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**Neighbourhood Walkability for Older People:
A Comparative Embedded Case Study Examining Experiences of Walking and Socio-Political
Processes in Four Ottawa Neighbourhoods**

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**Neighbourhood walkability for older people:
A comparative embedded case study examining experiences of walking and
socio-political processes in four Ottawa neighbourhoods**

Theresa Grant

Thesis submitted to the Faculty of Graduate and Postdoctoral
Studies in partial fulfilment of the requirements for the PhD
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“Walking is the first thing an infant wants to do and the last thing an old person wants to give up. Walking is the exercise that does not need a gym. It is the prescription without medicine, the weight control without diet, and the cosmetic that cannot be found in a chemist. It is the tranquilliser without a pill, the therapy without a psychoanalyst, and the holiday that does not cost a penny.”

John Butcher, Founder Walk21, 1999

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LIST OF ABBREVIATIONS

General abbreviations:

BRFSS: Behavioral Risk Factor Surveillance System
CHAMPS: Community Healthy Activities Model Program for Seniors
GIS: Geographic Information Systems:
IPAQ: International Physical Activity Questionnaire
NS: Association not statistically significant
N_SES_v: Neighbourhood socio-economic status variable
Nv: Neighbourhood variable
PA: Physical Activity
PAv: Physical Activity variable
SES: Socio-economic status
WHO: World Health Organization

Place abbreviations:

AB: Alberta
CA: California
CO: Colorado
CT: Connecticut
DC: District of Columbia
FL: Florida
IL: Illinois
MD: Maryland
NC: North Carolina
NY: New York
ON: Ontario
OR: Oregon
QC: Québec
UK: United Kingdom
USA: United States of America
WA: Washington
WI: Wisconsin

THESIS ABSTRACT

Background: The 21st century has been characterized by rapid urbanization and shifting age demographics. Given these trends, there has been growing interest in the ways that societies can support the health and well being of older people living in cities. Walkable neighbourhoods support the ability of older people to remain physically active, mobile and socially connected within their local environments. Therefore, the ways in which local civic processes shape neighbourhood walkability have implications for the health and independence of older people. Previous research examining older people's perspectives on outdoor walking has focused on identifying the barriers and facilitators of walking rather than on how walking is experienced in the context of daily life or how creating walkable environments is associated with local socio-political processes. Furthermore, studies examining the effects of the neighbourhood environment on walking patterns among older people have focused either on the built environment or on neighbourhood socio-economic status (SES) with little attention to how these two dimensions may inter-relate to affect the walking experience. This thesis aims to address these gaps and develop a better understanding of how neighbourhoods and municipalities can create more walkable environments for older people.

Objectives: This thesis had four main objectives: 1) to examine older people's walking experiences in the context of their daily lives; 2) to investigate how key informants, at both neighbourhood and municipal levels, describe the socio-political process of creating walkable neighbourhoods; 3) to examine how neighbourhood SES and urban form may inter-relate to affect older people's walking experiences and; 4) to examine differences among

neighbourhood key informant perspectives on the socio-political processes that shape the walkability of neighbourhood environments.

Methods: Objectives were addressed using a comparative embedded case study design. Four neighbourhoods were purposefully selected to vary on SES and urban form. The study was conducted in three phases. During phase one, interviews and focus groups were conducted with older people in order to describe their walking experiences in these four neighbourhoods. In the second phase, these results provided a platform for interviewing key informants about the municipal and neighbourhood-level socio-political processes of creating walkable neighbourhoods. In the third phase, qualitative data from phases one and two, in combination with publicly available quantitative indicators were compared across neighbourhoods using a matrix strategy consisting of SES and urban form axes.

Results: Analysis of phase one qualitative data revealed four themes common to older people's walking experiences: 1) multidimensional personal meanings; 2) navigating hostile walking environments; 3) experiencing ambiguity; and 4) getting around. Five dimensions of the socio-political process of creating walkable neighbourhoods were identified in phase two: 1) political context; 2) access channels; 3) resources; 4) actors and; 5) opportunities. These dimensions and their inter-relationships elucidated insights on how neighbourhoods and municipalities interact on walkability issues. Examining the inter-relationship of neighbourhood SES and urban form characteristics on older people's walking experiences in phase three indicated that urban form differences were accentuated positively in higher SES neighbourhoods and negatively in lower SES neighbourhoods. Key informant descriptions of the socio-political processes indicated that differences in these processes can affect

neighbourhood capacity to influence decisions at a municipal level. Together, both sets of findings along with quantitative indicator comparisons provided evidence of inequitable walking environments.

Discussion: This research provides new insights on older people's walking experiences by revealing multi-layered meanings affected by intersecting dimensions of the physical and social environment. The experiences are further understood within a socio-ecologic context. An integration of the study data is presented in a theoretical model, which conceptualizes how dynamic community socio-political structures and processes at the individual, neighbourhood and municipal levels inter-relate to affect the production of neighbourhood walkability. The model also depicts four sets of influences operating at various stages in the cycle of local production, which create different conditions for neighbourhood action and which can lead to inequitable walking conditions.

Conclusion: This study signals the need for a fundamental shift in thinking about walkability. It calls upon us to re-examine the notion of walkability as an array of historically-determined built environment characteristics and to consider how walkability is shaped by dynamic socio-political processes that can be challenged and influenced. This research highlights the need for municipal policies that promote walking as a legitimate form of transportation and that guarantee equitable access for older people. Municipal governments must monitor and address differences in walkability that exist between socially advantaged and disadvantaged neighbourhoods, ensuring that walking improvements in one neighbourhood do not exacerbate walking problems in another. These approaches may help to support independent living, particularly among older people who rely on walking for

transportation. Future population health interventions must aim to reduce inequitable walking conditions among socially advantaged and disadvantaged groups, and must do so in a way that harnesses the dynamic properties of municipal systems.

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CHAPTER 1: INTRODUCTION

This chapter begins with a brief description of the holistic view of health behind the conception of this study, followed by an explanation of the study's rationale and an overview of its purpose, objectives and research design. The present state of knowledge with respect to the study's objectives is then summarized in three sections. The first of these reviews literature pertaining to older people's walking patterns and neighbourhood walkability. The second looks at the concept of health equity, with a particular focus on the differences in physical activity patterns among socially advantaged and disadvantaged neighbourhoods. The third section examines research on municipal and neighbourhood processes that impact on walkability. The theoretical basis for the thesis is then described, followed by a presentation of the study's guiding conceptual model. A methodological overview is provided. The inherent challenges of case study methods are described, study limitations are highlighted and a statement of personal interest, including my stance, is outlined. The chapter concludes with a brief description of how the thesis is organized.

Holistic view of health

The Ottawa Charter [1] marked a major shift in the World Health Organization's conceptualization of health from a bio-medically oriented view of the "absence of disease" to a more positive and holistic concept representing the "capacity of people to adapt, respond to or control life's challenges and changes" [2, p.1]. With this shift, came a greater focus on the multiple and interacting social, environmental and economic determinants of health [3]. Health interventions began to be viewed as not only those delivered through health care

systems and aimed at individuals, but also those that could change social, physical and economic environmental factors affecting health status and health disparities of populations. The conceptualization of health moved beyond the state of the individual to include the attributes of healthy populations [4] and the collective capacity to create healthy communities [5]. The World Health Organization's (WHO) Healthy Cities Initiative [6] represented an international collaboration aimed at operationalizing principles set out in the Ottawa Charter [1]. These principles included creating supportive environments, strengthening community action and building healthy public policy. It was within this holistic view of health that current research was conceptualized.

Rationale

The focus of this study is on understanding older people's walking experiences and contextualizing them within the socio-political processes that shape their walking environments. This section introduces background on population aging and the significance of walking as an accessible form of physical activity. It also explains why the neighbourhood is a relevant context for examining both older people's walking experiences and socio-political processes that influence these walking environments. Finally, it outlines the relevance of understanding the neighbourhood-municipal interface and its potential importance to the process of creating more walkable environments.

The population of North America is aging. In 2005, 12.4 % of North Americans were aged 65 years and older and this figure is projected to rise to 16.1 % by 2020 [7]. Given this demographic trend along with increasing urbanization, there has been growing interest in ways that society can support the health and well being of older people living in cities. The

desire to age in place is a preference shared by many older people, not only because of an attachment to personal autonomy and residence, but also due to ties with the local community [8,9]. Walking provides older people with an accessible form of physical activity and a means of transportation within their local communities [10]. Despite potential health benefits, physical activity levels among people over the age of 65 fall short of recommended levels [11-13]. Although people can walk in a variety of settings, the neighbourhood context is especially relevant to healthy aging and physical activity promotion since older people spend more time in their local environments [14]. Thus, how neighbourhoods can better support walking among older people is an important public health issue.

The neighbourhood is also a context of social and political activity in which the routines of daily life are most closely embedded. Adopting a more holistic notion of health necessitates not only an examination of how the neighbourhood environment supports walking for older people, but also of how social and political forces shape those environments. Understanding how these forces may contribute to differences in the way that environments support health (i.e. by providing opportunities to walk) has implications for reducing health disparities among population groups. The relationship between poor health and living in a socially disadvantaged area has been clearly established, although the mechanisms responsible for this relationship remain less clear [15].

Urban form and socio-economic status are two dimensions of neighbourhood context that have been studied both with respect to neighbourhood walking patterns and neighbourhood socio-political processes. The term 'urban form' is most frequently used in reference to built

environment characteristics, distinguishing high density inner-urban neighbourhoods and low density automobile-oriented suburban neighbourhoods. The characteristics of population density, land-use mix and street connectivity typically found in inner-urban neighbourhoods are thought to promote walking mainly through their effect on the viability of reaching destinations on foot [16]. It is also hypothesized that these features promote greater political and social engagement through the opportunities that people have to interact frequently and spontaneously [17-19]. Neighbourhood SES is thought to affect walking patterns through perceptions of safety, aesthetics and traffic as well as through the quality of environmental supports [20,12]. A number of researchers [22-25] have found differences in the quality of walking environments in high and low SES neighbourhoods and suggest that these may be the result of socio-political processes, which produce an inequitable distribution of pedestrian-friendly resources.

Neighbourhood SES and urban form tend to be studied in isolation but can potentially have a joint effect on walkability. For example, documented characteristics associated with low SES neighbourhoods, such as higher levels of traffic or crime [20,26,27] may negate the urban form benefits of mixed land-use and inter-connected streets. Researchers looking at the spatial distribution of pedestrian traffic collisions have noted that collisions typically tend to occur in neighbourhoods with high residential and employment densities [28,29]. However, within high density neighbourhoods LaScala, Gerber & Guenewald [29] have identified '*hot spots*' characterised by high rates of vehicle-pedestrian collisions located within socially disadvantaged neighbourhoods. This finding suggests that interacting dimensions of neighbourhood context may compound the hazards associated with walking in socially disadvantaged neighbourhoods. Given that research on both sets of environmental

walking influences - that is neighbourhood SES and urban form - have produced mixed and inconclusive findings, there is a need to look at the effect of their potential inter-relationship, especially with respect to older people who are particularly sensitive to both physical [30,31] and social aspects [32,33] of the environment.

In addition to examining the joint effect that neighbourhood SES and urban form may have on older people's walking experiences, this thesis aims to place these experiences within a set of community processes. Specifically, it aims to examine how neighbourhood actions relevant to older people's walking concerns interface with city-level processes. There are several reasons for focusing on the neighbourhood-municipal interface. The first stems from criticism of research done in relation to the WHO's Healthy Cities Initiative. Although the Initiative has documented various measures of success in terms of producing healthy public policy [6,34], the general approach has been criticized for being professionally driven [35], deficient in community participation [36] and characterized by "centralized top-down target driven initiatives" [6, p.13]. This thesis aims to focus on developing a better understanding of the decentralized bottom-up processes and actions, driven by ordinary citizens, which have been largely overlooked by the healthy cities literature.

The second reason for focusing on the neighbourhood-municipal interface is that the neighbourhood is a proximal context of daily life for older people. Aging in place permits development of layered sets of knowledge relevant to walking and socio-political processes. It is a meaningful and relatively accessible context for both walking and community participation and, therefore, a logical place to examine both the walking experiences of older

people and the social processes they are likely to be a part of. Understanding how cities and neighbourhoods work together will be critical to creating more walkable environments. Since walking conditions are often associated with the quality of everyday life experience, these conditions are often first detected by local residents who have a vested interest in addressing them [37,38].

The final reason this thesis focuses on the neighbourhood-municipal interface is that the involvement of neighbourhood groups helps to ensure the effectiveness of higher level planning initiatives through the provision of both formal and informal feedback mechanisms necessary for fine-tuning and sustainability of neighbourhood improvements [39-41]. Despite the logical importance of examining the neighbourhood-municipal interface for developing more walkable neighbourhoods, little research has addressed how socio-political change processes occur at this level of interaction. Furthermore, the way in which neighbourhood-municipal interaction may affect equitable access to walking environments remains largely unexplored.

Overview of purpose, research design and objectives

The purpose of this research was to develop a more in-depth understanding of a) older people's neighbourhood walking experiences and, b) the local socio-political processes that influence their neighbourhood walking environments. This thesis used a comparative embedded case study design with three phases of data collection. Four neighbourhoods were purposefully selected to provide contrasts of urban form and SES allowing neighbourhood comparisons among these dimensions. The specific research objectives were as follows:

- 1) To examine older people's walking experiences in the context of their daily lives.
- 2) To investigate how key informants, at both neighbourhood and municipal levels, describe the socio-political process of creating walkable neighbourhoods.
- 3) To examine how neighbourhood SES and urban form may inter-relate to affect older people's walking experiences through an examination of neighbourhood differences.
- 4) To examine differences among neighbourhood key informant perspectives on the socio-political processes that shape the walkability of neighbourhood environments.

Present state of knowledge

Literature reviews were conducted for three content areas, each with a separate search strategy. The research strategies were designed to identify literature from broad areas including empirical studies, theoretical work and synthesis reports. The first strategy captured literature describing the intersection of older people, walking and neighbourhoods. The second focused on the issue of health equity, particularly with respect to how physical activity patterns vary among socially advantaged and disadvantaged neighbourhoods. The third examined municipal and neighbourhood socio-political processes that impact on walkability. Databases were selected with the aim of including literature from the fields of health, urban planning and social sciences. Appendix 1 provides a complete description of the search terms and strategies. The first section of this overview summarizes literature that

is specific to older people, while the second and third sections present literature pertinent to the general population.

Section 1: Older people, walking and neighbourhood

Older people as a group

Definitions of '*an older person*' vary across developed and developing countries, and are associated not only with chronological age but also with social roles and functional capacities [42]. For the purpose of this research, the age of 65 years and older was used to define an older person since this has traditionally been the age of retirement in Canada and it is also the age at which full retirement benefits are paid by government programs.

As individuals get older, the aging process is more likely to have an effect on daily function. Declines in muscle strength, sensory function, joint integrity and immune function are associated with aging [43]. Although these declines do not necessarily result in disability, they do require adaptation. The incidence of chronic disease such as cardiovascular disease, cancer and diabetes also increases with age, presenting additional challenges [43].

Due to the physical changes associated with aging, older people as a group are especially affected by their environments [30]. Work in environmental gerontology has long recognized that the ability of older people to function depends on the interaction between individual competencies and environmental attributes [31]. However, environmental support research has focused, for the most part, on indoor adaptations [44,45]. There is a much smaller body of work examining how outdoor environments support walking among older

people. Nevertheless, interest in the latter is growing, partially because environments that are more walkable for older people may also be more walkable for other age groups.

Older people and physical activity

Physical activity, including walking, has been associated with improved functional capacity, mental health, cognitive function as well as a lower risk for falls, chronic disease and disability among older people [46-51]. Walking outdoors provides opportunities for social interaction and contact with nature, both of which are associated with mental health benefits [52,53]. Despite its clear benefits, physical activity levels among the majority of North Americans over the age of 65 fall short of recommended levels [11-13].

Walking is the most common and preferred physical activity among older adults [54,55]. This preference can be attributed to the fact that walking involves little expense, does not require learning new skills and can be used for transportation purposes as well as exercise. In the urban setting, walking generally takes place on neighbourhood sidewalks or in social settings (parks, shopping malls, trails) [55,56]. Given the preference of older people to walk for exercise, and the higher likelihood they will do so in local environments, examining ways to make urban neighbourhoods more walkable holds great potential for promoting physical activity among this population.

How does the neighbourhood environment affect walking among older people?

Quantitative studies: Appendix 2 provides a summary of quantitative studies that have examined the relationship between the neighbourhood environment and walking and /or physical activity among older people [32,33,57-82]. Most of these have examined cross-

sectional associations between aspects of the neighbourhood environment and self-reported measures of walking or physical activity.

Characteristics of the built environment most frequently studied in relation to walking levels have been dwelling density, mixed land use and street pattern connectivity. These characteristics are typically concentrated in North American inner-urban neighbourhoods developed before the post World War II economic boom and are thought to support walking through the proximity of destinations and the efficiency of pathway connections between origin and destination [83]. In contrast, suburban neighbourhoods, particularly those developed after 1969, were constructed with lower housing densities, longer block lengths, lower street connectivity and land-use that is primarily residential with less diversity in commercial or institutional use [83]. Walkability scales have largely been constructed to differentiate between these two types of urban form [16,84].

Cross-sectional studies have documented mixed associations between urban form and walking levels among older adults. For example, Berke et al. [59] found that short interconnected city blocks, mixed land use and higher residential density (i.e inner-urban) characteristics were associated with higher levels of self-reported walking than were automobile-oriented land-use / transportation designs typically found in the suburbs. Other authors have reported similar findings using both self-reported walking levels and pedometer readings as outcome variables [70,71]. In contrast, however, King [33] found that characteristics of density and street connectivity associated with increased walking for transport were not associated with self-reports of higher rates of daily walking or total physical activity. This author reported a significant positive association between total

walking levels and perceptions of neighbourhood safety and social cohesion. The findings of Fisher et al. [32] and Booth et al. [60] also supported the importance of perceived safety, as well as the influence of accessible recreational facilities such as parks and walking trails. While older people's perceptions of their environments may be incongruous with objective measures [85,86], they are important since perceptions about the environment are associated with walking levels [87]. Although, these cross-sectional designs have provided mixed results on which aspects of the neighbourhood environment are most likely to affect walking among older people, the majority of evidence indicates that the neighbourhood environment is associated with walking patterns among older people over and above individual-level differences.

A number of cross-sectional studies [32,33,65,66,68,74,76,82] have used multilevel modelling, which provides a more sophisticated analytic technique to examine the relationship between neighbourhood characteristics and walking. Multilevel modelling is a statistical approach, which helps disentangle compositional effects (i.e. individual resident factors) from contextual effects (i.e. neighbourhood level factors). However, critics have pointed out that it creates a false dichotomy since individual characteristics can potentially be affected by environmental conditions [15,88]. Thus, adjusting for individual characteristics results in an under-estimation of neighbourhood-level effects. Another problem associated with the application of multilevel modelling is that it relies on '*the fish out of water principal*' in order to yield any meaningful results about neighbourhood-level effects [89]. In other words, statistical power depends on there being a fair number of atypical neighbourhood residents since individual variability is required in order to differentiate between individual-level and neighbourhood-level effects. Consequently, a very

homogenous population would not yield any differences between the effects at these two levels. This may be another reason for mixed findings among cross-sectional studies examining the relationship between older people's walking patterns and the neighbourhood environment

Cross-sectional designs are limited to providing a '*snapshot*' measure of association at a single point in time but cannot be used to infer causal relationship, nor do they provide information on how individual or environmental characteristics influence walking patterns over time. A number of studies [58,62,63,72,73] have used longitudinal cohort designs to examine how the neighbourhood environment may affect walking or disability over time. Li et al. [73] found that older people (n=303) living in neighbourhoods (n = 28) with higher levels of perceived social capital, safer walking environments and greater access to physical activity facilities had lower rates of walking decline over the period of a year. In this study, which used multilevel modelling, path coefficients between neighbourhood safety and facility accessibility and the statistical slope factor for neighbourhood walking were significantly predictive of change in neighbourhood walking, $\beta = 0.44$ for safety and $\beta = 0.61$ for accessibility. Balfour & Kaplan [58] examined a separate sample of older adults from the Alameda County study and found that those who identified their neighbourhoods as having multiple problems, including excessive noise, inadequate lighting and heavy traffic, were at greater risk of losing lower extremity function (odds ratio 2.23, confidence interval 1.15 - 8.51) and overall functional loss (odds ratio 3.12, confidence interval 1.08 - 4.60) over a year than those living in less problematic neighbourhoods. Lang et al. [72] had similar findings in a prospective cohort study with a two year follow-up period using data

from the English Longitudinal Study of Aging. These authors reported that older people living in socially disadvantaged neighbourhoods were significantly more likely (risk ratio 1.75, 95 % confidence interval 1.14 – 2.70) to experience incident mobility disability (i.e. self-reported difficulty walking 100 yards or climbing stairs) than those living in more advantaged neighbourhoods. Clark et al. [62] also looked at mobility disability as defined by the self-reported ability to walk half a mile and climb stairs in a retrospective longitudinal cohort study in New Haven, Connecticut, with an eight year follow up. They found that the risk for mobility disability was greatest (hazards ratio 1.56, 95% confidence interval 1.02 - 2.37) for older people who reported neighbourhood safety hazards and had incomes under the poverty line. Another group of researchers [63] examined a national sample from the Americans' Changing Lives Study and found that, over a period of fifteen years, older adults living in neighbourhoods with higher levels of motorized travels had increased odds (1.5 times higher) for self-reported mobility disability.

The advantage of the longitudinal designs, used in the previously described set of studies, is that they demonstrate a clear temporal sequence between living in a low SES neighbourhood and adverse outcomes in relation to walking ability. Although temporality supports cause and effect relationships, there is still the possibility that other factors may have influenced or have been responsible for the relationships observed. Therefore, longitudinal designs cannot be used as definitive evidence for causal effect relationships, nor do they necessarily provide insights on mechanisms that account for the observed relationships. For instance, they do not examine how the outdoor neighbourhood environment is experienced in the context of older people's daily walking journeys—that is, how the neighbourhood environment impacts on the decisions and routines of every-day walking. In summary, this group of longitudinal

studies provides evidence that people living in lower SES neighbourhoods are more likely to develop difficulty walking over time, but provide limited insights into why this may be the case.

Qualitative studies: Qualitative methods provide a complement to quantitative studies by uncovering the meanings associated with the walking experience, thereby, developing a more complete conceptualization of how the neighbourhood environment may support or hinder walking among older people. Appendix 3 provides a summary of studies that have used qualitative data collection techniques to examine older people's perspectives on how the outdoor environment may support walking and/or health [10,57,90-96]. The most common of these techniques were focus groups and semi-structured interviews. Much of this research [10,91,92,95] has focused on older peoples views on environmental supports and barriers to physical activity, rather than on the meanings that older people associated with the walking experience and how the neighbourhood environment is experienced in the context of their daily lives. As a group, these studies have identified the importance of convenient access to destinations, well-maintained pedestrian infrastructure, neighbourhood attractiveness and public transportation as supportive features of the environment. They also described how traffic and fall hazards can be significant barriers for older people. Both Strach et al. [95] [95] and Lees et al. [91] reported that pedestrian infrastructure (i.e. sidewalks and crosswalks) was the most commonly identified environmental support for walking. However, Lees et al. [91], who looked exclusively at ethnic minority women recruited from two community health centres in New York City using a nominal group technique, pointed out that concerns about personal safety cut across all coding categories identified.

Strach et al. [95] conducted 12 semi-structured interviews in combination with a quantitative component of 37 open-ended surveys and found no differences among the barriers and facilitators of walking as identified by older people in high and low walkable neighbourhood (defined on the basis of urban form). Although this study aimed to compare findings among neighbourhoods with different built environments, it did so within a predominantly quantitative study design. Furthermore, the study lacked SES diversity among the selected neighbourhoods and, therefore, could not illuminate whether there may have been differences linked to this dimension of the neighbourhood environment.

Michael et al. [10] conducted nine focus groups with 60 older people living in 10 Portland, Oregon neighbourhoods. They reported that in general, older people felt that local shopping and services, traffic and pedestrian infrastructure, neighbourhood attractiveness and public transportation could influence physical activity. The authors provided a brief report of this study but did not elaborate on the study design or theoretical approach beyond describing the research as a qualitative study. While these authors included diverse neighbourhoods (both on the basis of SES and urban form) analysis did not focus on examining neighbourhood differences.

Only one of the studies using qualitative data collection methods used a case study design. Day [90] selected three areas in Scotland and asked older people to share their perspectives on how local outdoor environments may support older people's health, using semi-structured

interviews. This study proposed five dimensions of health support (cleanliness, peacefulness, exercise facilitation, social interaction facilitation and emotional boost), which could all potentially be accessed through the activity of walking. The study described three types of local environments with varying levels of socio-economic status and types of built form (inner-urban, suburban estate, and coastal town) and suggested that the coastal town was the most health-supportive while the inner-urban neighbourhood was the least health-supportive. However, the study design did not allow conclusions on whether these differences in environmental support were linked to urban form or local SES.

It must also be mentioned that findings from qualitative studies on older people's perspectives on outdoor walking are not well reflected in evolving conceptualizations of the notion of "*walkability*". The term walkability has been defined by various authors [16,97,98] and commonly emphasizes qualities of the physical environment, which support and encourage walking. Southworth [98], for instance, provided the following definition:

“Walkability is the extent to which the built environment supports and encourages walking by providing for pedestrian comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network” [p.248].

An emerging body of qualitative research based on walking experiences of younger age groups has begun to translate the physical and social features of environments into what is

meaningful to individuals as part of the walking experience [90,99,100]. Based on a review of the literature, Alfonzo [101] proposed a theoretic framework of walking needs arranged in a hierarchy consisting of feasibility, accessibility, safety, comfort and pleasurability. Metha's [100] work looking at walking behaviour on main streets expanded this framework to include usefulness and a sense of belonging. Both authors have suggested how these concepts can be operationalized but do so based on work with population groups whose experiences may differ from those of older people. For example, safety is operationalized by Alfonzo as safety from crime. For older people, however, hazards from falls and traffic have also been well documented as significant safety concerns [102]. Alfonzo considers traffic calming to be related to walking comfort as opposed to safety, suggesting that there is considerable blurring among levels of the hierarchy. It is, therefore, important that older people's walking experiences be elicited to inform the evolving concept of walkability and to explore how overlap among identified walkability concepts may be experienced.

In summary, the studies that have used qualitative data collection methods to examine older people's perspectives on outdoor walking have focused on identifying how various dimensions of environment can support or discourage walking. For the most part, they have used generic qualitative designs or have used qualitative methods within the context of a quantitative design. The one study using a case study approach was limited with respect to examining differences among older people's walking experiences in various settings, mainly due to the particular areas chosen for the study and also because the examination of differences was a secondary objective, which did not guide study design. Furthermore, the

conceptualization of walkability has mainly been developed based on research done with younger populations.

The current thesis builds on this previous work by using a comparative case study to examine more advanced questions regarding links between older people's walking experiences, the neighbourhood environment and the socio-political processes that shape these environments. A comparative case study design allows examination of various contextual influences and how they may interact to affect older people's walking experiences. None of the previous studies described were designed to explore how the inter-relationship of neighbourhood SES and urban form may impact on older people's walking experiences. Furthermore, none have examined older people's experiences within the context of socio-political processes that shape their walking environments. This thesis aims for a deeper examination of the inter-connections between environmental supports and challenges as well as associated meanings of walking and walkability.

Section 2: Health equity

There are persistent and consistent gradients in health status, independent of any disease process, found between social groups in all industrialized countries [103]. This strong relationship indicates that health is determined by the interaction of social-structural influences with individual characteristics. Underlying social advantage or disadvantage refers to the characteristics that define how people are grouped into social hierarchies. In

North America, these attributes are usually studied with respect to income, wealth, education or occupational status and are referred to as socio-economic indicators.

Health equity refers to the absence of systematic health differences among social groups. Ethicists and public health leaders have argued that there is a moral imperative to address systemic policies or practices that create or sustain disadvantage [104,105]. The concept of health equity, as it is defined from a social justice and human rights perspective, emphasizes the need to look at the distribution of health and living conditions, as well as the socio-political processes driving health disparities [104]. Faden and Powers [105] argued that the reduction of these disparities constitutes an ethical obligation within the field of public health. Understanding the pathways through which neighbourhood SES may be linked to neighbourhood health conditions is, therefore, of critical importance to public health research and can be used to inform interventions aimed at achieving health equity.

Although a clear social health gradient has been established within and between societies, there is less known about the causal pathways that account for this relationship. Socio-ecologic theories posit that individual biology interacts with social and physical aspects of the environment such that people “*embody*” characteristics of their environments [3,106,107]. Applied to the health behaviour of walking, that would mean that there are environmental influences that affect both the decision to walk and the health benefits associated with it, and that these may be different in socially advantaged versus disadvantaged neighbourhoods.

In order to think about how these pathways may function with respect to walkability, it is first important to consider differences in walking and physical activity when SES is measured as an individual attribute versus a neighbourhood attribute. Even though neighbourhood-level SES is composed of individual-levels of SES, it represents an emergent marker for collective processes that can have a bearing on the distribution of resources that support walking. This means that regardless of one's own SES, the SES of the majority of one's neighbours matters in shaping walkability. Therefore, considering neighbourhood-level SES, allows a more complete interrogation of the collective processes that reproduce SES in terms of spatially distributed resources and of the conditions for accessing spatially distributed goods. Before further discussion of these processes, however, it is useful to examine the current evidence of SES differences when SES is measured as an individual attribute versus when it is measured as a neighbourhood attribute.

Previous studies [55,68,108] examining the association of individual-level SES and walking have indicated that people with lower levels of SES walk less for exercise, than do people with higher levels of SES. However, when SES is treated as a neighbourhood level attribute, the relationship between walking and SES becomes less clear. Several studies [32,109,110] have found that similar or higher levels of overall walking have been associated with living in lower SES neighbourhoods. One explanation for these seemingly contradictory findings is that many lower SES neighbourhoods are located in inner-urban environments, which promote walking through the attributes of population densities, mixed land-use and street connectivity [109,111]. Another explanation is that people with lower incomes are reliant on walking for transportation and, therefore, would do less walking for the sole purpose of exercise [112-114]. One qualitative study [112] of lower income mothers living in a

disadvantaged UK neighbourhood found that although mothers were reliant on walking for transport, walking through neglected and littered areas was associated with stressors such as worrying about keeping their children safe and compounded exhaustion levels. Walking was viewed as a stressful experience rather than a health-supporting one.

Although, not specific to walking, a larger number of studies have examined the association between neighbourhood-level SES and physical activity levels in general. These are summarized in Appendix 4 along with studies, which focused exclusively on walking [26,32,57,71,72,109,115-125]. A number of these studies, examining general physical activity and using cross-sectional designs, found no association between neighbourhood-level SES and being physically active [118-120,122,124]. Others studies have contradicted these findings, reporting that living in a lower SES neighbourhood was associated with a greater risk of inactivity or less leisure time physical activity than living in a higher SES neighbourhood [26,57,115-117,123]. While Giles-Corti & Donovan [26] found no association of neighbourhood-level SES with walking levels, residents in lower SES neighbourhoods were less likely to undertake vigorous physical activity. In contrast, King et al. [71] reported higher levels of physical activity associated with living in lower neighbourhood SES, after adjustment for individual SES. Lee, Cubbin & Winkleby [120] found that women living in lower SES neighbourhoods reported greater energy expenditure but engaged in less moderate to vigorous physical activity than those living in higher SES neighbourhoods.

The mixed findings on neighbourhood-level SES and physical activity levels may, in part, be due to a variety of methods used to measure physical activity from dichotomous categories

of self report (i.e. active versus non-active) to continuous measures using objective pedometer data. Studies also vary in the types of walking they examine (i.e. total walking versus walking for recreation or exercise). Despite these differences, the research to date consistently indicates that people living in lower SES neighbourhoods are less likely to report walking for recreational purposes than people living in high SES neighbourhoods.

In addition to the longitudinal cohort studies of older people reviewed in the previous section, indicating that living in a lower SES neighbourhood was associated with a higher risk of physical activity decline [58,62,72,73], Yen and Kaplan [125] found similar results in a prospective sample of 1737 participants aged 20 years and older. Their study found that living in a poverty area of Oakland California was associated with a greater risk of physical activity decline over the course of 10 years after adjustment for individual factors including age, income, education and smoking.

The overall picture provided by the group of studies summarized in Appendix 4 is that the relationship between physical activity and neighbourhood-level SES is complex and likely moderated by other aspects of the neighbourhood environment, as well as individual factors. However, findings consistently point to lower levels of recreation-related physical activity in lower SES neighbourhoods and a greater risk of physical activity decline over time than in higher SES neighbourhoods.

A number of studies have suggested that the association between lower levels of recreational physical activity and lower neighbourhood SES is moderated by the quality of neighbourhood environments [22-24,126,127]. Aytur et al. [22] reported that residents of

lower SES areas in North Carolina were less likely to have features supportive of physical activity and non-automobile transportation improvements included in their land-use plans compared with residents of higher SES areas. Estabrooks, Lee & Gyurcsik [24] examined 32 census tracts in a Midwestern American city and found that low and medium SES areas had fewer resources for physical activity (e.g. parks, recreational trails, sports facilities) than high SES areas. As part of the Children Living in Active Neighbourhoods Study, conducted in Melbourne, Australia, Crawford et al. [23] examined the relationship between the quality of public open space and neighbourhood SES. Although there were no differences in the numbers of recreational facilities among neighbourhoods, these researchers found that public open space in the highest SES neighbourhoods had more amenities (i.e. drinking fountains, picnic tables) and were more likely to have trees that provided shade, walking and cycling paths, lighting and signage. Other studies have documented higher perceptions of traffic hazards, crime and noise in lower SES neighbourhoods [20,26,27]. In summary, this body of work draws attention to disparities in conditions that would support walking between socially disadvantaged versus advantaged neighbourhoods. In other words, it highlights the issue of resource distribution and necessitates consideration of whether the processes driving unequal distribution are fair.

The concept of health equity is closely related to that of environmental justice. Both notions are based on the normative view that no social group should bear disproportionate costs resulting from societal practices and government policy. The environmental justice movement in the United States arose in response to practices and policies that resulted in the disproportionate environmental exposures and adverse health outcomes in low income and racial minority neighbourhoods. An executive order issued by the Clinton administration in

1994 directed federal agencies to develop environmental justice strategies aimed at reducing the unfair and unnecessary impact of programs, policies or activities on minority populations [128]. The focus of this movement has mainly been on unwanted land uses such as landfills, hazardous waste incinerators, chemical, metal and oil production facilities, lead in homes and other pollutants [129,130]. Although the movement is evolving to include other issues, very few studies have explored how the concept of environmental justice relates to the issue of walkability [111,131]. Considering the higher incidence of poor health and disability, a high reliance on walking for transport and evidence of more hazardous environments in disadvantaged neighbourhoods, there is a clear need to look at what socio-political processes may be contributing to disparities in walking conditions.

To date, our understanding of health equity as it relates to walkability remains basic. There is evidence of differential walking patterns, as well as unequal walking conditions among higher and lower SES neighbourhoods. This evidence has been derived mainly from cross-sectional quantitative studies, which have measured associations but have not provided insight on the pathways that may lead to inequitable walking environments. In order to further our understanding of the mechanisms producing inequitable walking environments, there is a need to examine contextual influences on neighbourhood environments. These include the socio-political processes that shape walking environments and impact on resource distribution patterns. This gap calls for a comparative case study design, which permits an examination of context as well as a comparison of how socio-political processes may differ among socially advantaged and disadvantaged neighbourhoods. The contextualizing process, carried out through a case study design, is necessary for further conceptual development of walkability as it relates to the issue of health equity.

Section 3: Socio-political processes, walkability and the neighbourhood-municipal interface

This thesis uses the term “socio-political processes” to refer to mechanisms that guide civic participation, planning, organizing, decision making and action within the neighbourhood as well as the actions taken to represent neighbourhood interests to municipal government.

Verba, Lehman Schlozman, & Brady [132] defined political participation as “activity that has the intent or effect of influencing government action—either directly by affecting the making or implementation of public policy or indirectly by selecting the people that make these policies” [p. 38]. The production of local public goods is a socio-political process of co-production between municipal governments and citizens [133]. This notion implies a vertical exchange between municipal government and grassroots citizen groups. In the case of producing walkable places, the neighbourhood-municipal interface is especially important.

Many services and amenities that support walking fall under municipal jurisdiction.

However, small details, important to the experience of walking, can easily be overlooked by broad-scale planning efforts at the municipal level [37]. Neighbourhood residents have regular exposure to these details and a vested interest in addressing them since walkability is often tied to the quality of every-day life. Thus, the production of walkable places requires ongoing citizen involvement in planning, implementing and evaluating amenities and services that affect walking.

A number of studies have examined what municipal governments do to support the creation of environments that are conducive to physical activity and walking from a “*top-down*”

perspective. These are summarized in Appendix 5 [37,134-140]. Many have documented the existence of municipal policies that supported physical activity, but were limited in determining the specificity of policies or the extent of their implementation. Exceptions include two case studies done in the city of Toronto, Canada and in the state of Michigan, USA. The former examined how pedestrian-friendly policies are implemented in the design of arterial streets [136]. This case study identified other conflicting policies and practices with respect to professional standards and bureaucratic organization that prevented pedestrian-friendly policies from being fully expressed within municipal frameworks. The latter study described how Michigan's public health officials, planners and researchers have collaborated on integrating health concerns into planning and development processes in a tri-county area [134]. These authors also described how administrative structures and formal legal/regulatory responsibilities challenged this kind of collaboration.

In addition to the literature examining institutional practices, there is a small body of work of looking at grassroots engagement. This research takes a "*bottom-up*" perspective and examines the role of citizens and neighbourhood groups in creating more walkable environments. These studies are also summarized in Appendix 5 [131,141-143]. Several case studies have documented how neighbourhood-level collective actions have led to improvements relevant to walkability [131,141-143]. Newman et al. [143], for example, described a grassroots initiative in Toronto, which resulted in a part-time pedestrian only space in the Kensington Market community. This study, however, focused on the role that social capital played in this process and less on the nature of the neighbourhood-municipal interface.

Other studies [131,142] have examined efforts to improve conditions in lower SES neighbourhoods using assistance from external organizations. Hardwood [131] described how an advocacy planning approach was used to achieve traffic calming in two disadvantaged neighbourhoods. Hooker et al. [142] reported on how a partnership between a local health department and a non-profit organization led to the walkable neighbourhoods for seniors' project. This project supported the development of grassroots senior advocates and resulted in safer, more attractive walking routes. The researchers identified the presence of a project champion at the municipal level, and linkages among municipal officials, community organizations and neighbourhood residents, to be critical to its success. These two examples described what can be achieved with a top-down, funded approach but tell us little about initiatives that originate within neighbourhoods. More research is needed to understand the naturally occurring dimensions of the neighbourhood-municipal interface and how these may operate differently depending on neighbourhood context.

Two dimensions of neighbourhood context that can influence neighbourhood-level socio-political processes are neighbourhood SES and urban form. Each of these has typically been studied in isolation. They will each be discussed in turn, with emphasis on their mechanisms of socio-political influence. Urban form is thought to influence socio-political activity by facilitating the opportunities people have to gather frequently and spontaneously. This relationship was described by Jacobs [18] in her ground-breaking book *The Death and Life of Great American Cities*. Her qualitative observational research in New York during the 1940's and 1950's led to a paradigm shift within the field of urban planning. She advocated

the importance of certain built environment features, such as interconnected, short city blocks, mixed land-use and compact dwelling density as being critical to urban economic and social vitality. Current efforts to create more walkable communities such as the Smart Growth and New Urbanism movements have drawn heavily upon her work. The links between pedestrian-friendly streets, car dependence and community social ties underpin these approaches.

New Urbanists contend that progressive suburbanization in North America has undermined socio-political participation by creating an auto-dominant culture [144,145]. Perhaps the strongest support for this notion has come from Robert Putnam's [146] analysis of national data from across the United States. He concluded that a 10 minute increase in commuting time was associated with approximately a 10 percent rate of decline of civic participation in that locale. Studies conducted by Leyden [19] in Ireland and Freeman [17] in the United States provide additional empiric support for this relationship.

While urban form may have an impact on socio-political processes, neighbourhood SES is thought to have a far greater effect. A number of studies [147-151] have indicated that higher SES neighbourhoods are in a more advantaged political position because of greater rates of political and civic participation compared to lower SES neighbourhoods. However, other studies have indicated that this relationship is not always consistent. For example, Oliver [152] who looked at variability across American cities, found that civic participation is lowest in highly affluent, demographically homogeneous cities and highest in diverse middle-income cities. He hypothesized that affluent cities with well-functioning institutions may have fewer problems and, therefore, people have less incentive to become politically

involved. Conversely, diverse cities have more competition for public goods, which may prompt greater political activity. The latter notion is supported by the work of Thomas [153], who found that the frequency with which citizens contact municipal government is consistently a function of perceived needs for services. Dodds & Hopwood [154] have suggested that lower SES areas with histories of long struggles may possess distinct sets of knowledge, which result in a greater capacity to act collectively.

To date, no studies in the field of civic participation have attempted to examine local socio-political processes in relation to neighbourhood walkability, or how these processes may vary among neighbourhoods. This thesis contends that in examining contextual influences on walkability, it will be important to consider not only how neighbourhood SES and urban form inter-relate to affect the walking experience, but also how this inter-relationship may be linked to socio-political processes. The underlying proposition is that an examination of socio-political processes associated with neighbourhood walkability will provide insights on mechanisms driving neighbourhood disparities.

Understanding the socio-political processes that shape neighbourhood walkability for older people also has relevance for an emerging body of work on creating ‘age-friendly’ cities. A number of authors have investigated older people’s perspectives on what an age-friendly or ‘elder-friendly’ community should be [155-157]. In 2005, the WHO initiated the Age-Friendly Cities Project aimed to improve conditions for older people in the context of growing global urbanization and aging populations. The WHO [157] defined an age-friendly city as one “that encourages active aging by facilitating the opportunities for health, participation, and security in order to enhance the quality of life as people age” [p.1]. Thus

far, the project has produced a guide based on qualitative research conducted with older people and service providers in 33 cities across the world. The guide identifies the components of age-friendly cities including outdoor spaces and transportation, both relevant to walkability, but provides limited direction on how they may be attained. Ensuring that guides such as this can be translated into concrete improvements necessitate an examination of how urban socio-political processes function, and how the concerns of older people fit into these processes.

Summary of literature review

Cross-sectional and longitudinal studies have provided evidence of an association between the neighbourhood environment and older people's walking patterns. Some research using qualitative data collection techniques has looked at how outdoor environments support and challenge walking, but this field is underdeveloped with respect to how neighbourhood walking is experienced in the context of older people's daily lives, beyond the identification of barriers and facilitators. Furthermore, little research has explored the links between neighbourhood walking conditions and local socio-political processes, particularly with respect to how neighbourhoods and municipalities interact on issues of walkability. A better understanding of these connections would have implications for reducing health disparities among neighbourhoods and creating age-friendly communities. This literature review indicates that both urban form and neighbourhood SES can influence neighbourhood walkability as it is experienced and acted upon politically. However, the two dimensions tend to be studied in isolation, with little attention to how they may inter-relate. The objectives of this thesis aim to address these gaps. The following section explains the theoretical basis for the study and presents the conceptual model, which guided this research.

Theoretical Basis for this research

This research is guided by a socio-ecological perspective contending that multiple interacting factors operate at various levels of aggregation to impact the health of individuals and communities [3,158,159]. This perspective is distinct from a purely ecological view of health since it integrates social context into the person-environment interaction. Krieger [106] argued that the importance of socio-ecologically based theory is that it focuses attention on the social divisions and processes that account for why health is distributed unequally in the social hierarchy. Rather than looking at separate sets of social or biological factors, this approach focuses attention on how these sets of factors interact with one another to influence health, and questions who or what is responsible for the social distribution of health.

Consistent with a socio-ecologic perspective, this thesis is predicated on the view that the relationship between environment and behaviour is reciprocal. In other words, the neighbourhood environment can affect walking and socio-political activity and this activity, in turn, can affect the neighbourhood environment. According to this perspective, because people are situated in different contexts, they are not only exposed to different patterns of information flow but also base their orientations and behaviours on different factors. The thesis contends that social and political forces operate at various levels of socio-ecologic aggregation, and that interaction of neighbourhood and municipality level processes is important for creating walkable places.

Given the lack of literature on how collective action at the neighbourhood level interfaces with government processes at the municipal level to affect walkability, this study draws on concepts from social movement theory to produce a guiding conceptual framework. The literature on social movements describes the organization of “*grassroots*” collective action and examines how this action is expressed in relation to existing power structures such as government or private sector institutions. Two dominant social movement models provide a theoretical basis for this research. The first—Tilly’s [160] resource mobilization framework—emphasizes the importance of group organization and the use of resources. It contends that collective action is based on rational interests and focuses on the strategies actors adopt to pursue these interests. Resources are the means through which change is affected and include tangibles and intangibles. Money and structural facilities are examples of the former, while leadership and knowledge are examples of the latter. Mobilization refers to the resources controlled as well as the likelihood that these resources will be used. The decision to use resources involves consideration of the costs and benefits of doing so, which is influenced by opportunities that lower the cost of collective action. Levels of group organization affect the extent to which resources can be mobilized as well as the potential to act on opportunity. Resource mobilization theorists argue that affluence tends to foster the types of processes that lead to collective action and social movements [161]. Wealthy communities can generate resources, such as money, a means of communication, and legitimacy, which facilitate organization and opportunity. At the same time, the model recognizes the role of governments in redistributing resources by providing grassroots organizations with money, labour and facilities.

The second framework is Tarrow's [162] model of political opportunity structure, which focuses on how citizens are linked to power holders. Tarrow considers political opportunity structures to be dimensions of the political environment such as policies or arrangements, which either facilitate or suppress collective action. In this sense, he considers political opportunity structures to be resources that exist outside of the collective group, which even resource-poor groups can take advantage of. Tarrow acknowledges that these structures do not necessarily determine the outcome of collective action directly, but rather influence the available choices for action strategies. He also points out that many types of political opportunities can easily shift and, therefore, collective action is more likely to have an effect if there are well-established organizational structures that link social movement actors with institutional power holders. In essence, Tarrow's model emphasizes looking not only at group organization and the mobilization of resources necessary for collective action, but also the way in which political context shapes this action.

The importance of considering the links between grassroots collective action and municipal power structures is illustrated in this study's conceptual model, presented in the next section. The model draws on key elements identified by these two models of social movement theory and applies them to the issue of neighbourhood collective action as it is relevant to neighbourhood walkability for older people. It provides a guide for examining how collective action at the neighbourhood level, involving organizations, resource mobilization and opportunity, interacts with institutionalized structures and processes of municipal government.

Conceptual model

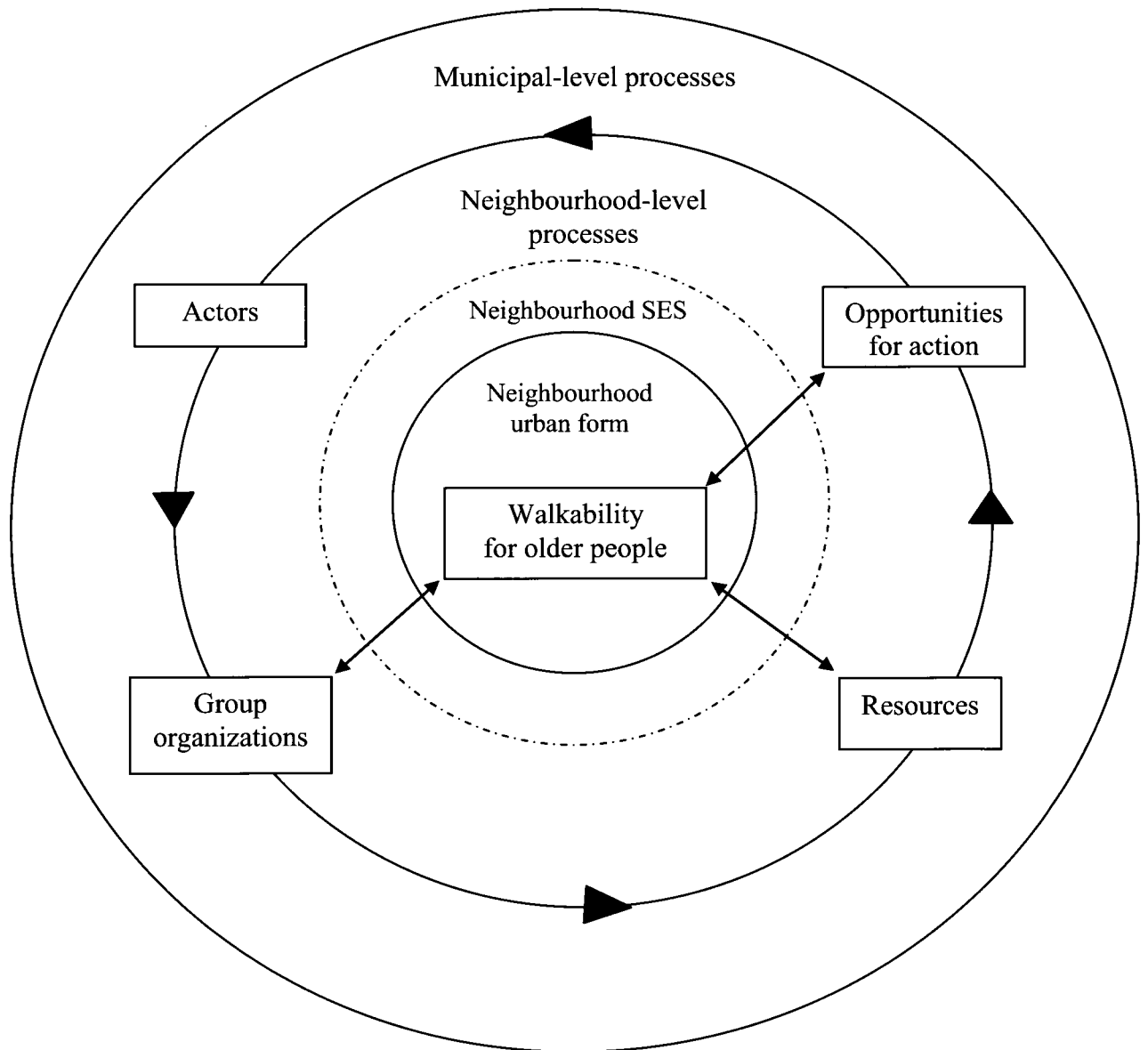


Figure 1.1 Conceptual model

Figure 1.1 depicts the theoretical model used to guide this research. It conceptualizes walkability for older people as an issue embedded within the relationship between the neighbourhood environment and community socio-political processes. The two outer circles represent neighbourhood and municipal levels of socio-political processes. Integral elements to socio-political processes—namely, actors, group organizations, resources and opportunities for action—are represented in four boxes overlapping neighbourhood and municipal levels of aggregation. Drawing on social movement theory, the model posits that actors work through group organizations to mobilize resources and act on opportunity. Integral elements are placed over both levels of aggregation to signify that connections between neighbourhood and municipal levels can exist for, or affect any of these elements.

The two inner circles of this model represent two dimensions of neighbourhood context that have been found to affect both walking and socio-political behaviour in the empirical literature—namely, urban form and socio-economic characteristics of the neighbourhood. The circle representing urban form was placed inside the socio-economic dimension of neighbourhood to represent physical factors that may be more proximal to the walking experience. The dimension of neighbourhood SES is conceptualized as a proximal dimension that affects walkability indirectly through the socio-political processes that shape urban form. In other words, in the model, neighbourhood SES represents a potential marker for differences in socio-political processes that may affect the equitable distribution of supportive walking conditions.

Bi-directional arrows are used within the model to illustrate the recursive relationship between elements of the socio-political process and both social and physical aspects of the environment. In other words, social and physical aspects of the neighbourhood environment can affect elements of the socio-political process and these elements can, in turn, affect social and physical aspects of the environment, which ultimately impact on walkability and the walking experience.

In summary, the conceptual model guiding this research contends that individual experiences occur within socially and geographically defined spaces and, thus, are embedded in the socio-political processes that shape these environments. This research sought to develop a deeper understanding of neighbourhood walking experiences among older people and the community processes that shape the environments in which these experiences occur.

Methodological Overview

Overview of study design and rationale

A case study design [163] driven by a qualitative approach was chosen to address the research objectives for several reasons. The first was that a case study provides holistic coherence, which permits the examination of interacting dimensions of neighbourhood (i.e. SES and urban form). The second reason was that the objectives of this thesis focus on understanding experiences and processes. Both are hard-to-measure and complex entities, best addressed through qualitative methodology. Finally, case studies are indicated in the early stages of conceptual development [163,164]. Theoretical frameworks guiding the study of neighbourhood effects on walking are still in the early stages of development and do

not yet explicate the joint effect of physical and social environments or the mechanisms through which disparities in walking conditions arise [16,101,165].

Design description

The City of Ottawa was considered a bounded municipal system for this case study, with four distinct neighbourhoods serving as embedded units. This overall design strategy allowed an examination of commonalities within the city but also a comparison of how differences in walkability may be affected by different combinations of neighbourhood physical and social dimensions. These dimensions were operationalized as urban form (inner-urban and suburban) and neighbourhood SES (higher and lower). Neighbourhood selection was guided by a 2 x 2 matrix design that allowed selection on both contrasts and similarities of neighbourhood dimensions. Comparisons made along each axis permitted an examination of how urban form and neighbourhood SES may inter-relate to affect differences in walkability.

Underlying paradigm

A pragmatic paradigm underlies the study [166,167]. This paradigm has become embedded in mixed method research, which has advanced knowledge in various areas lying outside the original five traditions of qualitative inquiry. The pragmatic paradigm is a pluralistic view based on a rejection of the forced choice between post positivism and constructivism [168]. It allows for the combination of both qualitative and quantitative data in order to form a more comprehensive analysis. Case studies have traditionally involved the collection of multiple sources of data, which are synthesized in order to gain a comprehensive interpretation of the case. The analysis of data from multiple sources is referred to as triangulation, which

supports a more accurate and thorough interpretation of data [163,169]. The use of multiple data sources provides depth and breadth to case analysis, and also affords the opportunity to explore the meaning of divergent findings and differing viewpoints [170].

As opposed to a purely reductive quantitative approach, which restricts the lens of inquiry to particular predefined variables, an inductive qualitative approach allows for emergence of contextual variables, which otherwise may have been overlooked [163]. This thesis adopts the view that individual lived experience forms the basis upon which to construct a more comprehensive understanding of reality, and that this understanding can be expressed in conceptual terms. It is a view articulated by Lincoln and Guba [171] based on the premise that there is an explicit chain of reasoning that links general knowledge, individual data and context to conceptual findings.

Research sequence

The research for this thesis involved three phases of data collection. Table 1.1 provides a schematic overview of the research sequence. Older people's walking experiences (phase one) provided a platform from which to plan the selection of key informants for the next phase. These walking experiences also served to provide "*real life*" examples, which were used in interview questions regarding community socio-political process (phase two). Data collected during phases one and two were re-analyzed for phase three and informed the collection of publicly available quantitative indicators. All three sources of data were used in the synthesis of neighbourhood comparisons during phase three.

Table 1.1 Research sequence overview

| Sequence | Research objectives | Participants | Data collected | Data Analysis |
|-----------------|---|---|--|--|
| Phase 1 | To examine older people's walking experiences in the context of their daily lives. | Older people | Qualitative: a) Individual interviews b) Focus groups | Interpretive description approach; identified themes common to the walking experiences of older people |
| Phase 2 | To investigate how community stakeholders, at both the neighbourhood and municipal levels, describe the socio-political process of creating walkable neighbourhoods. | Key informants (neighbourhood and municipal levels) | Qualitative: c) Individual interviews | Interactive approach; identified dimensions of the socio-political process |
| Phase 3 | Neighbourhood comparisons: a) To examine how neighbourhood SES and urban form may inter-relate to affect older people's walking experiences through an examination of neighbourhood differences. b) To examine differences among neighbourhood key informant perspectives on the socio-political processes that shape the walkability of neighbourhood environments. | Older people Key informants at the neighbourhood level | Quantitative: d) Publicly available indicators of neighbourhood walkability | Comparative matrix strategies applied to data collected in phase 1, phase 2 and phase 3. |

Methodological challenges and limitations

While a qualitatively driven comparative case study has certain advantages in the capacity to provided insights on complexity, the approach has a number of inherent challenges.

Managing vast quantities of data, limiting the case boundaries and time-consuming and labour-intensive demands of iterative data analysis are all commonly recognized challenges in using this approach [169].

Case studies have also been criticized for being limited in the extent to which findings can be generalized to other settings. This limitation was addressed through theoretic neighbourhood sampling and description of the main limits to transferability (or generalizability).

Inadequacy of sampling is often an issue in case study research due to a limited number of cases that can be examined at once and small numbers of participants that may be available in any one of the cases. This limitation was addressed in the current research through purposeful sampling of comparison neighbourhoods and participants. Purposeful sampling was also used to recruit key informants, who included politicians, members of voluntary organizations, employees of place-based institutions and the private sector.

Qualitative analysis represents a researchers' interpretation of what is going on in the case. This interpretation is subject to the researcher's own world view, which cannot be completely separated from the research findings [169,172-174]. It was, therefore, important for me to include the following section outlining my own values and motivations relevant to this research.

Statement of personal interest

My interest in doing this study came from an interlacing of professional and life related patterns. As a physiotherapist working with older people to improve mobility and prevent injury, I was naturally drawn to looking at how outdoor environments support older people in staying mobile and healthy. This interest was part of an intellectual trajectory, which started with a focus on issues such as postural control and progressed to thinking and working on issues relating to the broader field of falls prevention and built environment support. My approach to this thesis was, therefore, mainly rooted in the desire to examine how neighbourhood environments could support older people in staying physically active by walking, since this was the question most relevant to my daily work. My past experience in working on postural control and fall prevention predisposed me to question how these issues fit with older people's neighbourhood walking experiences.

Interwoven with this professional orientation was my own perspective as a walker and the high value I place on being able to primarily get around on two feet or two wheels. My preference to travel by foot or bicycle has usually led me to live in neighbourhoods that support this choice. It is an inclination likely rooted in my experience of growing up in a small Nova Scotian town, where most destinations were within walking distance.

As a researcher I was aware that I needed to make a clear effort to 'bracket' my own assumptions about what constitutes a walkable environment or what should be done to improve walkability. Bracketing is described in the tradition of phenomenology as the process of being aware of what one already knows or has experienced in order to lay it aside

[175]. The aim of this awareness was not to reach a state of objectivity, but rather to understand how my own values and experience may impact on the research. The process of bracketing includes seeking out and being open to opinions that may be different from one's own. Bracketing does not eliminate personal perspective but brings it into view so that one can prepare to hear the voices of others more clearly. Throughout the research process I worked at maintaining an awareness of my own pre-conceived views through journal and field note recordings.

I started this research with the normative view that it is important to create walkable environments for older people and that older people are an important part of this process. I also began with the knowledge that my position as a physiotherapist and an inner-urban dweller would influence the way that I conducted the research and interpreted the findings. Acknowledging these aspects of my own lens was an essential first step to ensuring transparency and rigour in the research process.

Organization of thesis

This thesis is organized in three stand alone manuscripts submitted to peer-reviewed journals. The second, third and fourth chapters describe the background literature, objectives, methodology and findings of each manuscript, building upon findings in the previous manuscript(s). There is some inevitable overlap in the background sections of each manuscript. The final chapter presents a revised conceptual model, which reflects the integrated research findings. References used in Chapters 2 and 3 follow the text of these manuscripts, since they were submitted to journals requiring a formatting style that differed

from the rest of this thesis. The references used in Chapters 1, 4 and 5, as well as those used in the appendices, are consolidated in a list, which follows the final chapter.

Chapter 2 examines the neighbourhood walking experiences of older people in four different neighbourhoods and identifies themes common to these experiences using qualitative methodology.

Chapter 3 investigates how socio-political influences on walkability at both neighbourhood and municipal levels shape the creation of walkable places. This phase of the research drew on the walking experiences and issues identified by older people in the first phase to investigate community stakeholder perspectives at both the neighbourhood and municipal levels using qualitative methodology.

Chapter 4 examines neighbourhood differences. It aims to develop an understanding of how urban form and neighbourhood SES inter-relate to affect older people's walking experiences. It also aims to explore differences in perspectives among neighbourhood key informants on the socio-political processes that shape the walkability of neighbourhood environments. It draws on data collected during the first two phases of the study and uses additional quantitative indicators to produce a synthesis of neighbourhood differences.

Chapter 5 provides an overall synthesis of study data. It presents a theoretical model, which conceptualizes how dynamic community socio-political structures and processes at the individual, neighbourhood and municipal levels inter-relate to affect the production of neighbourhood walkability. Chapter 5 also discusses the research implications with respect

to measurement of walkability, intervention, policy and further research. Finally, the chapter outlines strengths and limitations of this research and summarizes its contributions to the field of population health.

**CHAPTER 2:
NEIGHBOURHOOD WALKABILITY: OLDER PEOPLE'S PERSPECTIVES FROM
FOUR NEIGHBOURHOODS IN OTTAWA, CANADA**

This manuscript addressed the first objective of the thesis, which was to explore older people's walking experiences in the context of their daily lives. It involved the first phase of data collection for the thesis and is presented as a stand-alone paper. The qualitative analysis produced themes common to the walking experiences among all four study neighbourhoods. This phase of the research was originally designed to ground the case study around walking issues that were important to older people in a real-life context, thus providing a guide for subsequent phases and meaningful comparisons.

The manuscript was accepted for publication in the *Journal of Aging and Physical Activity* on Sept 18th, 2009. It is, therefore, presented in the formatting style of this journal with figures and tables included separately, following the reference list. Study findings extend our understanding of links between aging, physical activity and neighbourhood context.

Article Title:

Neighbourhood walkability:
Older people's perspectives from four neighbourhoods in Ottawa, Canada

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Abstract

This qualitative study examined older people's walking experiences in four Ottawa neighbourhoods. Seventy-five adults aged 65 years and older who had lived in their neighbourhoods for at least two years participated in focus groups and individual interviews. Four themes were identified through data analysis: 1) multidimensional personal meanings; 2) navigating hostile walking environments; 3) experiencing ambiguity; and 4) getting around. Neighbourhood walking was experienced within the continuum of personal and environmental change. Findings indicated that the concept of pedestrian connectivity must incorporate aspects of both intersection regulation and design to ensure relevance for an aging population. Participants called for more clarity around policies that affect pedestrian safety for older people. The overarching theme of getting around indicated that walkability assessments must consider how walking fits within an integrated transportation system and how accessible this system is for older people.

Key words:

Older people, walking, walkability, neighbourhood, outdoor environment

Introduction

Increasing urbanization and an aging North American society have prompted concerns about how cities can accommodate shifting demographics. In order to support the preference to age at home, attention is turning to the role of built and natural environments in supporting healthy aging. Walking provides older people with an accessible form of physical activity and a means of transport (Michael, Green, & Farquhar, 2006). Physical activity helps to prevent chronic disease and disability among older people and has also been associated with improved mental health and cognitive function (Miller, Rejeski, Reboussin, & Ettinger, 2000; Weuve et al., 2004). Despite its clear benefits, physical activity levels among the majority of North Americans over the age of 65 fall short of recommended levels (Health Canada, 2002; Matthews et al., 2008; Troiano et al., 2008). Since individuals tend to spend more time in their local environments as they age, understanding how to make neighbourhoods more walkable for older people is an important public health concern.

The concept of walkability has emerged as ecological approaches to increase physical activity have gained attention. Southworth (2005) defined walkability in the following way:

“Walkability is the extent to which the built environment supports and encourages walking by providing for pedestrian comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network.” (p.248)

Walkability has been operationalized in the development of walking indices using measures of intersection density, dwelling density and land-use mix (Leslie et al., 2007; Vernez Moudon et al., 2007). Quantitative studies (Berke, Koepsell, Moudon, Hoskins, & Larson, 2007; Frank, Schmid, Sallis, Chapman, & Saelens 2005; King, 2008; Li, Fisher, & Brownson, 2005; Li, Fisher, Brownson, & Bosworth, 2005; Oakes, Forsyth, & Schmitz, 2007) have documented mixed effects of neighbourhood built environment characteristics on walking behaviour. Some authors (Berke et al., 2007; Frank et al., 2005) have shown that short interconnected city blocks, mixed land use and higher residential density (characteristics found in traditional inner-city neighbourhoods) are associated with higher levels of walking than more automobile-oriented land-use / transportation designs typically found in the suburbs. However, other authors (King, 2008; Oakes et al., 2007) have found that characteristics of density and street connectivity associated with increased walking for transport are not associated with higher overall rates of daily walking or total physical activity, and suggest the importance of other factors such as perceived safety and social cohesion.

Only a handful of qualitative studies have used the voices of older people themselves to examine how neighbourhood context influences walking. Safety features that protect from falls and traffic hazards, convenient access to destinations, well-maintained pedestrian infrastructure, neighbourhood attractiveness and public transportation have all been identified as important aspects of the neighbourhood walking context by older people (Day, 2008; Lockett, Willis, & Edwards, 2005; Michael et al., 2006; Strach, Isaacs, & Greenwald, 2007). Most of these studies asked older people how the physical environment influences physical activity or health. However, researchers have not focused on the walking

experience as it occurs within the context of people's daily lives. The objective of this study was to develop a more thorough understanding of older people's neighbourhood walking experiences with an emphasis on daily life. The intent of this approach was to allow older people's voices to broaden our understanding of neighbourhood walkability.

Methods

The findings presented in this article come from a larger comparative case study examining the socio-political context of older people's walking experiences. This initial analysis examined older people's walking experiences in four neighbourhoods and identified themes common to these experiences. A comparison of differences in neighbourhood walkability appears in a subsequent paper that combines data from older people with key informants and quantitative information to provide a comprehensive understanding of the influences of neighbourhood urban form and socio-economic status.

The current study used interpretive description which involves description and interpretation of a shared experience from the perspective of those who live it and "reflects a respect for knowledge about aggregates in a manner that does not render the individual case invisible" (Thorne, Reimer Kirkham, & MacDonald-Emes, 1997, p171). While inductive in nature, this approach differs from traditional phenomenological approaches by drawing on existing knowledge and constructing conclusions on the basis of linkages with other research.

Study setting

The study was conducted in Ottawa, the national capital of Canada established in 1857.

The civil service expanded after World War II, setting off a pattern of rapid urbanization that

continued until the 1980's. In 2001, Ottawa was amalgamated with 11 surrounding municipalities making it the fourth largest city in Canada with a population of 877, 300. In 2001, 11.5 % of the population was age 65 years and older. The main employers in Ottawa are the federal government and the technology sector, resulting in average incomes that are relatively high compared to other Canadian cities. Ottawa is also a city that receives a considerable amount of snow during winter months.

Sampling of neighbourhoods

Neighbourhoods were purposively selected to vary on socio-economic status (SES) and urban form. Higher and lower SES contexts were defined by 2001 census data on mean household income, percentage of post-secondary graduates and percentage of low income households. City classifications (City of Ottawa, 2003) of urban form reflecting historical influences on built environment type were used to divide inner-urban neighbourhoods (primarily developed before 1950) from suburban neighbourhoods (primarily developed after 1950). Typical for pre-1950 era, the inner-urban neighbourhoods were characterized by differing land uses, including residential, commercial, office and institutional uses within shared blocks. Street patterns were traditional rectilinear grid while dwelling densities ranged from 1992 to 3258 dwellings per square kilometre. Inner-urban neighbourhoods contained a mix of housing types with lot widths ranging from 5 to 20 metres. In contrast, suburban neighbourhoods were characterized by a separation of land uses and a greater predominance of single family homes. Street patterns were primarily curvilinear including cul de sacs although a modified grid pattern existed in one area of the lower income suburban neighbourhood. Dwelling densities in the suburban neighbourhoods ranged from 840 to 1823 dwellings per square kilometre with lot widths ranging from 20 to 30 metres.

Selection criteria within these two types of classification were that the neighbourhoods provided the greatest contrast of socio-economic status while possessing a comparable percentage of residents who were 65 years and older (9 to 11 percent) as well as having an active community association. Table 2.1 provides an overview of neighbourhood characteristics based on 2001 Canadian census data.

Insert Table 2.1 about here

Participant sampling

Participants in each of the four study neighbourhoods were recruited using multiple strategies. Information sessions were conducted at seniors' centres, during community events and in housing co-operatives. Local newspapers were used to advertise, and a city-wide newspaper ran a story about the study. Information posters were placed in recreation centres and apartment buildings. The recruitment strategy aimed to recruit older people with diverse views and experiences based on variations in mobility, socio-economic status and length of neighbourhood residence. Individuals were eligible to participate if they had lived within one of the neighbourhoods for at least two years, had walked in their neighbourhood at least once within the past year and were 65 years of age or older.

Data were collected through focus groups and individual interviews. These were conducted within the study neighbourhoods in readily accessible locations: seniors' centres, community centres, and apartment meeting rooms. A few participants requested interviews in their homes. The interviewer also walked through each neighbourhood in order to observe areas where participants had described problems. Field notes written following recruitment

sessions were used in the planning of interviews and focus groups. Additional field notes were written after completing interviews and focus groups as well as following walks through study neighbourhoods.

Walkability was defined as anything in the outdoor environment that affected the safety, convenience, comfort and enjoyment of walking. This definition was used in the consent form and the semi-structured interview guide that introduced the purpose of the study. The interview guide was structured on the a priori assumption that older people would have valuable insights on questions contained in Table 2.2. However, the questioning process was also guided by the assumption that what older people chose to emphasize about their walking experiences should be central to the interview so that the essence of this experience could be explored. For this reason, the researcher formulated other questions as the interview or focus group proceeded depending on the participants' responses. Individual interview questions asked were essentially the same as those posed during the focus group but allowed the researcher to probe issues in greater depth. An additional question regarding how the participants came to live in their neighbourhood was included in individual interviews permitting further exploration of how the walking experience was viewed within a larger life context.

Insert Table 2.2 about here

Interviews and focus groups were scheduled for approximately 50 minutes and were audio-taped. All participants completed a short survey following the interview, which provided information on required walking aids, sample demographics and self reported walking levels.

Most interviews were conducted during the spring, summer and fall of 2007. All data were collected by one interviewer (the lead investigator), a practising physiotherapist working in the field of geriatric and stroke rehabilitation, as part of a doctoral research program in population health. Debriefing sessions were held with members of the research team who had backgrounds in nursing, epidemiology, rehabilitation and sociology.

Analysis

The analytical framework examined the everyday walking experiences expressed by the participants was not predefined but rather based in the incoming data. Focus groups and individual interview recordings were transcribed verbatim. All transcripts were reread several times in order to allow the researcher to apprehend the overall picture. Field notes and reflective memos taken during data collection were also reviewed to facilitate thinking about the data and to develop an initial coding strategy. A constant comparative method (Strauss & Corbin, 1998) was used which involved breaking the data down into discrete sections in order to label concepts or categories and continuing to compare across these categories so that links and connections could be identified. Analysis moved from coding strategies (i.e. categorizing the data) to contextualizing strategies (i.e. considering relationships that link statements and events within a coherent whole). Re-reading of the texts and discussion among members of the research team assisted in the integration of categories and the emergence thematic interpretation.

Preliminary analysis was performed by the lead investigator. Reliability was enhanced by having another member of the research team verify a sample (30 %) of the transcripts to ensure a credible match between data and coding domains. Authenticity of interpretation

was enhanced through feedback received from study participants. Participants who provided contact information during the initial consent process (32% of the sample) were sent a copy of the final results and asked to let the researcher know if any the selected quotes were used in a way that did not represent the intended meaning or constituted a threat to confidentiality. No one expressed concern regarding either of these points but participants did respond indicating positive support for the findings through letters and e-mails.

Results

Participants

A total of 53 older adults participated in one of twelve focus groups (three per neighbourhood) and another 22 participated in interviews (approximately 5 per neighbourhood). Eighty-two percent of the sample was female and the mean age was 75 years. Multiple recruitment strategies were used, resulting in participants from the following sources: a) 31 % housing co-operatives and apartment buildings; b) 25 % seniors' centres; c) 17 % newspaper; d) 13 % community health centre programs; d) 9 % community events; and e) 5 % neighbourhood associations. The sample included a segment of older people who were more sedentary (i.e. 10.2 % reported walking rarely and 21.1 % reported walking less than 20 minutes per day) as well as a segment who were very active (i.e. 24.9 % reported walking five to seven days per week and 7.6 % reported walking more than 60 minutes per day). The majority of participants reported walking from one to four days per week (64.9%) and between 20 and 60 minutes per day (71.3%). Slightly over half of the participants had completed post secondary education and owned their own homes. The mean length of neighbourhood residence was 27 years (range 2 – 53 years). The sample included older

people who had immigrated to Canada from other countries including China, Italy, Greece, Britain, Ukraine and Chile. Table 2.3 summarizes participant sample characteristics for each neighbourhood.

Insert Table 2.3 about here

Figure 1.1 provides of schematic illustration of how broad question lines led to coding categories that were then integrated into four main themes along with key implications. Although categories are displayed to correspond with themes they informed most directly, overlap and links between categories also informed the identification of themes. For example, the categories on change are reflected in all four themes. This notion of category linkage is illustrated with overlapping circles.

Insert Figure 1.1 about here

1. Multidimensional personal meanings

Inter-related dimensions of personal meaning included exercise, managing everyday life, contact with nature, social connection and discovery. The significance of these dimensions was described through responses to questions regarding purposes, destinations and routes. Older people perceived the experience of neighbourhood walking as being highly relevant to their health and well-being. Walking for exercise was usually described in combination with other walking purposes or benefits including reaching a destination or enjoying the company of a walking partner.

Contact with nature was a highly valued aspect of neighbourhood walking described by many participants as it brought them positive gains in their state of mind or emotions.

Nature was described while walking along streets as people enjoyed tree cover and gardens as well as in parks:

“I prefer to go to the Experimental Farm because that of course is a nice area ... it is very quiet of course, and I like just looking at the sky you know, it is wonderful, the big skies are so beautiful. I walk through the fields there. I go for the skies alone.”

(Female, suburban lower SES neighbourhood, focus group)

Some older people, however, felt that nature was inaccessible within the distance that they were capable of walking. The use of parks was associated with more contingencies than the use of neighbourhood streets for walking. For example, many people commented that parks were not accessible in winter. Female participants often said that they felt more comfortable walking in natural areas with a walking partner:

“Whereas really in the park ...walking by myself, I do not feel it is dangerous because there are other people, but it is nice to have somebody with you anyway, no matter what.”

(Female, inner-urban lower SES neighbourhood, focus group)

The social dimension of neighbourhood walking had both active and observational elements. In the case of active social connection, participants described both intentional meetings at

places like seniors' centres or coffee shops as well as spontaneous outdoor encounters with their neighbours, which often helped to strengthen those relationships:

"I tend to walk and bike, and I always stop and chat—of course I am retired now, so I have time to stop and chat—so I know everybody on the street and we chat and I have a relationship with them and sometimes I help them do something..., so walking has that."

(Male, inner-urban higher SES neighbourhood, interview)

Participants described both being an observer and being observed. Being an observer had benefits related to mental stimulation as well as the acquisition of neighbourhood knowledge. This knowledge was useful in that it allowed older people to know about new shops and services in the neighbourhood that may be useful to them as well whether there were teenagers living close by that may be interested in being hired for odd jobs.

"You know, if I could not shovel my own snow, I would know who to get."

(Male, inner-urban higher SES neighbourhood, interview)

The benefits of being observed related to the prevention of victimization and the provision of help in case of a health emergency or fall.

Participants' discussions on neighbourhood walking revealed a dimension of contribution that had both formal and informal elements. Some participants talked about walking to places like hospitals and churches where they were engaged in volunteer activities such as visiting or administrative work. Others talked about how they sometimes helped their

neighbourhoods or provided surveillance for the neighbourhood while walking. These examples illustrated that older people associated many different kinds of social connection with the walking experience involving people they knew as well as those they did not. The dimension of contribution was also reflected in actions taken by participants to improve neighbourhood environments such as contacting political representatives, picking up garbage, providing surveillance and calling the city about observed problems.

The concept of discovery emerged as an important aspect of neighbourhood walking. Even in very familiar environments people used terms such as “*exploration*” and “*adventure*” to describe their walking experiences. Participants talked about how this dimension of neighbourhood walking had benefits relevant to the provision of mental stimulation:

“I like to see what everybody is doing. When you are walking, you can see landscaping in progress or things. It is very interesting because you pick up something every day. It is also for the mind, not just the body.”

(Female, suburban higher SES neighbourhood, interview)

Importantly, personal meanings changed over time thus characterizing the walking experience as complex and dynamic. For example, changes in hearing, balance and reaction time affected how comfortable people were in using shared recreational pathways. The death of a walking partner influenced how frequently participants walked in their neighbourhoods as well as the routes they chose:

“Well I used to have a lot of friends in the neighbourhood and I would walk to visit them or we would walk together but some of them have moved away, or died, or something...

I don't walk at the Experimental Farm anymore, I don't usually have anybody to walk with anyway, but the Farm is right across Fisher [Street]. It is a nice walk among the trees and everything, but I just wouldn't feel right going in there alone. Now I don't go very far from home.”

(Female, suburban lower income neighbourhood, interview)

2. Navigating hostile walking environments

Older people described dangerous walking environments as those characterized by multiple demands for attention or a combination of hazards. Hostile walking environments were most often described with reference to crossing main arterial roads and often associated with the recurring phrase *“that is taking your life in your hands”*. However recreational pathways, public transit and parking lots also presented situations that people attempted to avoid. The problem of crossing arterial roads related to inconvenient crossing opportunities, inadequate signal times, long crossing distances across multiple lanes of traffic, intersection complexity and aggressive driver behaviour. People frequently commented that the green pedestrian crossing phase (i.e. light regulating a safe roadway crossing) was too short and that once the red warning signal started to flash (i.e. indicating that the safe crossing phase was coming to an end), there was a sense of urgency associated with completing the crossing. This sense of urgency appeared to compound the risk of falling in some instances:

"...I didn't know how long [the crossing signal] had been green so I was hurrying up...but then I tripped on [the uneven pavement] ... blood was on my face. My knee was bleeding too..."

(Female, inner-urban lower SES neighbourhood, interview)

Participants who relied on public transit perceived the connectivity between sidewalk and public transport to be particularly hostile in winter:

"At bus stops, well I think they have to stop, or get somebody out there to clear the bus stops. It is just too darn scary. You should not have to straddle a snow bank. I broke my thumb doing that."

(Female, lower income inner-urban neighbourhood, interview)

Participants with mobility impairments identified busy roads, including arterial roads as obstacles because crossing circumstances were not perceived as being safe. For example one woman remarked:

"I think Gladstone Avenue is horrible. If you have to [cross] and get a parcel and bring your parcel back across that street, I dread it. I would rather leave my parcel there."

(Female, inner-urban lower SES neighbourhood, focus group)

In another example, a woman described a grocery store that was within walking distance.

However, she considered it inaccessible because of *“the thought of having to cross all that traffic”*.

(Female, suburban higher SES neighbourhood, focus group)

Increases in neighbourhood traffic and changes in driver behaviours were perceived as factors that had made crossing roadways more dangerous. Suburban participants frequently talked about how the recent growth of surrounding areas had increased traffic volumes either within their neighbourhood or on its boundaries. Participants in all neighbourhoods noted that drivers had become more aggressive and less attentive especially in larger intersections. Many said that they felt the increased use of cell phones made drivers less apt to notice pedestrians. Some participants indicated that their visible signs of aging such as having grey hair or using a walking device, made drivers more polite, but this was not a universal sentiment:

“Drivers are wicked...I [was] ready to go across with a go light and one young chap...I really wanted to whack his car but then I was afraid he would get out and poke me one.”

(Female, suburban lower income neighbourhood, focus group)

In inner-urban neighbourhoods, people talked about how increasing demands on pedestrian infrastructure has presented new challenges to sidewalk safety. Greater numbers of newspaper boxes and vending displays on the sidewalks made negotiating sidewalks more difficult. Participants frequently expressed concerns about colliding with rollerbladers and skateboarders. Furthermore, increased vehicle volumes on the roads were felt to have

forced more cyclists onto the sidewalk, making them more hazardous for older people.

Many participants said that traffic exhaust made arterial roads unpleasant to walk along.

Others pointed out how main arterial roads were more likely to have bus stops with benches that allowed them to rest at regular intervals.

Hostile walking environments represented the most explicit tensions expressed by participants. Frequently these concerns were associated with arterial roads that bordered neighbourhoods. For some participants these roads represented barriers that stopped them from accessing certain destinations on foot. For others bordering arterial roads were environments that required extreme vigilance in order to navigate.

3. Experiencing ambiguity

Participants identified ambiguities relating to the right-of-way among other modes of travel (e.g. other pedestrians, motor vehicles, bicycles) as well as those related to the interplay between built environment design (e.g. lack of sidewalks, intersection design) and legislative regulation (e.g. yielding requirements of vehicles). People often asked about what the “rules” were around various issues and sometimes expressed the need for a “*rule book for walking*”. Discussions in inner-urban neighbourhoods frequently focused on sidewalk etiquette and the question of who should yield to whom on the sidewalk. In suburban neighbourhoods, ambiguities were discussed in reference to avoiding collisions with cyclists on shared recreational pathways. One man who grew up in Europe felt that these conflicts were partially due to an under-developed walking and cycling culture in Canada:

“When everybody does it, like in Europe in my town, there is no problem. They know exactly when to ring ahead of time; they know exactly where the people go and they know themselves where to go. This you do not learn in one day. It has to be the custom.”

(Male, suburban higher SES neighbourhood, focus group)

Ambiguities often related to the interplay between built environment design and legislative regulations. One woman made the point that walking on the street facing traffic, as required by law, resulted in exposures to other hazards such as ice, snow and puddles. She described circumstances related to a fall that she had while walking on a street with no sidewalks during the winter:

“One chooses as best one can which way to go, ... sometimes there is a big puddle on one side and not on the other. But on the other hand, if you are walking on the inappropriate side of the street because there are no puddles there, and a car comes along and hits you..., enough said?”

(Female, suburban lower SES neighbourhood, interview)

It was often pointed out that when pedestrians have a regulated signal to allow walking they must remain vigilant of turning vehicles that also have a regulated signal to proceed. In order to avoid confusion over who had the right of way, many participants said that they automatically yield to vehicles in these instances. Walking across motor vehicle merging lanes also represented an uncomfortable situation for participants. People felt there was ambiguity as to the yielding requirements of vehicles at these types of crossings (i.e. yielding to oncoming traffic versus yielding to the pedestrian):

“Sometimes there are pedestrian symbols that accompany these signs and sometimes there are not...usually I think that these signs only apply to traffic.”

(Female, lower income inner-urban neighbourhood, interview)

Ambiguities arose with respect to the meaning of a pedestrian crosswalk. Some participants were originally from provinces in Canada where legislation governing crosswalks is different from that in Ontario. In Ontario, The Highway Traffic Act (1990) does not give pedestrians the priority anywhere except at regulated crossings (e.g. signalized, stop sign), whereas in some provinces and states motorists must yield to pedestrians at any type of marked pedestrian crossing. Therefore in Ottawa, a crosswalk by itself does little to ensure pedestrian safety. One man coming from outside Ontario talked about how he requested that a crosswalk be painted to allow residents of a seniors' building to cross a busy collector road that intersected their residential street:

“ [I wrote a letter requesting] crosswalks, so you could put out your hand and the traffic would stop.... [The people from the city] came up, looked and said, ‘Thank you very much, it is not in our budget’.”

(Male, suburban lower SES neighbourhood, focus group)

The city's response confused the participant since he felt that painting was not a major budget item and the response did not help to clarify why a crosswalk was not provided. This example illustrates how differences in jurisdictional legislation governing roadway crossings can lead to differences in understanding of the safety a crosswalk would provide.

4. Getting around

An overarching theme that emerged from the discourse on walkability concerned the challenges of getting around. Not all desired destinations were located within a walkable distance. Although some neighbourhoods were more destination-rich than others, participants in all neighbourhoods described having to reach destinations that lay beyond their neighbourhoods. Walking was viewed as part of an integrated transportation network especially for participants who did not have access to a motor vehicle. For these participants, issues related to taking public transit became integral to the conversation on walkability. Individual changes associated with aging influenced the distance that some participants were able to walk making them more reliant on public transit:

“I used to be able to walk downtown no problem, but as you get old, you slow down, so now I gratefully have my senior’s pass and I use it.”

(Female, lower income suburban, focus group)

Findings indicated that the usefulness of public transit related to how conveniently the bus stops were located relative to shopping destinations:

“I think they put in a bus station but they put it as far away as they possibly could [from the shopping mall]. In fact you need to be a really good walker to get to it. You have to cross cars lanes ...”

(Female, higher income suburban, focus group)

Connections between pedestrian infrastructure and transit were particularly problematic during winter months:

“You cannot get to the stop half the time because it is icy and if you walk down the road, you cannot climb up over the bank to get to where the bus stop is, because it is all filled up with ice. I find anywhere in the wintertime around here, any bus stop, they are not cleared out.”

(Female, higher income suburban, focus group)

Participants were concerned that several older people had been killed in Ottawa due to sliding under the wheels of the bus after exiting. As a result they described disobeying the exit by rear sign on buses, choosing instead to always exit at the front where they were more visible to the bus driver.

Not owning a car or the decision to give up a car made walking more critical to getting around but introduced new challenges related to having to carry groceries or shopping bags. Participants described how neighbourhood changes had also contributed to challenges in getting around. In three out of the four neighbourhoods, participants talked about how the loss of a local grocery store negatively affected the walkability of the neighbourhood as it eliminated a useful walking destination and accompanying opportunities for spontaneous social interaction:

“The grocery store was just across the street. The bank, the liquor store, the hairdresser, and everybody just walked and met everyone ... it was quite pleasant. Today, we have to get into our cars. So, that has really changed.”

(Female, suburban higher SES neighbourhood, focus group)

This type of change meant that participants became more reliant on their cars or public transport. In cases where neither of these transport options was accessible, participants described how the organization of local grocery buses had been helpful. However, the buses were often available only one or two days per week with capacity limitations for people and cargo. The ability to walk to a grocery store was preferred since it was associated with a greater degree of flexibility in terms of travel time and provided an opportunity to get some exercise with a purposeful destination.

Participants described the importance of getting around, managing everyday life and living independently. Participants who relied on automobiles expressed concern that they may not be able to drive in the future. This represented a worry since walking did not constitute a viable way to get around. The theme of “getting around” emphasizes how walking was viewed within the greater preoccupation of transportation in a large urban environment.

Discussion

Four distinct yet interdependent themes emerged from older people's description of their walking experiences. Together these themes represent an intersection of perspective and environment that has implications for the conceptualization of walkability. The first theme

highlighted how older people's reasons for walking are influenced by overlapping personal meanings including exercise, managing everyday life, contact with nature, social connection and discovery. Health relevant aspects of neighbourhood walking were consistent with previous conceptualizations on how outdoor environments affect older people's health (Day 2008; Sugiyama & Ward Thompson 2007). Key distinctions of this research however, had to do with the nuances of social connection associated with walking. "*Being seen*" related to community cohesion implied by trusting anonymous others to help in case of an emergency. "*Seeing*" was more analogous to Granovetter's theory (1983) on the importance of weak ties for social information since the incidental observations about local resources that older people made while walking in their neighbourhoods can have implications for continued independent living. This research also indicated that being able to walk to volunteer activities promoted a continued level of societal engagement particularly for older people without access to a vehicle. The opportunity for social participation has been identified as a critical element in prescriptions for "senior-friendly communities" (Feldman & Oberlink, 2003) as well as studies that have examined the broader perspectives on quality of life among older people (Richard et al., 2005).

A further distinction of this work from other qualitative work on older people's walking experiences (Day 2008; Lockett et al., 2005; Michael et al., 2006; Strach et al., 2007) has to do with the role of discovery in how older people described their walking experiences. The desire to see what was happening represented an underlying motivation to walk in many cases. Even in familiar environments people talked about how they were constantly observing small changes, which provided a source of mental stimulation associated with the walking experience. Previous studies have indicated that both mental exercise and walking

may play a role in reducing cognitive impairment later in life (Studenski et al., 2006; Weuve et al., 2004). Our findings expand these studies in developing a greater understanding of how mental exercise and walking are interrelated and, in this way; underline the role of neighbourhood environments in supporting both of these complementary activities. A question for future research may be to investigate whether people who embrace discovery and are able to adapt their walking routine to changing conditions, also preserve cognitive function. If so this would suggest additional health benefits to community walking versus walking around a track.

The fact that contact with nature was highly valued but inaccessible for some older people highlights the importance of preserving natural features like trees that are located within the urban landscape and not only in separate park land. Having trees and gardens in places that have multiple urban uses means that older people can have more exposure to nature over a greater variety of seasonal conditions and alleviates some worry about security in parks while walking alone. Urban programs aimed at the preservation of city trees and the provision of places to rest may have more benefits than the creation of park space outside neighbourhood boundaries for older people by allowing exposure to natural elements within an achievable walking distance. Considering the empirical evidence that supports the health benefits of local walkable green spaces for older people (Takano, Nakamura, & Watanabe, 2002), it is important for municipalities to consider how to make these benefits accessible to people with limited walking radiuses.

The theme of hostile walking environments illustrates how some environments were not only perceived as unsupportive of walking but hazardous to life and health. By far the most

common type of hostile walking environment was associated with crossing main vehicular traffic arteries. Our findings indicate that many older people relied on regulated crossings (i.e. crossings regulated by a sign or light that legally required drivers to stop for pedestrians). Previous measures of walkability have defined pedestrian connectivity in terms of intersection density but have paid little attention to intersection regulation (Vernez Moudon et al., 2007). Filion & Hammond (2003) concluded that neighbourhoods are often defined by main arterial roadways, yet the evolution of 20th century planning has not improved intra-neighbourhood accessibility. The fact that many participants talked about walking to places beyond neighbourhood boundaries highlights a need for better regulated pedestrian connections among neighbourhoods, commercial areas and parks.

Air quality was often given as a reason that participants avoided certain streets. This observation implies that air quality is a dimension highly relevant to measures of neighbourhood walkability, which should be incorporated into studies examining the association between the built environment and physical activity. Despite a preference to avoid traffic exhaust, participants sometimes opted for exposure in order to access positive neighbourhood attributes like bus stop benches, which were more likely to be located at regular intervals along main arterial roads. This finding demonstrates how the notion of risk trade-off, as described by Lockett et al. (2005) with respect to falls and safety hazards, can also apply to other types of exposures influencing walking route choice.

The theme of experiencing ambiguity suggests that older people are vigilant pedestrians who are concerned about the clarity of pedestrian travel rules. Concerns regarding safety issues likely reflect the fact that fall-related injuries have more serious lifestyle implications with

increasing age (Alexander, Frederick & Wolf, 1992). This theme also suggests that accepted patterns of shared public space among various modes of travel have not been established in the study areas. Ambiguities often came up with regard to pedestrian etiquette on sidewalk and public transit suggesting competing sense of entitlement among different types of users (e.g. older pedestrians, parents with child strollers, wheelchair users etc.). Given the potential for public conflict on this issue there is a need for municipalities to establish and publicize guidelines around the rules for shared public space. Clarity is especially important with respect to shared space between pedestrians and vehicles. Results suggest that harmonizing jurisdictional regulations, or at least clear communications about existing regulations may assist to reduce ambiguity for pedestrians and the hazards associated with it. Crossing designs can also make motorist obligation to the pedestrian more obvious (Ewing, 1997).

The overarching theme of getting around indicated that participants viewed walking as part of an integrated transport system. While walking as a mode of transport took on greater significance for some participants as they aged because of the decision to give up a private vehicle, it also became less feasible for others as a mode of getting around because of declining physical abilities and /or destinations moving farther away. This dominant theme highlights how the interface between pedestrian infrastructure, public transit and destinations (shops, institutions, service buildings) is a critical element of walkability for older people since the overall size of most cities does not allow them to reach all desired destinations by foot. This interface included not only having a transit stop within walking distance but also being able to access public transit safely without having to worry about climbing over a snow bank or finding a seat before the bus started moving. Findings indicate that accessibility of

both origin and destination are important considerations for getting around. This theme relates to deeper concerns of being able to manage everyday life and live independently and points to the importance of accessible walking routes as a critical element in the overall transportation system.

Participants' concerns about motor vehicles reflected the fact that they represent a primary mode of transport as well as a principal safety hazard. Societal priority of automobile transport was reflected in examples of transportation infrastructure design (e.g. vehicle turning lanes, discontinuous walking paths) and provincial legislation (e.g. vehicle yielding requirements), and land-use (e.g. convenient destinations) which affected walking conditions for older people. The inequality between automobile and pedestrian travel has potentially the greatest impact on those who do not have access to a private vehicle which was often the case in lower income neighbourhoods. Findings suggest that getting around by motor vehicle is perceived as a more feasible and legitimate form of transportation. Policies aimed at improving walking conditions for older people must address both of these considerations.

All four themes contained temporal elements illustrating that the relationship between older adults and their neighbourhoods is not static. Findings indicated that age-related change such as declines in hearing or balance changes the kind of walking infrastructure that participants felt comfortable using. Although recreational pathways support physical activity among the mainstream population (Duncan & Mummery, 2005), pathways shared with bicycles may not be a neighbourhood asset that encourages walking as older people become more frail. The types of individual and neighbourhood changes discussed by participants in this study illustrated that both sets of changes compounded the difficulty of reaching

meaningful destinations by foot. Examples of how retail expansion, transportation patterns and technological product development (e.g. cell phones) affected older people's walking experiences illustrated that neighbourhood walkability is subject to factors beyond the local level. Grocery store expansion, for instance, reflects a wider quest for increasing economies of scale in order to maximize profits.

Although Golant (2003) conceptualized the importance of examining temporal aspects of both the individual and environment, his conceptualization has mainly been applied to the design of indoor residential environments and care settings. Our research highlights the importance of looking at how individual and societal changes are experienced together within the context of neighbourhood. Although the line of questioning for this research focused on asking participants for their perceptions of neighbourhood change, responses indicated that these perceptions are intertwined with personal change (life course and age-related). The interplay between personal and environmental change warrants further exploration in future research.

Considerations for transferability and implications for future research

This study was conducted in Canada's national capital, which possesses distinctions important for transferability of findings. National-level organizations maintained green space that bordered all neighbourhoods. The experiences identified by participants in this study must be interpreted within the context of an economically prosperous city with 20 % of its total land use devoted to parks and green space. Challenges associated with winter walking described in this study are particular to cities with a similar climate to Ottawa.

Purposive sampling of neighbourhoods limited the study setting to suburban and inner-urban environments but did not include rural areas where the experience of walking is likely to be vastly different for older people. As municipalities continue to grow incorporating more rural areas, the question of how this process affects walking experiences will be an important one for future research.

This data reflects mainly a female perspective since 82 % of the participants were women. Other research has revealed differences in walking patterns among men and women (Lee, 2005) as well as the perception that women are not legitimate users of public space after dark (Andrew, 2000). Our findings emphasizing concerns about getting around without a car may be more particular to older women due to greater economic vulnerability (Smeeding & Sandstrom 2005). Having a walking partner may also be more important to women due to a greater sense of physical vulnerability. The small percentage of male participants prevented data saturation among this segment of the sample and thus our ability to do a gendered analysis. However, some men related a sense of purpose and usefulness associated with the walking experience that may be especially important after retirement from work. This idea warrants further exploration in a larger sample of males.

Conclusion

This study uses the voices of older people to expand the research knowledge and conceptualization of walkability. Findings indicate that neighbourhood walking is experienced in the context of multiple, overlapping personal meanings and influenced by aspects of the built, social and legislative environment. Neighbourhood walkability not only means being able to walk within the neighbourhood but also being able to reach destinations

beyond its borders. Hazards associated with crossing main arterial roads are of major concern to older people. Findings indicate that the concept of pedestrian connectivity must incorporate both aspects of intersection design and regulation to ensure relevance for an aging population. The level of certainty related to walking safety may become more important with advancing age or vulnerability. Participants called for more clarity around policies affecting pedestrian safety. Ensuring accessibility of pedestrian and public transport systems connections will assist older people in being able to manage everyday life and live independently. Future tools to assess walkability and urban planning must consider how well these connections allow older people to get around.

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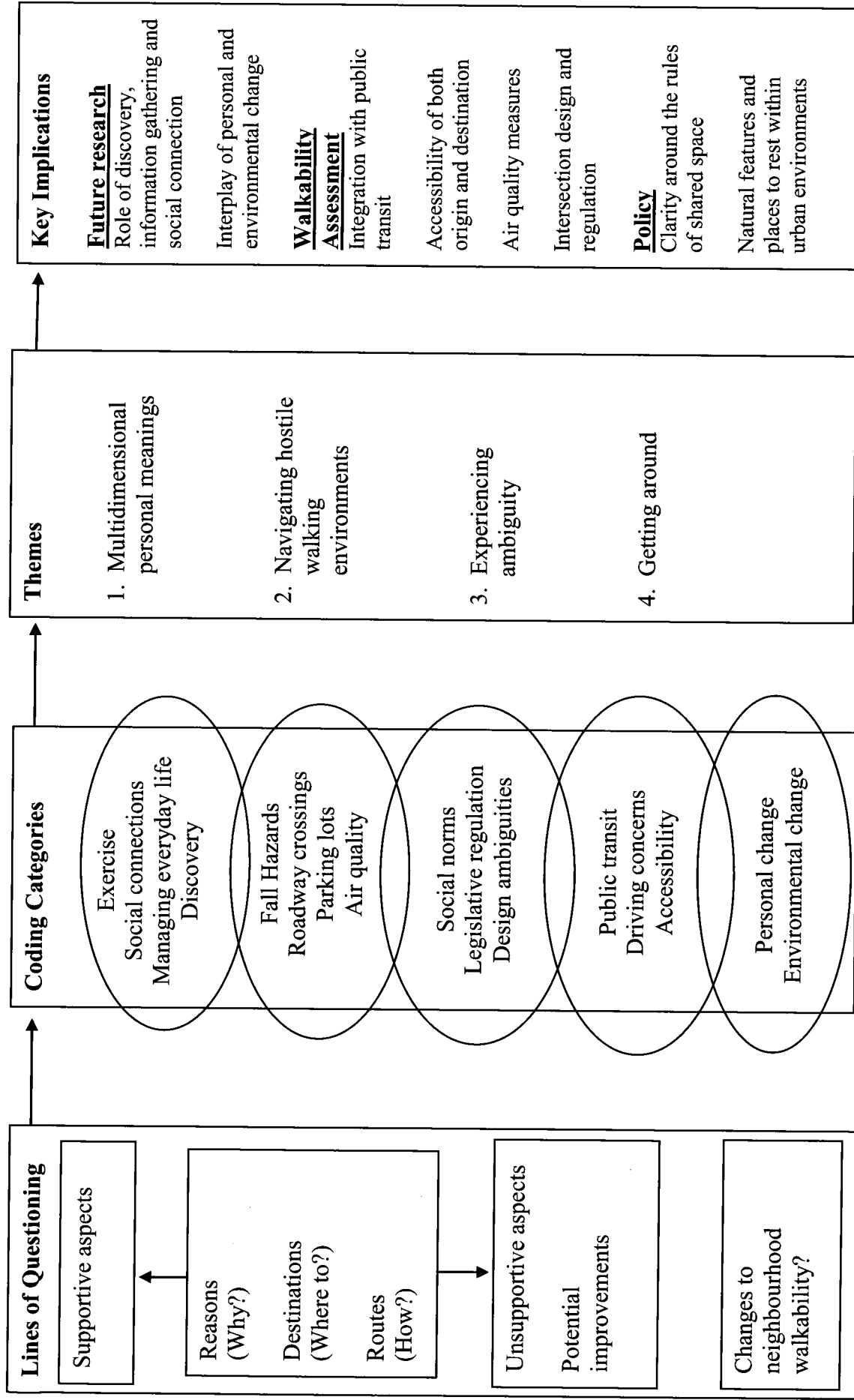


Figure 2.1 Schematic illustrating process of theme identification

Table 2.1 Selected neighbourhood characteristics

| Neighbourhood | Residents aged 65 years and older (%) | Post-secondary graduates (%) | Average household income (Canadian \$) | * LICO households (%) |
|------------------------|---------------------------------------|------------------------------|--|-----------------------|
| Inner-urban Lower SES | 11 | 51 | 41,007 | 39 |
| Inner-urban Higher SES | 9 | 79 | 99,313 | 10 |
| Suburban Lower SES | 11 | 49 | 44,453 | 35 |
| Suburban Higher SES | 10 | 73 | 108,602 | 7 |

LICO: low income cut-off

Table 2.2 Questions used to guide focus groups and individual interviews

| | |
|---|--|
| 1. What kinds of things make it enjoyable, safe or convenient for you to walk outdoors in your neighbourhood? | <p><u>Probes:</u> <i>Where do you walk? Tell me about this... why?</i> <i>Are there reasons that you chose one route over another?</i> <i>Can you walk to the shops and services that you need?</i></p> |
| 2. What kinds of things make it unpleasant, unsafe or inconvenient for you to walk outdoors in your neighbourhood? | <p><u>Probes:</u> <i>Are there places that you would like to walk but don't?</i> <i>Do you find it difficult to walk in the winter?</i> <i>Do you walk at night?</i></p> |
| 3. Are there changes that have happened in your neighbourhood within the last 10 years or since you have lived here that have made it a) better for walking outdoors b) worse for walking outdoors? | <p><u>Probes:</u> <i>Tell me about them.</i> <i>Why have these changes made the neighbourhood a) better for walking outdoors? b) Worse for walking outdoors?</i> <i>Are there particular people, leaders or groups who have been involved with these changes?</i></p> |
| 4. In your opinion, what are the most important things that must be done to improve outdoor walkability in your neighbourhood? Why? | |
| 5. Tell me about how you came to live in your neighbourhood. <i>(Individual interviews only)</i> | |

Table 2.3 Sample characteristics for each neighbourhood

| Neighbourhood | Number of participants | Age (mean years) | Gender (% female) | Walking aid use (%) | Length of neighbourhood residence (mean years) | Owners (%) | Renters (%) | Education – post secondary (%) |
|------------------------|------------------------|------------------|-------------------|---------------------|--|------------|-------------|--------------------------------|
| Inner-urban Lower SES | 20 | 77 | 85 | 35 | 15 | 10 | 90 | 25 |
| Inner-urban Higher SES | 17 | 77 | 76 | 25 | 37 | 88 | 12 | 88 |
| Suburban Lower SES | 18 | 72 | 78 | 28 | 26 | 33 | 67 | 55 |
| Suburban Higher SES | 20 | 75 | 90 | 10 | 28 | 75 | 25 | 45 |

**CHAPTER 3:
CREATING WALKABLE PLACES:
NEIGHBOURHOOD- AND MUNICIPAL-LEVEL PERSPECTIVES
ON SOCIO POLITICAL PROCESSES IN OTTAWA, CANADA**

This chapter presents a second manuscript, which addresses the second objective of the thesis and reflects findings from phase two of the study. Phase two data were collected and analyzed with the aim of exploring how neighbourhoods and municipalities may work together to create more walkable environments for older people. This manuscript investigates how community stakeholders, at both neighbourhood and municipal levels, described the socio-political process of creating walkable neighbourhoods.

The second phase of research built on the previous one by using the themes derived from older people's walking experiences, and concrete examples of theme expression in each neighbourhood, in interviews with community stakeholders. This progression ensured that descriptions of the socio-political process of creating walkable neighbourhoods were grounded in issues that were important to older people. Phase one examples of older people's walking experiences also served as reference points around which more general concepts could be discussed.

The manuscript was submitted to the Journal of Urbanism and is currently under review.

This journal focuses on issues of urban "place making". Although this study was conducted from a population health perspective and focused on the issue of walkability for older people, findings from phase two are relevant for readers interested in general urban issues and socio-

political processes. Thus, the Journal of Urbanism, which reaches an international audience and focuses on cross-disciplinary research, is an appropriate venue for dissemination. The manuscript has been formatted in the style required by this journal with figures and tables on separate pages, which follow the reference list.

Title: Creating walkable places: neighbourhood- and municipal-level perspectives on socio-political processes in Ottawa, Canada

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Abstract

As society faces concerns over rising obesity rates, traffic congestion and global warming, attention is turning to the importance of creating more walkable environments. The objective of this study was to investigate how community stakeholders, at both neighbourhood and municipal levels, describe the socio-political process of creating walkable neighbourhoods. Thirty-one key informants were interviewed about walking issues identified by older people in four different neighbourhoods in Ottawa, Canada. Five dimensions of the process were identified through qualitative analysis that elucidated insights on political context, access channels, resources, actors and opportunities. Creating walkable neighbourhoods is ultimately a political process that involves the convergence of resources facilitated by actors who are able to bridge sectors, organizations and levels of the system. Mobilization of resources at the neighbourhood level affected citizens' ability to utilize access channels and act on opportunity raising considerations around equity. Future efforts to improve walkability will require that conventional bureaucracies develop approaches that are sensitive to place-based needs.

Key words: walkability, socio-political process, neighbourhood, municipal, community stakeholder perspectives, walkable places,

Introduction

Rising obesity rates, more urbanization, increased traffic congestion and threats associated with global warming are turning societal attention to the importance of creating more walkable environments. Walking is an inexpensive and accessible form of physical activity with numerous health benefits (Lee & Buchner 2008, Nelson & Folta 2009). It also provides a means of transport and, in combination with public transit, represents a more environmentally sustainable option than travel by automobile. In places that support walking, opportunities for social interaction and a sense of belonging are enhanced which can contribute to a greater sense of community (Leyden 2003, Mehta 2008).

Numerous health and environmental organizations are advocating strategies for creating more walkable communities. Their efforts have been informed by research indicating that features of the built environment like the presence of sidewalks, walkable destinations, pleasing aesthetics and the perception of safety significantly influence walking patterns (Badland & Schofield 2008, Frank et al. 2005, Frank et al. 2004, Owen et al 2007, Saelens et al. 2003). Cities around the world are also beginning to adopt policies aimed at improving pedestrian conditions (Vuchic 2008). However, despite a growing awareness of the health and environmental benefits of more walkable environments, little attention has been paid to the social and political change processes associated with this goal. This paper contends that there are systematic socio-political influences on walkability at both neighbourhood and municipal levels and that understanding how these influences work together is critical to the creation of walkable places.

Outdoor environments are generally considered walkable if they provide pedestrian safety, comfort, enjoyment and convenience. The notion of walkability has been defined by various authors (for example, Leslie et al., 2007, Vernez Moudon et al. 2007) and commonly emphasizes qualities of the physical environment. Southworth (2005), for instance, has provided the following succinct definition of walkability:

“Walkability is the extent to which the built environment supports and encourages walking by providing for pedestrian comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network.” (p.248)

Other researchers have described the social and sensory qualities of environments that support walking such as opportunities to see other people, contact with nature and a sense of safety (Brown et al., 2007, Day 2008, Mehta 2008). Social, sensory and built qualities of outdoor environments are influenced by processes that occur at both municipal and neighbourhood levels. Barnett’s (2006) work on the London Walkability Project indicated that many resident concerns about walking fell under municipal jurisdiction. These included larger-scale elements of walkability such as zoning bylaws, which determine land-use and density, as well as smaller-scale elements such as the construction of pedestrian infrastructure and lighting installation. However, walking patterns vary among neighbourhoods within the same city (Ross 2000) and neighbourhood characteristics such as social cohesion have been shown to have a significant association with levels of walking activity (Fisher et al. 2004, King 2008). Traffic calming schemes are usually initiated by

neighbourhood residents rather than municipal level officials (Hass-Klau 1990). Since neighbourhoods represent distinct units of social, geographical and political identity that exist within municipalities, they have great potential importance in the overall movement towards creating more walkable places.

The question of how cities (i.e. municipalities) and neighbourhoods work together on walkability issues is important for several reasons. First of all, some of the problems that citizens experience while they are walking can easily be overlooked by broad-scale planning efforts (Barnett 2006). Walking allows the observation of small details and therefore the experience of walking can contribute valuable information to the planning and implementation of municipal interventions aimed to support it. Secondly, neighbourhood residents have a vested interest to act on issues that affect them directly. Since conditions such as traffic and noise, which affect walking environments, also affect general living conditions, local residents have a stake in acting on these conditions. Third, although neighbourhood groups may not always be in favour of changes to promote walkability, these changes are unlikely to occur without the support of local residents and political leaders (Dear 1992, Vojnovic et al. 2006).

Despite the logical importance of neighbourhood and municipal interplay, little is known about how processes at these two levels interact to affect walkability. Literature relevant to creating walkable places (e.g healthy and sustainable cities) has tended to focus on developing supportive policy with less attention to how these policies are implemented. One exception is a case study of why Toronto's policies for improving pedestrian conditions are not better reflected on the design of arterial streets (Hess 2009). The author identified

existing implementation tools (i.e. zoning and road classification) that were incongruent with the new policies as well as complex relationships among bureaucratic units that slowed the infiltration of policy statements into municipal frameworks.

Beyond these institutional practices, lies the realm of community engagement, which also has implications for creating health environments. In an evaluation of a World Health Organization project to develop healthy public policies by local governments in 13 cities, Boonekamp et al. (1999) identified community participation as “the most deficient aspect of the project” (p.108). Although these authors and others (Arefi 2004, Bradford 2004, Bradford 2003) maintain that policies without roots in the community are not sustainable over the long term, little attention has been paid to how local day-to-day social processes in civil society interact with municipal policy and practice. This interaction may be the most important to understand with respect to the creation of walkable places since municipal level processes are arguably more permeable to the influences of groups and individuals within civil society than processes at any other level of government . Given the paucity of literature on the links between collective action at the neighbourhood level and government processes at the municipal level, this paper uses concepts from social movement theory to examine how these two levels of socio-political aggregation interact around issues of walkability.

The literature on social movements describes the organization of ‘*grassroots*’ collective action and the engagement of this action with existing power structures. Although this body of work is large and diverse, there are two dominant models particularly relevant to the current research. The first is Tilly’s (1978) resource mobilization model, which emphasizes the importance of group organization and resource use and focuses on how actors adopt

strategies in order to pursue rationale interests. Resources are the means through which change is affected, and include tangibles such as money, facilities, and labour; as well as intangibles such as leadership, knowledge, commitment, solidarity and legitimacy. Social networks provide the basis for group organization and are key facilitators of collective action. Organizational dynamics impact on opportunities for action as well as the extent to which resources can be mobilized.

The second frame for this paper is Tarrow's (1998) model of political opportunity structure, which focuses on how citizens are linked to power holders. These structures refer to dimensions of the political environment such as policies or arrangements, which either facilitate or suppress collective action. While these structures do not determine the outcome of collective activity completely, political opportunity structures influence the choice of action strategy and the impact that social movements may have on their environments. Applied to the question of walkability, these opportunity structures can be considered as access channels that link geo-social units of civil society (i.e. neighbourhoods) with the power structure of municipal government.

These two models provide useful concepts for examining collective action at the neighbourhood level (i.e. how do neighbourhoods mobilize resources?) and how this collective activity intersects with municipal government (i.e. how do government structures and processes affect the expression of this collective action?) Given the lack of research in this area, this study uses a qualitative approach that draws on the perspectives of community stakeholders operating at both the neighbourhood and municipal levels. The underlying premise is that insights gained from those most closely involved with local socio-political

processes will provide useful information on poorly understood but critical aspects of creating walkable places. Developing a better understanding of the day-to-day community processes that shape walkability from the perspective of those who are intimately involved with them will inform future efforts to improve pedestrian conditions.

Setting

The study was conducted in Ottawa, the national capital of Canada. Ottawa has a population of 877,300 represented by 23 ward councillors. In 2001, Ottawa was amalgamated with 11 surrounding municipalities making it the fourth largest city in Canada. The amalgamation resulted in a single tier of municipal government as opposed to the previous two tiers of regional and municipal government. Ottawa possesses a politically decentralized system with a bureaucracy organized around departments of service delivery. City council possesses both legislative and executive authority with the authority to approve mayoral nominations (Zussman et al. 2008).

Methods

A tri-phase comparative case study was undertaken to examine the socio-political context of older people's walking experiences. Phase one findings are currently in press (Grant et al., in press). Findings from the second phase of data collection are presented here. In the first phase, four neighbourhoods were purposively selected to capture contextual elements that varied on socioeconomic status (Table 3.1) and urban form (Table 3.2). During phase one, interviews and focus groups were conducted with older people in order to describe their walking experiences in these four neighbourhoods. Table 3.3 illustrates the themes identified through this initial phase of data collection and examples of associated

neighbourhood walkability issues. In the second phase, these results provided a platform for questioning community stakeholders about the socio-political process of creating walkable neighbourhoods. Key informant interviews were grounded in concrete issues that mattered to pedestrians.

The study used an interactive qualitative approach to data collection and analysis as described by Maxwell (2005). It draws on the existing theory to guide design but does not impose that theory on interpretation, thus allowing emergent concepts to arise that may not be included in the pre-existing idea-context. An iterative inductive process examining the links between data and existing frameworks was used.

Insert Tables 3.1, 3.2 and 3.3 about here

Participant sampling:

Key informants were defined as community members whose actions or decisions have had or potentially could have an impact on neighbourhood walking conditions. These informants included community members, city employees and local politicians who possessed particular knowledge on, or had past experience with, the walking issues identified by older people in phase one of this research. Purposive sampling was used to select key informants from three main groups of community stakeholders—employees of the city (those operating within the municipal bureaucracy), elected officials (municipal politicians), and members of civil society. The latter group included place-based informants who lived or worked in the selected neighbourhoods as well as those serving on public advisory committees at the municipal level.

A number of strategies were used to select key informants. In the case of city employees, several collaborators within municipal government working in the areas of health, planning and seniors assisted in identifying knowledgeable key informants. Examples of walkability issues identified in phase one included difficulty with roadway crossings, driver behaviour, sidewalk conditions, access to destinations and the use of public transit. These issues guided the identification of relevant municipal divisions. For example, professionals from the Traffic Operations Division were contacted regarding issues related to roadway crossings. Other municipal divisions sampled included the police, public transit, health and planning. Municipal politicians representing the four study neighbourhoods were contacted via e-mail and invited to participate. Key informants from civil society were recruited through the four neighbourhood community associations, community health centres, public advisory committees. Some phase one participants who were older neighbourhood residents also participated. Snowball sampling was also used within this group of informants to identify other relevant informants.

Data Collection:

From November 2007 to May 2008, in-depth interviews were conducted with all respondents. The overall purpose of the interview was to obtain participants' perspectives on the community processes that affect neighbourhood walkability for older people. The interviewer presented relevant issues to the key informant's area of knowledge and asked them to add their insights to the nature of the particular problem(s) identified in phase one. A semi-structured interview guide was used to draw out insights relevant to theoretical concepts such as actors, resources, access channels and opportunity (refer to Table 3.4 for

examples). After each interview the researcher took reflective notes which helped to guide subsequent questioning and probes. In this way the interview process was adapted to gain a deeper view as data collection progressed.

Insert Table 3.4 about here

Analysis:

Interviews were audio-recorded and transcribed verbatim. The transcripts were read and re-read while the researcher made preliminary notes in the form of memos in the margins of the transcripts. This process facilitated thinking about the data in a holistic contextual manner (Maxwell 2005). The development of a coding strategy was informed by social movement theory as well as emergent concepts from the data. Summary forms were completed using the codes derived from each transcript as headings, a summary of the issues discussed, and examples of quotes and reflective memos. These summary forms facilitated formulation of ideas for further categorization. Several raw transcripts as well as excerpts from raw transcripts pertinent to coding categories were provided to members of the research team who provided input on coding domains and interpretation. Conceptually-oriented matrices (Miles & Huberman 1994) were used to compare key informant groups on areas of convergence and divergence. This visual representation of data also assisted in the identification of patterns. Further reading of the transcripts was carried out to confirm interpretations derived from the analytical process. An iterative process of identifying links among data categories followed by confirmation of those links using raw data and matrices lead to the identification of five key dimensions. Authenticity of interpretation was

enhanced through feedback received from study participants who were sent a copy of the study results.

Results

Thirty-one key informants were interviewed. Fifteen participants had experience working at the municipal level. Of these, three were politicians, nine were city staff and three were members of public advisory committees. Sixteen participants had experience working at the neighbourhood level. Of these, three were employees of place-based institutions (e.g. community health centres) and the remaining 13 were involved with voluntary place-based organizations or had been in the past. Interviews lasted 50 to 90 minutes and were audio-taped with the consent of participants. One participant preferred that the researcher take notes rather than use an audio-tape. Data analysis revealed five dimensions of the socio-political process relevant to creating walkable neighbourhoods.

1. Local political context: tensions between place and department

Politicians and residents talked about issues such as traffic calming, pedestrian crossings and sidewalks in relation to how these things were experienced within a particular socio-geographic location. Bureaucratic key informants, on the other hand, described how the same issues fit within overall departmental mandates. Requests for pedestrian improvements at the neighbourhood level were often perceived to be blocked by a bureaucratic focus on departmental mandates. Both politicians and neighbourhood informants described meeting bureaucratic resistance to requests for pedestrian improvements for a variety of reasons. One reason had to do with a reluctance to change anything in a large complex system that might

jeopardize the reliability of service delivery (i.e. focus on running the system rather than improving it). Another primary concern was the stronger municipal-level focus on vehicular traffic rather than pedestrian traffic:

“These are hard working conscientious civil servants, but their theme is move vehicles quickly and efficiently. That is their theme, not make it easy for pedestrians to use the space. They are not against pedestrians, just when they build roads, when they redo a roadway they are thinking of the roadway, they are not so much thinking of the sidewalk.”

(Neighbourhood association member)

City employees described how their position requires achieving a balance among various concerns including public and private sector objectives as well as departmental mandates for the city as a whole. Municipal-level views revealed that departments often resist neighbourhood requests for pedestrian improvements because of implications for operational rather than capital costs:

“From a public works perspective and an engineering perspective, they do not want sidewalks. It just adds that much more to a very stretched city to maintain, to clear, and whatever.” (Planning professional)

Although bureaucratic-level key informants emphasized the importance of city-wide approaches, they also described how comprehensive monitoring of pedestrian infrastructure such as sidewalks and road crossings was limited by financial resources. For this reason they

were reliant on public feedback to provide information on issues that could not be monitored comprehensively. While city employees pointed out why public feedback was important, they also stressed the need to have metrics to verify the accuracy of public perception (e.g. speed surveys, traffic counts).

Key informants at both neighbourhood and municipal levels described how, over the past decade, provincial downloading of responsibility, budgetary shortfalls and amalgamation played a role in exacerbating tensions between neighbourhoods and the municipality.

Political agreement at Council was more difficult to achieve because rural and urban priorities tended to differ. Residents in a recently amalgamated neighbourhood felt that this change had affected their ability to participate in municipal decision-making processes.

They felt farther away from these processes both in terms of the distance they had to travel to reach city hall as well as the intimidation of dealing with a larger bureaucratic structure.

Some city employees felt that amalgamation, combined with provincial downloading had created a difficult situation in which a large and fragmented bureaucracy had to operate with more limited resources.

The overall tensions that emerged through key informant perspectives highlighted the difference in orientation of community stakeholders at the neighbourhood level who are concerned about the characteristics of place versus those at the municipal level who are concerned about divisional mandates. These tensions emerged in a political context in which political representation is structured around geographic entities (i.e. place) while its bureaucratic organization is structured around departments. Tensions between

neighbourhood level and municipal level processes were strained further through provincial downloading of budgetary responsibility and amalgamation.

2. Formal access channels: being listened to and getting feedback

Informants described formal access channels to exchange information between municipal government and neighbourhood organizations. They identified both political and administrative access channels, but indicated that the former has had a larger impact on past improvements to walkability:

“Our councillors for the last fifteen years have been [receptive to our concerns], much more so than the staff themselves. We always had downtown people pushing the envelope. City bureaucrats, they have got their rules and just follow them.”

(Neighbourhood association member)

Using political access channels included writing letters to city council, appearing at budget deputations and ongoing communication with direct municipal representatives. Of the political channels described, a strong relationship with the neighborhood’s municipal councillor was viewed as most effective. Being heard through political channels was associated with living in a politically active community with high voter participation rates. Living in a neighbourhood with these kinds of attributes was associated with the expectation of being listened to:

“... people here vote, they vote. They are involved, they are politically active.

You get listened to if you vote.”

(Neighbourhood association member)

Administrative channels included contacting service departments directly, often through the use of a central information line, and participation in various planning consultations.

These channels were viewed to be effective for issues that did not require a substantial outlay of resources, (e.g. burnt out street lights), but less so for issues requiring a more comprehensive approach (e.g. traffic calming). Lack of response was often attributed to budget restrictions:

“I mean when I called the police [about drivers turning right across the path of pedestrians crossing on a green light] and said, they admit it is a very dangerous thing. The pedestrian does not have a chance there, but they cannot afford to do it [add extra enforcement]. I have talked to different people and it is pretty much the same thing, we cannot afford to do that.”

(Older persons' association member)

City employees said that public feedback on municipal processes comes from a variety of sources including public advisory committees, direct complaint processes and through councillor office staff. While the importance of public feedback was acknowledged, so was the challenge of capturing and analyzing many sources. City employees suggested that a variety of factors influenced the uptake and impact of public feedback. The first is that it is directed towards *“the right person”* and *“is articulated in a way that that person can*

understand.” Another had to do with how much “*accumulative action*” had already occurred around a particular issue. Group concerns appeared to have more legitimacy with municipal councillors, supporting the notion that there is power in numbers:

“For things where one person has asked for it, it absolutely does not meet the warrants [standard criteria] and it would make no fiscal sense to do it, like it is really one of those cases where there is nothing that will compel staff, then those are the ones that are very hard, but you have to learn how to say no sometimes. I am getting better at that.”

(Municipal councillor)

There were many examples of residents expecting action when they called in about a problem. However municipal-level responses appeared to depend on the result of cumulative action and having these complaints filter up to someone who had the power to make a decision on the issue. The use of administrative channels was challenged by a “*complexity of structures*” whereby available mechanisms for the public complaint or input may be “*too far down the chain of command*” to have any real effect. Although political channels were seen as being more effective than administrative ones, the use of these channels was also challenged by competing interests such as the efficient movement of vehicular traffic.

3. Mobilizing resources

Resources were mobilized at the neighbourhood level, which subsequently enhanced access to resources at the municipal level. These resources were mobilized differently depending on neighbourhood context. For example, some neighbourhoods had larger community

associations and therefore could form more complex organizations with standing committees constantly working on various issues such as traffic calming and neighbourhood planning:

“I am sure the key committee people, work ten to fifteen hours a week, volunteer, on community business, but it keeps the edge going, it keeps drawing things to people’s attention. It is a sad comment that the squeaky hinge gets the oil. We squeak.”

(Neighbourhood association member)

These larger community associations had additional ways of raising funds that facilitated further organizational activities such as clean up events and concerts. Membership drives served as one source of revenue for community associations that assisted with organizational activities as well as legitimacy. Groups with smaller memberships drew on links with other collectives and institutions in order to generate the resources necessary to act on various issues. Institutional resources such as community health centres (CHCs) were useful in assisting group organization activities, particularly in lower SES neighbourhoods. One group, the Ottawa Seniors Action Network, organized with assistance from the inner-urban CHCs. This group formed around problems that seniors living in inner-urban neighbourhoods had identified and these included pedestrian safety. Community development and health promotion resources were used to assist the group in providing a meeting place as well as administrative and organizational support. In this case, CHCs bridged the gap between grievances and organizational capacity. CHC’s also assisted the group in making linkages with appropriate city level processes in order to address their issues:

“The community health centres in the area... I would say they are the link. They are part actually of the discussion. They are quite into it, when it comes to letter writing, or telephone calls, they are part of it. Generally, we do the work. They are helping us at the professional level. Who do we get a hold of? Who should we be talking to? Who is our best contact to make things work? If we do not get results, how do we push ...”

(Older persons’ association member)

Three types of knowledge relating to walking experience, professional credentials and municipal processes emerged as being key resources, which converged through group organization and linkages. For example, community associations combined knowledge of municipal processes (i.e. systems knowledge) with knowledge of the neighbourhood (i.e. experiential knowledge) in order to address local problems. System knowledge related to knowing how to engage with municipal processes in order to influence action. This kind of knowledge meant understanding the orientation of other actors in the system in order to make a persuasive argument. Experiential knowledge arose from those who spent time walking in the neighbourhood and observing problems. Professional knowledge was often used to address the observed problems and was usually spoken of with respect to municipal level city employees. However, this type of knowledge was also possessed by neighbourhood residents with professional expertise and civil institutions such as community health centres. Often the city councillor acted as a link between experiential knowledge and professional knowledge at the city level.

Conversely there were examples of frustration suggesting gaps between local experiential knowledge and municipal professional knowledge. For example professionals working in traffic control said that stop signs and speed bumps are ineffective traffic calming strategies and often unwarranted but the public continues to request them anyways. Key informants at the neighbourhood level who had experiential knowledge of walking were frustrated when professional knowledge was used to address their concerns with little perceived change:

“You know the answer they gave me at that meeting was, oh, they have better equipment [for snow clearance] so we can look forward to better results. Well, it did not happen. Well, I do not know, if it was good equipment but I did not see any improvement.”

(Older persons’ association member)

These frustrations usually emerged when one group felt that another group’s solution was ineffective, suggesting that perhaps better ways are required to integrate this knowledge and that evaluating effectiveness of interventions should use both kinds of knowledge.

4. Key actors: catalysts of change

Informants identified four types of actors—the political actor, the middle level actor, the grassroots actor and the inside actor—who had all played a critical role in achieving past improvements to walkability. Political actors were seen as the most influential because of their ability to act through the governing structures and budgetary decisions.

“It depends very much on political personalities, it really does, to get things done... You have to find the right person at the right moment and I regret to say, that is how the cookie crumbles.”

(Neighbourhood association member)

The most frequently identified political actor was the municipal councillor who had the power to gain direct access to the “*right person*”, follow up frequently and “*push*” for implementation. Residents gave examples of how politicians had acted as facilitators for accessing the right administrative structure for making change. They also gave examples of how follow-up by politicians was more likely to ensure a response from city staff.

The middle level actor was someone who was a resident of the neighbourhood with professional expertise and many social connections. This kind of actor did not act within political or administrative structures but was respected in both realms. In one example, a resident with planning expertise helped the neighbourhood association come up with its own traffic control plan. Although not a political figure, the resident planner had influence with key politicians through social and professional acquaintances as well with neighbourhood residents (i.e. pull from the top and pull from the bottom). The critical role of the middle level actor appeared to be an ability to describe geographical realities of a neighbourhood in a way that was understood by both bureaucrats and politicians. This kind of actor also helped interpret the implications of municipal plans to neighbourhoods and assisted the community in providing a collective response.

The grassroots level actor was a person with well integrated community links. This kind of actor was active in a number of community groups and was able to draw on the knowledge and social networks established through these relationships. One such actor was described as the key force behind an organization's efforts to have grit boxes installed for use on sidewalks during winter. This particular individual had built and maintained connections with 10 different community groups over the span of 20 years. She was able to connect experiential, professional and system knowledge in order to effect change.

Inside actors were professionals working for change from within the bureaucratic system. These actors used their knowledge of the system, professional connections and expertise to ensure that pedestrian issues were considered as part of the political agenda. In contrast to the middle level actor, the inside actor was not associated with a particular neighbourhood but rather with a particular approach that aligned itself with pedestrian concerns such as accessibility or environmental sustainability.

5. Identifying and acting on opportunity

Opportunity represented a change in circumstances that lowered the cost of action or made action possible. Key informants identified different types of opportunities existing within civil society, the bureaucracy and the political system, which were both taken advantage of and created. Neighbourhood level key informants reported that acting on opportunities often meant using reconstruction or redevelopment events to direct departmental municipal budgets towards local pedestrian improvements:

“That is why Somerset Heights traffic calming plans have been on the books for twelve years and it is not quite all done and the only reason some of it is done is because they had a program to redo the sewers. If it had not been for that, we would have all been dead being run over.”

(Neighbourhood association member)

The ability to act on opportunity was distinct from the opportunity itself and involved the convergence of actors, resources and access channels. It represented a way of navigating system constraints. Acting on opportunity required that actors recognized the opportunity and had the resources to match it (i.e. legal opportunities required legal resources).

Emphasis on the *“need to push”* suggested that the nature of the process is more conflictual than co-operative. Actors engaging in this conflict appeared to have a certain degree of confidence and a willingness to persist despite adversity:

“We call it guerrilla urbanism. ...I said [to the developer], the payoff for the city is you have got to put in really good planters and put in a nice sidewalk to protect the people walking there because it is a very ugly pedestrian environment... They balked at that for quite a while. We had to get kind of persistent with them and said, look, we did not get these development charges relieved so the community gets nothing back, besides your building. Our payback here is a better sidewalk, and a safer sidewalk.”

(Municipal councillor)

Acting on opportunities required the ability to persist over the long-term. Extensive periods of time passing between planning and implementation resulted in gaps between these two processes. Some of these gaps were attributed to turn-over among the professionals involved with a particular project and some were due to budget restraints. The emphasis on time highlights how the process of making change requires committed endurance. Through on-going awareness and participation, community stakeholders were able to take advantage of smaller opportunities, which led to larger ones over the long-term.

City employees and politicians discussed how opportunities were both created and constrained by the larger policy context. For instance, development patterns are largely determined by provincial and federal taxation strategies driving response of the commercial sector. One councillor described how her community's actions to prevent the loss of local commercial walking destinations were unsuccessful:

“All the city can do is to zone where certain types of uses can go, but we do not actually provide those facilities. And then we cannot force anybody to build. We cannot force anybody to stay. That is a little bit frustrating sometimes.”

(Municipal councillor)

Regional legislative frameworks pertaining to roadway use and accessibility were also frequently mentioned with respect to local government policy. For example, recently passed provincial accessibility legislation (*Accessibility for Ontarians with Disabilities Act-2005*) presents a potential opportunity for improving pedestrian environments for people with

disabilities. Although the built environment standards are still being developed, this legislation shifts the onus to municipalities for providing accessible pedestrian infrastructure.

Discussion

This research has identified five dimensions that influence the interface between neighbourhood and municipal processes. Although these dimensions are not unique to the literature on social movements, this research provides an analysis of what they mean in terms of micro-urban processes as opposed to national broad-based movements. The following sections provide a discussion of how these dimensions inter-relate and the implication of these relationships for creating walkable places.

The dimension of local political context illustrates several important points on the nature of municipal-neighbourhood interaction. The first point is that municipal processes are structured around discrete divisions of service delivery while neighbourhoods, as socio-geographic entities, are concerned with issues of place. The resultant tensions between municipal divisions and issues of place produced frustrations among stakeholders in different realms of the system, and illustrated an inherent challenge to creating more walkable places. Walking is experienced in places but acted upon by municipal departments. Community development approaches that bring placed-based community stakeholders together with municipal level departments hold promise for resolving this problem and ensuring that walkability issues do not fall through cracks created by “*siloed*” departmental approaches.

The second important point regarding political context, was the lack of formal neighbourhood governing structures in Ottawa as found in cities like Edmonton (i.e. borough

system) and Toronto (i.e. neighbourhood councils). Thus, neighbourhood citizens had to rely on other less formal communication mechanisms. Links between governments and citizens provide a mechanism for the negotiation and renegotiation of plans and policies (Arefi 2004, Woolcock 1998), thereby building trust in democratic processes and supporting successful community development. Although administrative channels existed and in many cases operated using a complaint-driven approach, political channels were viewed to be more powerful since they provided direct influence on budget and policy decisions. The municipal councillor was the key actor in this type of channel and often bridged the gap between place-based concerns and city-level approaches. In many cases they were able to facilitate residents' abilities to be heard and receive feedback through administrative channels. While the municipal councillor represents an extremely useful actor in this kind of a system, action may largely depend on how knowledgeable councillors are about walking conditions in their jurisdictions, how committed they are to acting upon them and how effective they are at negotiating the administrative system. It is also important to note that political action is always tied to an election cycle and therefore must be sustained by broad-based public support (Brownson et al. 2006, Oliver 2000).

The third important feature of political context shaping the interaction of municipal and neighbourhood processes was that political power rested with a collection of councillors representing geographically-based interests rather than with a central official collective as would be the case in a party system. Ottawa has a political system based on a decentralized vision emphasizing territorial legitimacy rather than ideological legitimacy. This feature of decentralized territorial legitimacy has both positive and negative implications for creating walkable environments. The positive aspect is that it allows citizens to use the strength of

political channels to influence municipal decisions. In this way they can be powerful actors using local knowledge to address complex problems that do not necessarily fall into the purview of any one municipal department. This kind of arrangement creates a type of permeability through which place-based concerns can have a direct impact on municipal level decisions. However, the legitimacy that the political system gives to neighbourhood and local councillor actions presents an interesting dilemma. While grassroots community action represents a strong and necessary force in creating walkable environments, it also has a negative side. The well described “*not in my backyard*” syndrome arises when neighbourhood residents want to protect their turf from unwanted change. It often occurs in response to higher density or alternative forms of housing that do not conform to the existing social fabric or built neighbourhood form (Baily & Humphrey 2001, Wheeler 2003). This kind of opposition tends to be led by homeowners motivated to preserve property values and protect the safety of their neighbourhood (Dear 1992). Collective action at the neighbourhood level can thus represent a barrier to creating walkable environments through higher level efforts to provide viable conditions for alternate modes of transportation and mixed-use. The acceptance of changes at the neighbourhood level may therefore depend on the city’s ability to adapt them to fit within a locally identified vision.

Finally, the characteristics of political context shaped the way that actors viewed and mobilized resources. For example, the prominence of geographical political representation and political access channels within this context meant that resources had to be mobilized around developing a strong political voice and strengthening relationships with municipal representatives. The structure of municipal departments meant that financial resources for improving walkability had to be accessed through departmental budgets.

This research highlights the role of both financial and knowledge-based resources for creating walkable environments. Financial resources were used at the neighbourhood level to facilitate group organization and used at the municipal level to affect environmental changes (e.g. sidewalk construction). Financial constraints limited the acquisition of other resources both at neighbourhood and municipal levels. Since economic concerns underlie much of what the city is willing or able to do about walkability, demands for improved walkability must be built on rationale that adequately accounts for the economic benefits of walking to both individuals and society. Litman (2003) contends that the full economic benefits of walking (e.g. health, transportation, tourism) are often not accounted for, and that transportation planning practices undervalue walking for a number of reasons. One reason has to do with the rationale of devoting transportation resources in proportion to each mode's share of travel activity (i.e. if walking trips constitute two % of travel, then two % of transportation resources should be devoted to walking). However, this practice does not account for walking that is done in conjunction with another mode of travel such as taking public transit, nor does it account for the trade-offs of increasing roadway capacity to carry vehicles at the expense of discouraging walking trips.

Findings emphasize the importance of both experiential and professional knowledge in developing more walkable environments but suggest that experiential knowledge is not valued by itself and must be verified in the context of professional knowledge. Although both kinds of knowledge can exist in a single neighbourhood organization, neighbourhoods more commonly relied on professional knowledge that existed at the municipal level. Gaps between experiential knowledge and professional knowledge suggested that better

mechanisms are needed for integrating these two kinds of knowledge. In many cases these gaps related to difficulty in using access channels, incomplete communication and lack of ongoing communication using formal access channels. Findings also suggested that some circumstances facilitate the sharing of this type of information. One is having a municipal councillor act as a bridge between local knowledge at the neighbourhood level and professional knowledge at the municipal level. The other is to have neighbourhood standing committees that develop links at the municipal level and use these links regularly. Knowledge of how the system works (system knowledge) was used to advance experiential knowledge and enabled actors to negotiate the interface between neighbourhood and municipal processes.

Key resources at the neighbourhood level were used to enhance the uptake of information at the municipal level. For example large community organizations were able to form standing committees on issues like neighbourhood planning and traffic calming, and established ongoing relationships with municipal level groups. Given that some neighbourhoods may be able to mobilize resources more effectively than others, the nature of municipal neighbourhood interaction sets up conditions for the “*squeaky wheel*” problem whereby groups that can articulate their complaints clearly and strongly are more likely to have them addressed. This condition can be exacerbated by a lack of systematic methods for monitoring pedestrian conditions at the municipal level and reliance on a complaint-driven response strategy. Thus, large and vocal community groups may be in a more advantaged position resulting in observed pockets of walkability. While local public input is important for creating walkable environments, it must be balanced with systematic approaches sensitive to addressing the needs of less vocal communities.

The research revealed several types of key actors who can be considered both resources and mobilizers of resources. The significance of these actors was that they played a bridging role across organizations, sectors (e.g. public private), and levels (e.g. neighbourhood-municipal). Although the key actors operated using different networks and backgrounds, their successes appeared to lie in being able to gain legitimacy and influence with various groups of stakeholders. These critical actors were able to combine various types of knowledge and draw on several frames of reference to advance particular arguments.

The ability to act on opportunity was distinct from the opportunity itself and involved the convergence of actors, resources and access channels. Acting on opportunity clearly required time and persistence, suggesting that some neighbourhoods may be in a better position than others. For instance, past research indicates that neighbourhoods with a higher percentage of home owners are more likely to have larger community associations (Rossi & Weber 1996). When groups are large, the burden of voluntary action can be shared among a greater number of actors, thus decreasing the cost of that action. Furthermore, home ownership has been theorized as a factor associated with greater political legitimacy through the values of property ownership and tax contribution (Forest 1983, Kemeny 1993). The values that homeownership represents in North American societies may, therefore, make municipal processes more receptive to the voices of neighbourhoods containing proportionally more homeowners.

The current research focuses on the role of local socio-political processes but acknowledges that these are nested within a larger economic, institutional and political context. Other

researchers have drawn attention to how federal highway investment, tax subsidies and land economies have encouraged growth patterns of urban sprawl over most of North America (Barnett 2007, Duany et al. 2000, Kunstler 1993). The larger policy context can influence local opportunities to improve walkability through frameworks for legislation as well as decisions on what resources may be given to cities. Socio-ecological approaches to increase population physical activity levels stress the need for policy interventions and multiple levels of governments (Brownson et al. 2006). However, further research is required to establish which kinds of policies will be most effective. The current research describes how the socio-political process operates between neighbourhood and municipal levels - a critical interface in the democratic system. This interface has been largely overlooked in the walkability literature but has significant implications for the ways that health promotion and community development initiatives could support grassroots community efforts to create more walkable places.

Considerations for transferability

Transferability of these findings must be limited to contexts with a similar municipal governmental structure. Dimensions of the process may differ between cities with a formalized neighbourhood governing structures and cities with central party systems. Although findings are specific to the issue of walkability, they may have relevance for processes that occur around other types of place-based issues that require inter-departmental collaboration. While the sampling strategy used in this study allowed questioning to revolve around situations and events grounded in reality, it resulted in four eligible politicians. It also limited the discussion of issues to those identified in the neighbourhoods being studied.

Perspectives from additional politicians and different types of neighbourhoods (e.g. rural villages) may have added further insights.

Conclusion

Creating walkable neighbourhoods is ultimately a political process that involves broad-based public support and knowledgeable politicians. The interface of neighbourhood-municipal processes forms the foundation of this process and is shaped by the local political context. Mobilization of resources at the neighbourhood level affected citizens' ability to utilize access channels and act on opportunity, putting some neighbourhoods in a more advantaged position than others. Future efforts to improve walkability will require that conventional bureaucracies develop approaches that are sensitive to place-based needs.

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Table 3.1 Neighbourhood socio-economic characteristics

| Neighbourhood | Post-secondary graduates (%) | Average household income (Canadian \$) | * LICO households (%) |
|-------------------------------|-------------------------------------|---|------------------------------|
| Inner-urban Lower SES | 51 | 41,007 | 39 |
| Inner-urban Higher SES | 79 | 99,313 | 10 |
| Suburban Lower SES | 49 | 44,453 | 35 |
| Suburban Higher SES | 73 | 108,602 | 7 |

* LICO: low income cut-off

Table 3.2 Characteristics of urban form

| Neighbourhood type | Dwelling densities (dwellings per square kilometre) | Land use characteristics | Street patterns |
|---------------------------|--|---|------------------------|
| Inner-urban | 1992 - 3258 | Mixed land-use (i.e residential, commercial, office, and institutional uses within shared blocks) | Rectilinear grid |
| Suburban | 840 - 1823 | Separation of land-use (i.e. commercial restricted to arterial roads with parking lot frontage) | Primarily curvilinear |

Table 3.3 Phase one themes and associated neighbourhood issues

| Themes | Examples of neighbourhood issues |
|--|---|
| 1. Multi-dimensional personal meanings | Loss of neighbourhood grocery store Having natural features and places to rest |
| 2. Hostile walking environments | Unsafe road crossing conditions Excessive traffic volumes Aggressive driver behaviour Poor sidewalk conditions |
| 3. Experiencing ambiguity | Inconsistent use of pedestrian signs at right turning lanes Lack of clarity of policies around shared space on sidewalks, roadways and recreational pathways |
| 4. Getting around | Connections between pedestrian infrastructure and public transit (e.g. ongoing activities like snow clearance that support these connections) Accessibility (e.g. of destinations, pedestrian infrastructure and road crossing opportunities) |

Table 3.4 Examples of questions used to guide interview process

What groups or individuals were involved? How were they involved?

What kinds of resources did the neighbourhood draw on?

Were there links between the neighbourhood and municipal government that influenced this process?

Were there disagreements that arose during the course of this process?

Where there any barriers or problems that arose during the course of this process?

What kinds of opportunities have you had for creating more walkable environments?

CHAPTER 4:
A COMPARATIVE CASE STUDY OF WALKABILITY FOR OLDER PEOPLE:
EXAMINING THE INTER-RELATIONSHIP OF NEIGHBOURHOOD
SOCIO-ECONOMIC STATUS AND URBAN FORM

This chapter presents a third manuscript, which addresses the third and fourth objectives of the thesis and focuses on neighbourhood comparisons. It aims a) to examine how neighbourhood SES and urban form may inter-relate to affect older people's walking experiences through an examination of neighbourhood differences, and b) to examine differences among neighbourhood key informant perspectives on the socio-political processes that shape the walkability of neighbourhood environments.

This third phase of the study involved re-analysis of data collected from phases one and two with the aim of identifying neighbourhood differences. It also entailed the comparisons of publicly available quantitative indicators relevant to walkability. All three sets of data were used in cross-case comparisons. The final manuscript reflects the overall case study design and thus, presents an analysis of data and integrated findings that provide additional insight into complex contextual influences on walkability.

This manuscript has been submitted to Bio-medical Central Public Health—an on-line open access journal with an international audience. The findings presented in this paper are highly relevant to future directions in public health research as well as theoretical development and intervention, which also make Bio-medical Central Public Health an appropriate source for dissemination. The manuscript has been formatted in the style required by this journal.

Tables and figures are included separately in the pages following the text. The references used in this manuscript have been integrated with final list of references following Chapter 5 since the formatting style required by Bio-medical Central Public Health was consistent with that of the thesis as a whole.

Article Title:

A comparative case study of walkability for older people: Examining the inter-relationship of neighbourhood socio-economic status and urban form

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Abstract

Background: Supportive neighbourhood walking conditions are particularly important for older people who spend more time in their local environments than younger people and who, as a group, prefer walking as a form of physical activity. Urban form and socio-economic status (SES) can influence neighbourhood walkability. Previous studies have focused on either the effect of urban form or neighbourhood SES on walkability. The objectives of this study were: a) to examine how urban form and neighbourhood SES inter-relate to affect the experiences of older people who walk in their neighbourhoods; and b) to examine differences among neighbourhood key informant perspectives on socio-political processes that shape the walkability of neighbourhood environments.

Methods: An embedded comparative case study examined differences among four Ottawa neighbourhoods that were purposefully selected to provide contrasts on urban form (inner-urban versus suburban) and SES (higher versus lower). Qualitative data collected from 75 older walkers and 19 neighbourhood key informants, as well as quantitative indicators were compared on the two axes of urban form and SES among the four neighbourhoods.

Results and discussion: Older people's walking experiences differed on the basis of urban form with respect to pedestrian infrastructure and walking destinations, and on the basis of neighbourhood SES with respect to traffic hazards and public transit. Neighbourhood key informant descriptions of the socio-political processes differed on the basis of neighbourhood SES with respect to salient neighbourhood association issues and neighbourhood political organization. Examining the inter-relationship of neighbourhood SES and urban form

characteristics on older people's walking experiences indicated that urban form differences were accentuated positively in higher SES neighbourhoods and negatively in lower SES neighbourhoods. Key informant descriptions of the socio-political process indicated that differences can affect neighbourhood capacity to influence decisions at a municipal level. Findings provide evidence of inequitable walking environments.

Conclusion:

Future research on walkability must consider urban form-SES inter-relationships and further examine the equitable distribution of walking conditions as well as the socio-political processes driving conditions. Study findings highlighted the need for municipal governments to monitor differences in walking conditions among advantaged and disadvantaged neighbourhoods, to be receptive to the needs of disadvantaged neighbourhood and to ensure that policy decisions are taken to address inequitable walking conditions.

Key words: Walkability, older people, neighbourhoods, socio-economic status, urban form, equity

Introduction

The importance of walking has received growing attention in recent years in both the fields of public health [176,177] and urban planning [178,179]. Research examining approaches to increase levels of physical activity has shifted from a lifestyle focus to supportive environments for active living [107]. Supportive walking environments are particularly important for older people, as walking is a preferred form of physical activity for a majority of this age group [54,55,180]. Furthermore, some older adults will face the loss of their driving license because of age-related changes, necessitating other options to meet their transportation needs [181]. Government policy directives to support independent living for older people [182] have created further imperatives for more walkable environments.

The neighbourhood is an important context for older people's walking patterns since this group tends to spend more time in local environments [14,30,183]. However, walking patterns vary among neighbourhoods [32,57,184]. Urban form and neighbourhood socio-economic status (SES) are two dimensions of the neighbourhood environment that have been shown to influence walkability over and above the effects of individual level determinants [73,74,185,186]. Urban form refers to the physical layout and design of neighbourhoods (e.g. dwelling density, land use and street patterns), while neighbourhood SES refers to the aggregated social and economic characteristics of the residents (e.g. average neighbourhood income, average level of education, percent of population living in poverty). As a group, residents of lower SES neighbourhoods are more reliant on walking for transportation [112,187,188], making supportive walking conditions especially important in lower SES neighbourhoods. However, the literature on walkability (i.e. the extent to which

environments invite and support walking) has tended to discuss urban form and neighbourhood SES in isolation, with little consideration given to how they may inter-relate.

In early studies examining the association between urban form and walking, the high density inner-urban neighbourhoods studied were often low SES areas while the low density suburban areas studied were often high SES areas, making it impossible to disentangle the effects of neighbourhood SES from those of urban form [189]. This issue has been addressed in two main ways. The first has been to select neighbourhoods that vary in urban form while keeping the social characteristics of neighbourhood residents homogenous [20,27,189]. These studies indicated that people walk more in high density inner-urban neighbourhoods than in low density suburban neighbourhoods. However, this approach did not disentangle the effect of neighbourhood environment, often referred to as context, from the compositional effects of individual residents who live in the neighbourhoods. In other words, people may walk more frequently in inner-urban neighbourhoods because a preference for walking influences their choice to live in these types of neighbourhood environments, or because they are reliant on walking for socio-economic reasons.

The second approach for disentangling the effects of urban form and SES has been to adjust for individual level SES using multilevel models [32,73,74,190-192]. Although the use of these models has allowed simultaneous examination of individual and group level factors, limitations remain. Macintyre et al. [15] argued that treating individual level SES as a confounder creates a false dichotomy between compositional and contextual effects since individual characteristics can theoretically be affected by environmental conditions. For example, individual SES may be affected by employment opportunities in the environment

and, thus, adjusting for individual occupational status may yield an underestimation of area-level effects.

Another critique of using multilevel models is that individual-level SES '*adjustment*' shifts attention away from what aggregated levels of SES represent at the neighbourhood level. As stated by Diez-Roux [193]: "*Variables measured at the individual-level (such as individual social class or race/ethnicity) may only be meaningfully understood in the context of how individuals are related to each other in groups or societies*" [p.184]. Aggregated neighbourhood levels of SES may, therefore, serve as a marker for how groups of people are related in a social hierarchy. These aggregated markers of group SES are often reflected in the characteristics of place, which can constrain health opportunities for lower SES groups [194].

There is growing evidence of a fundamental inequity among neighbourhoods vis-à-vis the environmental attributes that influence walkability. Lower quality recreational facilities, less pedestrian infrastructure and less green space have been documented in lower SES neighbourhoods compared to high SES neighbourhoods [22-25]. Similarly, higher levels of perceived traffic noise and crime, and lower levels of perceived aesthetics have been observed in low SES neighbourhoods compared to high SES neighbourhoods [20,26,27,195]. In inner-urban neighbourhoods, the benefits of having destinations in close proximity may be offset by factors such as high vehicular traffic density that make those destinations more hazardous to reach [28,29]. These differences suggest there may be socio-political processes at work that disadvantage lower SES neighbourhoods. Proponents of social justice and health equity [105] argue that addressing systematic patterns of disadvantage represents a

moral imperative of public health. The distribution of resources and opportunities linked to socio-political engagement ultimately affects health disparities among social groups. Put another way, these resources and opportunities represent collective capacity for creating healthy environments and, therefore, have relevance to public health interventions.

To date, studies examining neighbourhood effects on walking have used a variety of methods and theoretical approaches. Many studies used data from large census tracts as a proxy for neighbourhood-level effects, which did not correspond to meaningful walking distances [16]. A number of authors have developed conceptual frameworks for examining how environmental features may affect walking [98,100,101,165]. These frameworks have drawn links between the walking experience and dimensions of the environment, while also proposing ways to operationalize these dimensions. For example, Alphonzo [101] theorized that environmental accessibility influences the decision to walk, and operationalized accessibility in terms of the sidewalk network, barriers to walking, distance to destinations and number of destinations. While the conceptual frameworks developed up to this point have provided useful categorizations for studying the neighbourhood environment and its relation to walking, they fall short in two main ways. The first is in providing guidance for understanding the joint effect of physical and social environments on the walking experience. The second is in providing an understanding of the mechanisms through which disparities in walking conditions arise [16,165]. The current study aims to address both shortcomings using a case study approach.

A case study design permits an examination of inter-related dimensions of context such as neighbourhood SES and urban form, and yields findings that support conceptual

development [163,164]. Only a few studies have used this approach within the field of research examining walkability. These have examined how citizens' groups acted to affect their local environments [131,142,143] but focused on externally funded initiatives rather than neighbourhood processes that occur spontaneously. Furthermore, previous case studies have not examined how the intersection of urban form and neighbourhood SES influence walkability. The current study aimed to examine how urban form and neighbourhood SES may inter-relate to affect the experiences of older people who walk in their neighbourhoods. The study also placed these walking experiences within the socio-political processes that shaped neighbourhood environments and aimed to examine differences in how neighbourhood key informants described these processes. The design offers a contextualizing process, which is important for characterizing underlying relationships and processes and adding new insight [196].

Setting and Methods

This comparative embedded case study was conducted in four Ottawa neighbourhoods that differed on urban form (inner-urban versus suburban) and SES (higher versus lower). Ottawa, located in the province of Ontario, is the capital of Canada. The main employers are the federal government and the technology sector, resulting in a relatively well-educated population. The case was bound by the socio-political structure of Ottawa's municipal organization and the geographic boundaries of neighbourhood embedded units. The study involved sequential collection of qualitative data and quantitative indicators. Phase one examined older people's perspectives on their walking experiences in the four neighbourhoods [197]. Phase two examined the perspectives of neighbourhood stakeholders who had been involved with neighbourhood actions relevant to walkability issues. Data on

publicly available quantitative indicators of amenities relevant to walkability and neighbourhood traffic burden were collected during phase three.

Sampling and recruitment

Neighbourhood selection:

Neighbourhoods were purposively selected to vary on urban form and SES. At the time of neighbourhood selection, Ottawa was classified into 50 neighbourhoods. Using socio-demographic data from the 2001 Canadian census, high and low SES neighbourhoods were differentiated on the basis of mean household income, percentage of post-secondary graduates and percentage of low income households. City classifications of urban form were used to divide inner-urban neighbourhoods (primarily established before 1950) from suburban neighbourhoods (primarily established after 1950). Since there were fewer inner-urban than suburban neighbourhoods, the inner-urban neighbourhoods were chosen first to provide the greatest contrast in SES while maintaining comparable percentages of people aged 65 years and above. Subsequently, suburban neighbourhoods were selected to provide comparable SES profiles with inner-urban neighbourhoods. Having an active neighbourhood association (also referred to a community association) constituted another selection criterion for neighbourhood inclusion. Table 1 displays the socio-demographic and urban form characteristics of selected neighbourhoods.

Insert table 4.1 about here

Phase one recruitment (older people):

Older people in each of the four study neighbourhoods were recruited through community newspaper advertisements, posters, seniors' centres, community health centres, recreation centres housing co-ops and apartment buildings. A newspaper with a city-wide distribution included a story about the study, which also facilitated recruitment. Older people were considered eligible to participate if they: 1) lived within one of the neighbourhoods being studied; 2) had lived there for at least 2 years; 3) were 65 years or older and; 4) had walked in their neighbourhood at least once within the past year.

Phase two recruitment (neighbourhood key informants):

Neighbourhood key informants were defined as community members whose actions or decisions have had or potentially could have had an impact on neighbourhood walking conditions. Three types of key informants were purposively recruited. They were people who had lived in, worked in and politically represented the neighbourhood within the previous ten years. Neighbourhood key informants were recruited through neighbourhood community associations, community health centres and contacts made in phase one. Several older people who participated in phase one volunteered to be re-interviewed as key informants because of relevant knowledge. Key informants were also asked whether they could recommend other people with relevant knowledge or experience that might be different from their own. Municipal politicians representing the four study neighbourhoods were contacted via e-mail and invited to participate.

Data collection***Phase one qualitative (older people on walking experiences):***

Data were collected through focus groups, individual interviews and observational field notes from May 2007 to December 2008. Interviews were semi-structured and designed to elicit discussion on: 1) where people walked and why; 2) supportive and unsupportive aspects of the neighbourhood environment; 3) positive and negative neighbourhood changes over the past decade that had affected walking. Interviews lasted for approximately 50 minutes and were audio-taped.

Phase two qualitative (neighbourhood key informants on community processes):

In-depth interviews were conducted from November 2007 to May 2008. Interviews lasted for approximately 60 minutes and were audio-taped. Participants were asked to describe their insights on the issue of walkability and associated community processes. They were prompted to talk about: 1) the types of individual and group actors; 2) types of issues and how they were addressed; 3) how groups were organized and how they communicated; 4) neighbourhood resources; 5) municipal-neighbourhood interactions; and 6) opportunities acted upon.

As data collection progressed during both phases, the researcher (TG) took field notes, which helped to guide subsequent questioning and probes. All data were collected by the lead investigator, a practising physiotherapist working in the field of geriatric and stroke rehabilitation, as part of a doctoral research program in population health. Regular debriefing sessions were held with members of the research team who had backgrounds in epidemiology, nursing, occupational therapy, political science and rehabilitation.

Quantitative indicators:

Publicly available quantitative indicators relevant to differences in older people's walking experience were identified. Indicators of commercial walking destinations (e.g. presence of grocery stores) and neighbourhood amenities (e.g. walking / cycling paths, parks, recreation centres) were obtained from a website that provided data on neighbourhood health indicators collected by researchers from the University of Ottawa who worked in collaboration with the City of Ottawa [198]. Indicators of neighbourhood traffic burden were collected from the City of Ottawa Public Works and Services Department. These included pedestrian-vehicle collisions, traffic volumes in major intersections and distance of designated trucking routes in the neighbourhood. Total numbers of pedestrian vehicle collisions were summarized for the period January 1, 1998 to January 1, 2007, including collisions that occurred while pedestrians were crossing neighbourhood borders. Major intersections within neighbourhood borders were selected to represent the convergence of a north-south oriented major roadway with an east-west oriented major roadway, and to include intersections described in older people's accounts of traffic hazards in phase one interviews. The intersection data were comprised of traffic and pedestrian counts collected by city staff between the hours of 7:00 a.m. and 6:00 pm over a single weekday. The total length of designated trucking routes per square kilometre was calculated for each of the neighbourhoods using maps available through the City of Ottawa [199] and geographic information system data on neighbourhood areas collected as part of the Ottawa Neighbourhood Study [198].

Analysis

Phase one and phase two qualitative data were analyzed separately using an inductive and iterative approach. Focus groups and individual interview recordings were transcribed verbatim. The transcripts were read and re-read while the researcher made preliminary notes in the form of memos in the margins of the transcripts. This process facilitated thinking about the data in a holistic contextual manner [173]. Field notes and reflective memos made during data collection were also reviewed. For each transcript, content-oriented summary forms were created that contained information relevant to the questions posed as well as to other emergent topics. A constant comparative analysis method [200] was used. This involved labeling categories within discrete sections of data and comparing data across these categories to identify links, connections and differences. Analysis moved from coding strategies (i.e. categorizing the data) to contextualizing strategies (i.e. considering relationships that linked statements and events within a coherent whole). Re-reading of the transcripts by the lead investigator and subsequent discussion among members of the research team assisted in the integration of categories and conceptual interpretation. Reliability was enhanced by having other members of the research team (ME, CA) verify sections of the transcripts to ensure a credible match between data and coding domains. Authenticity of interpretation was enhanced through feedback received from study participants who were sent a copy of the study results.

Data from the four neighbourhoods were compared using matrices [169]. Content summary forms were used to construct question- and category-oriented matrices. Conceptually-oriented matrices were constructed based on the findings of phase one and phase two. Differences were further verified using matrices that were specific to sub-categories of the

broader conceptual dimensions. Figure 4.1 illustrates the four sets of comparisons that were used to identify differences among the neighbourhoods. These comparisons were made within each of the three data sets using matrices and tables to allow visual display. Figure 4.1 displays two sets of comparisons made along the urban form axis and two sets of comparisons made along the neighbourhood SES axis. These comparisons permitted an examination of the joint effects of urban form and SES. Looking at how urban form is experienced differently in high and low SES neighbourhoods allowed an exploration of how neighbourhood SES may modify the experience of urban form. Likewise, looking at how the same level of neighbourhood SES may be experienced differently in suburban and inner-urban neighbourhoods allowed an examination of how urban form may modify the experience of neighbourhood SES. Differences identified through qualitative analysis were triangulated with publicly available quantitative indicators.

Insert Figure 4.1 about here

Results

Results are presented in three sections. The first provides a summary of participant and neighbourhood characteristics. Section two focuses on urban form while section three concentrates on SES comparisons between inner-urban and suburban neighbourhoods.

Section 1: Participant and neighbourhood descriptors

Older participants:

Three focus groups and three to five individual interviews were conducted in each neighbourhood, yielding 75 participants in total. Table 4.2 displays the number of and characteristics of older participants in each neighbourhood.

Insert table 4.2 about here

Neighbourhood key informants:

Four to six key informants were recruited from each neighbourhood (n = 19; 63% male; 37% female). These participants included present and past members of place-based voluntary groups (n = 12), professionals of place-based institutions (n = 4), and municipal politicians (n = 3).

Neighbourhood amenities relevant to walkability:

Table 4.3 illustrates the presence of some neighbourhood amenities relevant to walkability. More banks, pharmacies and grocery stores were present in the inner-urban neighbourhoods than in suburban neighbourhoods. However, only the higher SES inner-urban neighbourhood had any grocery stores. Walking and biking paths as well as park land measures were higher in higher SES neighbourhoods compared to their lower SES counterparts. It is noteworthy that the higher SES inner-urban neighbourhood had higher levels of both walking paths and park land compared to the lower SES suburban neighbourhood. Inner-urban neighbourhoods had a greater number of recreational facilities compared to suburban neighbourhoods. The lower SES inner-urban neighbourhood had the

highest number of indoor recreation facilities of all the neighbourhoods but the lowest amount of park land per 1000 residents.

Insert table 4.3 about here

Indicators of neighbourhood traffic burden:

Table 4.4 provides indicators of neighbourhood traffic burden. Pedestrian vehicle collisions were higher in inner-urban neighbourhoods compared to suburban neighbourhoods. It is noteworthy that inner-urban neighbourhoods also had higher pedestrian: vehicle ratios at major intersections suggesting that collisions may be more likely to occur in these types of neighbourhoods because of higher concentrations of both pedestrians and vehicles. Lower SES neighbourhoods had more than double the number of collisions of their higher SES counterparts over a ten year period. Vehicle volumes in a major intersection were highest in the lower SES suburban neighbourhood. The table also illustrates that lower SES neighbourhoods had greater distances of designated trucking routes per square kilometre compared to high SES counterparts.

Insert table 4.4 about here

Section 2: Urban form comparisons

Pedestrian infrastructure: older people's walking experiences

Older people living in inner-urban neighbourhoods more often reported having sidewalks in their neighbourhoods than those living in suburban neighbourhoods. Their discussion of sidewalks highlighted tensions between the liveliness and interest of walking in inner-urban

neighbourhoods and the hazards of multiple sidewalk uses. The importance of sidewalks in inner-urban neighbourhoods was associated with safety, since they separated vehicle and pedestrian traffic, as well as with their value in providing frequently used public space (i.e. providing spontaneous meeting opportunities and comfort in knowing others were around to help if required). Since many sidewalks had just been replaced in the higher SES inner-urban neighbourhood much of the discussion in this neighbourhood focused on sidewalk design. The new design, while providing a continuous level portion for the pedestrian on the inner side, had increased the grade of driveway inclines on the outer side and many people found this difficult to navigate especially when walking two abreast in winter. In the lower SES suburban neighbourhood, there was less emphasis on sidewalk design and more emphasis on multiple sidewalk hazards such as carts and fallen fruit on the sidewalks as well as the problem of cyclists and skateboarders using the sidewalks. One key informant noted that while the law prohibited bikes on the sidewalks, many parents were teaching their children to ride on the sidewalks because of concerns about traffic volumes on the roadways:

“They are learning very young not to follow the law. I think it is bad training for the kids. Of course, the parents do not want them on road, so what do you do?”

(Female, phase two interview, lower SES inner-urban neighbourhood)

Suburban discourse on sidewalks highlighted a tension between auto-oriented street design and pedestrian concerns. Lack of sidewalks was perceived to be less of a problem in the higher SES suburban neighbourhood because of lower traffic volumes as well as an extensive network of recreational pathways through green areas. Older people in this neighbourhood felt that the combination of these pathways and green areas was an asset,

which invited walking in the neighbourhood. However, they noted the disadvantage of having to share the network with cyclists and the subsequent risk of collisions. They also indicated that the network of pathways was not cleared adequately during winter months.

Older people's views in the higher SES suburban neighbourhood revealed, however, that retrofitting suburban areas with sidewalks can be highly controversial:

“We have never missed sidewalks. We always walked on the road and we were quite happy. Well, amalgamation came along and suddenly Penfield was missing a piece of sidewalk and we almost had the third world war about that little piece of sidewalk.”

(Female, phase one, focus group, higher SES suburban neighbourhood)

Key informant interviews indicated that the reluctance to have sidewalks in the higher SES suburban neighbourhood was related to concerns about aesthetics such as how well the sidewalk fit with overall design principals of the neighbourhood, and property values.

Opposition to sidewalks was also related to residents' concerns about easily accessing their driveways especially in winter when snow banks made roadways narrower. In other words, the addition of sidewalks was expected to reduce the width of roadways and thus, the space available for maneuvering vehicles.

Sidewalks were felt to be much more important in the lower SES suburban neighbourhood where vehicle volumes were higher and the availability of recreational pathways was lower than in the higher SES suburban neighbourhood. Many people in this neighbourhood felt

that a sidewalk would relieve some of the worry of vehicle hazards and legitimize walking as a form of local transportation:

“I think that one side of a street should have a sidewalk. It is a sign of civility...just so we acknowledge that people walk.”

(Female, phase one focus group, lower SES suburban neighbourhood)

In the lower SES suburban neighbourhood, very few of the participants reported using recreational pathways on a regular basis because of having to walk too far to access them or because of concerns about cyclists.

Walking destinations: older people’s walking experiences

Walking for shopping and errands appeared to be most convenient and enjoyable in the higher SES inner-urban neighbourhood because of having a mix of shops and services nearby, frequent regulated roadway crossings and pleasant surroundings. Older people in the other three neighbourhoods reported that not having a local grocery store was a major factor that reduced the walkability of their neighbourhoods. Older people in the lower SES inner-urban neighbourhood who walked to the nearest grocery store crossed at least three major arterial roads to reach it. Despite a lower number of commercial destinations in the lower SES suburban neighbourhood, many walking destinations were associated with practical errands. In this neighbourhood, people reported walking to shopping centres adjacent to a busy major arterial boarder consisting of six lanes of traffic:

“I do not like Carling and Kirkwood either. There is so much traffic there. There is really not a pedestrian-friendly way to pedal or to walk when you are going to those shopping centers.”

(Male, phase one, focus group, lower SES suburban neighbourhood)

In the higher SES suburban neighbourhood, people lamented the loss of local commercial destinations but reported that walking paths, beautiful scenery and community destinations like the library and seniors’ centre gave them plenty of opportunity and incentive to walk within the neighbourhood. This neighbourhood had the highest amount of park land per person and descriptions of walking destinations emphasized the natural features of the environment. Park areas were associated with the identity and community spirit of this area:

“And this area in here somehow has managed to hang on to its parks. There is the big Samuel Green and God help anybody if they try and build on that. There would be a total uprising.”

(Female, phase two, interview, higher SES suburban neighbourhood)

Section 3: SES comparisons

Traffic Hazards: older people’s walking experiences

Pedestrian-vehicle collisions, vehicular traffic volumes through selected intersections, and designated trucking route distances were higher in lower than higher SES neighbourhoods. Older people in both lower SES neighbourhoods reported having to cross hazardous neighbourhood borders such as main traffic roadways more often to reach desired destinations such as federally maintained parkland and shopping destinations. They also

reported more walking hazards associated with heavy vehicles than their higher SES counterparts:

“How they manage to stop when those lights turn to amber, some of those trucks. I get the impression that this city is trying to keep the flow of traffic. The concentration is on the traffic rather than on the pedestrian. That is the feeling that I have.”

(Female, phase one interview, lower SES inner-urban neighbourhood)

Older people in the higher SES suburban neighbourhood were more likely to drive to shopping destinations, while those in the higher SES inner-urban neighbourhood reported being able to regularly shop within the neighbourhood and that crossing the main traffic artery within the neighbourhood was not a problem because of frequent regulated pedestrian crosswalks.

Particularly problematic to the lower SES suburban neighbourhood, were long distances between regulated pedestrian crossings on one of the main traffic arteries running through the neighbourhood. High traffic volumes coupled with long block lengths meant that crossing a main arterial in this neighbourhood was difficult. Compounded by a lack of benches, this situation proved especially challenging to older people with mobility problems who lived in the lower SES suburban neighbourhood.

Public transit: older people’s walking experiences

One topic of conversation that clearly dominated more of the discussion of walkability in lower SES neighbourhoods was the role of public transit. More participants in these

neighbourhoods relied on buses in order to complete their walking trips and viewed public transit as integral to walkability. While older people in higher SES neighbourhoods also discussed the importance of public transit for walkability, this observation did not emerge as consistently across focus groups and interviews. Concerns in lower SES neighbourhoods highlighted the importance of providing clear and safe pedestrian connections between pedestrian infrastructure and transit vehicles. Many people talked about the difficulty of having to climb over snow banks to reach the sidewalk after exiting the rear of the bus in winter. These participants also mentioned several older people who had been killed when they slid under the wheels of the bus after exiting the bus in winter. Difficulty getting seated before the bus started moving and congestion in priority seating areas were also issues that emerged more frequently in lower SES neighbourhoods. There was a stronger sentiment expressed by older adults in the lower SES suburban neighbourhood than in the lower SES inner-urban neighbourhood that bus routes were not always convenient:

“It is not easy finding a bus that gets you there in an uncomplicated fashion. It is not easy even if you find a bus and are willing to get on it...it is not easy carrying all these baskets of nice new plants.”

(Female, phase one interview, lower SES suburban neighbourhood)

Salient neighbourhood association issues: neighbourhood key informant descriptions of socio-political processes

Higher and lower SES neighbourhoods differed with respect to salient neighbourhood association issues discussed by neighbourhood key informants. Key informants in higher SES neighbourhoods gave examples of how neighbourhood association efforts had aimed to

improve neighbourhood aesthetics more frequently than lower SES neighbourhoods. For example, the higher SES inner-urban neighbourhood had organized a series of concerts and raised a considerable amount of money in order to bury hydro-electric wires to improve aesthetics. The higher SES suburban neighbourhood had a heritage committee that was addressing the issue of preserving the original lighting posts in the neighbourhood rather than having a new standard imposed by the city. The light posts along with natural features and winding pathways were felt to contribute to its distinct character, which was part of a comprehensive design plan implemented by the neighbourhood's developer. In the lower SES neighbourhoods there was little mention of aesthetics, but more concern around safety issues (i.e. crime preventions and traffic hazards). In the lower SES suburban neighbourhood, crime prevention activities occurred separately in different parts of the neighbourhood. One key informant from a public housing complex described his unsuccessful attempt at organizing a neighbourhood watch initiative. Some of the barriers he faced were raising the funds necessary for advertising the initiative, mobilizing support within his housing community and hearing back from the police in a timely fashion. In contrast, one of the older people in the higher SES inner-urban neighbourhood noted that concerns about crime consumed very few community resources:

“Well that is the only incident [of crime] that I know of ... I am a member of the Glebe Community Association. I go to all their meetings once a month and I have been active on the board and it has never been raised in the past five years that I have been going to any meetings.”

(Male, phase two interview, higher SES inner-urban neighbourhood)

Political organization: neighbourhood key informant descriptions of socio-political processes

Higher SES neighbourhoods had larger neighbourhood association memberships than their lower SES counterparts. This characteristic appeared to be associated with creating more complex and stable neighbourhood associations in which voluntary work was shared among a greater number of people. In the lower SES neighbourhoods, activities around walkability were addressed by groups with smaller membership numbers:

“It is great having this cultural mix, but it is not only a cultural mix but it is an economic mix and socially mixed and that is why it is a great neighbourhood. It just does not have the same dynamic as where there is a huge ownership contingent. It puts more burden on a few people but it takes, as Margaret Meade said, it only takes a few people to change the world.”

(Male, phase two interview, lower SES inner-urban neighbourhood)

Another interesting difference between the higher and lower SES neighbourhoods was that political representatives lived in the higher SES neighbourhoods rather than in the lower SES neighbourhoods. Although this did not necessarily mean political representatives misunderstood lower SES neighbourhood issues, it did mean that their own day-to-day walking experiences often lay outside the neighbourhoods they were representing, and that there was a greater onus on residents of lower SES neighbourhoods to keep them up-to-date:

“Then there are other things where I really do not know a lot about it, because I do not live in that area or I am not a senior, so I am not experiencing that current challenge right now. ... If I do not know that there is a demand, I am not going to know to ask for it.”

(Female, municipal councillor, phase two interview, lower SES suburban neighbourhood)

Residents of higher SES neighbourhoods had the benefit of being represented by councillors whose residency in the neighbourhood gave them a greater appreciation of the issues:

“We have had a very good [councillor] because she is also a resident. She has been a resident for probably close to forty years...you need somebody who knows what your problems are.”

(Female, phase two interview, higher SES suburban neighbourhood)

Key informants in higher SES neighbourhoods indicated that groups had been able to generate a strong voice through community associations resulting in improvements to walkability. Key informants in lower SES neighbourhood also described having achieved improvements to walkability including pedestrian crossings, and traffic calming measures. However, in the lower SES neighbourhoods, there were more reports of difficulty obtaining information such as building standards or municipal procedures from the City of Ottawa:

“It is very hard to find code. I have been told by various city engineers that say, code is two inches for curb cuts, or that there is no regulation as to the width of the curb

cut... They won't give you the information. You have to go research it and find it, nobody will give it to you so that you know whether it meets or it does not meet [the code]."

(Female, phase two interview, lower SES suburban neighbourhood)

The difficulty of information exchange with municipal officials did not emerge in conversations with key informants from higher SES neighbourhoods. Both groups of key informants described a process of ongoing vigilance but key informants in lower SES neighbourhoods described meeting more resistance as they attempted to navigate municipal level processes. This was the case for neighbourhood group representatives as well as for single residents who acted individually. Although, higher SES neighbourhoods also met with resistance, past battles and the capacity of community associations were viewed as factors that seemed to have lowered this resistance at city hall. One resident suggested that city hall may be more receptive to inquiries from the representatives of neighbourhoods with a history of successful community mobilization.

"You do not want to upset five thousand potential voters...I am sure the key committee people, work ten to fifteen hours a week, volunteer, on community business, but it keeps the edge going, it keeps drawing things to people's attention. It is a sad comment that the squeaky hinge gets the oil. We squeak."

(Male, phase two, interview, higher SES inner-urban neighbourhood)

Discussion

The inter-relationship of neighbourhood SES and urban form: compounding effects on older people's walking experiences

Examining the inter-relationship of neighbourhood SES and urban form characteristics on older people's walking experiences highlighted the role of compounding effects—some positive and some negative. On the positive side, for example, a combination of extensive walking paths, abundant and well-kept park space and key community destinations made walking an inviting and pleasant experience in the higher SES suburban neighbourhood despite the lack of commercial destinations. Similarly, a combination of commercial destinations, pleasant surroundings and neighbourhood traffic calming approaches made walking especially convenient in the higher SES inner-urban neighbourhood. Conversely, in the lower SES suburban neighbourhood, a lack of pedestrian infrastructure, greater distances between walking destinations and a greater reliance on walking and public transit for transportation jointly made walking inconvenient for many participants who lived in this neighbourhood. Although pedestrian-traffic collisions occurred in all four neighbourhoods, the number of collisions was especially high in the lower SES inner-urban neighbourhood. This finding is consistent with those of LaScala, Gerber & Gruenewald [29] who identified “*hot spots*” of pedestrian-vehicle collisions in socially disadvantaged inner-urban neighbourhoods. The compounding effects of having more residents who rely on walking for transport in lower SES neighbourhoods and higher volumes of traffic may partially explain this finding.

In essence, the compounding effects highlighted by this study suggest that there are advantages and disadvantages associated with urban form but that these differences are

accentuated positively in higher SES neighbourhoods but negatively in lower SES neighbourhoods. Comparisons of neighbourhood walking amenities provided support for this conclusion. With the exception of pharmacies and recreational facilities, the levels of all other amenities relevant to older people's walking experiences were higher in higher SES neighbourhoods compared to their lower SES counterparts. Although older participants in both inner-urban neighbourhoods appreciated having a mix of commercial walking destinations, it was participants of the lower SES inner-urban neighbourhood who expressed that the absence of a grocery store represented a disadvantage in terms of how they thought about walkability. Comparisons of park land as well as walking and biking paths also demonstrated clear differences between higher and lower SES neighbourhoods, which were relevant for older people. Although some research has suggested that higher levels of green space and recreational pathways might be found in suburban neighbourhoods [140,201], it is notable that both types of amenities were more accessible in the higher SES inner-urban neighbourhood compared to the lower SES suburban neighbourhood in the current study. This finding indicates that neighbourhood SES is may be a stronger determinant of certain walking amenity levels than urban form.

Differences found in both older people's descriptions of their walking experiences and the quantitative indicators of traffic burden provide additional support for the compounding effects produced by the inter-relationship of urban form and neighbourhood SES. Concerns with traffic hazards were described by all older participants but to a much greater extent in the lower SES neighbourhoods. These differences were also reflected in quantitative indicators of traffic burden. The suburban differences between the number pedestrian-vehicle collisions and intersection vehicle volumes may, in part, be explained by a higher

population in the lower SES suburban neighbourhood. However, there was a clear difference in both these indicators demonstrated in the inner-urban neighbourhoods, which have comparable populations. Furthermore, the differences in distances of designated trucking route demonstrated contrasts in higher and lower SES neighbourhoods that would not necessarily be relevant to population differences.

The question that arises from these findings is whether the neighbourhood SES differences highlighted by this research reflected material differences driven by market forces, or whether they reflected systemic differences in socio-political processes. It could be argued that greater traffic hazards in lower SES neighbourhoods may partly be explained by real estate market forces since, for example, it is generally less costly to live next to a busy roadway than to a park. However, the problems associated with living next to a heavily trafficked area are created by society as a whole and sustained by transportation policy decisions. Furthermore, differences in key informants' descriptions of the socio-political processes emerged in SES neighbourhood comparisons rather than in urban form comparisons. While the latter finding does not necessarily mean that SES differences in walking conditions were created by the particular socio-political processes identified, it does indicate that socio-political processes can have a role in perpetuating these differences. The following section discusses the significance of the socio-political process differences identified.

Socio-political differences

Results highlight a number of differences relevant to the political organization of neighbourhood groups that may contribute to unequal walking conditions through a

neighbourhood's capacity to influence decisions made at the municipal level. The first of these relates to the role and the critical mass of neighbourhood associations. Although, neighbourhood associations operate in conjunction with a variety of other stakeholders (e.g. community based agencies, tenant organizations, local businesses, schools and local associations), they are often the most recognizable group associated with the neighbourhood as a whole [202,203]. Previous research indicates that home owners are more likely to participate in neighbourhood improvement organizations than renters [204,205] and that higher SES neighbourhoods have greater levels of home ownership [206,207]. Thus, neighbourhoods with lower numbers of homeowners are often associated with smaller neighbourhood associations. Furthermore, because membership is usually associated with a monetary fee, larger and wealthier community associations can generate more financial resources which can be used to enhance organizational capacity, which in turn further increases membership as well as allowing options such as hiring outside consultants. Membership size has been found to be an indicator of community group capacity, both organizationally and politically [208,209].

The second influence on neighbourhood capacity to influence municipal-level decisions related to differences in municipal officials' receptivity and greater challenges in obtaining information about various procedures and standards as expressed by the key informants in lower SES neighbourhoods compared to their higher SES counterparts. Whether this difference was relevant to the size of the group making the request or the perceived legitimacy of the concern could not be determined from the available data. However, the theoretical importance of the finding is that lower SES neighbourhoods may have more challenges obtaining information and being heard at the municipal level, which hinders their

capacity to influence the neighbourhood environment. Although previous research has indicated that municipal administrators' receptivity to citizens' contacts may be low in general [210,211], there is evidence to suggest that the perceived legitimacy of a neighbourhood issue in the eyes of municipal officials is affected by the level of mobilization and resident participation that occurs around that issue, which often is often higher in affluent neighbourhoods [149,202,212,213]. The extent to which municipal receptivity and perceived legitimacy may vary with respect to socially advantaged and disadvantaged neighbourhoods has important implications for creating walkable environments and warrants further study.

The third influence on neighbourhood capacity to influence municipal-level decisions is related to relationships with political representatives. The role of local political representatives may be particularly important for creating walkable neighbourhoods in decentralized municipal systems, since there is no centralized executive body to override political decisions taken with respect to one constituency. Findings from the current study suggest that when a local political representative lives in the neighbourhood, they possess additional knowledge on that neighbourhood through their own walking experiences and daily observations. When they live elsewhere, residents must take the extra step of ensuring that the political representative remains up-to-date on neighbourhood issues. Future research may test the implications of this observation by examining whether improvements are more likely to occur in neighbourhoods with elected politicians residing in them. A rival hypothesis, regarding the importance of where councillors live, is the importance of the relationship that neighbourhoods forge with their political representatives. Rakodi [214] found that despite a commitment to poverty reduction, urban politics are rarely responsive to

the needs of the poor. Based on her case study work in 10 developing cities, she concluded that gains by low income urban residents were achieved by fostering relationships with elected representatives at various levels.

The final socio-political difference found in this study, relating to the salience of neighbourhood association issues, highlights a further challenge that lower SES neighbourhood may face in creating walkable environments. That is—a greater gap between neighbourhood problems and the resources available to deal with them compared to higher SES counterparts. For example, higher SES neighbourhood key informants talked about organizing around aesthetic improvement projects, while lower SES neighbourhood key informants talked about organizing around safety. If lower SES neighbourhoods must expend organizational resources on basic concerns that make walking safe (i.e. crime and traffic control) there may be fewer resources left over to address issues that make walking inviting (i.e. aesthetics).

Previous research has shown that high SES areas have been favoured with respect to non-automobile transportation policies including provisions for public transit as well as pedestrian and cycling infrastructure [21,22,215,216]. Without approaches to reduce traffic and crime in the city as a whole, addressing these problems in one neighbourhood may shift them to another, creating a larger gap between the problem and available resources. Furthermore, while more cities, including Ottawa, are producing municipal pedestrian plans—an example of a city-wide approach to pedestrian travel—these must be followed by a shift in budgetary resources permitting their implementation.

Equitable walking environments

Taken together, the findings discussed in the previous two sections provide insights on the issue of equitability as it relates to walkable neighbourhoods. The concept of health equity, as it is defined from a social justice and human rights perspective, emphasizes the need to look at the distribution of health and living conditions as well as the socio-political processes driving health disparities among socially advantaged and disadvantaged groups [104,105]. Examining how neighbourhood SES and urban form inter-relate to affect older people's walking experiences highlighted clear differences between lower and higher SES neighbourhoods, pointing to a social gradient of walkability. However, looking at these differences devoid of socio-political processes does not go far enough in explaining inequity. Socio-political process differences indicate that the social gradient represents more than material differences. They also indicate that the problem of unequal distribution of walkability among neighbourhoods is unnecessary, and amenable to intervention.

Potential interventions to address inequitable walking conditions could include measures that support neighbourhoods in community mobilization efforts as well as mechanisms to ensure that concerns from lower SES neighbourhoods are addressed at the municipal level. Other examples include municipal systems that monitor unequal neighbourhood conditions as well as policy and implementation strategies to reduce inequities through city-wide approaches. The challenges, however, of implementing a city-wide approach to increasing walkability, will inevitably be met by resistance from other interests such as from those who depend on automobile transport.

Since automobile-dependence is widespread, particularly in North American cities [217], the inherent challenge of creating more walkable cities and reducing neighbourhood inequity is apparent. However, a growing recognition of the need for more sustainable transportation systems supports the imperative to address these challenges [218]. Resolving tensions that arise in cities among pedestrian and automobile drivers will require mechanisms that bring diverse interests together and ensure that socially disadvantaged groups have a meaningful voice in this process. Promising examples include approaches being used by the Study Circle Resource Center [219] and the Canadian Institute for Public Engagement [220], which employ a number of strategies including small working groups, the use of personal stories and deliberative dialogue techniques to ensure that a diverse range of citizens can participate and reach decisions on disagreements. As stated by McCoy and Scully [219]:

To become engaged people need to see that their participation will make a difference and that it will be valued. They need opportunities that allow them to make the best use of their skills and time. They need to be invited to participate by those they know and trust [p. 120].

The current study highlights a need for developing further public dialogue around inequitable walking conditions and employing strategies to ensure that there is a place for everyone in this process.

Considerations for transferability and limitations

This study was conducted in Canada's national capital. Findings must be interpreted within the context of an economically prosperous city with 20 % of its total land use devoted to

parks and green space [221]. Although the selected neighbourhoods differed with respect to rates of personal crime [198], these differences were not reflected in older people's descriptions of their walking experiences in higher and lower SES neighbourhoods. This finding contrasts with other research [20,57] and may be explained by the relatively low levels of major crime in the city as a whole [222]. It is also possible that the older persons who volunteered for this study may have been less fearful of crime than the population of older residents.

The indicators of traffic burden used did not represent measures of overall traffic volume nor did they represent measures of pedestrian risk. Selected intersection volumes were not all collected during the same year but these were the most recent and comparable data available from the City of Ottawa when this study was conducted. Despite this limitation, these values provided an indication of how major intersection traffic volumes may differ between higher and lower SES neighbourhoods. Although findings were particular to the four neighbourhoods selected for this study, the differences among neighbourhoods provided insights on the broader concept of equity, which is applicable to other places and future research.

Conclusion

Examining the inter-relationship of neighbourhood SES and urban form with respect to older people's walking experiences indicated walking conditions were more supportive in higher SES neighbourhoods compared to their lower SES counterparts. Socio-political process differences emerged in comparisons of SES rather than urban form comparisons, indicating

that differences in walkability among higher and lower SES neighbourhoods are not only unequal but inequitable. Future research on walkability must consider the urban form-SES inter-relationship and further examine the equitable distribution of walking conditions as well as the socio-political processes driving these inequities. Study findings highlight the need for municipal governments to monitor differences in walking conditions among advantaged and disadvantaged neighbourhoods, to be receptive to the needs of disadvantaged neighbourhoods and to ensure policy decisions are taken to reduce inequitable walking conditions.

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Declaration of competing interests

The authors declare that they have no competing interests.

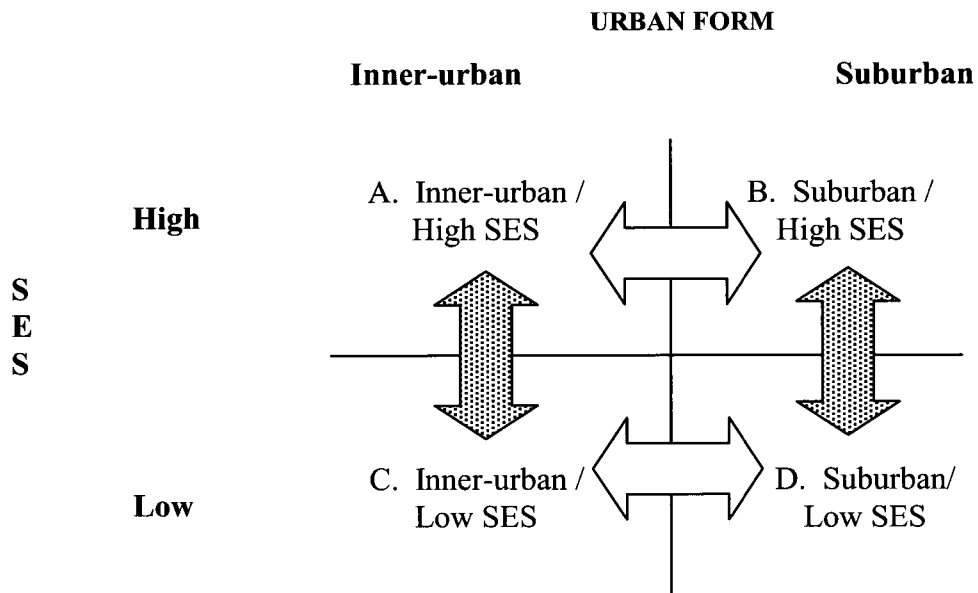


Figure 4.1 Comparison strategies: Horizontal arrows represent urban form comparisons with attention to how differences may be expressed in low and high SES neighbourhoods. Vertical arrows represent SES comparisons with attention to how differences were expressed in inner-urban and suburban neighbourhoods. These comparisons were made within each of the three data sets.

Table 4.1 Socio-demographic and urban form characteristics of selected neighbourhoods

| Neighbourhood characteristics | Lower SES Inner-urban neighbourhood | Higher SES Inner-urban Neighbourhood | Lower SES Suburban Neighbourhood | Higher SES Suburban Neighbourhood |
|--|--|---|--|--|
| *Older residents (%) | 11 | 9 | 11 | 10 |
| *Total population | 11947 | 10630 | 10106 | 5237 |
| *Post secondary graduates (%) | 51 | 79 | 49 | 73 |
| *Average household income (Canadian \$) | 41,007 | 99,313 | 44,453 | 108,602 |
| *Low income cut-off households (%) | 39 | 10 | 35 | 7 |
| **Dwelling density per square kilometre | 3258 | 1992 | 1823 | 840 |
| ***Street pattern | Rectilinear grid | Rectilinear grid | Curvilinear; one area with modified grid | Curvilinear street; some cul-de-sacs |

Multiple Sources: *City of Ottawa, based on 2001 Canadian Census data
 ** Kristjansson, E., Sawata, M., & Labonte, R. The Ottawa Neighbourhood Study, based on 2006 data [198]
 ***City of Ottawa Planning Department

Table 4.2 Sample characteristics of older walkers for each neighbourhood

| Sample characteristics | Lower SES Inner-urban neighbourhood (L-U) | Higher SES Inner-urban Neighbourhood (H-U) | Lower SES Suburban Neighbourhood (L-S) | Higher SES Suburban Neighbourhood (H-S) |
|---|--|---|---|--|
| Number of participants (n) | 20 | 17 | 18 | 20 |
| Age (mean years) | 77 | 77 | 72 | 75 |
| Gender (% female) | 85 | 76 | 78 | 90 |
| Walking aid use (%) | 35 | 25 | 28 | 10 |
| Length of neighbourhood residence (mean years) | 15 | 37 | 26 | 28 |
| Home owners (%) | 10 | 88 | 33 | 75 |
| Post-secondary education (%) | 25 | 88 | 55 | 45 |

Table 4.3 Neighbourhood amenities relevant to walkability

| Amenities | Lower SES Inner-urban neighbourhood | Higher SES Inner-urban Neighbourhood | Lower SES Suburban Neighbourhood | Higher SES Suburban Neighbourhood |
|---|--|---|---|--|
| Banks (per 1000 residents) | 0.33 | 0.47 | 0 | 0.18 |
| Pharmacies (per 1000 residents) | 0.55 | 0.26 | 0 | 0 |
| Grocery Stores (per 1000 residents) | 0 | 0.19 | 0 | 0 |
| Biking and walking paths (metres per person) | 0.44 | 1.00 | 0.71 | 3.38 |
| Parks (metres per person) | 2.09 | 29.88 | 23.57 | 93.64 |
| Recreational facilities (per 1000 residents) | 2.67 | 2.01 | 1.23 | 1.23 |

Source: Kristjansson, E., Sawata, M., & Labonte, R. The Ottawa Neighbourhood Study. Ottawa Neighbourhood [198]
2001 Canadian Census data

Table 4.4 Indicators of neighbourhood traffic burden

| Indicators | Lower SES inner-urban neighbourhood | Higher SES inner-urban neighbourhood | Lower SES suburban Neighbourhood | Higher SES suburban Neighbourhood |
|---|--|---|---|--|
| *Pedestrian- vehicle collisions (total number) | 207 | 113 | 78 | 34 |
| **Vehicle Volume (total number) | 11 694 | 10 554 | 15 852 | 7 469 |
| **Pedestrian Volume (total number) | 2417 | 3292 | 242 | 122 |
| **Vehicles : Pedestrian (ratio) | 4.8 : 1.0 | 3.2 : 1.0 | 65.5 : 1.0 | 61.2 : 1.0 |
| Designated trucking routes (metres per square kilometre) | 2762 | 541 | 831 | 0 |

Source: City of Ottawa Public Works and Services Department

* Pedestrian-vehicle collisions 1998 – 2007

** Pedestrian and vehicle volumes for selected main intersections:

Absolute counts collected over an 8 hour weekday

Values for L-U collected July 2007, H-U May 2007, L-S July 2006, and H-S July 2006

CHAPTER 5: INTEGRATED DISCUSSION AND CONCLUSION

This chapter integrates research findings from the manuscripts and provides an overall analysis of the study data. It begins with a presentation of the revised conceptual model including an overview and explanation of model components and their relationships. This model considerably extends the original model, which conceptualized older people's walking experiences as being embedded within a socio-political process. The revised model represents a more in-depth conceptualization of the socio-political production of neighbourhood walkability and provides a preliminary explanation of equity influences. A discussion follows this presentation, which elaborates on how the model represents an integration of empirical evidence and theoretical concepts. Implications are then discussed with respect to measurement of walkability, intervention, policy and further research. The chapter also outlines strengths and limitations of this research including an overview of strategies used to enhance rigour. Finally, the chapter summarizes the contribution that this research makes to population health.

Overview of the model

The revised model (Figure 5.1) conceptualizes how community socio-political structures and processes at the individual, neighbourhood and municipal levels inter-relate to affect the production of neighbourhood walkability. It is based on the premise that walking experiences occur in environments shaped by socio-political forces operating at various levels of aggregation, and focuses on the levels of neighbourhood and municipality since they are most proximal to walking and daily life. The model illustrates a dynamic process.

Individuals and neighbourhood groups interact with both political and bureaucratic dimensions of municipal government. In turn, municipal government influences the neighbourhood environment to affect walkability. The model also depicts sets of influences that affect equitable processes and outcomes with respect to the production of neighbourhood walkability. In essence, the model conceptualizes how the socio-political production of neighbourhood walkability is situated within interacting components of a community system.

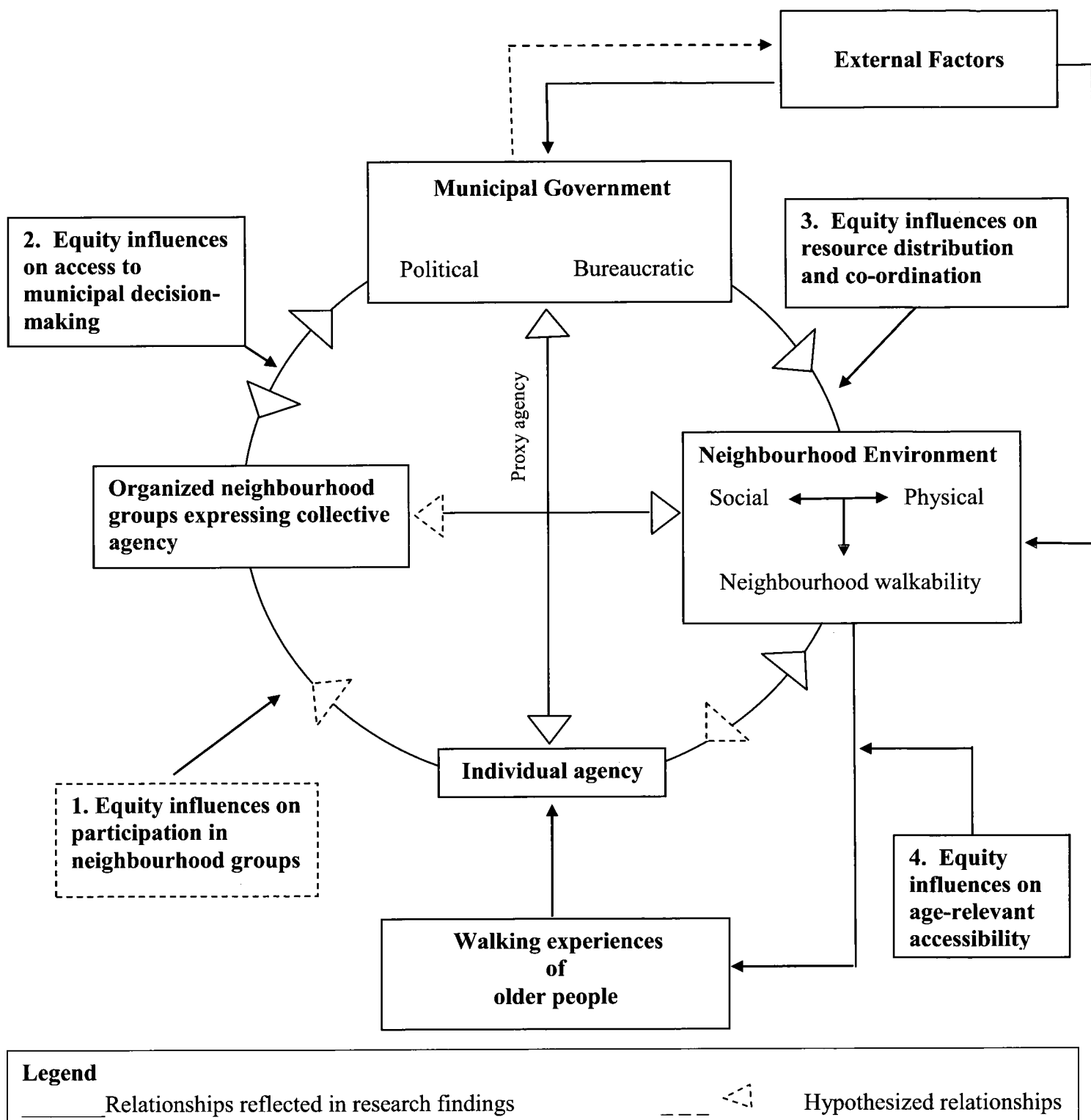


Figure 5.1 The socio-political production of neighbourhood walkability: a dynamic model

Elements of the model and their inter-relationships

Walking experiences of older people:

Older people's walking experiences are a foundation of the model. While not all walking experiences are linked to socio-political processes, the model conceptualizes personal experience as the primary basis for socio-political action since walking can lead to observations that prompt people to act. Conversely, individuals would be unlikely to act on walkability if they have little exposure to walking experiences.

Individual agency:

Action arising from these experiences is conceptualized as '*individual agency*'. The model draws on Bandura's [223] definition of agency which is a planned and intentional effort to affect a particular outcome and can be carried out either individually, by proxy or collectively. Individual agency can be exerted on the neighbourhood directly. Proxy agency is exercised through individual requests to municipal government for interventions such as sidewalk replacement.

Organized neighbourhood groups expressing collective agency:

Individual agency can extend to collective agency expressed through organized neighbourhood groups. Bandura's theory suggests that collective agency arises from collective efficacy and outcome expectancy. Organized neighbourhood groups represent a collective capacity to organize, speak and act on behalf of group members and in doing so play a role in producing public goods for collective use. Individual members of neighbourhood groups can mobilize resources, share skill sets and reach a critical mass

resulting in a capacity that is greater than the sum of individual parts. This emergent collective capacity represents a strong influence on municipal-level decisions about resource distribution. Links between neighbourhood and municipal levels act as important regulatory mechanisms in this overall cycle of socio-political production since they allow neighbourhood groups to stay informed about municipal government decisions and governments to stay informed about the effects of their decisions. Consistent with Giddens' structuration theory [224], the model integrates the notions of agency and structure. In other words, actors express agency through social structures such as neighbourhood organizations and municipal government to produce and reproduce social systems.

Municipal government:

Municipal government represents institutionalized power structures composed of both political and bureaucratic dimensions. These two dimensions represent actors and opportunity structures, which operate from different orientations. The political dimension operates from a place-oriented perspective while the bureaucratic dimension operates from a department-oriented perspective. At this level of the model, policies can be established and fine-tuned with public feedback. It is also a level where politicians and bureaucrats have the power to allocate larger budgetary resources and professional knowledge to affect neighbourhood environments. Municipal government influences the production of neighbourhood walkability through the spatial distribution and co-ordination of amenities and services that affect both the physical and social dimensions of the neighbourhood environment.

External factors:

This model acknowledges the role of external factors operating outside the realm of municipal government, neighbourhood groups and individuals, to affect the production of neighbourhood walkability. These influences include other groups within civil society, the private sector and higher-level governments, which can impact directly upon the neighbourhood environment or indirectly through their effect on municipal government decisions. The model hypothesizes a recursive relationship between these external factors and municipal governments. In other words, municipal government decisions can also influence the way in which external factors operate.

The neighbourhood environment:

The neighbourhood environment is composed of physical and social dimensions which co-produce walkability. The model hypothesizes that the social and physical neighbourhood characteristics not only affect walkability and how it is experienced, but the expression of agency.

Equity influences:

The notion of ‘equity’ used in this model is derived from Braveman and Gruskin’s [104] definition of health equity as “the absence of systematic disparities in health (or in the major social determinants of health) between social groups who have different underlying social advantage/disadvantage – that is, different positions in a social hierarchy” [p.254]. The model illustrates how distinct sets of equity influences come into play during the cycle of socio-political production. These influences can affect the ease of access that some social groups have over others to either participate in the socio-political processes influencing

neighbourhood walkability, or to benefit from efforts to improve walkability. This section briefly describes each set of influences beginning at the lower left hand corner of the model and moving in a clockwise direction.

1. The model hypothesizes that there are equity influences on participation in organized neighbourhood groups at the neighbourhood level. These influences make participation more accessible to some types individuals versus others (e.g. homeowners versus tenants or older adults versus younger adults).
2. The set of equity influences operating between the levels of neighbourhood groups and municipal governments concern which groups speak to authorities about their neighbourhood or on behalf of their neighbourhood, and which neighbourhoods have the most legitimacy with city officials. These influences affect which neighbourhood voices get heard by municipal government. Being heard at the municipal level is, in part, dependent on a neighbourhood's capacity to mobilize many consistent voices that can be sustained over a period of time. The 'squeaky wheel problem' discussed in Chapter 3 is an example of this type of equity influence.
3. Equity influences that operate between the level of municipal government and the neighbourhood environment relate to the spatial distribution and co-ordination of resources. Municipal governments have the capacity to contribute to inequities or correct for them. If municipal governments distribute resources using predominantly complaint driven-response systems, they may contribute to inequity by responding to neighbourhoods that possess the resources and the capacity to complain at the expense of neighbourhoods that do not. On the

other hand, having city-wide approaches that examine unequal conditions and reduce disparity through redistribution, is a way that municipal government can alleviate the burden that some neighbourhoods may bear at the expense of others.

4. In addition to the previous set of distribution-related influences, the model illustrates influences affecting equitable access to walking environments. For example, conditions that allow walking access to pedestrians with average levels of mobility may not offer the same kind of access to older people, or those with disabilities. These types of influences have to do with the provision of designs, amenities and services that make it possible for those with mobility limitations to access, pedestrian infrastructure and destinations. One example would be sidewalk designs that allow access with any kind of walking device.

Integrated discussion of the model

This discussion outlines how study findings have been integrated to inform the model and draws on other research to support hypothesized relationships. It also addresses the theoretical integration, which evolved with the models' development, and situates the theoretical contribution of the model with respect to previous conceptualizations of neighbourhood walkability and equity. The significance of the system-oriented view represented in the model is discussed in reference to change processes and the potential role that older people may have in these processes.

Empiric support for the model

The findings from Chapters 2 and 3 supported the relationship between walking experiences of older people and the expression of agency both individually, by proxy and collectively.

Data provided examples of how older people contributed to their neighbourhood environments directly, called municipal government about problems and, in some cases, participated in neighbourhood groups. The themes emerging in Chapter 2 illustrate how older people's walking experiences are affected by an intersection of the social and physical aspects of the neighbourhood environment. For example, experiencing ambiguity was reflected in built environment characteristics, social norms and legislative inconsistencies.

Chapter 2 provided many examples of walking barriers for older people such as lack of safe road crossings with a reasonable walking distance. These conditions prevented some people from walking and therefore represent accessibility issues rather than inherent risks of the walking experience. The distinction is important since the perception of injustice plays a role in prompting people to act and because established legal frameworks (i.e. Accessibility Acts, Canadian Charter of Rights and Freedoms) and associations (e.g. Human Rights Commission) can be used as resources in addressing this kind of inequity.

Findings from Chapter 3 supported the relationship drawn in the model between organized neighbourhood groups and the municipal government. The evidence of this chapter indicated that the capacity of neighbourhood groups to act collectively can affect their ability to influence municipal government. Chapter 3 findings also highlighted the tension between a place-oriented perspective of neighbourhood groups and politicians and the department-oriented view expressed by municipal bureaucrats. Political and bureaucratic dimensions are illustrated in the model and represent the two types of opportunity structures that citizens used in interactions with the municipal level. This chapter also provided examples of how neighbourhood groups can act collectively to affect neighbourhood environments directly

and how municipal government affects the production of neighbourhood walkability through the distribution and co-ordination of amenities and services. Key informant perspectives in this chapter indicated that the process of creating neighbourhood walkability evolves over a long period of time and requires ongoing commitment. These findings support the dynamic nature of the model

Findings from Chapter 4 provided evidence of inequitable neighbourhood walking conditions. The differences observed between lower SES neighbourhoods and their higher SES counterparts suggested that there were influences operating, which affected the equitable spatial distribution of resources relevant to walkability. The differences identified among key informant descriptions of neighbourhood socio-political processes suggested that the inequities in resource distribution may be related to differences in neighbourhood political organization and neighbourhood influence on municipal-level decision-making. The findings from Chapter 4 did not provide causal evidence that differences in socio-political processes resulted in the observed differences in walking conditions. However, findings did provide insight on some of the processes that may be reproducing and perpetuating these inequities.

Hypothesized relationships

The model has some hypothesized relationships that were not investigated directly or thoroughly in the current study but, which do have some basis in other empirical evidence. The first is the set of equity influences affecting individual participation in organized neighbourhood groups. There was evidence in this study that some older people participated in organized neighbourhood groups and some did not. Although the question of why and

how older people get involved in neighbourhood groups was not a primary objective of this thesis, findings point to the significance of these questions. It could be surmised that participation is a matter of personal choice and that non-participation simply reflects this choice. However, Richard et al. [225] found that social participation among a convenience sample of older people living in Montreal neighbourhoods was correlated with frequency of neighbourhood walking and perceived access to higher levels of neighbourhood services and amenities. The authors of this quantitative study noted the similarities of their findings with those of a qualitative study done in Australia, which reported that “higher levels of social participation took place in areas where people held a positive image of their environment, where environments were green, and had open spaces and considerable opportunity structures” [226, p.359]. Opportunities for participation can be affected by community development initiatives, which focus on assisting groups to develop the knowledge and resources required to effectively participate in the civic process [227].

The current research provided an example of how one group, the Ottawa Seniors Action Network, emerged from community development efforts spearheaded by the local community health centre. This group lobbied for improvements to pedestrian conditions that were of particular concern to older people and drew attention to issues that otherwise may not have been a priority to a homeowner’s group. Thus, the model hypothesizes that influences such as equitable access to organizational resources, may affect participation in neighbourhood groups.

The second hypothesis is that neighbourhood environments affect the expression of agency through pathways to individual and neighbourhood levels. The work of both Giddens [224]

and Bandura [223] has provided ample evidence of the recursive relationship between social context and agency. Although this relationship has not been tested with respect to how neighbourhood walkability may affect agency, one may surmise that a highly walkable neighbourhood could allow individuals greater exploration opportunities leading to action. It is also conceivable that salient features of an environment influence what people think needs to be acted upon. The abundance of green space for example, may prompt individuals into actions aimed at natural preservation. If on the other hand, there are prominent signs of social incivilities (i.e. garbage, graffiti), crime prevention may be viewed as a priority. It is plausible that living in an environment that is hostile to walking may limit what people can imagine as possible, thus reducing collective agency. Similarly, the resource costs associated with acting in this kind of environment may simply be perceived as too great to warrant the effort.

This second hypothesis has been extended to the effect that neighbourhood environments may have on collective agency among neighbourhood groups. This hypothesis is supported by literature presented in Chapter 1 regarding associations between the level of civic participation and the social or physical dimensions of the neighbourhood environment. For example, a number of studies suggest that higher levels of civic participation occur in more walkable neighbourhoods [17,19,146]. Findings from the current study did not reveal any differences in neighbourhood-level socio-political processes based on urban form. However, findings in Chapter 4 did indicate differences based on neighbourhood SES, which were associated with aspects of neighbourhood political organization. Thus, the hypothesized relationship is partially supported by study findings but how differences in neighbourhood

agency may be affected by the *joint* effect of physical and social neighbourhood dimensions, remains to be determined.

The third hypothesized relationship relates to the potential effects of municipal government action on external factors. Despite the complexity of forces bearing down on cities, some urban scholars contend that decisions made at the level of municipal government impact on a nation's economy and social climate [40,228]. Since cities are where flows of people, ideas and capital converge, the way that municipal governments manage these flows affects the organizational synergies that drive economic innovation [229]. Organizations such as the Federation of Canadian Municipalities regularly send representatives to national and international decision-making forums to represent common municipal interests [230]. Although the external effect of municipal action was not a focus of the current research, the importance of this relationship has implications for municipal capacity to affect change beyond the limits of the system represented in the model.

Similarities and differences with original model

This model retains the socio-ecologic premise of the original model but draws a more in-depth conceptualization of the key elements and the relationships among them. It illustrates a dynamic conceptualization depicting not only how environments can be impacted by various levels of the socio-ecologic model but also how these characteristics feed back into a cycle of production.

The study began by using social movement theory concepts to guide an examination of how neighbourhoods and municipal processes interact. These theories are normally applied to

broad-based social movements arising within civil society and their relation to institutional power structures. The revised model reflects how social movement theory concepts were reflected with respect to micro-urban processes and the socio-political production of neighbourhood walkability. It also integrates these concepts with those derived from Bandura's social cognitive theory [223], which focuses on the relationship between individuals and social context. This integration was necessary in the revised model since findings suggested a link between individual experience, individual agency and participation in organized neighbourhood groups.

The thrust of the final model is consistent with Giddens' structuration theory [224], which considers human agency and social structure to be inter-related and recursive dimensions of social action. The dynamic system represented in the revised model reflects Giddens' concept of 'structuration'—a notion referring to the ways in which social systems are produced and reproduced through the patterning of social structures and social relations across space and time.

The element of actors used in the original model has been further developed to illustrate various types of actors who express agency in different ways. While the original model contained one representation of actors spanning two levels of the system, the revised model illustrates the role of individuals expressing individual and proxy agency, and neighbourhood group organization actors expressing collective agency. The model also illustrates that the level of municipal government contains two types of actors—political and bureaucratic—which also represent two kinds of opportunity structures that the public uses to interact with this level of the system.

Although the element of resources was displayed separately in the original model, the revised model considers resources to be the means through which agency is expressed and that these are embedded within each level of the model. In other words, individuals, neighbourhoods and municipal governments draw on the resources that are available to them to either affect the environment directly or to influence resource distribution decisions at another level of the system.

Neighbourhood socio-economic status appeared in the original model representing a marker of neighbourhood-level social advantage hypothesized to impact walkability. The final model has replaced this element with the notion of equity influences, which present a clearer conceptualization of how differential walking conditions in lower SES neighbourhoods may arise.

Theoretical contribution of the model

Neighbourhood walkability:

This model represents a shift in conceptualizing the notion of neighbourhood walkability. Previous conceptualizations have focused on explaining how the built environment may affect walking [16,98,165]. These have categorized or operationalized how aspects of the built environment such as mixed land-use or path connectivity influence the experience of walking. Other conceptualizations of walkability have focused on defining categories of walking needs and their relationship to one another [100,101]. This revised model moves beyond these conceptualizations in two main ways.

First it presents the concept of neighbourhood walkability as one that is influenced by the interplay of social and physical environment characteristics. This is important because it allows the walking experience to be more fully understood. One might develop some understanding of neighbourhood walkability with respect to either the social or the physical dimension of the environment. However, looking at how these dimensions work together provides a richer understanding. The recognition of this interplay highlights how a neighbourhood's social characteristics can modify the experience of its physical characteristics and vice versa. Chapter 4 findings provided evidence of the effect of this inter-relationship. For example, the effect of having mixed land-use and interconnected city streets presented a greater problem of traffic hazards in the lower SES inner-urban neighbourhood compared to the higher SES inner-urban neighbourhood. Furthermore, the convenience of these physical attributes emerged more strongly in the walking experience of older people living in the higher SES inner-urban neighbourhood. These findings highlight the importance of why this inter-relationship must be considered in future research on walkability.

The second way that this revised model moves the conceptualization of neighbourhood walkability forward is by placing this concept within a system of community processes. It represents a departure from looking at walkability as a static concept determined by historical influences, to recognizing its dynamic nature, which is shaped by ongoing and inter-related sets of community processes that take place at neighbourhood and municipal levels. This has important implications since it provides an orientation for thinking about neighbourhood walkability in reference to a process of change. It highlights the need to look at societal processes, which produce and shape neighbourhood walkability.

These two main theoretical contributions to our understanding of neighbourhood walkability also highlight important considerations regarding equity influences. These are addressed in the next section.

Equity:

The revised conceptual model represents an original perspective on how the concept of equity is relevant to neighbourhood walkability and highlights several important points. First it emphasizes the need to examine influences relevant to the distribution of walkability. This distribution can place people who rely on walking for transport, live in lower SES neighbourhoods or those with physical mobility impairments at a greater disadvantage.

Secondly, the model points to the importance of examining how the inter-relationship of physical and social neighbourhood dimensions may inform the concept of equity. Focusing on either the social dimension or the physical dimension may obscure the effect of how these dimensions work together. Considering the effect of their inter-relationship is important for understanding why particular physical characteristics may be especially problematic in particular social contexts. An example, highlighted by this research is the problem of traffic hazards in lower SES inner-urban neighbourhoods where a greater proportion of the participants had mobility difficulties and relied on walking for transportation.

Finally, the model highlights how neighbourhood walkability is part of a system of socio-political production and that differences found between socially advantaged and disadvantaged neighbourhoods must be examined within this system. The model also

identifies four distinct sets of equity influences, which operate within this system. These influences act on underlying mechanisms that can perpetuate or alleviate the production of inequitable walking conditions. In other words, neighbourhood and municipal processes may create larger gaps between walking conditions for social groups or they may engage in redistributive processes that correct for them. Although these sets of equity influences are represented separately, they are considered to be part of a system and therefore are inter-related. Thus, a change in one set of influences can affect another component of the system. For example, redistribution of walkability resources among neighbourhoods may affect walking access for some neighbourhood residents, which in turn affects their opportunities to participate in the socio-political process.

Previous conceptualizations of equity as it relates to public health have focused on defining it both in terms of health outcome disparities among social groups and the underlying societal processes that make these disparities unnecessary and unfair. This model has drawn mainly on conceptualizations provided by Braveman & Gruskin [104] as well as Powers & Faden [232] since they provide clear distinctions between what constitutes a health disparity versus what makes this disparity a matter of social justice and human rights. Powers & Faden justify the imperative to address socially determined health differences based on the normative view that all individuals should be able to reach their full potential for health and wellbeing regardless of socio-economic status, age, race, gender or any other socially-determined grouping.

Although neighbourhood walkability is not a traditionally defined health outcome, environments that support walking allow opportunities for physical activity, social contact,

and environmentally sustainable forms of transportation—all of which have empirically supported health benefits [177,233,234]. Thus, the model considers neighbourhood walkability to be an important health-relevant context characteristic and one that is associated with several dimensions of health.

Previous conceptualizations of neighbourhood health disparities have mainly focused on examining the mechanisms through which the characteristics of place can affect health [15,88,194,235-238]. For example, Macintyre et al. [15] proposed a framework of universal human needs as the basis for conceptualizing the links between place and health, emphasizing how features of both material infrastructure and collective social functioning may influence health through access to health-relevant resources and opportunities. Although the revised conceptual model is relevant to this previous work, it represents a shift in looking at how the characteristics of places or neighbourhoods influence health, to looking at how community socio-political processes influence the production and distribution of health-relevant neighbourhood conditions—specifically neighbourhood walkability. This is an important basis for future interventions targeting neighbourhood walkability.

The revised model builds on the conceptualization provided by Schulz & Northridge [21], which illustrated how the built environment may affect health. These authors proposed that fundamental macro-level factors such as historical conditions, political orders, legal codes and ideologies operate through multiple pathways to affect inequalities, which influence aspects of the built environment and social context thereby affecting health. The model presented in this chapter provides an extended conceptualization of what Schulz & Northridge referred to as the intermediate or community-level pathway influences on health.

While not inconsistent with what these authors have presented, the current model contends that, in addition to macro-social factors originating among the higher level external factors, there are distinct sets of influences operating between neighbourhoods and municipalities, which may perpetuate or correct for the inequitable distribution of health-relevant resources such as walkability. Both this model and that of Schulz & Northridge posit that action at the community level has great potential for buffering individuals and groups from macro-level effects. This potential, however, must be considered against the strength of forces existing elsewhere in the system. Some of these forces will be discussed in the next section, which focuses on the potential for system change.

Systems and potential for change

This model takes a system-oriented perspective on neighbourhood walkability. In other words, it illustrates how neighbourhood walkability is influenced by community elements, which function together in an integrated and holistic fashion. This perspective has implications for approaches to improve public health [239-242]. As pointed out by Hawe, Shiell & Riley [240], past community health interventions have failed, in part, because of over reliance on individual-level theory. These authors state that theories driving community interventions must be “about the dynamics of the context or system, not the psyche or attributes of the individuals within it” [p.269].

Taking a system-oriented view necessitates consideration of how systems change and what kinds of intervention points are most likely to lead to changes [241,243]. This research highlighted how creating neighbourhood walkability was ultimately a political process. Local political representatives emerged in Chapter 3 as potentially important change agents

because of their position in this system. They were actors who represented public concerns about place within a political system that privileges territorial legitimacy. Their position in the system allowed them to bridge neighbourhood and municipal levels, and afforded decision-making power at the municipal level. However, the research also drew attention to the importance of city-wide approaches to planning pedestrian systems and reducing traffic hazards so that improvements made in one neighbourhood do not result in the decline of another. These kinds of approaches will require collaboration among both political representatives and bureaucratic units. They will also require public support. Findings suggested that congruent sets of rules will be important to this collaboration.

As succinctly summed up by Bernard et al. [235], Giddens referred to the concept of rules as the “learned procedures and techniques that are necessary to perform social activity in relation to structural constraints and opportunities” [p. 1842]. These rules include moral codes, social traditions, institutional practices and laws, which can be reproduced through social action depending on how they are interpreted, observed or ignored. Rules are thus “procedures of action” [224, p. 21], which are embedded in culture and learned through forms of socialization. Giddens contended that rules are used in combination with resources to produce social structures, which are organized as properties of social systems. Therefore, understanding rules is essential to understanding social systems and their potential to change.

The importance of rules emerged in Chapter 1 in relation to ambiguity of the walking experiences. This ambiguity stemmed from lack of clarity regarding social norms, built environment designs and regional legislative inconsistencies. The importance of rules also emerged in Chapter 3 through interviews with bureaucrats at the municipal level. These key

informants often referred to policy or to legislation which determines municipal actions. Thus, establishing rules, particularly those with legal implications will be important for creating more neighbourhood walkability. Building greater protection for pedestrians into legislation governing roadways would be one example of such an intervention. Although rules such as those entrenched in legislation have great potential to affect how a system operates, these rules must be embedded within every-day municipal procedure and public consciousness. For example, legal frameworks and construction standards exist to promote equitable access for people with disabilities [244]. However, the application of these rules is often limited to situations where laws and standards can be enforced and to those who have the resources to ensure their application. It is, therefore important that there is widespread public awareness about rules, which legitimize and protect pedestrians as well as mechanisms to ensure their routine implementation.

Meadows [243], a scholar in environmental sustainability and systems research, pointed out that a key force in system change, with even greater strength than system rules, is a system paradigm. A system paradigm refers to the underlying set of beliefs and societal values upon which a system functions. North American values of personal freedom, private property and economic growth have become interwoven with what the automobile has come to symbolize [245]. Efforts, therefore, to create more walkable neighbourhood environments must ultimately address how these underlying values may create resistance to change. It is worth noting that some participants not only expressed their views of walking in their neighbourhoods but also their views about driving in it, remarking that improvements to walking convenience often constitute declines in driving convenience. This sentiment mirrors the dilemma and inherent tension that society faces as it attempts to wean itself from

a well established dependence on private automobiles. Global awareness of climate change presents a challenge to this paradigm, as do international agreements on human rights, which recognize that all individuals should have equal opportunities for health and wellbeing regardless of where they live or their position in society. Shifting age demographics also represents a potential force for driving system change, which is particularly relevant to the main focus of this thesis and will be discussed in the next section.

Older people's potential for driving system change: assets and challenges

There are a number of reasons that older people could be a strong collective force in reshaping local environments. First, older people have often had time to develop attachment with, knowledge of and social networks within their local neighbourhoods, which represent potential resources for affecting those environments. Secondly, the cohort of older people known as the “baby boomers” composes a greater percentage of the population than ever before and therefore may generate a stronger voice around the issues that are important to them. Furthermore, voting rates tend to be higher among older people, thus politicians focus on older voters as a pivotal segment of the electorate [246]. This may be particularly true at the local level where overall voting levels are low, especially among younger voters [247]. In the words of Maggie Kuhn [248], Gray Panthers founder, “The old, having the benefit of life experience, the time to get things done, and the least to lose by sticking their necks out, [are] in a perfect position to serve as advocates for the larger public good” [p.38]. The current research provided examples of what older people do on their own or as part of a collective that may affect their walking environments. Approximately one third of key informants identified themselves as “older” illustrating that older people are indeed active with respect to walkability, although not always in conjunction with seniors’ groups. While

older people possess many assets critical to the creation of walkable neighbourhood environments, it is also important to consider the challenges they face as a group.

Ageist sentiment is evident in many North American cultural symbols and employment frameworks [249]. The view of aging that emphasizes disability, dependency and decline is one that contributes to the exclusion of older people from community processes. The economic resources and social networks of older people often shrink after retirement [42] presenting another challenge. Some key informants commented that voluntary participation of older people declines because of health problems and the time required to manage them.

Bridging the gap between generational assets and challenges will require an examination of the opportunities that older people have to engage in full citizenship as well as their motivations for doing so. Glass & Balfour [30] argue that full social participation of older people is a basic and essential societal need since it helps to facilitate the transfer of knowledge from one generation to the next. Others have suggested that civic involvement is necessary to promote productive and successful aging [250,251]. While this view may potentially burden older people with the obligation of volunteerism, it is generally agreed that opportunities and options for civic participation should be available to everyone throughout their life course [252,253]. Despite the recognized value that older people offer by remaining active in civic affairs, evidence indicates that participation declines with age [254]. Initiatives have recently emerged aimed at reducing these declines and examining how the civic engagement of older people can be enhanced [155,157,252,255,256]. The extent to which these initiatives are widely adopted will determine the full effect of this potential force for change. Put another way, older people can act as change agents only if

they are considered to be full citizens and have access to a wide range of opportunities for civic participation.

Summary of integrated discussion

This discussion of the revised conceptual model represents both an empirical and theoretical integration. Findings from all three phases of this study have been discussed with respect to how they informed the model. These findings were relevant to older people's walking experiences, neighbourhood and municipal socio-political processes and neighbourhood differences in walkability. Although the original conceptual model was informed by two particular models of social movement theory [160,162], the final model integrates theoretical concepts from social-cognitive theory [223], structuration theory [224] and conceptualizations of health equity [104,232]. The model represents a shift in thinking about the notion of neighbourhood walkability. It emphasizes the importance of the inter-relationship between the physical and social dimensions of the neighbourhood environment. The model also places the concept of neighbourhood walkability within a set of inter-related and dynamic community processes. It highlights the concept of equity in relation to the distribution of walkability and the socio-political processes affecting this distribution. This systems-oriented theoretical perspective provides a framework for thinking about change processes as well as potential intervention points to improve neighbourhood walkability and reduce inequitable walking conditions. The implications of research findings and theoretical contribution will be discussed in the next section.

Implications

This section provides an overview of study implications. It focuses on implications for measurement, intervention, policy and further research with respect to walkability and how it may be produced equitably. Since measurement is a necessary basis for intervention or policy change, the overview will begin with this point and move towards discussing implications on a broader scale.

Measurement of walkability

Research on the measurement of walkability has focused on the development of objective indices using GIS data [185,257,258] as well as subjective surveys [259-261] and observational audits [65,262,263]. The psychometric properties of these measures have had limited development with the exception of the Neighbourhood Environment Walkability Scale (NEWS) [259,261,264,265], a survey of perceived environmental characteristics associated with walking. Recent research on the NEWS indicates that the environmental correlates for walking differ among older and younger age groups and that proximity to non-residential destinations and recreation facilities may be especially supportive for older people [81].

The current research provides insights on several points that will be useful in the future development of walkability measures, which are relevant for older people. The first point relates to measuring the proximity of destinations, which is often set between a one and two kilometre radius from a person's home [16]. The currently research highlighted how comfortable walking distances become shorter with advancing age and, therefore, the same radius that constitutes a walkable distance for younger people may not apply to older people.

Secondly, current measures of walkability do not include assessment of air quality, which was a common concern of older participants in this study in relation to their walking decisions. Thus, future measures could incorporate this dimension of the neighbourhood environment into walkability indices.

A third point is that desired destinations often lie beyond neighbourhood boundaries and that walking to these destinations involves the use of public transit. Findings emphasized the role of walking as part of an integrated transportation system and implied that assessment of walkability must include how well pedestrian infrastructure interfaces with public transit and consider how well older people are able to get around without the use of a private automobile. Seasonal conditions such as snow and ice represented significant barriers to older people in the current study and therefore should be incorporated into future measures, such as a winter walkability index, which might examine ploughed and sanded walking routes. Overall, the research implies that there is a need for transportation indices measuring the ease of reaching desired destinations using non-automobile options, and that these indices must be sensitive and relevant to seasonal conditions.

Finally, development of walkability measures to date has focused on differentiating between built environment characteristics found in higher density inner-urban neighbourhoods and lower density suburban neighbourhoods [16]. This study highlights the need to further develop measures that reflect differences in walking conditions that exist among higher and lower SES neighbourhood. Findings from the current study suggest that a composite measure of overall neighbourhood traffic burden is one such example. Indicators of traffic burden used in this study were limited, as described in Chapter 4, but informative on

contrasting conditions and, therefore, warrant further development. Many of these indicators are collected routinely but not synthesized in a way that is useful for neighbourhood comparisons or policy development. The research implies that municipal governments should implement monitoring systems through which neighbourhood differences can be assessed on an ongoing basis. This would be useful for policy development aimed to reduce unfair disadvantage.

Interventions on walkability

This research implies that interventions to address walkability should be considered as part of a comprehensive strategy to increase population physical activity, to reduce environmental health hazards (e.g. risk of injury) and increase environmental health supports (e.g. opportunities for social contact). In other words, interventions on walkability have the potential to address multiple determinants of health and require the use of multiple strategies. Previous public health interventions to increase physical activity have focused primarily on individual behaviour change with limited success [266]. More recent recognition of the importance of inter-related health determinants, including social, economic, cultural and political factors, has led to the design of complex health interventions, referred to as multiple intervention programs [267]. These complex approaches use multiple strategies (e.g. behavioural, built design, media, policy interventions) across multiple levels of a socio-ecologic system (e.g. neighbourhood, city, region) and across multiple system sectors (e.g. health, transportation, employment). Although, earlier trials of multiple intervention programs failed to demonstrate effectiveness over short periods of time [268], more current evidence is yielding promising results, particularly in the area of tobacco control [269].

The current research highlights how the issue of walkability has relevance for multiple dimensions of health and must be addressed by multiple intervention strategies since it is affected by complex and interacting sets of influences extending beyond the health sector. It provides evidence of guiding principles that must be employed in the design and implementation of multiple intervention programs aimed at creating more walkable environments. The first principle is that interventions must include ongoing consultation with people who live and walk in neighbourhoods. One could argue that “the devil is in the details” when it comes to creating walkable environments. These small scale details reveal themselves to regular users who must be included in the process of creating walkable environments. Public consultation must engage members of society who are vulnerable pedestrians and also those who rely on walking for transportation. Interventions stemming from this consultation must integrate the experiential knowledge derived from public engagement with other types of knowledge including technical and systems knowledge.

The second principle is that interventions to improve walkability must involve collaboration among municipal government departments (i.e. health, planning and transportation) and will depend on the development of mechanisms and incentives to ensure this kind of collaboration takes place. Promising examples of such mechanisms, described in recent literature include approaches that integrate health impact assessment into municipal land-use and transportation planning procedures [134,270]. Other examples include planning approaches that are place-centred, such as the neighbourhood planning projects currently being piloted in Ottawa [271]. A neighbourhood planning framework focuses on the needs

of places and involves ongoing public engagement and inter-departmental co-ordination to address these needs.

The third principle is that interventions to improve walkability must consider the issue of equity. The current research implies that interventions on walkability must place greater emphasis on addressing the needs of older people and improving conditions in socially disadvantaged neighbourhoods. These interventions could aim to reduce exposures to hazards (e.g. exposure to air pollution, fall risk, vehicle collision risk) and enhance benefits (e.g. access to meaningful destinations; exposure to nature) of walking to levels experienced by socially advantaged counterparts. Although recent research indicates that health improvements have been associated with multiple intervention programs, there is evidence of differential benefits among social groups [272,273]. Thus, future interventions to address walkability must include strategies to reduce disparities in potential effects and to monitor unintended consequences.

Finally, this research indicates that interventions to improve walkability must also involve elected representatives. In other words, these interventions necessitate political intervention. It is, therefore, important that local politicians know about options and strategies that would improve walkability and are engaged in ongoing dialogue with constituents about local walking conditions. Involvement of political representatives is necessary for policy intervention, which is a critical element of any multiple intervention strategy. Implications for policy directions are discussed in the following section.

Policy directions

Findings indicate that there is a greater need for policies that legitimize walking as a form of transport. These policies must be co-ordinated both horizontally (i.e. among municipal departments) and vertically (i.e. provincial and federal governments). Legislative frameworks must also support the protection of pedestrians. The move to develop municipal pedestrian plans and to adopt a pedestrian charter, measures being taken by many international cities [274], represent important steps towards developing supportive policy. It will also be necessary, however, that these steps are accompanied by implementation plans and sufficient resources to carry them out. Findings indicate that clarity around the rules of shared space is another important policy direction that would enhance the walking experience among older people. This clarity is particularly important with respect to roadway crossings, shared recreational pathways and the use of priority seating on public transit.

The need to shift towards more environmentally sustainable planning has been recognized by many national and international municipal organizations including the Federation of Canadian Municipalities [230]. This shift has highlighted the need to create more compact walkable communities and thus policy interventions for walkability must be situated within the broader sustainability framework. Smart Growth is a planning approach aimed at creating more environmentally sustainable urban growth patterns through conserving natural resources, promoting compact and mixed land-use development and creating walkable environments [275]. Although most municipal and regional development policy in North America runs counter to Smart Growth principles, a number of successful examples in

Portland, Washington and Minneapolis/St. Paul provide lessons and models of how these sets of complementary policies can be implemented [276].

The Western Australian government's pedestrian friendly design code is another example of a policy intervention with the potential to enhance environmental support for walking [277]. Currently an ongoing longitudinal study is being conducted to assess the long-term impact of this policy on walking levels. Policy interventions made by successive administrations in Bogotá Columbia from 1995 to 2000 have shown that integrated and comprehensive promotion of the pedestrian environment, improved public transportation, automobile restrictions and the reclamation of public space can lead to quantifiable improvements in economic, social and health conditions [278]. This latter example, suggests that interventions to improve walkability are more likely to be successful, if they are nested within a broader intervention plan aimed at addressing multiple, interacting elements of a system.

The evidence of inequitable walking conditions provided by this research implies that there is a need for higher level policies requiring municipal government to have strategies in place to identify and address impacts of departmental and/or co-ordinated municipal activities which result in disparities of walking conditions and disproportionate burden in socially disadvantaged neighbourhoods. The Clinton administration's executive order [128] to address environmental justice in minority and low income populations in the USA could serve as a template for the drafting of such policies with respect to ensuring the equitable distribution of walkable environments.

Future research

In the previous decade, research in population health primarily focused on identifying the determinants of health and health inequalities rather than the pathways through which these determinants lead to health inequities [279]. However, attention is now turning to the need for a better understanding of what pathways link health determinants to changes in population health and health inequities since an understanding of these inter-related factors is critical to the design and implementation of successful public health interventions [280]. The current study has resulted in a conceptual model, which provides a framework for future research aimed at understanding and intervening on the community-level pathways through which inequitable walking conditions—and therefore inequitable health contexts—arise.

The four sets of equity influences identified through the final conceptual framework raise a number of specific questions for future research. First, research could examine how walking and social participation may lead to collective action and what types of resources or opportunity structures best support this type of action for older people especially those living in socially disadvantaged neighbourhoods. It could also examine how the neighbourhood environment affects what people think needs to be acted upon, or indeed, what they consider possible.

Secondly, research could further examine mechanisms of information exchange and knowledge integration between municipal and neighbourhood levels with respect to walkability. Chapter 3 highlighted gaps in this regard, and therefore future research must examine approaches to close these gaps so that the process of creating walkable

neighbourhoods is a collaboration among people who use those neighbourhoods and those who manage them, resulting in improved and more sustainable effects.

Third, research should further examine systems of resource distribution, which affect walkable neighbourhoods. For example, what types of municipal interventions are initiated using complaint-driven approaches and how do these fit in with general approaches for the city as a whole? How might isolated pockets of collective efforts affect overall distribution of resources, and exacerbate inequitable walking conditions? What kinds of systems do municipalities have in place to monitor the distribution of hazards and benefits with respect to transportation-related decisions? How might these systems be improved? What types of interventions are most likely to produce more equitable distribution of resources for supportive walking environments?

Fourth, the equity influences identified through the current research, point to the need for further research on age-relevant accessibility issues. The research provided specific examples of how neighbourhood changes, affected by development patterns, made walking more difficult for older people. Furthermore, amenities such as recreational pathways, which represent a walking resource for the mainstream adult pedestrian, were often not viewed as accessible or safe walking infrastructure by older people with mobility difficulties. Thus, future research must further examine how current development trends impact on the accessibility of walking for older people. Furthermore, there is a need to examine why current legislation on accessibility is not better reflected in the planning and design of walking infrastructure.

In addition to these specific questions on equity influences, future research must consider how disparities between walking conditions in socially advantaged and disadvantaged places can be reduced, and must do so using a systems perspective. The current research highlighted the roles of various actors in this system and drew attention to why some are particularly important (e.g. local political representatives), as well as strategies employed by others (i.e. grass-roots, middle level and inside actors). It also pointed to an inter-dependence of system components, illustrating network links between individual, collective and government actions. Therefore, future research on interventions aimed at reducing inequities must be carried out with attention to how these interventions may or may not be congruent with how the overall system functions. In other words, intervention success will likely depend on whether it considers how the system already works and the extent to which it can build on the dynamic system properties. Hawe et al. [240] have recently proposed that population health interventions should be seen as “ways to create new roles, to elevate particular symbols, to bridge structural holes within and between networks and to increase opportunities for interaction and exchange” [p.270]. The current research sets the stage for taking this approach.

This research makes an argument for the importance of neighbourhood collective organizations in creating walkable places but raises caution about the implications of having one group speak for all constituents of the neighbourhood. It will be important that future research compare different types of organizations (i.e. those representing the interests of home and business owners versus tenants’ associations) to determine whether one has more legitimacy with municipal officials than the other. It is also important that future research examine how city-wide (e.g. Citizens for a Car-Free Ottawa) and national organizations (e.g.

Canada Walks), which do not have a particular neighbourhood focus, impact on the creation of walkable places. The current research focused on neighbourhood organizations but the role of more widely based organizations in civil society deserves further attention.

Although this study focused on micro-urban processes, because of their proximity to and potential for affecting the walking experience, it acknowledges a need for future research examining how higher level government policy (i.e. provincial and federal) and private sector actions impact on local walking conditions. Many taxation strategies, municipal growth and boundary issues and transportation patterns are tied to higher level decisions which impact local systems [276,281,282] and can contribute to the production of inequitable walking environments. It is, therefore, important that future research examine the inter-relationships of influences that occur further “*upstream*” and consider how they are linked to local walking conditions and the production of inequities. These upstream or macro-level influences, however, must be examined in terms of how they inter-relate with municipal-level systems. Since municipal decisions also have the potential to influence higher-level forces, such as creating conditions that attract innovation [229], future research could examine the dimensions of this inter-relationship to determine why some cities are more walkable than others.

Strengths of the research

A major strength of this study was that it examined the notion of walkability both in terms of how it was experienced and acted upon, thus contextualizing a health behaviour within environmental, social and political determinants. The comparative embedded case study design allowed the study to look at complex relationships among social and physical

neighbourhood dimensions within a real life context. The predominant qualitative approach allowed an in-depth conceptual exploration of the meanings associated with neighbourhood walking and of the processes that shape walkable neighbourhoods. Selection of the study neighbourhoods provided a basis for comparing the effect of both urban form and neighbourhood SES on both walking experiences and socio-political processes. The neighbourhood comparison was further enhanced by the combination of data sources (qualitative from older people and key informants as well as quantitative indicators) to provide a more complete understanding of neighbourhood differences.

Sampling of older people in phase one used multiple recruitment sources to obtain a wide range of opinions. Media coverage of the story also served to strengthen and broaden the study's sampling reach. This coverage also resulted in several key informants coming forward as well.

Many of the older people who participated in phase one of this study provided valuable information regarding the history of neighbourhood issues and the stakeholders involved. This provided useful background for the researcher in posing questions of community stakeholders in phase two. Of those interviewed in phase two, 10 identified themselves as "older" people or as "a senior". These older key informants provided views that had been reflected over substantial periods of time. They also constituted diverse perspectives - including those of a politician, land developer, city planner, business person, newspaper editor and community association member—which strengthened the study.

Older people were the central actors in this research making it distinct from a large segment of geriatric research that has focused on older people as the recipients of care or intervention. This study gave voice to older people and in doing so provides a more enriched conceptualization of walkability.

Strategies for ensuring rigour

Rigour refers to the means through which research integrity and competence are demonstrated [283]. This section begins with a reflection of my positionality in relation to this research since it was through my own world view that the research was conducted. Thus, researcher positionality is likely to have the most extensive influence on consequent interpretation of data. Such a reflection is considered to be an integral part of ensuring rigour in qualitative research since it allows the findings to be clearly situated in relation to the researcher [172,174]. The reflection is followed with descriptions of approaches used to enhance credibility, confirmability and transferability. Taken together these approaches constitute what is often referred to in qualitative inquiry as trustworthiness or “truth value” of the research [171].

Reflections on my positionality as a researcher

Through the research I continued to reflect on how my own position in relation to the people and places I was studying may have affected the research results. I have lived in a number of Ottawa neighbourhoods over the last 20 years (five in total, all inner-urban except one). The fact that I was living in one of the inner-urban neighbourhoods being studied and had lived in the other gave me somewhat of an insider perspective with respect to the issues and places under discussion in these neighbourhoods. My familiarity with these two neighbourhoods may have permitted me to probe issues in greater depth but it may have also led me to overlooking things that would be more obvious to an outsider. I compensated for lack of distance in these situations by considering how my own walking experiences and observations were different from the participants I interviewed. Notable differences in some

cases had to do with ease of walking at night, using recreational pathways for walking and differences with respect to route decisions. For example, some participants would go out of their way to avoid walking along main streets because of the air quality concerns while I, on the other hand, am often drawn to the liveliness of main streets. I also found it interesting that people pointed out the presence of benches in places where I had not noticed them to be previously, likely because I rarely find the need to use them. In the same vein, certain obstacles were not so obvious to me since they did not constitute problems in my own experience.

I did not consider myself a true insider in either case. I had not been involved with either community association, so my approach to the recruitment and questioning of key informants was similar in all four neighbourhoods. With respect to recruitment of municipal-level key informants, I also considered myself as an outsider since I had not been employed by the City of Ottawa. I had, however, been involved with The Ottawa Falls Coalition, which is a group of community organization representatives, community members, health providers and public health officials who are concerned with fall prevention. Through this group, I had contacts that helped me liaise with municipal key informants more easily.

I was not as familiar with the suburban neighbourhoods included in the study prior to commencing the research, which might have made it less likely that I would impose my own walking experiences upon those of which I was hearing about. Being closer to the position of outsider in these situations gave me the advantage of greater distance but I found that I had to compensate for my lack of familiarity by spending more time walking in these neighbourhoods. I would often walk routes that participants described to develop a more

complete understanding of their walking experiences. I also did this in the neighbourhoods I was familiar with as well since I found that walking with the objective of noticing what others had described was a different experience than walking for my own purposes. On several occasions participants offered to walk with me in the neighbourhoods which further served to highlight distinct neighbourhood characteristics that I may have overlooked.

My training and experience as a physiotherapist certainly affected the way that I viewed the challenges that participants described. I was aware of how changing physical and sensory abilities may have contributed to their walking experiences and of potential fall hazards existing in outdoor environments. However, for the most part, the older people who participated in the study were more mobile than the majority of my clients and, therefore, represented a group I was less familiar with. My professional background predisposed me to attend to how the physical environment can interact with individual competencies. This focus, however, broadened during the research process to include layers of social meaning that were embedded in the descriptions I listened to. I did not include the fact that I was a physiotherapist on the information form but it often came up during recruitment sessions when potential participants asked more questions about the study and my background. Sharing this information often made people more willing to participate since it seemed to enhance their trust of me and the perceived legitimacy of the study. Although my position as a physiotherapist was fundamental to the research question, my curiosity as a researcher predisposed me to noticing points and issues that were not obvious to me before.

I began this project with the normative position that it is important to create walkable places inclusive of older people and that this group should be considered full citizens in the process.

During the course of the research, I encountered views that were different from my own and found myself having to reconcile my role as a researcher and my role as a health care professional with expertise in aging and mobility. As a researcher I wanted to understand a variety of viewpoints and had an interest in allowing people to speak freely and focus on what they considered to be important. However, as a physiotherapist I also felt I had a professional obligation to comment on some of the assumptions expressed by key informants that indicated a lack of awareness about certain issues and why they may be important to older people. I felt that my silence on these issues, given my position as someone with a particular knowledge set, could be seen as a re-enforcement of the status quo. In negotiating this dilemma, I found myself using my position as a physiotherapist to point out an alternative view or some of the reasons a proposed solution may not address the concerns of older people on two occasions. In one instance a key informant suggested that in an ideal world we would build pedestrian stairway overpasses so older people could get across the street without having to worry about traffic hazards. I felt obligated, at this point in the interview, to mention that I work with many older people who have great difficulty with stairs and may not consider this an ideal solution. I then attempted to re-focus the discussion on the informant's area of expertise that would add to my understanding of some of the challenges cities face in providing safe and accessible crossing opportunities.

Some key informants stressed the importance of taking personal responsibility for one's own safety while walking. One described the need for pedestrians to develop better "*situational awareness*". After probing this particular key informant and learning that the term meant paying attention to a variety of factors in the environment, I explained some the reasons that older people may have difficulty doing this. I realized that I was using my position of

knowledge to create a better awareness of why addressing certain issues is important but was conscious that I needed to do this in a way that did not make the key informants feel that they were not being listened to. I therefore attempted to do this in a way that was constructive and that invited another point of view. I felt that it was more constructive to do this during the interview as the point arose so that I could probe and learn more about someone else's point of view with relevance to the issue under discussion.

In summary, my position as an inner-urban dwelling physiotherapist meant that I approached the process from a certain vantage point, which was not hidden from participants. This position had both advantages and disadvantages with respect to the research process, especially in terms of what participants may have decided to share with me. Measures taken to compensate for disadvantages allowed me to balance my preconceived ideas with new ones that arose during the course of the study. Re-reading field notes prompted ongoing reflection. These measures also allowed me to develop a deeper understanding of why some things may be important from a perspective other than my own. Although the interpretation of research findings represents one that has been derived through my own particular lens, I aimed to represent the views of participants as honestly as possible and to consider alternative interpretations in my final synthesis.

Credibility refers to the extent that data represents the views of participants [169]. This aspect of rigour was enhanced by strategies used both during and following the collection of qualitative data. During focus groups and individual interviews, I summarized my understanding of key points and asked for confirmation or clarification from participants. A research assistant was present for a sample of interviews and focus groups to take notes and

offer reflections. Members of the supervisory committee as well as another PhD candidate reviewed transcript samples to ensure a credible match between data and coding domains. Summaries of study findings (i.e. researcher interpretation and participant quotes used in manuscripts) were sent to participants to ensure that quotes were not used out of context and that the researcher's interpretation had relevance to those who were interviewed. Written and verbal feedback was provided to the researcher by some participants. A number of presentations (written and oral) of preliminary data were also given in the community during which feedback was solicited from the public. A summary of these presentations are included in the dissemination section at the end of this chapter.

Confirmability refers to the extent to which study findings and conclusions can be traced back to the original data [169]. The audit trail in this research consisted of raw audio-tapes and transcripts and field notes. The interview guidelines have been provided in Appendix 8 and sampling decisions were presented in Chapters 2, 3, and 4. A description of the processes through which categories and themes were derived was included in Chapters 2 and 3, while Chapter 4 contained a description of cross neighbourhood comparison strategies. Members of the supervisory committee were closely involved throughout data collection and analysis and provided alternate perspectives for interpretation.

Considerations for transferability

Transferability refers to how well study findings may apply to other settings [169]. The neighbourhoods studied were purposefully selected to provide contrasts in neighbourhood socio-economic status and urban form (i.e. examples of suburban and inner-urban environments). Using more than a single setting enhances the transferability of study

findings as does the use of heterogeneous participant groups and multiple data sources [173]. The level of conceptualization reached through thematic analysis and integration in the final model gives the research an analytic generalizability, which also strengthens the extent to which it can be applied to other settings [163]. Taken together, the approaches of purposeful sampling, cross neighbourhood comparisons and conceptualization make these research findings relevant to other places. Details of participant, neighbourhood and city characteristics have also been included in all three manuscripts so that readers can judge the extent to which results are transferable to their own contexts.

In summary, a number of approaches have been used to enhance the rigour of this research including design considerations, purposeful and maximum variation sampling, data collection and analysis techniques. These approaches enhance both the trustworthiness of findings (i.e. internal validity), the extent to which procedures were transparent (i.e. reliability) and the extent to which they can be applied to other settings (i.e. external generalizability).

Limitations of the research

Limits to transferability

Several limitations to transferability have been mentioned in the papers but will be expanded upon here. The first limitation has to do with the types of neighbourhoods chosen (i.e. inner-urban and suburban). The perspectives of older people living in these types of neighbourhoods are bound to be different from those living in rural areas. Furthermore, there may be issues that arise in newly established residential areas that did not emerge in this study since all study neighbourhoods had been established for over 30 years. Finally, all

four neighbourhoods included had active community associations, which may make them different from neighbourhoods that do not.

The second consideration for transferability relates to the characteristics of the municipal setting. Ottawa is a national capital with national organizations such as the National Capital Commission and the National Experimental Farm that maintain green space within the city. These federally maintained green spaces may have obscured concerns over a lack of municipal investment in neighbourhood green space. For instance, participants living in both lower SES neighbourhoods identified federally maintained green space adjacent to their neighbourhoods as being an asset to living in their neighbourhoods and a reason that they enjoyed walking. In addition to this benefit, Ottawa is a city with a highly educated population and stable economy, located in a country with a fairly robust social safety net. These broad contextual factors may buffer the effects of neighbourhood SES differences. In other words, the differences found among higher and lower SES neighbourhoods in this research are likely to be greater in other places.

Characteristics of Ottawa's municipal political system may also limit the transferability of findings. As mentioned in Chapter 3, Ottawa possesses a decentralized political system where municipal council has both executive and legislative authority. The mayor in Ottawa exercises one vote on council and does not have the power to veto council decisions. Thus, in places with more centralized power structures (i.e. those possessing central party systems or strong mayor systems) the role of individual municipal councillors might differ.

Furthermore, Ottawa does not possess any formal structure at the neighbourhood level such as community leagues [284] or neighbourhood councils [285] to connect with the municipal

level. The tensions that emerged in this study between the perspective of place and those of municipal departments may not have emerged as strongly in cities that have formalized structures to facilitate communication between these two levels.

Although the neighbourhoods included in this study were purposefully selected to allow the examination and comparison of particular neighbourhood dimensions, the fact that findings were derived from only four neighbourhoods limits conclusions to a particular combination of circumstances. Further qualitative research is required to add older people's voices from other contexts and also to determine whether the themes and trends observed among the types of neighbourhoods chosen for this study can be found over similar combinations of neighbourhood conditions on a wider scale.

Sampling limitations pertaining to older people

Older people recruited to the study had lived in their neighbourhoods for at least two years with averages ranging from 15 to 37 years. This meant that older participants were fairly familiar with their neighbourhoods. Consequently, findings did not reflect concerns that older people may have when they are walking in unfamiliar environments such as the presence of way-finding features or the availability of public washrooms. Concerns of crime did not appear to limit daytime walking for participants of this study as it has in other British, American and Australian studies reviewed by Loukaitou-Sideris [286]. This contrast may reflect environmental differences particular to Ottawa or it may reflect sampling differences. Older people who did not walk because they were fearful of crime may have been reluctant to participate in this study. Although not limited to one cultural or social group or to only those who walked frequently in their neighbourhoods (i.e. inclusion criteria only specified

that participants had walked at least once in their neighbourhoods over the previous year), participants were the types of people who feel comfortable volunteering for research studies. They may hold different views than those who chose not to participate or felt that they were unable to participate.

Due to available resources, the study was offered to participants who spoke English, French, Cantonese or Mandarin. This limited the expression of views from older people who did not speak any of these languages. One Cantonese focus group and one interview were conducted through an interpreter who also translated and transcribed them into English. Small numbers of Cantonese and French speaking participants limited a subgroup analysis of results.

The sample of older participants was composed mostly of women, despite recruitment strategies targeting both genders. A limited number of men prevented a gendered analysis of the data in phase one, although some differences were suggested. Neighbourhoods did have more older women than older men living in them (approximately 60 % versus 40 % men), which partially accounts for the higher number of female participants. Another factor may be that more women depend on walking to get around or feel more vulnerable as pedestrians. Either factor may have heightened their interest in the study topic and contributed to higher numbers of female participants. Previous research on gender differences among men and women support the notion that women perceive themselves as more vulnerable pedestrians and are more comfortable walking with a partner or in the presence of other people [69,287-289]. Cross cultural research on physical activity suggests that cultural differences on the role and priorities of women can also present barriers to the amount of walking that women do [290].

Sampling limitations pertaining to key informants

The issues identified during phase one in the four study neighbourhoods, drove key informant sampling for the second phase of data collection. This limited the sampling of political representatives to four eligible politicians—only three of whom participated. The views of the private sector were also limited to three participants in this study. Although grocery store managers and business improvement association representatives were contacted, none volunteered to participate. Having a greater number of political and private sector participants may have added further insights. However, a purposeful sampling strategy produced varied perspectives from which useful contrasts could be made between perspectives at the neighbourhood level and those at the level of municipal government. There were 17 neighbourhood-level and 14 municipal-level community stakeholders. These numbers were sufficient for reaching information saturation with respect to elements identified in the original conceptual model.

The notion of saturation refers to point at which no new information is being observed in the data [291]. Although numerous authors [168,292-294] offer guidelines for planning qualitative sample sizes, only Guest et al. [291] have provided evidence for their recommendations. These authors documented the degree of data saturation over the course of thematic analysis of 60 in-depth interviews conducted in two countries. They found that saturation occurred after the first 12 interviews, although the elements of overarching themes were present within the first six interviews. In Chapter 4, key informant sampling within each neighbourhood was limited by the number of people who were willing or able to provide insights on the socio-political processes pertaining to walkability. Therefore, data

from the key informant community stakeholder interviews at the neighbourhood level (n = 4 to 6 per neighbourhood) was combined with socio-political thematic analysis of phase one data, which consisted of three to four focus groups and four to six individual interviews per neighbourhood. Municipal councillor interviews were also considered neighbourhood-level key informants for comparative analysis. Merging these data sets resulted in information saturation on neighbourhood socio-political processes pertinent to walkability.

The limitations outlined in this section point to the importance of looking at concepts identified through this research in other settings (e.g. rural communities) and with other types of samples (older people walking in unfamiliar environments, private sector key informants). However, they do not detract from the contribution this study makes to the field of population health, which is discussed next.

Contribution to population health

Population health is a field that investigates multiple and interacting determinants of health and asks why some people are healthier than others [295]. It is concerned with examining the broader environmental and social determinants of health, which function at multiple levels of society, and recognizes individuals as being embedded in a larger influential context [296]. This research has contributed to the field of population health by looking beyond the traditional perspective of individual determinism and examining the socio-political processes that shape the opportunities people have for healthy living. Consistent with a population health approach, it has drawn on multiple fields of research for both conceptualizing the research questions and interpreting the research findings. The question of how well neighbourhood environments invite and support walking has implications not only

for population levels of physical activity but also for other aspects of population health such as improving air quality, mental wellbeing and reducing injuries associated with motor vehicle collisions. This research broadens our understanding of how individuals and groups engage with community resources to create more walkable environments. By examining the walking experiences of older people, the research focused on the needs of a more vulnerable segment of the population and in doing so illuminated critical aspects of the walking experience that have implications for the wider population. By comparing the differences among higher and lower SES neighbourhoods, this research has contributed to expanding the knowledge base with respect to population health inequities that exist between socially advantaged and disadvantaged groups, and the socio-political processes that contribute to these inequities.

Conclusion

This research reframes our thinking about older people's walking experiences by highlighting the multiplicity of the walking experience and how this experience is affected by intersecting aspects of the physical and social environment. It also places these experiences within a local socio-ecological framework illustrating how the experience of walking is affected by socio-political processes that influence the production of walkable neighbourhoods. The research concludes that there are sets of influences operating at various stages in the cycle of local production of walkable places, which create different conditions for neighbourhood action and which can lead to inequitable walking conditions for older people. Reducing these inequities may help support independent living, especially among older people who rely on walking for transportation, or who use walking to access public transit.

This research calls upon us to re-examine the notion of walkability as an array of historically-determined built environment characteristics and to consider how it is shaped by dynamic socio-political processes that can be challenged and influenced. The study highlights the need for municipal policies that promote the legitimacy of walking as a form of transportation and that guarantee equitable access for older people. Municipal governments must monitor and address differences in walkability that exist between socially advantaged and disadvantaged neighbourhoods, ensuring that walking improvements in one neighbourhood do not exacerbate walking problems in another. These approaches may help to support independent living, particularly among older people who rely on walking for transportation. The final conceptual model has relevance not only for the production of walkable neighbourhoods but also for the production of local public goods, which ultimately affects health and health disparities. It is imperative that future research further examine the mechanisms resulting in equitable walking conditions and how these may translate into health inequities. Population health interventions must aim to reduce disparities in walking conditions among socially advantaged and disadvantaged groups but must do so in a way that captures and builds on the dynamic properties of municipal systems.

Statement of contribution

I, the doctoral candidate (TG), assumed responsibility for this research project. I was closely supported by a thesis committee from the University of Ottawa that included Professors Dr. Heidi Sveistrup (supervisor, Faculty of Health Sciences), Dr. Nancy Edwards (co-supervisor, Faculty of Health Sciences), Dr. Caroline Andrew (Faculty of Social Sciences) and Dr. Mary Egan (Faculty of Health Sciences). The thesis committee provided perspectives from the fields of rehabilitation, nursing, epidemiology and political science and all four members were involved in the conception of the research project. Regular meetings were held to monitor progress, assist with interpretation and provide ongoing support.

I was responsible for the conceptualization of the project and led the research through subsequent stages of ethics approval, participant recruitment, data collection, data analysis, overall synthesis. I was also responsible for writing each chapter of this thesis and submitting manuscripts to appropriate peer-reviewed journals. All committee members contributed to each of the chapters and are co-authors on the submitted manuscripts.

Other contributors

Ginette Drouin, public health nurse, assisted one with of the focus groups. Susana Sou Chan U-leong, social worker, facilitated two focus groups and provided translation and transcription services for one interview and one focus group. Jamie Findlay, English teacher, assisted with one focus group and provided copy editing services for the first and second manuscripts. Stephanie Prince, PhD candidate, verified a sample of data coding for the first manuscript. Dr. Mike Sawada of the Ottawa Neighbourhood Study provided data used in the

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Dissemination

Dissemination activities have taken place at both the local and the international level throughout the project. The following sections categorize and chronicle this process.

Journal publication:

Grant, T.G.; Edwards, N.; Sveistrup, H.; Andrew, C.; Egan, M. “Neighbourhood walkability: older people’s perspectives from four neighbourhoods in Ottawa, Canada.” *Aging and Physical Activity*, in press.

Journal submissions

Grant, T.G.; Andrew, C.; Edwards, N.; Sveistrup, H.; Egan, M. “Creating walkable places: neighbourhood and municipal level perspectives on the socio-political process in Ottawa, Canada.” *Journal of Urbanism*, submitted.

Grant, T.G.; Edwards, N.; Sveistrup, H.; Andrew, C.; Egan, M. “A comparative case study of walkability for older people: Examining the inter-relationship of neighbourhood socio-economic status and urban form.” BMC Public Health, submitted.

Conference presentation:

Grant, T., Edwards, N., Sveistrup, H., Andrew, C., Egan, M. “Neighbourhood walkability: seniors’ perspectives from four neighbourhoods in Ottawa Canada.” IFA Global Conference on Aging and Design, Montréal Canada, September 8, 2008.

Newspaper contributions

Grant T., Sawyer, E. “Neighbourhood walkability study suggests improvements for seniors in Dalhousie.” The Centretown Buzz, 13 (6) March 14, 2008.

Grant T. Letter to the editor on walkability study. The Centretown Buzz, 13, (7), April 11 2008.

Community presentations given in Ottawa

Oral and power point presentation of findings on older people’s walking experiences, Abbotsford Seniors Centre, Speaker Series, March 11, 2009.

Oral and poster presentation of findings on older people’s walking experiences, Somerset West Community Health Centre, Health & Physical Activity Open House, October 3, 2008.

Informal presentations of phase one data given in the context of other group meetings

Dalhousie Community Association meeting, January 2, 2008.

Carlinton Professional Interchange meeting, February 20, 2008

Caldwell Women's Group, February 20, 2008.

Radio interview

CBC Ottawa Morning, Host: Hallie Cotnam, February 5, 2008.

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**APPENDIX 1:
LITERATURE SEARCH STRATEGIES**

Literature search strategies

PART 1

The first search strategy aimed to capture the research that has been done on older people, walking patterns and the concept of walkability.

Data bases: Medline, CINAL, GeoRef, SCOPUS, Urban Studies and Planning (Sage)

Search Terms:

1. older people /or older person* / or elder*/ or older adult / or senior/
2. physical activity/ or walk*/ or pedestrian / or active living
3. neighbourhood/ or neighbourhood/ or built environment/ or urban design/ or community design/ or walkability/ or outdoor environment
4. 1 and 2
5. 2 and 3
6. 1 and 2 and 3

PART 2

The second search strategy aimed to capture the literature on the issue of health equity. It focused on looking at this issue with respect to walkability as well as the effect that neighbourhood social disadvantage has on physical activity patterns.

Data bases: Medline, CINAL, GeoRef, Scopus, PAIS, Urban Studies and Planning (Sage)

1. health equity or social justice or environmental justice
2. physical activity/ or walk*/ or pedestrian / or active living
3. neighbo*rhood SES/ or neighbo*rhood disadvantage/ or neighbo*rhood socio-economic status/ or neighbo*rhood deprivation [term area-level also used in place of neighbourhood]
4. 1 and 2
5. 3 and 4

PART 3

The third search strategy aimed to capture the literature on local civic processes that impact walkability.

Databases: Medline, CINAL, PAIS, Scopus, Urban Studies and Planning

Search Terms:

1. healthy cities/ or healthy communities
2. age friendly cities or elder-friendly communities

(Terms 1 and 2 were searched individually)

3. physical activity/ or walk*/ or pedestrian / or active living
4. socio-politic* or politic*

5. municipal government /or city /or municipal planning/ or municipal policy
6. neighbo*rhood action/ or neighbo*rhood planning/ or neighbo*rhood governance/ or community action/ or community mobilization/ or civic process
7. 3 and 4
8. 3 and 5
9. 3 and 6

Week of last up-dated searches: Oct. 12-16, 2009.

APPENDIX 2:
QUANTITATIVE STUDIES EXAMING THE RELATIONSHIP BETWEEN
NEIGHBOURHOOD ENVIRONMENTS AND WALKING / PHYSICAL ACTIVITY
AMONG OLDER PEOPLE

Common limitations referred to by number:

1. Cross-sectional designs cannot be used to infer causality.
2. Self-reported physical activity presents the limitation of recall bias.
3. Census tract data used instead of neighbourhood level data introduces misclassification measurement error bias.
4. Psychometric properties of neighbourhood measure not established.
5. Psychometric properties of physical activity measure not established.

Studies are presented in chronological order.

Full reference citations can be found in the final reference list at the end of Chapter 5.

Quantitative studies examining the relationship between neighbourhood environments and walking and/or physical activity among older people

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|---|---|--|---|--------------------------------------|--|
| Chapman & Beaudet [61] 1983 Multnomah County, OR, USA | Cross-sectional, 224 participants age 65+ years, 5 separate linear regression analyses | 1. Self-reported proximity to services | 2. Self-reported physical activity | NS 1 and 2 | 1, 2, 4,5 |
| Hovell et al. [67] 1989 San Diego, CA, USA | Cross-sectional 2,050 mixed-aged participants; 738 of these were 50+ years, multiple regression analysis | Self report: 1. Convenience of exercise facilities 2. Neighbourhood safety and ease, frequency of seeing others exercise | 3. Self-reported walking for exercise (minutes per week) | NS 1 and 3 * 2 and 3 | 1, 2, 4,5, participants higher than average SES, variability of neighbourhood environments unclear |
| Booth et al. [60] 2000 Australia | Cross-sectional, 449 participants 60+ years, systematic national sample, logistic regression analyses | Self report: 1. Feel safe walking 2. Footpaths safe 3. Access to various facilities | 4. Self-reported physical activity: converted to dichotomous variable of active and inactive | NS 1 and 4 * 2 and 4 * 3 and 4 | 1, 2, 3,4,5 sample size did not allow stratified analysis |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|--|---|--|---|--|---|
| Balfour & Kaplan [58] 2002 Alameda County, CA, USA | Prospective longitudinal with 12 month follow-up, 883 participants aged 55+ years, living in neighbourhoods in 12 cities, logistic regression analysis | Self report: 1. Traffic 2. Noise 3. Crime 4. Trash 5. Inadequate lighting 6. Access to public transport | 7. Self-reported lower extremity functional loss | * 1 and 7 * 2 and 7 NS 3 and 7 NS 4 and 7 * 5 and 7 NS 6 and 7 | 1, 2, 4,5 sample contained a greater proportion of people likely to live in adverse neighbourhood conditions |
| King et al. [70] 2003 Pittsburgh, Pennsylvania, USA | Cross-sectional, 149 women 65+ years living in 128 census block-groups, Wilcox rank sum and Spearman rank order correlation | Self-reported: 1. Convenience 2. Safety 3. Aesthetics 4. Overall neighbourhood walkability 5. Sum of destinations within walking distance | 6. Self-reported walking and physical activity (Paffenbarger Activity Questionnaire) 7. Physical activity as measured by pedometer | * 1. with 6 NS 2 and 6; 2 and 7 NS 3 and 6; 3 and 7 *4 and 6; 4 and 2 *5and 6; 5 and 2 | 1,2,3,4, sample size limited statistical power; participants lived in neighbourhoods of middle to high SES and were recruited from a previous walking intervention study; |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|---|--|---|--|---|---|
| Wilcox et al. [82] 2003 Fairfeild County, South Carolina, USA | Cross-sectional, 102 women, mean age 69.8 years, living in a rural county, multilevel analysis | Self-reported: 1. safety 2. sidewalks 3. traffic 4. lighting 5. unattended dogs 6. nearby park | 7. Self-reported physical activity: (Physical Activity Scale for the Elderly) | 1 and 7* 2 and 7* (negative association) * 3 and 7 (negative association) NS 4 and 7 NS 5 and 7 NS 6 and 7 | 1,2,4, no information on geographic variability |
| Fisher et al. [32] 2004 Portland, OR, USA | Cross-sectional, 582 participants age 65+ years living in 56 neighbourhoods, multilevel analysis | 1. Facilities for walking (observation and city data on parks and trails) Self report: 2. Social cohesion 3. Neighbourhood walking safety 4. Neighbourhood problems | 5. Self-reported: walking for exercise (categorical scales) | * 1 and 5 * 2 and 5 NS 3 and 5 NS 4 and 5 | 1, 2, 3, 4, 5, small neighbourhood samples, lack of inter-neighbourhood variability in terms of safety and neighbourhood problems |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|--|--|--|--|---|--|
| Li et al. [74] 2005 Portland, OR, USA | Cross sectional 577 participants, mean age 74 years, living in 56 neighbourhoods Multilevel analysis | GIS built environment variables 1. Number of residential households 2. Number of employment sites 3. Number of street intersections 4. Total open recreational green space Self-reported measures: 5. Proximity to local recreational facilities 6. Safety for walking 7. Safety from traffic 8. Number of nearby recreational facilities | 9. Self-reported walking (5 point Likert Scale) | Neighbourhood level: * 9 and 2, *9 and 1, *9 and 3, *9 and 4 Individual level: * 9 and 8 * 9 and 6 NS 9 and 5 *interaction between 3 and 7 NS interaction between 5 and 4 | 1,2, 4, small within neighbourhood samples (average 10) |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|--|---|---|--|---|---|
| Li et al. [73] 2005 Portland, OR, USA | Prospective longitudinal over 12 months, 303 participants aged 65+ years living in 28 neighbourhoods, multilevel analysis | 1. Facilities for walking (observation and city data on parks and trails) Self report: 2. Social cohesion 3. Neighbourhood walking safety 4. Neighbourhood problems | 5. Self-reported: walking for exercise (categorical scales) | * 1 and 5 * 2 and 5 * 3 and 5 NS 4 and 5 | 2, 4, small neighbourhood samples, weather variations potential confounders |
| Patterson & Chapman [79] 2004 Portland, OR, USA | Cross-sectional, 372 women aged 70+ years living in 6 census tracts, multilevel analysis | 1. New Urbanism Index (urban form) | Self-reported walking: 2. walking frequency 3. walking distance 4. reasons for walking (categorical scales) | NS 1 and 2 NS 1 and 3 * 1 and 4 | 1, 3, 4, moderately low response rate |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|--|---|--|--|--|--|
| King et al. [71] 2005 Pittsburgh, PA, USA | Cross-sectional, 158 overweight women, mean age 57.3 years, multiple linear regression | GIS data on: 1. median year neighbourhood homes were built (as a proxy of urban form) 2. neighbourhood SES 3. proximity of business and facilities (within waking distance) | 4. Physical activity measured by pedometer | * 1 and 4 * 2 and 4 * 3 and 4 (for golf courses and post offices) NS 1,2,3 - summary measure and 4 | 1, sample of women from a previously studied cohort relatively homogeneous, GIS data did not consider all businesses and facilities, definition of walking distance may vary among individuals |
| Glass et al. [66] 2006 Baltimore, MD, USA | Cross sectional, 1140 participants aged 50 -70 years living in 65 neighbourhoods, multilevel logistic regression | 1. Neighbourhood Psychosocial Hazards Scale | 1. Obesity (Body mass index) 2. Self-reported physical activity (Yale Physical Activity Survey) | * 1 with 1, partially mediated by 2 | 1,2, 4 |
| Michael et al. [77] 2006 Portland, OR, USA | Cross sectional design, 582 participants aged 65 years + living in 10 neighbourhoods, multivariate logistic regression | 1. "Walking friendliness" categorization (based on physical and social characteristics) a) objective measures b) subjective measures | 2. Self-reported walking over a 12 month period using a 5 point Likert scale | * 2 with 1a: presence of a mall (positive association); graffiti and vandalism (negative) * 2 with 1b: presence of mall and walking trails (positive association) | 1, 2, 4,5, limited variability of certain neighbourhood features such as parks, large variability in neighbourhood size |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|--|--|---|--|--|---|
| Piro et al. [296] 2006 Oslo, Norway | Cross-sectional, 3499 participants aged 74 – 76 years living in 25 administrative boroughs (neighbourhoods), multilevel regression | 1. Neighbourhood level violence 2. Fear of Violence | 3. Self-reported physical activity (dichotomized into a) more than one hour per week and b) less than 1 hour per week) | * 1 with 3 for men * 2 with 3 for women | 1,2, 4,5 dichotomized PAv lose meaning with respect to acquiring adequate PA for health benefits; not clear how large administrative boroughs were and weather they had relevance for walking |
| Berke et al. [59] 2007 King County, Washington DC, USA | Cross-sectional, 936 participants aged 65 to 97 years, multiple logistic regression | 1. Walkability score calculated by geographic information systems (built environment variables), calculations based on 3 km radius around participants' homes | 2. Self-reported walking – minutes per week (BRFSS; IPAQ) 3. Obesity | * 1 and 2 (positive association) NS 1 and 3 | 1, 2, 4, participants were all enrolled in same health maintenance organization |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|---|--|--|---|---|--|
| Dawson et al. [64] 2007 England and Scotland | Prospective survey with 12 month follow-up, 750 participants; 420 aged 65 years +, pearson's χ^2 ; McNemar's test of significance; analysis of variance | 1. Self-reported barriers to neighbourhood walking (10 items on physical and social barriers) | 2. Self-reported physical activity a) walking for leisure b) total energy expenditure (Daily Activities Questionnaire) | Cross sectional association: *1 and 2a (but magnitude small) Association over 12 months: NS | 2, 4, participants were relatively affluent (85 % owned their homes) and were recruited from walking programs (i.e. already active) |
| Mota et al. [78] 2007 Porto, Portugal | Cross sectional, 181 participants; 126 women (mean age 79 years), 55 men (mean age 77 years) recruited from 5 seniors' centres in one city | 1. Self-reported neighbourhood environmental support (questionnaire) | 2. Self-reported physical activity (Baecke Questionnaire) | * 2 and neighbourhood safety items of 1 | 1, 2, 4, small sample and lack of variation among living conditions, non-systematic sampling methods |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|-----------------------------------|---|--|---|---|--|
| Lang et al. [72] 2008 UK | Prospective cohort study over 2 years, 4148 participants aged 60 years + living in census areas across the UK, logistic regression analyses | 1. Index of multiple deprivation (neighbourhood deprivation) | 2. Self-reported mobility difficulties (walking 100 yards; climbing stairs) | * 1 and 2 | 2, 3 |
| King [33] 2008 Denver, CO, USA | Cross sectional, 190 participants aged 65 years +, living in 8 neighbourhoods, multilevel analyzes | 1. Observational audit tool using items from the a) Systematic Pedestrian and Cycling Environment Scan and the b) Neighbourhood Brief Observation Tool (social environment variables) | 2. Self-reported walking a) walking for errands b) total walking (CHAMPS) | * 1a with 2a NS 1a with 2b * 1b with 2b | 1, 2, limited evaluation of individual mobility constraints, small numbers of participants and neighbourhoods; audit tools applied to only 5% of street miles in each neighbourhood |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|---|---|---|--|--|---|
| Gauvin et al. [65] 2008 Montreal, QC, Canada | Cross-sectional, 2614 participants aged 45+ years; 959 65+ years, living in 112 census tracts, multilevel analysis | 1. Neighbourhood Active Living Potential Audit a) density of destinations c) activity friendliness b) safety | 2. Self-reported walking using the IPAQ a) total walking b) recreational walking | * 1 (combined index) and 2a NS 1 (combined index) and 2b * 1b and 2a (inverse association) * 1a and 2a / 2b NS 1c and 2a / 2b | 1, 2, 3, not clear how neighbourhood routes were selected for audits or how much of the census tract was represented |
| Prohaska et al. [80] 2009 4 locations across the United States: Alameda County, CA; Cook County, IL; Allegheny County, PA; and Durham/Wake Counties, NC | Cross-sectional, 884 participants aged 80+ years living in 4 locations across the United States, multiple linear regressions | 1. GIS walkability variables (density, connectivity, land-use) | 2. Self-reported walking frequency | * 1 with cognitive status *2 with cognitive status | 1, 2, 3,4,5 |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|--|---|--|--|---|--|
| Li et al. [75] 2009 Portland, OR, USA | Cross sectional, 1221 participants mean age 65 years living in 120 neighbourhoods, multivariate logistic regression | 1. Density of fast food restaurants (measured by GIS) | 2. Self-reported physical activity (BRFSS survey questions) 3. Obesity (body mass index) | * 1 and 2 (inverse association) *1 and 3 (positive association) | 1,2, information on other neighbourhood environment variables not included in analysis |
| Mendes de Leon et al. [76] 2009 Chicago, IL, USA | Cross sectional, 4,317 participants mean age 74.5 years living in 82 census blocks, multi-level analysis | 1. Self-reported measures a) neighbourhood social cohesion b) neighbourhood disorder | 2. Self-reported walking | * 2 and 1b) NS 2 and 1a) | 1,2,3,4,5 |
| Clark et al. [62] 2009 New Haven, CT, USA | Retrospective longitudinal cohort with 8 year follow-up, 1884 participants aged 65 years +, 28 census tracts bivariate analysis | 1. Perceived neighbourhood safety (using a 5 point scale from the BRFSS) 2. Neighbourhood crime rates (historically derived measures) | 3. Mobility disability (able to walk 0.5 mile; climb set of stairs) 4. Self-reported walking behaviour over previous month (3 categories) | * 1 and 2 (positive association) NS 1 and 3 for total sample but * for participants living under the poverty line * 3 and 4 (inverse association) | 2,3,5 crime measures based on media data, small numbers of census tracts limited the ability to do multilevel analysis |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|---|---|---|---|--|--|
| Kamphuis et al. [68] 2009 Eindhoven, Netherlands | Cross-sectional, 1995 participants, aged 55-75 years, living in 147 neighbourhoods, multilevel analysis | 1. Self-reported social and physical neighbourhood characteristics | 5. Self-reported walking for recreation (> 10 minutes; yes or no) | The relationship between walking and individual SES attenuated when “neighbourhood aesthetics” of 1 was introduced into the model | 1, 2, 4, 5 |
| Annear et al. [57] 2009 Christchurch, New Zealand | Mixed methods, 63 participants (mean age 76 years) living in 2 suburban neighbourhoods, t-tests used to examine neighbourhood differences in PA | 1. Neighbourhood deprivation index | 3. Self-reported leisure time physical activity (2 week recall) | * 1 and 3 | 1,2, small number of participants and neighbourhoods precluded analysis to determine independent neighbourhood-level effects |
| Shigematsu et al. [81] 2009 King County/Seattle WA, USA | Cross-sectional, 1623 participants aged 20 to 97 yr divided into five groups: ages 20-39, 40-49, 50-65, 66-75, and 76+, living in 16 census areas, regression analysis with adjustment for covariates | 1. Self-reported neighbourhood attributes (Neighbourhood Environment Walkability Scale) | 2. Self-reported physical activity: (IPAQ and CHAMPS) | Of Nv: proximity to nonresidential uses and recreation facilities were moderately correlated with walking for transportation of PAv in the two oldest groups | 1,2, 3 self report biases may have varied across age groups |

| Author, date, location | Methods | Neighbourhood variables (Nv) | Physical activity variables (PAv) | Associations of Nv with PAv | Limitations |
|-----------------------------------|--|--|---|---|--------------------|
| Clarke et al. [63] 2009 USA | Longitudinal retrospective, 1821 participants, aged 45+ years, national sample, multilevel analysis | 1. Population density 2. Proportion of residents who commute to work by walking or public transit 3. Population age structure 4. SES disadvantage | 5. Self-reported mobility disability (5 category scale) | * 5 and 2 NS 5 and 1 NS 5 and 3 NS 5 and 4 | 2,3 |

**APPENDIX 3:
QUALITATIVE STUDIES EXAMINING OLDER PEOPLE'S OUTDOOR
WALKING EXPERIENCES**

Qualitative studies examining older people's outdoor walking experiences

| Author, reference number, date, location | Objective | Methods | Findings |
|--|---|--|--|
| Rowles [93] 1978 Lanchester, Pennsylvania, USA | To explore the geographic experiences of older people in an attempt to acknowledge the multi-layered character of person/environment relations beyond a simple model of spatial withdrawal. | 5 participants, recruited through neighbourhood centre case workers, weekly unstructured meetings over 2 years | Layered descriptions of each participant and their geographical experiences. Interpretation indicates that "constriction in spatial activity is accompanied by expansion of geographical fantasy". |
| Russell et al. [94] 1998 Sydney, Australia | To investigate the social health needs of older residents of a low-income inner city neighbourhood characterized by social and environmental hazards. | 40 participants, 60-86 years, recruited from one neighbourhood through community centres, local service providers, and clergy, semi-structured interviews | Practices that seniors adopted in meeting daily needs within an environment of physical and social hazards were described. |
| Lockett et al. [92] 2005 Ottawa, ON, Canada | To explore seniors perspectives on the environmental facilitators and barriers to walking. | 22 participants recruitment from 3 different geographic using three seniors centres, focus groups photo-voice; (n = 13) | Environmental hazards related to traffic and fall hazards can be significant barriers. Connectivity can only exist for seniors if routes are efficient and hazard free. Benches and washrooms may facilitate walking for seniors. |

| Author, date, location | Objective | Methods | Findings |
|---|---|---|---|
| Valdemarsson et al. [96] 2005 Kristianstad, Sweden | To gather information on older people's subjective perception of problematic and favourable environmental conditions in public outdoor environments | 39 participants, aged 75-84 years, recruited by letter, systematic sampling within a small town. Semi-structured interviews | All participants commented on surface materials, kerb cuts, traffic, temporary obstacles, lighting seats, guidelines, parking/ loading zones. None commented on signs, noise or controls and apparatus. More problems were perceived while walking outdoors than within public facilities. |
| Michael et al. [10] 2006 Portland, OR, USA | To explore seniors' perspectives on how neighbourhood design encourages active aging. | 60 participants aged 56 – 84 years, recruitment from 9 neighbourhoods using community associations, flyers and newspaper ads Focus groups; (n=9) | Local shopping services, traffic and pedestrian infrastructure, neighbourhood attractiveness and public transport were viewed as neighbourhood features that supported seniors in staying active in their communities. |
| Lees et al. [91] 2007 New York, NY, USA | To examine participants' perceptions of what neighborhood environmental changes would encourage greater physical activity for older African American and Hispanic women | 45 ethnic minority women aged 50-75 years, recruited from 2 urban community health centres Nominal group technique sessions | Major categories were physical environment changes, safety, and activities/social support. Although the physical environment received the greatest number of points, concerns for personal safety cut across categories. Participants indicated the need for more facilities in which to be active. |

| Author, date, location | Objective | Methods | Findings |
|--|--|---|--|
| Strath et al. [95] 2007 WI, USA | To determine perceptions of environmental supports and barriers for walking and biking behaviour in older adults. | 37 participants, aged 55 + years recruited from 2 “high walkable” and 2 “low walkable” neighbourhoods | Categories and themes did not differ across neighbourhoods with differently defined levels of walkability. Infrastructure was the most commonly identified category. |
| | To determine whether perceptions differed by defined neighbourhood walkability. | Open-ended surveys Semi-structured interviews (n=12) | Other categories of land use, landscape, and aesthetics were reported. Poorly maintained or missing sidewalks, crosswalks, bike paths or lanes, and traffic safety were categories that discouraged activity. |
| Day [90] 2008 Scotland, UK | To explore the ways that local outdoor physical environments may support older people’s health and to explore the variation of this experience among places. | 45 participants, aged 62+ years, recruited from 3 settings: inner-city neighbourhood, coastal town, suburban estate Semi-structured interviews | Five dimensions of environmental support are proposed: cleanliness, peacefulness, exercise facilitation, social interaction facilitation and emotional boost. Relevant environmental qualities vary between places. |
| Annear et al. [57] 2008 Christchurch, New Zealand | To investigate how neighbourhood deprivation affects older adults’ participation in leisure time physical activity | 63 participants, mean age 77 years, systematic door to door recruitment in 2 suburban neighbourhood (high and low SES) Semi-structured interview results | Low SES neighbourhood themes: Lack of appropriate provision; unattractive environment; perceptions of crime and antisocial behaviour High SES themes: Well-served leisure environment; attractive and walkable surroundings; socially responsible residents |

APPENDIX 4:
QUANTITATIVE STUDIES EXAMING THE RELATIONSHIP BETWEEN
NEIGHBOURHOOD-LEVEL SOCIO-ECONOMIC STATUS AND
WALKING/PHYSICAL ACTIVITY

Quantitative studies examining the relationship between neighbourhood-level socio-economic status (SES) and walking and/or physical activity (PA)

| Author, date, location | Methods | Neighbourhood SES variables (N_SES_v) | Physical activity variables (PAv) | Main Findings (Relation between N_SES_v and PAv) |
|---|--|---|--|--|
| Karvonen & Rimpela [118] 1996 Finland | Cross-sectional, 1921 teenagers, national sample, aged 16-18 years living in 460 municipalities, logistic regression | Occupational structure, self sufficiency of employment, level of services | Self-reported PA (less or more than 2x/week) | No relationship between area-level SES and PA. |
| Yen & Kaplan [125] 1998 Oakland, CA, USA | Prospective longitudinal with 10 year follow-up, 1737 participants aged 20+ years living in census tracts, multiple linear regression analyses | Proportion of families with low income, substandard housing, adults with low educational attainment, unemployed; unskilled male labourers, children in homes with a single parent | Self-reported PA (categorical scale) | Participants living in lower SES census areas had a greater risk of PA decline over 10 years than those living in higher SES areas, after adjustment for individual-level factors. |
| Sundquist et al. [123] 1999 Sweden | Cross-sectional, 9240 participants living in 8519 neighbourhoods, aged 25-74 years, multilevel analysis | Care Need Index, Townsend score | Self-reported PA (almost none or regular) | Participants living in the most deprived neighbourhoods had an increased risk for engaging in no physical activity. |
| Ross [109] 2000 IL, USA | Cross-sectional, 2482 of residents living in census tracts across the state, aged 18 – 92 years, multilevel analysis | Poverty, education and racial and ethnic composition | Self-reported walking (# days per week) | Residents in higher SES neighbourhoods were more likely to walk as were those in low SES neighbourhoods, suggesting a U-shaped relationship between walking and neighbourhood SES. |

| Author, date, location | Methods | Neighbourhood SES variables (N_SES_v) | Physical activity variables (PAv) | Main Findings (Relation between N_SES_v and PAv) |
|--|--|---|---|---|
| Gordon-Larsen [117] 2000 USA | Cross-sectional Nationally representative sample of 17 766 adolescents living across the USA logistic regression | Total household income, maternal education, ethnic composition; neighbourhood serious crime | Self-reported PA (7 day recall - times / week) | Maternal education inversely related to high inactivity; high family income associated with increased moderate to vigorous activity; neighbourhood serious crime level associated with a decreased likelihood of falling in the highest category of moderate to vigorous physical activity. |
| Stephoe & Feldman [122] 2001 London, England | Cross-sectional, 419 residents of 18 higher SES neighbourhoods (postal sectors) and 235 residents of 19 lower SES neighbourhoods, aged 18 – 94 years, logistic regression and multilevel analysis | Occupational profile of residents | Self reported vigorous PA over the past 2 weeks (yes / no) | Neighbourhood problems were greater in lower versus higher SES neighbourhoods but were not associated with PA measure. However, the odds of having impaired physical function were greater in high problem neighbourhoods compared to low problem neighbourhoods. |
| Giles-Corti & Donovan [26] 2002 Perth, Australia | Cross-sectional, 1803 participants aged 18-59 years living in census districts, logistic regression analyses | Social Advantage Index | Self-reported PA over previous 2 weeks (vigorous, light-moderate, walking for recreation, walking for transport) | Residents of lower SES neighbourhoods were less likely to undertake vigorous PA. There was no association between neighbourhood SES and walking for any purpose. |

| Author, date, location | Methods | Neighbourhood SES variables (N_SES_v) | Physical activity variables (PAv) | Main Findings (Relation between N_SES_v and PAv) |
|---|---|--|--|--|
| Lee & Cubbin [119] 2002 USA | Cross-sectional, 8165 youths, aged 12 – 21 years living in census tracts across the USA, multiple linear and logistic regression models | Family income, poverty, education, housing value, crowded housing, blue collar workers | Self-reported vigorous PA for 20 minutes over previous 7 days (yes / no) | Neighbourhood characteristics were not associated with physical activity. |
| Fisher et al. [32] 2004 Portland, OR, USA | Cross-sectional, 582 participants age 65+ years living in 56 neighbourhoods, multilevel analysis | Percent low income households, ethnic composition, percent of older residents | Self-reported: walking for exercise (categorical scales) | Neighbourhoods having greater proportions of low income households, older residents and white residents were associated with higher levels of walking. |
| King et al. [71] 2005 South-western Pennsylvania, USA | Cross-sectional, 158 overweight women aged 52 - 62 years, area of residence geo-coded to 1500 metres of participants' homes, multiple linear regression | Census data on median household income, % poverty, % less than a bachelor's degree, ethnic composition, unemployment | Pedometer measured PA over 7 days | Living in a low SES neighbourhood was positively associated with PA. |
| Wen, Kandula & Lauderdale [124] 2006 CA, USA | Cross-sectional, 41,545 participants aged 18+ years, logistic regression models | Concentrated affluence, concentrated poverty, % college educated residents, % home ownership | Self-reported walking over previous week - dichotomized into 2 variables based on recommended levels for health benefits | Neighbourhood SES was not associated with walking at recommended levels. |

| Author, date, location | Methods | Neighbourhood SES variables (N_SES_v) | Physical activity variables (PAv) | Main Findings (Relation between N_SES_v and PAv) |
|--|---|---|--|---|
| Lee, Cubbin & Winkby [120] 2007 CA, USA | Cross-sectional, 2672 women aged 12-74 years, 82 neighbourhoods, multilevel analysis | Percentage of residents aged 25 and over with less than a high school education, median annual family income, % blue collar workers, % unemployed, median housing value | Self-reported PA over previous 7 days spent on light, moderate and vigorous PA (time reported converted to energy expenditure) | Women living in lower SES neighbourhoods reported greater energy expenditure but undertook less moderate PA than women in moderate SES neighbourhoods. Women living in higher SES neighbourhoods reported more vigorous activity than women in moderate SES neighbourhoods. |
| Dragano et al. [115] 2007 Nine towns in the Czech Republic and Germany | Cross-sectional, 11554 participants, mean age 58 years, 326 neighbourhoods, multilevel analysis | Unemployment rate, overcrowding | Self-reported leisure time PA – less than once / week (yes / no) | Low PA levels were more common in low SES neighbourhoods |
| Miles et al. [121] 2008 Tallahassee, FL, USA | Cross-sectional, 72 participants, mean age 42 years, living in 2 neighbourhoods, Pearson Product correlations, Pearson chi-square tests, one way ANOVAs | Percent college graduates, % no health insurance, % no access to motor vehicle | Pedometer measured PA (steps / day) over 7 days, Self-reported PA – time spent over the previous month for various purposes | Higher rates of utilitarian walking were reported in the lower SES neighbourhoods, but measures of leisure walking and total physical activity did not differ between the 2 neighbourhoods. |

| Author, date, location | Methods | Neighbourhood SES variables (N_SES_v) | Physical activity variables (PAv) | Main Findings (Relation between N_SES_v and PAv) |
|---|---|---|---|---|
| Gary et al. [116] 2008 USA | Cross-sectional, 7830 diabetic participants, served by health management organizations, mean age 62 years living in 7 states, multilevel analyses | Percent residents living below federal poverty line | Self-reported PA (none, light or vigorous) | Residents of lower SES had lower participation in any physical activity compared to residents living in higher SES neighbourhoods. |
| Lang et al. [72] 2008 UK | Prospective cohort study over 2 years, 4148 participants aged 60 years + living in census areas across the UK, logistic regression | Index of Multiple Deprivation | Self-reported mobility difficulties (walking 100 yards; climbing stairs), Walking speeds (m/second) | Participants living in the most deprived neighbourhoods had a greater risk of incident mobility difficulties and reduced walking speed over a two year period compared to residents of the least deprived neighbourhoods. |
| Annear et al. [57] 2009 Christchurch, New Zealand | Mixed methods, 63 participants (mean age 76 years) living in 2 suburban neighbourhoods, t-tests used to examine neighbourhood differences in PA | Neighbourhood Deprivation Index | Self-reported leisure time physical activity (LTPA) over previous 2 weeks | Residents of lower SES neighbourhood had lower levels of LTPA. |

**APPENDIX 5:
MIXED METHOD STUDIES EXAMINING LOCAL CIVIC PROCESSES
PERTAINING TO WALKABILITY**

Mixed method studies examining local civic processes pertaining to walkability

| Author, date, location | Study objective | Methods | Key Findings |
|---|--|---|---|
| Wang & Smith [140] 1997 Edmonton, AB, Canada | To establish whether planned neighbourhoods are safer than unplanned ones | Case study: retrospective analysis of frequency distributions of neighbourhood types by gross pedestrian accident rates in one city | Improved connectivity between neighbourhoods is associated with fewer pedestrian accidents. |
| Librett [137] 2003 Utah, USA | To identify municipal ordinances that may influence physical activity | Cross-sectional survey sent to all municipalities in Utah, descriptive statistics | Cities experiencing more high growth reported more ordinances than did cities experiencing slow or medium growth. |
| Eyler et. al. [135] 2003 Missouri, USA | To analyze the perceptions of physical activity policy data among community leaders | Cross-sectional survey of physician, church leaders, business leaders and civic leaders as key informants, descriptive statistics | All groups strongly supported physical education in schools but were less supportive of government funding for places where people can exercise. |
| Hardwood [131] 2003 Santa Ana, CA, USA | To examine the tool of advocacy planning in the context of neighbourhood improvement | Case study of 2 neighbourhoods | Use of advocacy planning approach resulted in positive neighbourhood changes and opened up communication between neighbourhoods and city staff. Changes were local rather than city-wide. |

| Author, date, location | Study objective | Methods | Key Findings |
|---|---|---|--|
| Steele et al. [139] 2005 Rockhampton, Australia | To explore perceptions and attitudes of local government employees in the role and promotion of physical activity | Qualitative: focus groups (n=6) with employees from 6 municipal government departments, 6-8 participants each group | Physical activity was not considered the core business of local government. Perceptions indicated that local government has a role in the provision of facilities and infrastructure that allow the community to be active. |
| DeFrancesco et al. [141] 2003 Baltimore, MD, USA | To investigate parents' perspectives on child pedestrian injury prevention | Qualitative: focus groups in four urban elementary schools with a total of 35 participants | Parents were aware of a full range of preventive measures but are especially supportive of speed bumps, safety education and traffic regulation enforcement. Parents were willing to get involved with making improvements but were uncertain about what kinds of strategies would be optimal. |
| Song [138] 2005 Oregon, Orange County and Montgomery County, USA | To examine the influences of the Smart Growth instruments on urban development patterns | Comparative case study: established quantitative measures of Smart Growth development and applied them to 3 urban areas | Smart Growth instruments have altered subdivision design but have not affected land use or regional accessibility. |

| Author, date, location | Study objective | Methods | Key Findings |
|---|---|---|---|
| Barnett [37] 2006 London England | To describe a model of pedestrian planning being used in four London boroughs | Case study: descriptive report | Identifies ten recurring issues faced by pedestrians. |
| Johansson et al. [297] 2006 Sweden | To describe the risks regarding health, safety and security that are considered in a set of municipality plan documents | Case study: thematic content analysis of master plan documents from 50 out of 290 Swedish municipalities | Plan documents mainly focus on disastrous hazards while risks related to human behaviour and lifestyle attract less attention. Policies express the goal of creating good living environments in general but little elaboration on implementation specifics. |
| Talen & Knapp [298] 2006 IL, USA | To examine the extent of implementation of Smart Growth policies in Illinois cities | Comparative case study of Smart Growth regulations. Content analysis of written zoning ordinances and subdivision regulations | Local governments' land-use policies generally run counter to smart growth development ideals. |
| Ehrenfeucht & Loukaitou-Sideris [299] 2007 Los Angeles, CA USA | To examine municipal response to conflicting sidewalk user demands | Retrospective case study at the municipal level in Los Angeles 1880-1920 | The pedestrian was defined as the priority sidewalk user and pedestrian circulation justified the restriction of other uses. However, multiple amendments to city ordinances suggest a process of negotiation through which other users were considered and accommodated. |

| Author, date, location | Study objective | Methods | Key Findings |
|--|--|---|---|
| Giles-Corti et al. [276] 2008 Australia | To describe the design and baseline results of an evaluation of the Western Australian government's pedestrian-friendly subdivision design code (Liveable Neighborhood (LN) Guidelines). | Baseline results (2003-2005) from a longitudinal study of people (n=1813) moving into three types of new housing developments are presented including usual recreational and transport-related walking undertaken within and outside the neighborhood, and 7-day pedometer steps. | No significant group differences detected in the type, amount and location of self-reported walking (p>0.05). However, more residents of the LN neighbourhoods reported that neighbourhood walkability had influenced their decision to live there. (p<0.05). |
| Bassett & Glandon [134] 2008 Lansing, MI and surrounding counties, USA | To provide details of the goals and accomplishments of the Land Use and Health Resource Team | Case study of a municipal level project | A geographic information system-based health impacts tool was developed to facilitate positive change in policies and planning relevant to the built environment. Administrative structures and formal legal/regulatory responsibilities challenge collaboration between health and planning sectors of government. |

| Author, date, location | Study objective | Methods | Key Findings |
|---|---|--------------------------------------|---|
| Newman et al. [143] 2008 Toronto, ON, Canada | To describe a local initiative to establish an urban pedestrian zone and to examine the role of social capital in the development of a network for community action | Case study of an urban neighbourhood | The initiative was successful in establishing a temporary pedestrian zone. Social capital was a powerful tool for local action but economic capital may be essential for sustainability of the network. |
| Hess [136] 2009 Toronto, ON, Canada | To explore why policies for improving pedestrian conditions in one city are not better reflected in the design of arterial streets | Case study of a municipality | Existing implementation tools were incongruent with the new pedestrian-friendly policies. Complex relationships among bureaucratic units that slowed the infiltration of policy statements into municipal frameworks. |
| Hooker et al. [142] 2009 Sacramento County, CA, USA | To describe a partnership between a municipal government department and a non-profit community organization with the goal of making environmental and policy change that would enable and encourage walking by older adults | Case study of a municipal project | The project resulted in safer, more attractive walking routes. The presence of a project champion and community networks were critical factors behind the project's success. |

**APPENDIX 6:
UNIVERSITY OF OTTAWA RESEARCH ETHICS BOARD APPROVAL
CERTIFICATES**

HEALTH SCIENCES AND SCIENCE RESEARCH ETHICS BOARD

CERTIFICATE OF ETHICAL APPROVAL

This is to certify that the University of Ottawa Health Sciences and Science Research Ethics Board has examined the application for ethical approval of the research project entitled '**Neighbourhood walkability of outdoor built environments for seniors**' (file # **H-02-07-09**) submitted by Heidi Sveistrup and Theresa Grant of the Faculty of Health Sciences, Department of Rehabilitation Services. The Board found that this research project met appropriate ethical standards as outlined in the Tri-Council Policy Statement and in the Procedures of the University of Ottawa Research Ethics Boards, and accordingly gave it a Category 1a (approval). This certification is valid one year from the date indicated below.

Date: April 16, 2007

Dorothyann Curran
Protocol Officer for Ethics in Research
For Dr. Daniel Lagarec, Chair of the
Health Sciences and Science REB



September 21, 2007

Heidi Sveistrup
School of Rehabilitation
Faculty of Health Sciences
University of Ottawa

Theresa Grant
Institute of Population Health
Faculty of Graduate Studies
University of Ottawa

Object: Neighbourhood Walkability of Outdoor Built Environments for Seniors (file H 02-07-09)

Dear Professor Sveistrup and Mrs. Grant,

The Health Sciences and Science Research Ethics Board has examined your request received on September 5, 2007 for ethics approval of the following modifications to the above-mentioned project:

- ❑ Addition of individual interviews with seniors to phase 2 of study;
- ❑ Time of research session shortened to 60 minutes;
- ❑ Compensation will be provided to all senior participants as opposed to only those who incur transportation expenses;
- ❑ Recruitment of Chinese and Somali Seniors. Senior from these immigrant groups should have been in their neighbourhoods for at least 2 years.

Your request has been accepted.

During the course of the study, any further modifications to the protocol or forms may not be initiated without prior written approval from the REB. You must also promptly notify the REB of any adverse events that may occur.

If you have any questions, please do not hesitate to contact me at 613-562-5841.

Sincerely yours,

Germain Zongo
Protocol Officer for Ethics in Research
For Daniel Lagarec, Chair of the Health Sciences and Sciences REB



SOCIAL SCIENCES AND HUMANITIES RESEARCH ETHICS BOARD

CERTIFICATION OF ETHICAL APPROVAL

This is to certify that the University of Ottawa Health Sciences and Science Research Ethics Board (REB) examined the application for extension of ethics approval for the research project **Neighbourhood Walkability of Outdoor Built Environments for Seniors: A Comparative Embedded Case Study Examining Perspectives on Walkability and Social-Political Processes in Four Ottawa Neighbourhoods (File # H02-07-09)** submitted by Heidi Sveistrup of the School of Rehabilitation and Theresa Grant of the Institute of Population Health of the University of Ottawa. This project received initial ethics approval on April 16, 2007 by the REB as meeting appropriate ethical standards set out in the Tri-Council Policy Statement and in the Procedures of the University of Ottawa Research Ethics Boards. The University of Ottawa REB members are accordingly granting it a one-year extension of ethics approval. This extension is valid one year from the date indicated below.

 Germain Zongo
 Protocol Officer for Ethics in Research
 For Daniel Lagarec, Chair of the
 Health Sciences and Sciences REB

April 16, 2008
 Date

UNIVERSITY OF OTTAWA
 145, rue Jean Jacques, Ottawa, Ontario K1N 6N5
 TEL: (613) 563-1234 FAX: (613) 563-1234
 www.uottawa.ca

**APPENDIX 7:
INFORMED CONSENT**

Note: Consent forms refer to ‘seniors’ rather than ‘older people’. However, reviewers of the first manuscript, accepted by the Journal of Aging and Physical Activity, requested the change to ‘older people’ in order to make it more understandable for an international audience. The term ‘older people’ was therefore used throughout the final thesis for the sake of consistency.

Information Letter and Consent Form

Focus Group Participation

Research Project: Neighbourhood Walkability of Outdoor Built Environments for Seniors: A Comparative Embedded Case Study Examining Perspectives on Walkability and Social-Political Processes in Four Ottawa Neighbourhoods

Researchers:

Dr. Heidi Sveistrup

School of Rehabilitation
University of Ottawa

Dr. Nancy Edwards

School of Nursing
University of Ottawa

Theresa Grant

Institute of Population Health
University of Ottawa

Dr. Caroline Andrew

School of Political Studies
University of Ottawa

Dr. Mary Egan

School of Rehabilitation
University of Ottawa

Purpose of Study

The purpose of this study is to develop a better understanding of outdoor neighbourhood walkability for seniors and the community processes associated with walkability. Walkability refers to the characteristics in your neighbourhood that affect the enjoyment, safety or convenience of walking outdoors. Examples of these things include traffic, scenery, sidewalks and interesting destinations. Environments that make walking easy, safe and enjoyable help to promote physical activity among seniors. Physical activity is associated with many health benefits, so having places that make people want to walk is important for the health of the whole population. Developing a better understanding of the events, decisions or changes in a community that have affected walking for seniors will help to identify ways that

communities and governments can support healthy environments. The Canadian Institute of Aging is providing financial assistance for this study.

What will I be asked to do?

1) Fill in an information form:

You will be asked to provide some information on your walking habits, age, gender, education level, how long you have lived in the neighbourhood, whether you own or rent your home and whether there have been changes to the enjoyment, safety or convenience of walking outside in your neighbourhood over the last 10 years. This information can be provided by filling in a form or having one of the researchers help you to fill it in.

2) Attend a group discussion:

You will be asked to come to one group meeting and discuss your opinions and experiences of walking in your neighbourhood. First, you will be asked about things that affect the safety, enjoyment and convenience of walking in the neighbourhood. Secondly, you will be asked about changes, events or decisions that have happened over the last 10 years which have affected the walkability of the neighbourhood. Finally, you will be asked about what things could be done to improve walkability in the neighbourhood.

You may not have answers for all the questions that are asked. This is alright since the purpose of having a group discussion is for people to put their experience and knowledge together. The group meeting will be audio-taped.

Who can participate in the study?

You may participate in this study if you:

- are 65 years and older
- have lived in your neighbourhood for at least 2 years
- have walked in your neighbourhood within the past year

How much time will it take?

The entire research session will be scheduled for 60 minutes (50 minutes for the group discussion and 10 minutes to fill in the information form).

Where will the meeting be held?

The meeting will be held in an accessible place for you to attend. This may be a community centre in to your neighbourhood or a meeting room in your apartment building. The location and time will be provided by the researcher.

Who will be at the meeting?

Seven to nine other adults, aged 65 years and older, who have lived in your neighbourhood for at least 2 years will be at the meeting. Theresa Grant, a Ph.D. candidate from the University of Ottawa will ask questions and moderate the

discussion. A research assistant from the University of Ottawa will be present to take notes.

What are the benefits of participating?

There are no direct benefits to participating in this study. The researchers will not be able to make improvements to the environment in your neighbourhood. The findings from the study, however, will be provided to the municipal government and others in the community who are interested in creating environments that make it enjoyable, convenient and safe for seniors to walk.

Are there any risks to participating?

There are no physical risks to participating in this study beyond those of everyday living. There is the chance that people may disagree on some of the issues being discussed. This disagreement could lead to judgement or emotional discomfort for some participants. In order to minimize these risks, the moderator will begin by stating that everyone's opinion is important and that the researchers are interested in hearing from everyone. The moderator will also ask everyone in the room to respect the confidentiality of all opinions expressed during the session. This means that no one's identity is to be associated with what is said in the room.

Will the information be kept confidential and anonymous?

Your participation in the study and any data collected from you will be kept strictly confidential. Only the research team will have access to this data.

With your permission, direct quotes may be used in publications; however no names or other identifiable features will accompany the quote.

What you say at the group discussion will be heard by the other participants and therefore is not anonymous. After the meeting, however, your anonymity will be protected by removing your name from the audio-tape. Except for the consent form, your name will not be kept in association with any of the information collected from you.

Storage of Data

The individual information forms, audio-tape, typed record and notes associated with the group discussion will be stored in a locked cabinet in Dr. Heidi Sveistrup's office at the University of Ottawa. Consent forms containing your name will be stored in a separate locked cabinet in the same office. The data will not be used for purposes other than this study and will be destroyed 10 years after publication.

Voluntary Participation

Your participation in any part of this study is voluntary. You can withdraw from the study at any time without providing an explanation to the researcher and without

repercussions of any kind. You do not have to provide any information that you do not wish to share.

Questions:

If you have any questions or concerns about the research please contact:
Theresa Grant

You may also contact any of the researchers listed at the beginning of this information letter.

Questions or concerns regarding the ethical conduct of the study may be directed to:
The Protocol Officer for Ethics in Research:

Telephone: 613-562-5387 e-mail: ethics@uottawa.ca
University of Ottawa,
550 Cumberland Street,
Tabaret Hall, Room 159,
Ottawa, ON, K1N 6N5

Compensation:

A stipend of \$ 10.00 will be provided as a gesture of appreciation and to help cover transportation costs associated with attending the meeting.

Receiving Final Study Results:

If you would like to receive a summary of the study findings, please provide your mailing address or e-mail address below:

Consent Form

Research Project: Neighbourhood Walkability of Outdoor Environments for Seniors: A Comparative Embedded Case Study Examining Perspectives on Walkability and Social-Political Processes in Four Ottawa Neighbourhoods.

I, _____, have received the information letter on this study whose main purpose is to develop a better understanding of outdoor neighbourhood walkability for seniors and the associated community processes. Participating in this study involves providing some information about myself related to walking habits, type of accommodation, gender, age, education level and changes to walkability in my neighbourhood. It also involves attending a group discussion which will be audio-taped.

Please indicate your response to the following statement:

I agree to be quoted, but all personal-identifying information will be removed to protect my identity.

Yes No Initial: _____

The entire research session will take 60 minutes (10 minutes to fill in the information form, 50 minutes for the discussion). Even though I may have initially consented to participate, I can decline to be involved with any part of the study. I also understand that I am free to withdraw from the study at any time without explanation and without repercussions of any kind. I understand that the information collected from me will only be used for the purpose of this study.

The potential risks and benefits of participating have been explained to me. I have been given an opportunity to ask questions and am satisfied with the answers given to me. I have been provided with a copy of the information letter.

Signature: _____ Date: _____

Information Letter and Consent Form

Individual Interviews with Seniors

Research Project: Neighbourhood Walkability of Outdoor Built Environments for Seniors: A Comparative Embedded Case Study Examining Perspectives on Walkability and Social-Political Processes in Four Ottawa Neighbourhoods

Researchers:

Dr. Heidi Sveistrup

School of Rehabilitation
University of Ottawa

Dr. Nancy Edwards

School of Nursing
University of Ottawa

Theresa Grant

Institute of Population Health
University of Ottawa

Dr. Caroline Andrew

School of Political Studies
University of Ottawa

Dr. Mary Egan

School of Rehabilitation
University of Ottawa

Purpose of Study

The purpose of this study is to develop a better understanding of outdoor neighbourhood walkability for seniors and the community processes associated with walkability. Walkability refers to the characteristics in your neighbourhood that affect the enjoyment, safety or convenience of walking outdoors. Examples of these things include traffic, scenery, sidewalks and interesting destinations. Environments that make walking easy, safe and enjoyable help to promote physical activity among seniors. Physical activity is associated with many health benefits, so having places that make people want to walk is important for the health of the whole population. Developing a better understanding of the events, decisions or changes in a community that have affected walking for seniors will help to identify ways that

communities and governments can support healthy environments. The Canadian Institute of Aging is providing financial assistance for this study.

What will I be asked to do?

1) Fill in an information form:

You will be asked to provide some information on your walking habits, age, gender, education level, how long you have lived in the neighbourhood, whether you own or rent your home and whether there have been changes to the enjoyment, safety or convenience of walking outside in your neighbourhood over the last 10 years. This information can be provided by filling in a form or having one of the researchers help you to fill it in.

2) Individual interview

You will be asked to participate in an interview to share your opinions and experiences of walking in your neighbourhood. You will be asked about changes that have happened over the last 10 years which have affected the walkability of the neighbourhood and how you think walkability could be improved in the future. You will also be asked to talk about why you chose to live in your neighbourhood.

With your permission, the interview will be audio-taped.

Who can participate in the study?

You may participate in this study if you:

- are 65 years and older
- have lived in your neighbourhood for at least 2 years
- have walked in your neighbourhood within the past year

The researchers may not be able to interview everyone who volunteers to do an individual interview. Before the interview you will be asked to provide some information on your age, mobility and activity level so that the researchers can ensure that they talk to a wide variety of seniors (i.e. those of different ages and activity levels).

How much time will it take?

The session will take about 60 minutes (50 minutes for the interview and 10 minutes to fill in the information form).

Where will the interview be held?

The interview will be held in a private room that is convenient for you to reach. The researcher will come to you if that is most convenient.

Who will attend the interview?

Only you and the researcher, Theresa Grant, will attend the interview.

What are the benefits of participating?

There are no direct benefits to participating in this study. The researchers will not be able to make improvements to the environment in your neighbourhood. The findings from the study, however, will be provided to the municipal government and others in the community who are interested in creating environments that make it enjoyable, convenient and safe for seniors to walk.

Are there any risks to participating?

There are no physical risks to participating in this study beyond those of everyday living.

Will the information be kept confidential and anonymous?

Your participation in the study and any data collected from you will be kept strictly confidential. Only the research team will have access to this data.

With your permission, direct quotes may be used in publications; however no names or other identifiable features will accompany the quote.

Your anonymity will be protected by removing any reference to your name from the audio-tape. Except for the consent form, your name will not be kept in association with any of the information collected from you.

Storage of Data

The individual information forms, audio-tape, typed record and notes associated with the group discussion will be stored in a locked cabinet in Dr. Heidi Sveistrup's office at the University of Ottawa. Consent forms containing your name will be stored in a separate locked cabinet in the same office. The data will not be used for purposes other than this study and will be destroyed 10 years after publication.

Voluntary Participation

Your participation in any part of this study is voluntary. You can withdraw from the study at any time without providing an explanation to the researcher and without repercussions of any kind. You do not have to provide any information that you do not wish to share.

Questions:

If you have any questions or concerns about the research please contact:
Theresa Grant

You may also contact any of the researchers listed at the beginning of this information letter.

Questions or concerns regarding the ethical conduct of the study may be directed to:
The Protocol Officer for Ethics in Research:

Telephone: 613-562-5387

e-mail: ethics@uottawa.ca

University of Ottawa,
550 Cumberland Street,
Tabaret Hall, Room 159,
Ottawa, ON, K1N 6N5

Compensation:

A stipend of \$ 10.00 will be provided as a gesture of appreciation and to help cover transportation costs associated with attending the meeting.

Receiving Final Study Results:

If you would like to receive a summary of the study findings, please provide your mailing address or e-mail address below:

Consent Form

Research Project: Neighbourhood Walkability of Outdoor Environments for Seniors: A Comparative Embedded Case Study Examining Perspectives on Walkability and Social-Political Processes in Four Ottawa Neighbourhoods.

I, _____, have received the information letter on this study whose main purpose is to develop a better understanding of outdoor neighbourhood walkability for seniors and the associated community processes. Participating in this study involves providing some information about myself related to walking habits, type of accommodation, gender, age, education level and neighbourhood characteristics. It also involves doing an interview which will be audio-taped.

Please indicate your response to the following statement:

I agree to be quoted, but all personal-identifying information will be removed to protect my identity.

Yes No Initial: _____

The entire research session will take 60 minutes (10 minutes to fill in the information form, 50 minutes for the interview). Even though I may have initially consented to participate, I can decline to be involved with any part of the study. I also understand that I am free to withdraw from the study at any time without explanation and without repercussions of any kind. I understand that the information collected from me will only be used for the purpose of this study.

The potential risks and benefits of participating have been explained to me. I have been given an opportunity to ask questions and am satisfied with the answers given to me. I have been provided with a copy of the information letter and consent form.

Signature: _____ Date: _____

Lettre d'informations et formulaire de consentement

Participation du groupe de discussion

Projet de recherche : La marchabilité de l'environnement extérieur du quartier pour les aînés. Une étude de cas intégrée comparative examinant les perspectives de la marchabilité et des processus socio-politiques dans quatre quartiers d'Ottawa.

Chercheures :

D^r Heidi Sveistrup

École des sciences de la
réadaptation
Université d'Ottawa

D^r Nancy Edwards

École des sciences
infirmières
Université d'Ottawa

Theresa Grant

L'Institut de recherche sur la santé des
populations
Université d'Ottawa

(

D^r Caroline Andrew

École des études politiques
Université d'Ottawa

D^r Mary Egan

École des sciences de la
réadaptation
Université d'Ottawa

But de l'étude

Cette étude a pour but de développer une meilleure compréhension au sujet de la marchabilité du quartier extérieur pour les aînés et des processus entamés par la communauté associés à la marchabilité. La marchabilité se définit selon les caractéristiques de votre quartier ayant un impact sur le plaisir, la sécurité ou la convenance de marcher à l'extérieur. La circulation routière, le paysage et les destinations intéressantes en sont quelques exemples. Les environnements, où il

devient plus facile, sécuritaire et plaisante d'y marcher aident à promouvoir l'activité physique parmi les aînés. Avoir des endroits où les gens veulent y marcher est important pour la santé de la population, puisque l'activité physique est associée à plusieurs bénéfices pour la santé. En développant une meilleure compréhension des événements, décisions ou changements ayant influencé la marche pour les aînés dans une communauté donnée, aidera aux communautés et gouvernements à identifier des façons à supporter des environnements sains.

L'appui financier pour cette étude provient de l'Institut canadien du vieillissement.

Qu'est ce qu'on me demandera de faire?

1) Remplir un formulaire d'informations

On vous demandera de nous informer de vos habitudes de marche, votre âge, votre sexe, votre niveau d'éducation, le nombre d'année vécu dans votre quartier, si vous êtes propriétaire ou locataire et s'il y a eu des changements dans votre quartier au courant des 10 dernières années qui ont influencé le plaisir, la sécurité ou la convenance de marcher à l'extérieur. Ces informations peuvent être fournies en remplissant un formulaire ou avec l'assistance d'une des chercheuses.

2) Assister à un groupe de discussion

On vous demandera d'assister à une rencontre de groupe pour discuter de vos opinions et de vos expériences de marcher dans votre quartier. En premier lieu, on vous demandera de parler des aspects qui influencent la sécurité, le plaisir et la convenance de marcher dans votre quartier. Deuxièmement, on vous demandera de discuter des changements, des événements ou décisions qui ont pris place au courant des 10 dernières années qui ont influencé la marchabilité dans votre quartier. Finalement, on vous demandera ce qui pourrait être fait pour améliorer la marchabilité dans votre quartier. Il se peut que vous n'avez pas de réponses pour toutes ces questions; ceci sera acceptable puisque le groupe de discussion servira d'un ensemble de partage d'expériences et de connaissances de chacun. Cette rencontre sera enregistrée sur cassette sonore.

Qui peut participer dans cette étude?

Vous pouvez participer dans cette étude si:

- vous êtes âgés de 65 ans ou plus;
- vous avez vécu dans votre quartier pour au moins 2 ans;
- vous avez marché dans votre quartier au courant de la dernière année;

Combien de temps ceci prendra?

La session de recherche entière est prévue pour une durée de 60 minutes. Remplir le formulaire d'information prendra environ 10 minutes. Le groupe de discussion sera d'une durée de 50 minutes.

Où sera tenue l'entrevue ?

La rencontre prendra place dans un centre communautaire accessible dans votre quartier ou près de vous. Sur une feuille d'informations séparée, nous ferons parvenir aux membres du groupe de discussion l'adresse, la pièce, la date et l'heure de la rencontre.

Qui sera à la rencontre ?

À la rencontre, il y aura sept à neuf autres adultes âgés de 65 ans ou plus ayant vécu dans votre quartier pour au moins 10 ans. Theresa Grant, une candidate doctorale à l'Université d'Ottawa posera les questions et dirigera la discussion. Un(e) assistant(e) de recherche sera présent(e) pour prendre des notes.

Quels sont les avantages d'y participer ?

Il n'y a aucun bénéfice primaire en y participant. Les chercheuses ne pourront pas faire des améliorations dans l'environnement de votre quartier. Par contre, les données recueillies pourront être utilisées par le gouvernement municipal et autres personnes de la communauté, afin de créer un environnement agréable, pratique et sécuritaire où les aînés peuvent y marcher.

A-t-il des risques à participer dans cette étude ?

Autres que les risques de la vie quotidienne, il n'y a aucun risque physique. Par contre, il se peut qu'il y ait des désaccords sur certains sujets discutés. Ces désaccords peuvent engendrer des jugements et des inconforts pour certains participants. Pour minimiser ces risques, la médiatrice expliquera, au tout début de la rencontre, que toutes les opinions sont importantes et que les chercheuses sont intéressées à les entendre. De plus, la médiatrice demandera à toutes personnes présentes de bien vouloir respecter la confidentialité de toutes les opinions exprimées durant la rencontre. Néanmoins, aucune identité ne doit être associée à ce qui est dit durant la session.

L'information sera-t-elle gardée confidentielle et anonyme ?

Votre participation et toutes les données compilées durant cette étude seront gardées strictement confidentielles. Seul l'équipe de recherche y auront accès.

Avec votre permission, des citations pourront être utilisées même dans des publications, sans y émettre aucun nom ou aucune codification identifiable.

Puisqu'il y aura d'autres participants à la rencontre, ce que vous allez dire ne sera donc pas anonyme. Après la rencontre votre nom sera retiré de la cassette sonore; donc votre anonymat sera protégé. À part du formulaire de consentement, votre nom ne sera pas associé avec aucune information divulguée de votre part.

Le rangement des données

Les cassettes sonores, la documentation informatisée et les notes associées à cette entrevue seront entreposées dans un classeur qui sera barré sous clé, dans le bureau du D^r Heidi Sveistrup à l'Université d'Ottawa. Les formulaires de consentement signés et les codes d'identification uniques seront gardés dans un autre classeur différent aussi barré sous clé. Les données ne seront pas utilisées à d'autres fins autre que pour cette étude et seront détruites 10 ans après les publications.

Participation volontaire

Votre participation est volontaire pour toutes les parties de cette étude. Vous pouvez en tout temps vous retirez sans aucune répercussion et sans avoir à provenir aucune explication aux chercheuses. Vous n'aurez pas à fournir aucune information que vous ne désirez pas partager.

Questions

Si vous avez des questions ou des préoccupations au sujet de la recherche s.v.p rejoindre:

Theresea Grant

Vous pouvez aussi rejoindre une des chercheuses mentionnées au début de ce document.

Les questions ou préoccupations touchant la déontologie pour cette étude pourront être adressées à:

La responsable de la déontologie en recherche
Université d'Ottawa
550 rue Cumberland
Pavillon Tabaret, pièce 159
Ottawa, On
K1N 6N5
Téléphone: 613-562-5387
Courriel: ethics@uottawa.ca

Compensation:

Un montant de 10.00\$ vous sera donné afin de déboursier les frais de déplacements pour assister à la rencontre.

Réception des résultats finals de l'étude

Si vous désirez recevoir un résumé des données de cette étude, s.v.p nous faire parvenir ci-bas, votre adresse postale ou votre courriel.

Formulaire de consentement

Projet de recherche: La marchabilité de l'environnement extérieur du quartier pour les aînés. Une étude de cas intégrée comparative examinant les perspectives de la marchabilité et des processus socio-politiques dans quatre quartiers d'Ottawa.

J'ai, _____, reçu la lettre d'informations de cette étude. L'étude a pour but principal de développer une meilleure compréhension de la marchabilité du quartier extérieur pour les aînés et des processus communautaires associés. Ma participation dans cette étude impliquera de donner quelques informations à mon sujet, notamment mes habitudes de marche, les types d'accommodations, mon sexe, âge, niveau d'éducation et les caractéristiques du quartier. De plus, ceci impliquera de participer à un groupe de discussion qui sera enregistrée sur cassette sonore.

S.v.p. émettre une réponse pour l'énoncé suivant:

J'accepte qu'on me cite, mais que toutes informations pouvant m'identifier soient retirées pour protéger mon identité.

_____ Oui

_____ Non

Initial:

La session de recherche entière sera d'une durée de 60 minutes (10 minutes pour remplir le formulaire d'information, et 50 minutes pour la discussion). Même si j'ai initialement consenti à participer dans cette étude, je peux en tout temps m'y retirer. De plus, je comprends que je peux librement m'y retirer de cette étude à tout moment sans donner aucune explication et sans aucune répercussion. Je comprends aussi que l'information que je divulguerai sera utilisée seulement pour cette étude.

Les avantages et risques potentiels m'ont été expliqués. J'ai eu l'opportunité de poser des questions et je suis satisfait(e) avec les réponses données. J'ai été fourni avec la lettre d'informations.

Signature: _____

Date:

Lettre d'informations et formulaire de consentement

Participation à l'entrevue individuelle

Projet de recherche : La marchabilité de l'environnement extérieur du quartier pour les aînés. Une étude de cas intégrée comparative examinant les perspectives de la marchabilité et des processus socio-politiques dans quatre quartiers d'Ottawa.

Chercheures :

D^r Heidi Sveistrup

École des sciences de la réadaptation
Université d'Ottawa

D^r Nancy Edwards

École des sciences infirmières
Université d'Ottawa

Theresa Grant

L'Institut de recherche sur la santé des
populations
Université d'Ottawa

D^r Caroline Andrew

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Université d'Ottawa

D^r Mary Egan

École des sciences de la réadaptation
Université d'Ottawa

But de l'étude

Cette étude a pour but de développer une meilleure compréhension au sujet de la marchabilité du quartier extérieur pour les aînés et des processus entamés par la communauté associés à la marchabilité. La marchabilité se définit selon les caractéristiques de votre quartier ayant un impact sur le plaisir, la sécurité ou la convenance de marcher à l'extérieur. La circulation routière, le paysage et les destinations intéressantes en sont quelques exemples. Les environnements, où il devient plus facile, sécuritaire et plaisante d'y marcher aident à promouvoir l'activité physique parmi les aînés. Avoir des endroits où les gens veulent y marcher est important pour la santé de la population, puisque l'activité physique est associée à plusieurs bénéfices pour la santé. En développant une meilleure compréhension des événements, décisions ou changements ayant influencé la marche pour les

aînés dans une communauté donnée, aidera aux communautés et gouvernements à identifier des façons à supporter des environnements sains.

L'appui financier pour cette étude provient de l'Institut canadien du vieillissement.

Qu'est ce qu'on me demandera de faire?

1) Remplir un formulaire d'informations

On vous demandera de nous informer de vos habitudes de marche, votre âge, votre sexe, votre niveau d'éducation, le nombre d'année vécu dans votre quartier, si vous êtes propriétaire ou locataire et s'il y a eu des changements dans votre quartier au courant des 10 dernières années qui ont influencé le plaisir, la sécurité ou la convenance de marcher à l'extérieur. Ces informations peuvent être fournies en remplissant un formulaire ou avec l'assistance d'une des chercheuses.

2) Participer à l'entrevue

Vous serez demandé de participer dans un entretien pour partager vos opinions et vos expériences de marcher dans votre quartier. Vous serez renseigné sur les changements qui est arrivé durant ces 10 dernières années qui a affecté la marchabilité du quartier et comment vous pensez que la marchabilité pourrait être amélioré à l'avenir. Vous serez aussi demandé de parler de pourquoi vous avez choisi d'habiter en votre quartier. Avec votre permission, cette entrevue sera enregistrée sur une cassette sonore.

Qui peut participer dans cette étude?

Vous pouvez participer dans cette étude si:

- vous êtes âgés de 65 ans ou plus;
- vous avez vécu dans votre quartier pour au moins 2 ans;
- vous avez marché dans votre quartier au courant de la dernière année;

Combien de temps ceci prendra?

La session de recherche entière est prévue pour une durée de 60 minutes.

Où sera tenue l'entrevue ?

La rencontre prendra place dans un centre communautaire accessible dans votre quartier ou près de vous. Le chercheur vous viendra si c'est le plus convenable.

Qui assistera à l'entrevue ?

Vous même et la chercheuse, Theresa Grant, seront présents.

Quels sont les avantages d'y participer ?

Il n'y a aucun bénéfice primaire en y participant. Les chercheuses ne pourront pas faire des améliorations dans l'environnement de votre quartier. Par contre, les données recueillies pourront être utilisées par le gouvernement municipal et autres personnes de la communauté, afin de créer un environnement agréable, pratique et sécuritaire où les aînés peuvent y marcher.

A-t-il des risques à participer dans cette étude ?

Il n'y a aucun risque physique au fait de participer à cette étude au-delà de ceux de vie quotidienne.

L'information sera-t-elle gardée confidentielle et anonyme ?

Votre participation et toutes les données compilées durant cette étude seront gardées strictement confidentielles. Seul l'équipe de recherche y auront accès.

Avec votre permission, des citations pourront être utilisées même dans des publications, sans y émettre aucun nom ou aucune codification identifiable.

Puisqu'il y aura d'autres participants à la rencontre, ce que vous allez dire ne sera donc pas anonyme. Après la rencontre votre nom sera retiré de la cassette sonore; donc votre anonymat sera protégé. À part du formulaire de consentement, votre nom ne sera pas associé avec aucune information divulguée de votre part.

Le rangement des données

Les cassettes sonores, la documentation informatisée et les notes associées à cette entrevue seront entreposées dans un classeur qui sera barré sous clé, dans le bureau du D^r Heidi Sveistrup à l'Université d'Ottawa. Les formulaires de consentement signés et les codes d'identification uniques seront gardés dans un autre classeur différent aussi barré sous clé. Les données ne seront pas utilisées à d'autres fins autre que pour cette étude et seront détruites 10 ans après les publications.

Participation volontaire

Votre participation est volontaire pour toutes les parties de cette étude. Vous pouvez en tout temps vous retirez sans aucune répercussion et sans avoir à provenir aucune explication aux chercheuses. Vous n'aurez pas à fournir aucune information que vous ne désirez pas partager.

Questions

Si vous avez des questions ou des préoccupations au sujet de la recherche s.v.p rejoindre:

Theresea Grant

Vous pouvez aussi rejoindre une des chercheuses mentionnées au début de ce document.

Les questions ou préoccupations touchant la déontologie pour cette étude pourront être adressées à:

La responsable de la déontologie en recherche
Université d'Ottawa
550 rue Cumberland
Pavillon Tabaret, pièce 159
Ottawa, On
K1N 6N5
Téléphone: 613-562-5387
Courriel: ethics@uottawa.ca

Compensation:

Un montant de 10.00\$ vous sera donné afin de déboursier les frais de déplacements pour assister à la rencontre.

Réception des résultats finals de l'étude

Si vous désirez recevoir un résumé des données de cette étude, s.v.p nous faire parvenir ci-bas, votre adresse postale ou votre courriel.

Formulaire de consentement

Projet de recherche: La marchabilité de l'environnement extérieur du quartier pour les aînés. Une étude de cas intégrée comparative examinant les perspectives de la marchabilité et des processus socio-politiques dans quatre quartiers d'Ottawa.

J'ai, _____, reçu la lettre d'informations de cette étude. L'étude a pour but principal de développer une meilleure compréhension de la marchabilité du quartier extérieur pour les aînés et des processus communautaires associés. Ma participation dans cette étude impliquera de donner quelques informations à mon sujet, notamment mes habitudes de marche, les types d'accommodations, mon sexe, âge, niveau d'éducation et les caractéristiques du quartier. De plus, ceci impliquera de participer à un groupe de discussion qui sera enregistrée sur cassette sonore.

S.v.p. émettre une réponse pour l'énoncé suivant:

J'accepte qu'on me cite, mais que toutes informations pouvant m'identifier soient retirées pour protéger mon identité.

_____ Oui

_____ Non

Initial:

La session de recherche entière sera d'une durée de 60 minutes (10 minutes pour remplir le formulaire d'information, et 50 minutes pour la discussion). Même si j'ai initialement consenti à participer dans cette étude, je peux en tout temps m'y retirer. De plus, je comprends que je peux librement m'y retirer de cette étude à tout moment sans donner aucune explication et sans aucune répercussion. Je comprends aussi que l'information que je divulguerai sera utilisée seulement pour cette étude.

Les avantages et risques potentiels m'ont été expliqués. J'ai eu l'opportunité de poser des questions et je suis satisfait(e) avec les réponses données. J'ai été fourni avec la lettre d'informations.

Signature:

Date:

研究項目資料通知書及同意書
參與研究項目的社群

研究項目名稱：

方便長者步行的社區戶外環境：就渥太華四個社區在步行環境的社會政策進行相對深入的個案研究，探討不同的觀點

研究員

Dr. Heidi Sveistrup 渥太華大學人文學院
電話: 613 562 5800 ext. 8016
電郵: hsveist@uottawa.ca

Dr. Nancy Edwards 渥太華大學護士學院
電話: 613 562 5800 ext.8395
電郵: nedwards@uottawa.on.ca

Theresa Grant 渥太華大學人口健康學院
電話: 613 562 4262 ext.1656
或: 613 237 7665
電郵: tgran084@uottawa.ca

Dr. Caroline Andrew 渥太華大學政治學院
電話: 613 562 5800 ext. 2755
電郵: candrew@uottawa.ca

Dr. Mary Egan 渥太華大學人文學院
電話: 613 562 5800 ext. 8043
電郵: megan@uottawa.ca

研究目的

這項研究目的是進一步了解社區的戶外步行環境能否方便長者。步行環境是指你能愉快地，安全方便地在你的社區進行戶外步行；例如社區的交通情況，戶外景點，行人通道和休憩場地等，有了方便安全，景色怡人的社區環境有利提高長者的體力運動。體力運動對健康好處甚多，所以社區周圍環境的設施有利於體力運動是十分重要的。能對影响長者在區內步行的事實，有關的決定或改變有進一步了解，將

有助社區和政府共同努力，支持建設一個更健康完善的環境。本研究項目得到加拿大老年學院資助。

我將會被邀做甚麼？

1) 填寫問卷

你將被問及在社區的步行習慣，年齡，性別，教育程度和你在該社區的居住年期，同時你將被問到你的住所是自置物業還是租賃，以及在過去十年期間你居住社區的步行環境在安全方便，周圍景色等設施有否改變。這些資料以填表方式進行或由其中一位研究員協助填寫。

2) 參與小組討論

你將被邀請出席小組會議，討論在社區內的步行經驗和意見。首先你會被問到有關影響社區步行安全方便，周圍景色的事物；然後是過去十年影響社區步行環境的相關的改變，事實或決定等；最後是已經改善的地方。

你不一定需要回答所有問題，因為小組會議目的是讓大家有一個共同討論機會，把經驗和知識分享，會議將進行錄音。

誰人可參與這個調查研究？

若符合以下條件者均可參加

- 年齡在 65 歲或以上
- 在所屬社區居住十年或以上
- 在過去一年內曾在所屬社區作步行活動

調查研究進行需時多少？

整個調查需時 60 分鐘(50 分鐘為小組討論和 10 分鐘填寫問卷)

調查研究在甚麼地方舉行？

會議將在就近你居住的地方舉行，可能是社區中心或你居住大廈的會議室，至於具體的時間和地點研究員將另行通知。

誰人將一起進行會議？

會議由七至九位年齡在 65 歲或以上居住於同一社區最少十年的長者參加，由一名渥太華大學博士研究生主持，並由一名渥太華大學研究員助手進行紀錄。

參與者有何好處？

本次調查未能對參與者有直接好處，而研究員亦不可能對你的社區環境作出任何改善。但是研究的結果會引起市政府以及社區的其他人士對步行環境的關注，從而創設有利於長者舒適而安全方便的步行環境。

參與者會有任何風險嗎？

這項調查對參與者的日常生活不會有任何影響。討論期間可以有不同的觀點和意見，這些不同意見可能會引起不快，因此，為了減少該情況的出現，主持人會聆聽及尊重每位參與者的意見和聲音。我們亦懇請參與者互相尊重，會議過程保密，換言之，每一位發言人的姓名和身份將不被公開。

調查資料是保密和不記名嗎？

參與者的所有資料將絕對保密，只有研究項目的研究員有權取得有關資料。

同時，若得到你的同意，部分的發言會公開，但絕對不會加上發言人的名字。

因為會議有其他與會者，因此不會是匿名的討論。但是會議後你的名字將從音帶中刪除，除了你的同意書要保留你的名字之外，所有資料中有關你的名字都不被保留。

資料的保存

所有個人表格，音帶，會議紀錄等都會鎖在渥太華大學 Heidi Sveistrup 博士的辦公室儲存櫃內，至於你的同意書會鎖在同一辦公室的另一個儲存櫃內，有關資料不會被用作其他用途，同時十年後將被銷毀。

志願參與

本項研究調查是志願性質，你可以在任何時間，無須提出任何理由的情況下退出，而且任何資料若你不願意回答可以不作答。

查詢：

若有任何查詢或疑問，請聯絡：

Theresa Grant 渥太華大學人口健康學院

電話: 613 562 4262 ext.1656

或: 613 237 7665

電郵: tgran084@uottawa.ca

你亦可向本文件首頁的任何一位研究員查詢。

所有查詢或疑問是根據以下研究項目的守則辦事處的指引進行，該辦事處的通訊如下：

研究項目守則辦事處

渥太華大學

550 Cumberland Street,

Tabaret Hall, Room 159,

Ottawa, ON, K1N 6N5

電話: 613-562-5387

電 郵: ethics@uottawa.ca

報酬：

每位參與者將獲得 10 元作為交通費。

研究項目的結果：

若你想獲得一份研究結果的簡報，請寫上你的地址或電郵，以便日後發送：

同意書

研究項目名稱：

方便長者步行的社區戶外環境：就渥太華四個社區在步行環境的社會政策進行相對深入的個案研究，探討不同的觀點

本人_____接受這研究項目的資料通知書，其主要目的是進一步了解社區的戶外步行環境能否方便長者。調查資料涉及本人的步行習慣，居住，性別，年齡，教育水平以及本人社區在步行環境條件的改變，同時當中的討論將被錄音。

請在以下敘述中選出你的答覆：

我同意我的說話被引述，但個人資料須受保護。

____是 ____否 簡簽：_____

整個項目將進行 60 分鐘(50 分鐘為小組討論和 10 分鐘填寫問卷)。雖然我簽署了同意書，但我仍可以拒絕參與這項調查的任何部分，同時我明白本人可以在無須提出任何理由的情況下退出，而不附帶任何負面後果，我明白這些資料的搜集是為本研究的目的而設。

本人已獲悉有關參與調查的風險及優惠，本人亦有機會發問且滿意當中的答覆，同時亦獲得研究項目的資料通知書。

署名：_____ 日期：_____

Information Letter and Consent Form

Key Informant Interviews

Research Project: Neighbourhood Walkability of Outdoor Built Environments for Seniors: A Comparative Embedded Case Study Examining Perspectives on the Walkability and Social-Political Processes in Four Ottawa Neighbourhoods.

Researchers:

Dr. Heidi Sveistrup

School of Rehabilitation
University of Ottawa

Dr. Nancy Edwards

School of Nursing
University of Ottawa

Theresa Grant

Institute of Population Health
University of Ottawa

Dr. Caroline Andrew

School of Political Studies
University of Ottawa

Dr. Mary Egan

School of Rehabilitation
University of Ottawa

Background and Purpose of Study

The purpose of this study is to develop a better understanding of outdoor neighbourhood walkability for seniors and the community processes associated with walkability. Walkability refers to neighbourhood characteristics that affect the enjoyment, safety or convenience of walking outdoors. Examples of these things include traffic, scenery, sidewalks and interesting destinations. Environments that make walking easy, safe and enjoyable help to promote physical activity among seniors. Physical activity is associated with many health benefits, so having places that make people want to walk is important for the health of the whole population. Developing a better understanding of the events, decisions or changes in a community that have affected walking for seniors will help to identify ways that communities and governments can support healthy environments.

The first part of this study involved asking seniors about their experiences and opinions of neighbourhood walkability and about the community changes, events or decisions that have affected the walkability of their neighbourhoods. The second part of the study involves interviewing key informants with specific knowledge or experience related to these changes, events or decisions. The researchers are interested in speaking to people working within municipal government as well as the public and private sectors.

The Canadian Institute of Aging is providing financial assistance for this study.

What will I be asked to do?

1) Individual interview

You will be asked to participate in an interview and share your perspectives and knowledge on a community event, decision or change related to neighbourhood walkability for seniors. You will be asked questions about how the change, event or decision came about. You will also be asked about the individuals, groups, resources and linkages that may have influenced this event, decision or change.

With your permission, the interview will be audio-taped.

2) Recommending other key informants

You will be asked if you know of one or two other people (e.g. community members or leaders) who would also have specific knowledge related to the event, decision or change that may be different from your own. If the contact information for these people is not public information, you will be asked whether you would forward a message from the researchers by e-mail or post asking these individuals for permission to be contacted. The researchers will cover the cost of postage.

You **would not** have to explain the study details or ask potential key informants to participate. You do not have to agree to recommend others in order to take part in the individual interview.

How long will the meeting be?

The interview will be scheduled for 60 minutes.

Where will the interview be held?

The interview will be held in a private room that is convenient for you to reach. The researcher will come to you if that is most convenient. If you now live more than a 5 hour drive from Ottawa, a telephone interview will be arranged.

Who will attend the interview?

Only you and the researcher, Theresa Grant, will attend the interview.

What are the benefits of participating?

There are no direct benefits to participating in this study. The findings from the study, however, will be provided to the municipal government and others in the community who are interested in creating environments that make it enjoyable, convenient and safe for seniors to walk.

Are there any risks to participating?

There are no physical risks to participating in this study beyond those of everyday living. During the interview you will be asked about disagreements or problems that arose in relation to the walkability issue. You may feel uneasy to talk about past tensions. You will only need to say what you feel comfortable saying, and can refuse to answer any questions. There may be some risks to remaining anonymous with respect to what you say during the interview. These risks are discussed below.

Will the information be kept confidential and anonymous?

Any information you share will remain strictly confidential. To protect your anonymity, your name will not be recorded with your responses or identified in any way. A unique code number will be assigned to you to identify your interview tape and transcript. The opinions that you express during the interview will be grouped with other opinions and analyzed for the main ideas and themes. With your permission, direct quotes from your interview may be used in publications; however no names or other identifiable features will accompany the quote.

There is a small possibility that the nature of the information that you share as a participant may limit the researchers' ability to keep your comments anonymous. For example, talking about something that only a few people have particular knowledge about may enable others to guess a participant's identity. Having others guess who made a particular statement could lead to social judgement. For this reason, quotes will be carefully selected so they do not reveal the identity of any participant.

Storage of Data

The audio-tape, typed record and notes associated with the interview will be stored in a locked cabinet in Dr. Heidi Sveistrup's office at the University of Ottawa. Signed consent forms and unique identifier numbers will be kept in a separate locked cabinet. Data will not be used for any other purpose than that of this study and will be destroyed 10 years after publication.

Voluntary Participation

Your participation in any part of this study is voluntary. You can withdraw from the study at any time without providing an explanation to the researcher and without repercussions of any kind.

You do not have to provide any information that you do not wish to share.

Questions:

If you have any questions or concerns about the research please contact:

Theresa Grant

You may also contact any of the researchers listed at the beginning of this information letter.

Questions or concerns regarding the ethical conduct of the study may be directed to:

The Protocol Officer for Ethics in Research
University of Ottawa
550 Cumberland Street
Tabaret Hall, Room 159
Ottawa, ON
K1N 6N5

Telephone: 613-562-5387
e-mail: ethics@uottawa.ca

Receiving Final Study Results:

If you would like to receive a summary of the study findings, please provide your mailing address or e-mail address below:

Consent Form

Research Project: Neighbourhood Walkability of Outdoor Environments for Seniors: A Comparative Embedded Case Study Examining Perspectives on Walkability and Social-Political Processes in Four Ottawa Neighbourhoods.

I, _____, have received the information letter on this study whose main purpose is to develop a better understanding of outdoor neighbourhood walkability for seniors and the associated community processes.

Participating in the study involves an hour long interview in which I will be asked to share my knowledge and perspectives on a community event, decision or change related to neighbourhood walkability for seniors. I will also be asked to recommend one or two other potential key informants.

Please indicate a response to each statement below.

1. I will allow the interview to be audio-taped.

Yes No Initial: _____

2. I agree to be quoted, but all personal-identifying information will be removed to protect my identity.

Yes No Initial: _____

Even though I may have initially consented to participate in this study, I can decline to be involved with any part of the study. I also understand that I am free to withdraw from the study at any time without explanation and without repercussions. I understand that the information collected from me will only be used for the purpose of this study.

The potential risks and benefits of participating have been explained to me. I have been given an opportunity to ask questions and am satisfied with the answers given to me. I have been provided with a copy of the information letter and consent form.

Signature: _____ Date: _____

Lettre d'informations et formulaire de consentement

Entrevues pour les informateurs clés

Projet de recherche : La marchabilité de l'environnement extérieur du quartier pour les aînés. Une étude de cas intégrée comparative examinant les perspectives de la marchabilité et des processus socio-politiques dans quatre quartiers d'Ottawa.

Chercheures :

| | |
|--------------------------------|--|
| D ^r Heidi Sveistrup | École des sciences de la réadaptation Université d'Ottawa |
|--------------------------------|--|

| | |
|------------------------------|---|
| D ^r Nancy Edwards | École des sciences infirmières Université d'Ottawa |
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| | |
|---------------|--|
| Theresa Grant | L'Institut de recherche sur la santé des populations Université d'Ottawa |
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| D ^r Caroline Andrew | École des études politiques Université d'Ottawa |
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| D ^r Mary Egan | École des sciences de la réadaptation Université d'Ottawa |
|--------------------------|--|

Antécédent et but de l'étude

Cette étude a pour but de développer une meilleure compréhension au sujet de la marchabilité du quartier extérieur pour les aînés et des processus entamés par la communauté associés à la marchabilité. La marchabilité se définit selon les caractéristiques de votre quartier ayant un impact sur le plaisir, la sécurité ou la convenance de marcher à l'extérieur. La circulation routière, le paysage et les destinations intéressantes en sont quelques exemples. Les environnements, où il devient plus facile, sécuritaire et agréable d'y marcher aident à promouvoir l'activité physique parmi les aînés. Avoir des endroits où les gens veulent y marcher est important pour la santé de la population, puisque l'activité physique est associée à plusieurs bénéfices pour la santé. En développant une meilleure compréhension

des événements, décisions ou changements ayant influencé la marche pour les aînés dans une communauté donnée, aidera aux communautés et gouvernements à identifier des façons à supporter des environnements sains.

Dans la première partie de cette étude les aînés étaient questionnés sur leurs expériences et leurs opinions face à la marchabilité de leur quartier et des changements, décisions ou événements communautaires ayant eu un impact sur celle-ci. