measurement session that will host up a group of up to four participants at a time, you confirm that any information you encounter will be kept confidential and not revealed to parties outside the group. Although the objective is to maintain confidentiality, it cannot be guaranteed.

**Who do I contact if I have questions about the study during my participation?**
The primary investigator for this study is Dr. Joanie Sims-Gould however if you have any questions or desire further information about this study before or during participation, you can contact our primary contact Brigid Wong, (604) 649-0844 or Dr. Joanie Sims-Gould at (604) 875-4111 ext. 21715.

**Who do I contact if I have any questions or concerns about my rights as a subject during the study?**
If you have any concerns about your rights as a research subject and/or your experiences while participating in this study, contact the Research Subject Information Line at the University of British Columbia, Office of Research Services at (604) 822-8598 and/or Dr. Hal Weinberg, Director, Simon Fraser University Office of Research Ethics at (778) 782-6593; (hal_weinberg@sfu.ca).
SUBJECT CONSENT TO PARTICIPATE

I have read and understood the subject information and consent form. I have had sufficient time to consider the information provided and to ask for advice if necessary. I have had the opportunity to ask questions and have had satisfactory responses to my questions. I understand that all of the information collected will be kept confidential and that the result will only be used for the scientific objectives. I understand that de-identified information collected may be temporarily stored and accessed outside of Canada for the purpose of analysis and the results will only be used for scientific objectives. I understand that my participation in this study is voluntary and that I am completely free to refuse to participate or to withdraw from this study at any time without changing in any way the quality of care that I receive. I understand that I am not waiving any of my legal rights as a result of signing this consent form. I understand that there is no guarantee that this study will provide any benefits to me. I have read this form and I freely consent to participate in this study. I have been told that I will receive a dated and signed copy of this form.

I would like to be contacted for future studies.  □ Yes  □ No

We may use the data collected in this study for further analysis in future studies interested in enhancing the health and mobility of older adults. For example, we may examine this data in conjunction with an individual follow-up interview.

I understand that my data may be used in this manner. □ Yes  □ No

Signatures

--------------------------------------------------------------------------------------------------------------------
Printed name of subject   Signature   Date
Consent form- Wave 2- English

Translated versions (Cantonese, Mandarin, Hindi, Punjabi) available upon request

-----------------------------------------------------------------------------------
THE UNIVERSITY OF BRITISH COLUMBIA AND SIMON FRASER UNIVERSITY

Active Streets, Active People Foreign-Born (ASAP-FB): A community engagement strategy to enhance foreign-born, older adult health and mobility- Qualitative Study

Consent form

Introduction
You are being invited to take part in this research study because you meet participation requirements and are a member of the ASAP-FB Study.

Your participation in this study is entirely voluntary, so it is up to you to decide whether or not to take part in this study. Before you decide, it is important for you to understand what the research involves. This consent form will tell you about the study, why the research is being done, what will happen to you during the study and the possible benefits, risk and discomforts.

If you wish to participate, you will be asked to sign this form. If you do decide to take part in this study, you are still free to withdraw at any time and without giving any reasons for your decision. If you do not wish to participate, you do not have to provide any reasons for your decision not to participate nor will you lose the benefit of any medical care to which you are entitled or are presently receiving.

Please take time to read the following information carefully before you decide.
Who is conducting this study?
This study is being conducted by Dr. Joanie Sims-Gould and Dr. Heather McKay at the University of British Columbia and Dr. Meghan Winters and Dr. Atiya Mahmood at Simon Fraser University.

Background
Foreign-born older adults residing in Canada are confronted with multiple health-related challenges, including social isolation and limited access to programs and services. A better understanding of the impact of both social and physical environments on one’s ability to move about in their neighbourhood and feel connected is needed to enhance opportunities to improve the health and mobility of foreign-born older adults.

What is the purpose of the study?
The main objective of this study is to evaluate mobility and social interactions of foreign-born older adults who live in the South Vancouver Neighbourhood House area.

Who can participate in this study?
You can participate in this study if you are a foreign-born man or woman aged 60 years and older, and live within the South Vancouver Neighbourhood House catchment area. Participants who can complete an interview in English, Hindi, Punjabi, Cantonese or Mandarin are eligible.

South Vancouver Neighbourhood House serves the community within the boundaries of East 41st Avenue to the north, Main Street and beyond to the west, Boundary Road to the east, and the Fraser River to the south (see map next page)

Who should not participate in this study?
You should not participate in this study if you are unable to leave your residence; and/or cannot consent to be involved in research.

What does the study involve?
This study involves an interview and an optional walk around your neighbourhood. The interview will take place in a private location of your
choice (for example, your home, or a private room in a local community center, library, seniors’ center or neighbourhood house). It will take approximately 2 to 2.5 hours to complete the study from the time you agree to participate. A member of our research team and a professional interpreter will be present at the interview.
South Vancouver Neighbourhood House Catchment Area
Interviews
You will be asked to participate in a 2 hour interview, and an optional 15 minute walk around your neighbourhood. The interviews will take place in a private location of your choosing. With the assistance of a professional interpreter, interviews can be conducted in: English, Hindi, Punjabi, Cantonese or Mandarin.

In the interview you will be asked questions about your general health, current physical activity level, your neighbourhood, your social networks (that is, your friends and family), your immigration experience, and your daily journeys. The optional 15 minute walk will take place in your neighbourhood, taking a route that you select.

The purpose of the walking interview is for us to see first-hand how your local area promotes or inhibits mobility for seniors. During this walk our interviewer will observe how you move in your local neighbourhood and will take notes on where you went, what route you chose, what was seen along the route and how the local area impacts your mobility. We seek to identify factors that promote mobility (e.g. places to go, even sidewalks, well-marked crosswalks, slow traffic, shade and benches for resting) and factors that impede mobility (e.g. traffic signals that don’t provide enough time to cross, a lack of shops or services, speeding or busy traffic and a lack of ramps). You will have the opportunity to show us, first-hand, the factors that you feel promote or impeded mobility in your local environment.

You do not have to answer any questions if you are not comfortable with them. You do not have to participate in the optional walk, if you are not comfortable doing so. At any point you may decide whether or not you wish to participate in the walking portion of the interview. For example, you may decide at the last minute not to complete the walking portion of the interview due to bad weather.
How much of my time is required?
If you agree to participate in this study, the following amount of your time is required:

2 hours for the interview, plus 15 minutes if you decide to go on a walk.

Approximately 15 minutes prior to the interview to schedule the meeting time and location over the telephone

What are the possible harms and side effects of participating?
We do not anticipate any possible harms or side effects as a result of participating in this study.

What are the benefits of participating in this study?
No one knows whether or not you will benefit from this study. There may or may not be direct benefits to you from taking part in this study. We hope that the new knowledge we obtain from this study can be used in the future to help promote and enable the mobility of older adults.

What happens if I decide to withdraw my consent to participate?
Your participation in this research is entirely voluntary. You may withdraw from this study at any time and no reason for withdrawal needs to be provided. If you decide to enter the study and to withdraw at any time in the future, there will be no penalty or loss of benefits to which you are otherwise entitled, and your future medical care will not be affected. If you choose to enter the study and then decide to withdraw at a later time, all data collected about you during your enrolment in the study will be retained for analysis. You do not waive any of your legal rights by signing this consent form. If you wish to withdraw please contact Brigid Wong (604) 649-0844.

What happens after the study is finished?
Once your participation in the study is concluded, you will be provided with a one page summary of the general study findings. No personal feedback will be provided.
What will the study cost me?
You will not incur any personal expenses as a result of participating in the study. You will receive a $25 gift card as compensation for your time. This is addition to the $25 gift card that you received as a participant in the original ASAP-FB study.

Will my taking part in this study be kept confidential?
Your confidentiality will be respected. No information that discloses your identity will be released or published without your specific consent to this disclosure. However, research records and medical records identifying you may be inspected in the presence of the investigator or his or her designate by representatives of the UBC Research Ethics Board for the purpose of monitoring the research. However, no records which identify you by name or initials will be allowed to leave the investigators’ offices.

Please note that there is a minor limitation to your confidentiality if you choose to participate in the walk portion of the interview, as you may be identified as participating in the project while out walking in your neighbourhood with a member of our research team and the interpreter.

Who do I contact if I have questions about the study during my participation?
The primary investigator for this study is Dr. Joanie Sims-Gould however if you have any questions or desire further information about this study before or during participation, you can contact our primary contact

Who do I contact if I have any questions or concerns about my rights as a subject during the study?
If you have any concerns about your rights as a research subject and/or your experiences while participating in this study, contact the Research Subject Information Line at the University of British Columbia, Office of Research Services at (604) 822-8598 and/or Dr. Hal Weinberg, Director, Simon Fraser University Office of Research Ethics at (778) 782-6593; (hal_weinberg@sfu.ca).
SUBJECT CONSENT TO PARTICIPATE

I have read and understood the subject information and consent form. I have had sufficient time to consider the information provided and to ask for advice if necessary. I have had the opportunity to ask questions and have had satisfactory responses to my questions.

I understand that all of the information collected will be kept confidential and that the result will only be used for the scientific objectives. I understand that my participation in this study is voluntary and that I am completely free to refuse to participate or to withdraw from this study at any time without changing in any way the quality of care that I receive.

I understand that I am not waiving any of my legal rights as a result of signing this consent form. I understand that there is no guarantee that this study will provide any benefits to me.

I have read this form and I freely consent to participate in this study. I have been told that I will receive a dated and signed copy of this form.

I would like to be contacted for future studies.  

[ ] Yes  [ ] No

We may link your interview data to your individual data collected for the original ASAP-FB study. For example, we may link your interview to the demographics information that we collected in the original study.

I understand that my data may be used in this manner.  

[ ] Yes  [ ] No

Signatures

----------------------------------------------------------------------------------------------------------------------
Printed name of subject   Signature   Date
----------------------------------------------------------------------------------------------------------------------
Printed name of principal investigator/ Designated representative   Signature   Date
----------------------------------------------------------------------------------------------------------------------
Appendix D  Accelerometer initializing and downloading protocol

**Accelerometry Initialization (ActiLife software)**

ONLY INITIALIZE ACCELEROMETERS AFTER THEY ARE CHARGED**

1) Unscrew the black cap of the unit using a pick/dime.
2) Plug in accelerometer to the computer’s USB port
3) Double check the ACC monitor number with the ACC tracking spreadsheet and ACC original downloads to ensure that the previous participant’s information has been properly downloaded and saved.
4) Click on ActiLife software – each accelerometer that is plugged in should be registered as a row on the user interface
5) Ensure that battery is full
6) Click on the “initialize” button located at the top left of the screen
   a. Sample rate = 30 Hz
   b. Ensure that, “flash LED during delay mode” is checked
   c. Ensure that, “flash LED during data collection” is not checked
   d. Set the start date = 12am of the first day of participant’s data collection (i.e. for assessments taking place on a Tuesday, the start date should be set for 12am of the adjacent Wednesday)
   e. No stop time
   f. Click on “enter subject info” \rightarrow under subject name options, click on “use serial number”
   g. Click “initialize all”
7) On the main screen, the accelerometer(s) will disappear from the display and then re-appear. The status should now be “finished initializing.” Check to ensure that the time and date and sampling rate correspond to what you intended. Ensure that 3 axes are enabled.
8) Unplug the unit. There should now be a blinking green light on the unit – this indicates successful initialization.
9) Screw the cap of the unit shut
10) **Update the ACC tracking checklist** (Y:\Studies and Projects\ASAP\ASAP FBI\QUANTITATIVE STUDY\GPS & Accel Unit- outgoing & incoming manangement)
11) Place **any problem** units in the bag labeled “ACC problems” and email Kaitlyn to let her know. Record issue in the ACC tracking spreadsheet.
Accelerometry Downloading Protocol

1) Plug in the accelerometer
2) Open ActiLife software

ActiLife Main interface:
3) Click download button (located above the row with device info)

Download options:
1. Select download location:

Y:\Studies and Projects\ASAP\ASAP FBI\QUANTITATIVE STUDY\DATA\ACC\ACC Participant Originals

Tick “use as a default download directory”

4) Select <serial number> < download date> as the naming convention
5) Tick “Create AGD file”
6) Select “Epoch: 60 seconds”
7) Select “# of axis 3”
8) Tick “steps”, “lux”, “inclinometer”
9) Download

Re-label files in My Computer:
10) Go to Y:\Studies and Projects\ASAP\ASAP FBI\QUANTITATIVE STUDY\DATA\ACC\ACC Participant Originals and rename the file to: ASAP-FB###ACC

*** obtain the participant number from the file located under:
Y:\Studies and Projects\ASAP\ASAP FBI\QUANTITATIVE STUDY\DATA\ACC\Linking participant numbers to monitor numbers

***Double check that the Monitor Number, Downloaded File and Participant ID all align***

11) Open 60sec AGD file to make sure data worked
   a. Click “show data” button (bottom left of screen) → ensure that the accelerometer logged for at least seven days (from first epoch date listed under “Basic AGD Information”)

ActiLife Main interface:
12) Click the “Graphing” tab in the top right corner of the main interface
   a. Click “select dataset” button and select the data you just downloaded
   b. Make sure “Axis 1” and “Equal activity scales” are ticked
   c. Evaluate whether data was recorded for at least 3 days and whether the data looks plausible (i.e. doesn’t consist of only extremes – ceilings or floors – or erratic peaks throughout)
13) Record any problems in the ACC downloading and initialing tracking spreadsheet: Location: Y:\Studies and Projects\ASAP\ASAP FB\QUANTITATIVE STUDY\DATA\ACC\ASAP-FB ACC Tracking Spreadsheet.xlsx
   
   - Place the problem unit(s) in a bag labelled “ACC problems” and email Catherine to let her know. Be sure to include the date, your name, accelerometer and participant ID, and the issue

14) Update the inventory checklist Y:\Studies and Projects\ASAP\ASAP FB\QUANTITATIVE STUDY\DATA\ACC\ASAP-FB_ACC_tracking_spreadsheet.xlsx

15) Unplug the accelerometer.
### DEMOGRAPHICS AND DESCRIPTIVE INFORMATION

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<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>1. Year of Birth / Age</strong></td>
<td></td>
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<tr>
<td><strong>2. Sex</strong></td>
<td>☐ Male ☐ Female</td>
</tr>
<tr>
<td><strong>3. Were you born in Canada?</strong></td>
<td>☐ No ☐ Yes</td>
</tr>
<tr>
<td><strong>If No, how many years have you lived in Canada:</strong></td>
<td>_______ years</td>
</tr>
<tr>
<td><strong>4. Ethnicity</strong></td>
<td>☐ White ☐ Southeast Asian</td>
</tr>
<tr>
<td></td>
<td>☐ Filipino ☐ South Asian</td>
</tr>
<tr>
<td></td>
<td>☐ Black ☐ Latin</td>
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<td></td>
<td>☐ West Asian</td>
</tr>
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<td></td>
<td>☐ American ☐ Japanese</td>
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<td></td>
<td>☐ Latin American ☐ Korean</td>
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<td></td>
<td>☐ Chinese ☐ Other:__________________</td>
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<tr>
<td><strong>5. Marital Status</strong></td>
<td>☐ Single (never married)</td>
</tr>
<tr>
<td></td>
<td>☐ Married (or common law)</td>
</tr>
<tr>
<td></td>
<td>☐ Widowed</td>
</tr>
<tr>
<td></td>
<td>☐ Separated</td>
</tr>
<tr>
<td></td>
<td>☐ Divorced</td>
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<tr>
<td><strong>6. Living Arrangement</strong></td>
<td>☐ Alone</td>
</tr>
<tr>
<td></td>
<td>☐ With a spouse or partner</td>
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<tr>
<td></td>
<td>☐ With another family member</td>
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<tr>
<td></td>
<td>☐ With a friend or roommate</td>
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<tr>
<td></td>
<td>☐ Other:__________________</td>
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<tr>
<td></td>
<td><strong>If you live with someone, does this person ever:</strong></td>
</tr>
<tr>
<td></td>
<td>☐ Go with you for walks</td>
</tr>
<tr>
<td></td>
<td>☐ Go with you on the bus</td>
</tr>
<tr>
<td></td>
<td>☐ Go with you in the car or drive you places</td>
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<tr>
<td></td>
<td>☐ Help you with directions or finding your way around the city</td>
</tr>
<tr>
<td><strong>7. Highest Education Level</strong></td>
<td>☐ Primary School</td>
</tr>
<tr>
<td></td>
<td>☐ Some secondary school</td>
</tr>
<tr>
<td></td>
<td>☐ Completed secondary school</td>
</tr>
<tr>
<td></td>
<td>☐ Some trade/technical school or college</td>
</tr>
<tr>
<td></td>
<td>☐ Completed trade/technical school or college diploma</td>
</tr>
<tr>
<td></td>
<td>☐ Some university</td>
</tr>
<tr>
<td></td>
<td>☐ Completed university degree</td>
</tr>
<tr>
<td></td>
<td>☐ Some graduate education</td>
</tr>
<tr>
<td></td>
<td>☐ Completed graduate degree</td>
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<tr>
<td><strong>8. How long have you lived in your current neighbourhood?</strong></td>
<td>_______ (years) _________ months(s)</td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
</tr>
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<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>9. How long have you lived in your current residence?</td>
<td>________(years) ________months(s)</td>
</tr>
<tr>
<td>10. Do you rent or own your current place of residence?</td>
<td>□ Rent □ Own □ Other:________________________________</td>
</tr>
<tr>
<td>11. How much do you like to walk outside?</td>
<td>Please circle one</td>
</tr>
<tr>
<td></td>
<td>Not at all Not much Neutral Somewhat Very much</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>12. How confident are you walking in your neighbourhood?</td>
<td>Please circle one</td>
</tr>
<tr>
<td></td>
<td>Not at all Not much Neutral Somewhat Very much</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>13. What is your current employment status?</td>
<td>□ Unemployed □ Full-time homemaker □ Employed full-time □ Employed part-time □ Retired and not working □ Permanently disabled □ On temporary medical leave</td>
</tr>
<tr>
<td>14. What is your annual household income?</td>
<td>□ Less than $10,000 □ $10,000 to $14,999 □ $15,000 to $24,999 □ $25,000 to $34,999 □ $35,000 to $49,999 □ $50,000 to $74,999 □ $75,000 to $99,999 □ $100,000 or more</td>
</tr>
<tr>
<td>15. Do you use a mobility aid when you walk?</td>
<td>□ No □ Yes</td>
</tr>
<tr>
<td>If Yes, please specify type of mobility aid (choose all that apply)</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>No</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>16. Do you currently have a valid driver’s licence?</td>
<td></td>
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<tr>
<td>17. Do you have access to a car?</td>
<td></td>
</tr>
<tr>
<td>18. Do you own a dog?</td>
<td></td>
</tr>
<tr>
<td>19. Do you currently smoke (cigarettes or a pipe)</td>
<td></td>
</tr>
<tr>
<td>20. Is your mobility and/or ability to leave the house significantly limited by [check all that apply]:</td>
<td></td>
</tr>
<tr>
<td>☐ A fall / fear of falling</td>
<td></td>
</tr>
<tr>
<td>☐ Health reasons (e.g. acute or chronic injury, illness)</td>
<td></td>
</tr>
<tr>
<td>☐ Your location of residence</td>
<td></td>
</tr>
<tr>
<td>☐ Inability to access transportation services (e.g. Handydart, community bus programs)</td>
<td></td>
</tr>
<tr>
<td>☐ Limited access to a car and/or loss of ability to drive</td>
<td></td>
</tr>
</tbody>
</table>

If checked, how long has this factor limited your mobility and/or your ability to leave the house?

<table>
<thead>
<tr>
<th>Factor</th>
<th>1 week</th>
<th>1 month</th>
<th>6 months</th>
<th>1 year</th>
<th>2+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>A fall / fear of falling</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health reasons (e.g. acute or chronic injury, illness)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Your location of residence</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Inability to access transportation services (e.g. Handydart, community bus programs)</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Limited access to a car and/or loss of ability to drive</td>
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</tr>
<tr>
<td>Topic</td>
<td>1 week</td>
<td>1 month</td>
<td>6 months</td>
<td>1 year</td>
<td>2+ years</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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</tr>
<tr>
<td>Emotional reasons (e.g. grief, depression, anxiety)</td>
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<tr>
<td>Caregiving and/or family responsibilities</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Personal finances</td>
<td></td>
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<tr>
<td>Other [please describe]:</td>
<td></td>
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</tr>
</tbody>
</table>

Thank you for taking the time to help us by answering these questions!
## Functional comorbidity index (FCI)

### FUNCTIONAL COMORBIDITY INDEX

<table>
<thead>
<tr>
<th>Item number</th>
<th>Disease</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Arthritis (rheumatoid and/or OA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Osteoporosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Asthma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Chronic Obstructive Pulmonary Disease (COPD), acquired respiratory distress syndrome (ARDS), or emphysema</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Angina</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Congestive heart failure (or heart disease)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Heart attack (myocardial infarct)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Neurological disease (such as multiple sclerosis, Parkinson's or Alzheimer's Disease )</td>
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<tr>
<td>9</td>
<td>Stroke or TIA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Peripheral vascular disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Diabetes type I and II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Upper gastrointestinal disease (ulcer, hernia, reflux)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Depression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Anxiety or panic disorders (claustrophobia)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Visual impairment (such as cataracts, glaucoma, macular degeneration)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Hearing impairment (very hard of hearing, even with hearing aids)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Degenerative disc disease (back disease, spinal stenosis or severe chronic back pain)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
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</tr>
</tbody>
</table>
This questionnaire is about activities that you may have done in the past 4 weeks. The questions on the following pages are similar to the example shown below.

**INSTRUCTIONS**

If you DID the activity in the past 4 weeks:

- **Step #1** Check the YES box.
- **Step #2** Think about how many TIMES a week you usually did it, and write your response in the space provided.
- **Step #3** Circle how many TOTAL HOURS in a typical week you did the activity.

Here is an example of how Mrs. Jones would answer question #1: Mrs. Jones usually visits her friends Maria and Olga twice a week. She usually spends one hour on Monday with Maria and two hours on Wednesday with Olga. Therefore, the total hours a week that she visits with friends is 3 hours a week.

<table>
<thead>
<tr>
<th>In a typical week during the past 4 weeks, did you...</th>
<th>How many TOTAL hours a week did you usually do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Visit with friends or family (other than those you live with)?</td>
<td></td>
</tr>
<tr>
<td>□ YES How many TIMES a week?</td>
<td></td>
</tr>
<tr>
<td>□ NO</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Less than 1 hour</th>
<th>1-2½ hours</th>
<th>3-4½ hours</th>
<th>5-6½ hours</th>
<th>7-8½ hours</th>
<th>9 or more hours</th>
</tr>
</thead>
</table>

303
If you DID NOT do the activity:

- Check the NO box and move to the next question

<table>
<thead>
<tr>
<th>In a typical week during the past 4 weeks, did you ...</th>
<th>How many TOTAL hours a week did you usually do it?</th>
<th>Less than 1 hour</th>
<th>1-2½ hours</th>
<th>3-4½ hours</th>
<th>5-6½ hours</th>
<th>7-8½ hours</th>
<th>9 or more hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Visit with friends or family (other than those you live with)?</td>
<td>How many TIMES a week?</td>
<td>How many TOTAL hours a week did you usually do it?</td>
<td>Less than 1 hour</td>
<td>1-2½ hours</td>
<td>3-4½ hours</td>
<td>5-6½ hours</td>
<td>7-8½ hours</td>
</tr>
<tr>
<td>□ YES  How many TIMES a week?</td>
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<tr>
<td>□ NO</td>
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</tr>
<tr>
<td>2. Go to the senior center?</td>
<td>How many TIMES a week?</td>
<td>How many TOTAL hours a week did you usually do it?</td>
<td>Less than 1 hour</td>
<td>1-2½ hours</td>
<td>3-4½ hours</td>
<td>5-6½ hours</td>
<td>7-8½ hours</td>
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<tr>
<td>□ YES  How many TIMES a week?</td>
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<td>□ NO</td>
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<tr>
<td>3. Do volunteer work?</td>
<td>How many TIMES a week?</td>
<td>How many TOTAL hours a week did you usually do it?</td>
<td>Less than 1 hour</td>
<td>1-2½ hours</td>
<td>3-4½ hours</td>
<td>5-6½ hours</td>
<td>7-8½ hours</td>
</tr>
<tr>
<td>□ YES  How many TIMES a week?</td>
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<tr>
<td>□ NO</td>
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</tr>
<tr>
<td>Activity</td>
<td>How many TIMES a week?</td>
<td>How many TOTAL hours a week did you usually do it?</td>
<td>Less than 1 hour</td>
<td>1-2½ hours</td>
<td>3-4½ hours</td>
<td>5-6½ hours</td>
<td>7-8½ hours</td>
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<td>-------------------------------------------------------------------------</td>
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<tr>
<td>4. Attend church or take part in church activities?</td>
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<tr>
<td>□ YES                      How many TIMES a week?_____ ⇒</td>
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<tr>
<td>□ NO                       How many TIMES a week?_____ ⇒</td>
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<tr>
<td>5. Attend other club or group meetings?</td>
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<tr>
<td>□ YES                      How many TIMES a week?_____ ⇒</td>
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<tr>
<td>□ NO                       How many TIMES a week?_____ ⇒</td>
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<tr>
<td>6. Use a computer?</td>
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<tr>
<td>□ YES                      How many TIMES a week?_____ ⇒</td>
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<tr>
<td>□ NO                       How many TIMES a week?_____ ⇒</td>
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<tr>
<td>7. Dance (such as square, folk, line, ballroom) (do not count aerobic dance here)?</td>
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</tr>
<tr>
<td>□ YES                      How many TIMES a week?_____ ⇒</td>
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</tr>
<tr>
<td>□ NO                       How many TIMES a week?_____ ⇒</td>
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<tr>
<td>8. Do woodworking, needlework, drawing, or other arts or crafts?</td>
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<tr>
<td>□ YES                      How many TIMES a week?_____ ⇒</td>
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<td></td>
</tr>
<tr>
<td>□ NO                       How many TIMES a week?_____ ⇒</td>
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<td></td>
</tr>
</tbody>
</table>
In a typical week during the past 4 weeks, did you ...

<table>
<thead>
<tr>
<th>Question</th>
<th>How many TOTAL hours a week did you usually do it?</th>
<th>Less than 1 hour</th>
<th>1-2½ hours</th>
<th>3-4½ hours</th>
<th>5-6½ hours</th>
<th>7-8½ hours</th>
<th>9 or more hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Play golf, carrying or pulling your equipment (count walking time only)?</td>
<td>YES, How many TIMES a week?____</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>□ YES, □ NO</td>
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</tr>
<tr>
<td>10. Play golf, riding a cart (count walking time only)?</td>
<td>YES, How many TIMES a week?____</td>
<td></td>
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</tr>
<tr>
<td>□ YES, □ NO</td>
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</tr>
<tr>
<td>11. Attend a concert, movie, lecture, or sport event?</td>
<td>YES, How many TIMES a week?____</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>□ YES, □ NO</td>
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</tr>
<tr>
<td>12. Play cards, bingo, or board games with other people?</td>
<td>YES, How many TIMES a week?____</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>□ YES, □ NO</td>
<td></td>
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</tr>
<tr>
<td>Activity</td>
<td>Question</td>
<td>Times a week</td>
<td>Total hours</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>-------------------------------------------------------------------------</td>
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<td></td>
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</tr>
<tr>
<td>Shoot pool or billiards</td>
<td>If yes, how many times a week?</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Play singles tennis (do not count doubles)</td>
<td>If yes, how many times a week?</td>
<td></td>
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</tr>
<tr>
<td>Play doubles tennis (do not count singles)</td>
<td>If yes, how many times a week?</td>
<td></td>
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</tr>
<tr>
<td>Skate (ice, roller, in-line)</td>
<td>If yes, how many times a week?</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Play a musical instrument</td>
<td>If yes, how many times a week?</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Question</td>
<td>YES/NO</td>
<td>TIMES/Hours a week</td>
<td>1-2½ hours</td>
<td>3-4½ hours</td>
<td>5-6½ hours</td>
<td>7-8½ hours</td>
<td>9 or more hours</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>18. Read?</td>
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</tr>
<tr>
<td>☐ YES  How many TIMES a week?_____ ➤</td>
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<td>☐ NO</td>
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<tr>
<td>19. Do heavy work around the house (such as washing windows, cleaning gutters)?</td>
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</tr>
<tr>
<td>☐ YES  How many TIMES a week?_____ ➤</td>
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<tr>
<td>☐ NO</td>
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</tr>
<tr>
<td>20. Do light work around the house (such as sweeping or vacuuming)?</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>☐ YES  How many TIMES a week?_____ ➤</td>
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<tr>
<td>☐ NO</td>
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<td></td>
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</tr>
<tr>
<td>21. Do heavy gardening (such as spading, raking)?</td>
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<td></td>
</tr>
<tr>
<td>☐ YES  How many TIMES a week?_____ ➤</td>
<td></td>
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<tr>
<td>☐ NO</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>
**In a typical week during the past 4 weeks, did you ...**

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. Do light gardening (such as watering plants)?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>23. Work on your car, truck, lawn mower, or other machinery?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**How many TOTAL hours a week did you usually do it?**

- Less than 1 hour
- 1-2½ hours
- 3-4½ hours
- 5-6½ hours
- 7-8½ hours
- 9 or more hours

**Please note: For the following questions about running and walking, include use of a treadmill.**

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>24. Jog or run?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>25. Walk uphill or hike uphill (count only uphill part)?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**How many TOTAL hours a week did you usually do it?**

- Less than 1 hour
- 1-2½ hours
- 3-4½ hours
- 5-6½ hours
- 7-8½ hours
- 9 or more hours

309
<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a typical week during the past 4 weeks, did you ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Walk fast or briskly for exercise (do not count walking leisurely or uphill)?</td>
<td>□ YES</td>
<td>□ NO</td>
</tr>
<tr>
<td>How many TIMES a week? _____ ➔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Walk to do errands (such as to/from a store or to take children to school (count walk time only)?</td>
<td>□ YES</td>
<td>□ NO</td>
</tr>
<tr>
<td>How many TIMES a week? _____ ➔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Walk leisurely for exercise or pleasure?</td>
<td>□ YES</td>
<td>□ NO</td>
</tr>
<tr>
<td>How many TIMES a week? _____ ➔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Ride a bicycle or stationary cycle?</td>
<td>□ YES</td>
<td>□ NO</td>
</tr>
<tr>
<td>How many TIMES a week? _____ ➔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How many TOTAL hours a week did you usually do it? ➔

Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours
### In a typical week during the past 4 weeks, did you ...

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>30. Do other aerobic machines such as rowing, or step machines (do not count treadmill or stationary cycle)?</td>
<td>□ YES  How many TIMES a week?____ → □ NO</td>
</tr>
<tr>
<td>31. Do water exercises (do not count other swimming)?</td>
<td>□ YES  How many TIMES a week?____ → □ NO</td>
</tr>
<tr>
<td>32. Swim moderately or fast?</td>
<td>□ YES  How many TIMES a week?____ → □ NO</td>
</tr>
<tr>
<td>33. Swim gently?</td>
<td>□ YES  How many TIMES a week?____ → □ NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How many TOTAL hours a week did you usually do it?</th>
<th>Less than 1 hour</th>
<th>1-2½ hours</th>
<th>3-4½ hours</th>
<th>5-6½ hours</th>
<th>7-8½ hours</th>
<th>9 or more hours</th>
</tr>
</thead>
</table>
### In a typical week during the past 4 weeks, did you ...

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>34. Do stretching or flexibility exercises (do not count yoga or Tai-chi)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ YES  How many TIMES a week?_____ ➔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35. Do yoga or Tai-chi?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ YES  How many TIMES a week?_____ ➔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. Do aerobics or aerobic dancing?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ YES  How many TIMES a week?_____ ➔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Do moderate to heavy strength training (such as hand-held weights of more than 5 lbs., weight machines, or push-ups)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ YES  How many TIMES a week?_____ ➔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ NO</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How many TOTAL hours a week did you usually do it? ➔</th>
<th>Less than 1 hour</th>
<th>1-2½ hours</th>
<th>3-4½ hours</th>
<th>5-6½ hours</th>
<th>7-8½ hours</th>
<th>9 or more hours</th>
</tr>
</thead>
</table>

*312*
<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a typical week during the past 4 weeks, did you ...</td>
<td></td>
</tr>
<tr>
<td>38. Do light strength training (such as hand-held weights of 5 lbs. or less or elastic bands)?</td>
<td></td>
</tr>
<tr>
<td>□ YES  How many TIMES a week?_____  ➤</td>
<td></td>
</tr>
<tr>
<td>□ NO</td>
<td></td>
</tr>
<tr>
<td>39. Do general conditioning exercises, such as light calisthenics or chair exercises (do not count strength training)?</td>
<td></td>
</tr>
<tr>
<td>□ YES  How many TIMES a week?_____  ➤</td>
<td></td>
</tr>
<tr>
<td>□ NO</td>
<td></td>
</tr>
<tr>
<td>40. Play basketball, soccer, or racquetball (do not count time on sidelines)?</td>
<td></td>
</tr>
<tr>
<td>□ YES  How many TIMES a week?_____  ➤</td>
<td></td>
</tr>
<tr>
<td>□ NO</td>
<td></td>
</tr>
<tr>
<td>In a typical week during the past 4 weeks, did you ...</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>41. Do other types of physical activity not previously mentioned (please specify)?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How many TOTAL hours a week did you usually do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ YES  How many TIMES a week?____</td>
</tr>
<tr>
<td>□ NO</td>
</tr>
</tbody>
</table>

Less than 1 hour, 1-2½ hours, 3-4½ hours, 5-6½ hours, 7-8½ hours, 9 or more hours
Add- In Questions

42. In a typical week during the past 4 weeks, did you watch television?

☐ YES  How many TIMES a week?_____ ➔ Approximately how many total hours a week do you watch television?_____
☐ NO

43. In a typical week during the past 4 weeks, approximately how many times did you leave your home or apartment?

☐ Daily
☐ Almost daily (5 or 6 times per week)
☐ Most days (3 or 4 times per week)
☐ Occasionally (once or twice per week)
☐ Not at all (none) (please skip to end – questionnaire complete)

44. In a typical week during the past 4 weeks, approximately how many times did you leave your neighbourhood?

☐ Daily
☐ Almost daily (5 or 6 times per week)
☐ Most days (3 or 4 times per week)
☐ Occasionally (once or twice per week)
☐ Not at all (none)

45. What are your reasons for leaving your home or apartment? (please check all that apply)

☐ Activities of daily living (groceries, mail, etc.)
☐ Visit friends and/or socialize
☐ To participate in recreational programs or other enjoyable activities
☐ Medical appointments
☐ Other___________________________________________________________

Thank You
## Anthropometry

### ANTHROPOMETRY

<table>
<thead>
<tr>
<th>Height</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial 1: ____________________</td>
<td>Trial 1: ____________________</td>
</tr>
<tr>
<td>Trial 2: ____________________</td>
<td>Trial 2: ____________________</td>
</tr>
<tr>
<td>Trial 3: ____________________</td>
<td>Trial 3: ____________________</td>
</tr>
</tbody>
</table>
PARTICIPANT #__________

INSTRUCTIONS FOR USING THE ACTIVITY MONITORS AND DAILY LOG

Please keep this booklet in a safe place so that it can be returned to us.

If you have any questions or concerns,
Please contact (Ms Brigid Wong at 604-649-0844)
PLEASE REMEMBER TO WEAR BOTH MONITORS STARTING THE MORNING OF
INSTRUCTIONS FOR USING THE ACTIVITY MONITORS

You have received a red monitor and you may have received a black monitor. There are specific instructions for each monitor below. If you did not receive a black monitor, please disregard the instructions for it. Please read the instructions carefully, and call if you have any questions. Contact: [Contact Information]

What do the monitors measure?
The **RED monitor** is an accelerometer. It measures the intensity of your activity and is particularly good at measuring walking. The **BLACK monitor** is a Global Positioning System (GPS) unit, which monitors your location and the trips you take. The data from both monitors will be used to provide us with an accurate picture of your physical activity and travel patterns over the week.

| Office Use: | Participant Code: ______________ | Region: ___________________ |

Specific Instructions for the RED Monitor

☐

How do I turn on the RED monitor?
The red monitor is pre-programmed so you do not need to turn it on or off during the week. The light on the monitor will **NOT** flash while it is recording.

How do I use the RED monitor?
The red monitor is worn just above your right hip in line with the middle of your right thigh. You should be able to see the “black screw” on the red monitor when you look down at it, and the black stripe should be facing outward (please see picture). It is important that the monitor sits straight, as shown in the picture. Please adjust the belt so it is comfortable.

The monitor can be worn either underneath or on top of your clothing, just as long as it fits snugly on your hip (or waist if this is more comfortable). If your clothes have belt loops, it may be easier to thread the strap through the belt loops. This will help keep the monitor in place.

**How long do I wear the RED monitor?**
Please wear the red monitor during waking hours *every day for 7 days*. The last time you will wear the red monitor is on the evening of Day 7. *The monitor is NOT waterproof*, so please remove it before showering or swimming and put it back on afterwards.

**What else do I need to do?**

It is important that you fill in the **Daily Activity Log** for the 7 days you are wearing the monitor. See instructions on page 9.
**Specific Instructions for the BLACK MONITOR**

How do I turn on the BLACK monitor?
Slide the power slider switch all the way up. An orange light will turn on to indicate that the device is on and will start blinking routinely when the device has acquired a satellite signal. To confirm that your power switch is pushed all the way up, a red light will flash to indicate that the device is tracking your travel. Please note that the device is only recording your travel patterns when the power switch is pushed all the way to the top. **Please turn on the black monitor on the morning of Day 1, when you put on your red monitor.**

How do I carry the BLACK monitor?
We suggest you put the black monitor in an item you always take with you when you leave your home, such as a purse, hand-bag, wallet or pocket. It is important that this monitor is with you at all times when you travel outside your home.

How long do I carry the BLACK monitor?
This monitor will run for two days – Day 1 and Day 2, after which you can stop carrying it. Note that there is only enough battery life in the black monitor for 2 days. It will automatically shut down when there is no more battery power. **The monitor is NOT waterproof so please avoid getting it wet.**
RETURNING YOUR MONITORS AND DAILY LOG

Once you are done with wearing the monitors and filling out the daily logs for 7 days please drop off the envelop at

**Location:**

**Date:**

**Time:**

Please make sure that you keep all of the equipment together in the envelope provided—ready to be dropped off.

Your package should include:

- Red monitor  □
- Black monitor □
- This booklet □
INSTRUCTIONS FOR THE DAILY LOG

FOR YOUR INFORMATION: The Daily Log is important for the use of the RED monitor. The information you record in this log should match your use of the RED monitor. We only require you to wear the RED monitor during waking hours.

Please see an example Daily Log on the next page. You will complete a log of 7 days. Each day is divided into sleep times and monitor wear times.

Please complete each question for all 7 days. Please try and be as accurate as possible in your answers.

1. Start by putting the date at the top of the page.
2. Please record when you put your monitor on.
3. In the next section, please record when you removed the monitor for more than 10 minutes. Please indicate the time(s) that you took the monitor off and put it back on and why you took it off. Remember, we only require you to wear it during waking hours.
4. At the end of the day, go back to the top of the Daily Log and record when you took the monitor off.

If you have any questions about filling in the Daily Log, please contact [Contact Information].
**EXAMPLE DAILY LOG**

<table>
<thead>
<tr>
<th>Date</th>
<th>Tuesday November 8th, 2011</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Monitors</th>
<th>Time RED Monitor belt on? 7:40 am/pm</th>
<th>Time BLACK Monitor on? 7:40 am/pm</th>
<th>Time RED Monitor belt off? 11:15 am/pm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Did you remove your RED Monitor belt today for more than 10 mins?</td>
<td><strong>No</strong>/Yes</td>
<td>If yes, please note time(s) off/on and the reason:</td>
</tr>
<tr>
<td></td>
<td>Time off: 6:05 am/pm Time on: 6:35 am/pm</td>
<td>Reason: <strong>Shower</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time off: ______ am/pm Time on: ______am/pm</td>
<td>Reason:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time off: ______ am/pm Time on: ______am/pm</td>
<td>Reason:</td>
<td></td>
</tr>
</tbody>
</table>
DAY 1
**DAILY LOG DAY 1** - remember to **TURN ON BLACK MONITOR** if you received one

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____________________________</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Monitors</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Time RED Monitor belt on? _____ am / pm</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Time BLACK Monitor on? _____ am / pm</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Time RED Monitor belt off? _____ am / pm</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Did you remove your RED Monitor belt today for more than 10 mins?</td>
<td></td>
</tr>
<tr>
<td><strong>No / Yes</strong></td>
<td><em>If yes, please note time(s) off/on and the reason:</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Time off: _____ am / pm Time on: _____ am / pm</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Reason: __________________________________________________________</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Reason: __________________________________________________________</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Time off: _____ am / pm Time on: _____ am / pm</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Reason: __________________________________________________________</strong></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td><strong>Time off: _____ am / pm Time on: _____ am / pm</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>Reason: __________________________________________________________</strong></td>
<td></td>
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<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
DAY 2
# DAILY LOG DAY 2

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>________________________________</td>
</tr>
</tbody>
</table>

| Monitors | Time RED Monitor belt **on**? _____ am / pm  
|----------|-----------------------------------------------|
|          | Time RED Monitor belt **off**? _____ am / pm  
|          | Did you remove your RED Monitor belt today for more than 10 mins?  
|          | **No** / **Yes** If yes, please note time(s) off/on and the reason:  
|          | Time off: _____ am / pm Time on: _____ am / pm  
|          | Reason: ___________________________________________  
|          | Time off: _____ am / pm Time on: _____ am / pm  
|          | Reason: ___________________________________________  
|          | Time off: _____ am / pm Time on: _____ am / pm  
|          | Reason: ___________________________________________  

329
DAY 3
**DAILY LOG DAY 3** – you can stop carrying the **BLACK MONITOR** if you received one

<table>
<thead>
<tr>
<th>Date</th>
<th>____________________________</th>
</tr>
</thead>
</table>

| Monitors | Time RED Monitor belt on? _____ am / pm  
|----------|---------------------------------|
|          | Time RED Monitor belt off? _____ am / pm  
|          | Did you remove your RED Monitor belt today for more than 10 mins?  
| No / Yes | If yes, please note time(s) off/on and the reason:  
|          | Time off: _____ am / pm  Time on: _____ am / pm  
|          | Reason: ____________________________  
|          | Time off: _____ am / pm  Time on: _____ am / pm  
|          | Reason: ____________________________  
|          | Time off: _____ am / pm  Time on: _____ am / pm  
|          | Reason: ____________________________  

---
DAY 4
# DAILY LOG DAY 4

<table>
<thead>
<tr>
<th>Date</th>
<th>Monitors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time RED Monitor belt <strong>on</strong>? _____ am / pm</td>
</tr>
<tr>
<td></td>
<td>Time RED Monitor belt <strong>off</strong>? _____ am / pm</td>
</tr>
<tr>
<td></td>
<td>Did you remove your RED Monitor belt today for more than 10 mins?</td>
</tr>
<tr>
<td><strong>No / Yes</strong></td>
<td>If yes, please note time(s) off/on and the reason:</td>
</tr>
<tr>
<td></td>
<td>Time off: _____ am / pm Time on: _____ am / pm</td>
</tr>
<tr>
<td></td>
<td>Reason: _________________________________________</td>
</tr>
<tr>
<td></td>
<td>Time off: _____ am / pm Time on: _____ am / pm</td>
</tr>
<tr>
<td></td>
<td>Reason: _________________________________________</td>
</tr>
<tr>
<td></td>
<td>Time off: _____ am / pm Time on: _____ am / pm</td>
</tr>
<tr>
<td></td>
<td>Reason: _________________________________________</td>
</tr>
</tbody>
</table>
DAY 5
# DAILY LOG DAY 5

<table>
<thead>
<tr>
<th>Date</th>
<th>Monitors</th>
</tr>
</thead>
</table>
|      | Time RED Monitor belt **on**? _____ **am** / **pm**  
|      | Time RED Monitor belt **off**? _____ **am** / **pm**  
|      | Did you remove your RED Monitor belt today for more than 10 mins?  
| No / Yes | If yes, please note time(s) off/on and the reason:  
| Time off: _____ **am** / **pm** Time on: _____ **am** / **pm**  
| Reason: ________________________________________________  
| Time off: _____ **am** / **pm** Time on: _____ **am** / **pm**  
| Reason: ________________________________________________  
| Time off: _____ **am** / **pm** Time on: _____ **am** / **pm**  
| Reason: ________________________________________________  
|
DAY 6
# DAILY LOG DAY 6

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________________</td>
</tr>
</tbody>
</table>

## Monitors

<table>
<thead>
<tr>
<th>Time RED Monitor belt on? _____ am / pm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Time RED Monitor belt off? _____ am / pm</th>
</tr>
</thead>
</table>

Did you remove your RED Monitor belt today for more than 10 mins?

- **No** / **Yes**  
  *If yes, please note time(s) off/on and the reason:*

<table>
<thead>
<tr>
<th>Time off: _____ am / pm</th>
<th>Time on: _____ am / pm</th>
<th>Reason: ________________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time off: _____ am / pm</td>
<td>Time on: _____ am / pm</td>
<td>Reason: ________________________________</td>
</tr>
<tr>
<td>Time off: _____ am / pm</td>
<td>Time on: _____ am / pm</td>
<td>Reason: ________________________________</td>
</tr>
</tbody>
</table>
DAY 7
# DAILY LOG DAY 7

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Monitors</th>
<th>Time RED Monitor belt on? _____ am / pm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time RED Monitor belt off? _____ am / pm</td>
</tr>
<tr>
<td></td>
<td>Did you remove your RED Monitor belt today for more than 10 mins?</td>
</tr>
<tr>
<td></td>
<td><strong>No / Yes</strong></td>
</tr>
<tr>
<td></td>
<td>Time off: _____ am / pm Time on: _____ am / pm</td>
</tr>
<tr>
<td></td>
<td>Reason: _________________________________________</td>
</tr>
<tr>
<td></td>
<td>Time off: _____ am / pm Time on: _____ am / pm</td>
</tr>
<tr>
<td></td>
<td>Reason: _________________________________________</td>
</tr>
<tr>
<td></td>
<td>Time off: _____ am / pm Time on: _____ am / pm</td>
</tr>
<tr>
<td></td>
<td>Reason: _________________________________________</td>
</tr>
</tbody>
</table>
Appendix G  Interview protocol and guide

ASAP-FB- Qualitative Component

Research Project Overview & Brief Introduction:

There are distinct and significant associations between the built and social environment and older adult health. Generally, a cycle ensues whereby health and function decline with ageing, social isolation comingles with financial strain and thereby reduces older adults’ ability to engage with challenging environments (e.g. poor street lighting or long distances to amenities). Research suggests that the built environment, the physical features of neighbourhood design, may mediate social isolation and depression that accompanies aging by facilitating local, place based social interactions and sense of community.

Nevertheless, few studies to date have focused on the impact of the built environment on older adult health; even fewer have looked at the impact specifically on foreign born older adults, and none have done so in Canada.

Immigrants comprise 30% of the elderly population in Canada. Research has consistently shown that foreign-born older adults residing in Canada are confronted with multiple health-related challenges, including social isolation and limited access to programs and services. With respect to the built and social environments, preliminary research from Australia has shown that foreign-born older adults are more likely to have negative perceptions of their physical environments and report lower rates of physical activity.

Thus, we aim to understand the salient health and mobility related issues for foreign-born older adults who are at risk for social isolation and who live in the South Vancouver neighbourhood.

Our specific objectives are:

1. **Develop** a comprehensive understanding of the health and mobility needs of foreign-born older adults living in different South Vancouver neighbourhoods (those that promote or inhibit mobility).
2. **Identify** barriers and facilitators to mobility and health for older adults who reside in different South Vancouver neighbourhoods.
**Interview Overview & Timeline: (** Instructions are for the interviewer **)**

A. Safety Phone Check-in (5 min)

- Meet with the interpreter at the pre-determined address (typically the participant’s home)

- Catherine Tong will call the Project Manager once we have reached the interview site, to confirm arrival

B. Arrival and Introductions (5-10 min)

- Introduce the interpreter and interviewer

- Set the tone (warm introduction, thank them for time and participation, etc.)

- Ask the participant where they would like to sit for a one-hour chat

C. During the Visit- Interview (60-100 minutes)

- Answer any questions that the participant may have

- Ensure you have a signed consent form prior to commencing the interview

- Leave a copy of the consent form with the participant so they have a record; place the signed consent form in your interview folder.

- Commence the interview and turn on the recorder. Periodically glance at the recorder throughout the interview to ensure that it is recording.

- Look for visual or verbal cues that the participant may be tired or getting worn out, and respond accordingly (e.g. by shortening questions or ending the interview early)

- Upon conclusion of the interview, provide the participant with the $25 Gift Card and have them sign the “receipt”

D. During the Visit- The Neighbourhood Walk (20 min, plus time to get shoes & coats on and off)

- Upon completion of the interview guide, ask the participant if they would be interested in going for a brief walk (approximately 15-20 minutes) around their neighbourhood. Reiterate that the walk is completely voluntary. If you sense any hesitation, provide the participant with an “out” (For example, say “Gosh, it’s not that nice out today, why don’t we both stay out of the rain!”). If the participant has any health or mobility issues, carefully consider whether or not a walk would be appropriate.

- Explain to the participant that the objective of the interview is for us to see, firsthand, what they like and dislike about their local neighbourhood. We want to see, through their eyes, what makes a neighbourhood “seniors-friendly”, or “walkable”, and what doesn’t. It is very important
to reiterate the purpose of the walk, so as to help guide the discussion. Otherwise, the walk usually turns into a social chat.

- If the participant decides to go on a walk, ask them to select a brief route that will take about 15-20 minutes. The interpreter will help guide the discussion during the walk. Talk walk breaks at safe locations (e.g., a sidewalk or bench) to discuss neighbourhood features that the participant likes/dislikes. The interviewer may take photos of particular features (e.g., particular parks, intersections, etc.), avoiding people’s faces, home addresses, etc.

- Taking your cues from the participant, take breaks as needed

- Walk the participant back to their home

E. Concluding the Visit (5 min)

- Provide one last opportunity for the participant to ask any questions or add any information

- Thank them for their time and insight

- Closure and goodbye

- Interpreter departs

F. Safety Phone Check-out (1 min)

- Catherine Tong will call the Project Manager when we have completed the interview and safely departed the site
Interview Questions:

Section A: Routines, Health and Personal Life

Starting with when you get up, can you please talk me through a typical day for you – think about it like a story: tell me - what you do, where you go, and who you see?

Section B: Immigration Experiences

Can you tell me about your life in (country of origin), before you came to Canada?

Can you tell me about moving to Canada?

What do you like about life in Canada? What do you dislike, or find challenging, about life in Canada?

Do you think it is easier to be an older adult in Canada, or (country of origin)? What makes you say that?

Would you say that you feel more (Chinese/Indian/etc.) or more Canadian? What makes you say that?

Section C: Health, Mobility and Physical Activity

What gets you out the door?

What keeps you inside?

What gets you moving your body?

What does “healthy” mean to you?

Section D: The Built and Social Environments

What do you like best about your neighbourhood?

What do you like least about your neighbourhood?

Where are your favourite places to go in your neighbourhood?

Do you think that your neighbourhood is “walkable” (an easy place to walk)? What makes you say that?

If city planners could do one thing to make your neighbourhood a better place to walk, what would that change be?

Can you tell me a little bit about your relationship with your neighbours?

Who do you go out with? (And/or who do you see when you go out?)

Conclusion: Thank you so much for your time and insights. Is there anything else that you would like to add to our discussion today?
**Field Notes Guide:**

**To be completed by the interviewer (Catherine Tong) within 24 hours of the interview**

Participant ID:

Prepared by:

Interview Date:

Starting Time:             Ending Time:

Participant chose to illustrate some answers by drawing on paper [yes/no]:

Location of interview (e.g. participant’s home, community center, etc.):

Description/your impressions of the neighbourhood:

Technical Problems (e.g., timing of interview, tape recorder):

People present:

Description of the home environment:

Content of Interview (e.g., use key words, topics, focus, words or phrases that stand out):

Interviewer’s impressions (e.g., discomfort of participant with certain topics, emotional responses to people, events or objects)

Nonverbal behaviour (e.g., tone of voice, posture, facial expression, eye movements, forcefulness of speech, body movements, and hand gestures):

Preliminary Analysis: (e.g., interviewer’s questions, tentative hunches, trends in data and emerging patterns, insights, interpretations, beginning analysis, working hypotheses):
Appendix H  Participant summary report-English

Translated versions (Cantonese, Mandarin, Hindi, Punjabi) available upon request

PARTICIPANT SUMMARY REPORT | AUG 2013

Thank You
Thank you very much for participating in our study. We are excited to share some findings with you.

Physical Activity
What you see on page 2 is the number of steps you took and the time you spent doing medium-to-high intensity activities when you were wearing the red monitor (accelerometer). This means that it only includes what the monitor can detect. So, this does not show activities like swimming and riding a bicycle.
PHYSICAL ACTIVITY RESULTS

HOW DID YOU DO?
YOUR RESULTS
For the week of the study, your average steps per day was
steps per day
Your average amount of medium-to-high intensity physical activity was
minutes per day

WHAT DID OTHER PEOPLE IN THE
STUDY DO?

Average Medium-to-High Intensity Physical Activity of EVERYONE in the study

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Males</td>
<td>184</td>
</tr>
<tr>
<td>Females</td>
<td>194</td>
</tr>
</tbody>
</table>

Average Steps Taken by EVERYONE in the study

<p>| | |</p>
<table>
<thead>
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<th></th>
</tr>
</thead>
<tbody>
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<td>Males</td>
<td>6,919</td>
</tr>
<tr>
<td>Females</td>
<td>7,363</td>
</tr>
</tbody>
</table>

HOW MUCH ACTIVITY SHOULD
YOU BE GETTING?

Older adults should aim for 150 minutes of medium-to-high intensity activities per week to stay healthy. These can be activities like walking, gardening, playing golf or exercise programs. Please talk to your doctor to understand the types and amounts of physical activity right for you.

Healthy older adults should try to take 7,000 steps per day. If you are not walking 7,000 steps per day, try to increase your steps a little bit each week.

Stay in touch:
To stay up to date with ASAP project activities and health and mobility information, please visit our blog: http://asapactive.wordpress.com, send us an email: info@asapactive.com. Thank you!
If you would like to take more steps, you can track your NUMBER OF STEPS per day by wearing a Pedometer. We have included one in this package for you to keep and use.

Your pedometer looks like this:

You can wear it near the hip:

To open it, you push lightly right here:

Every morning, set the numbers to 00000 by pressing the YELLOW button:

During the day, walking around, you should close the lid:

At the end of the day, you can open the lid to see how many steps you took: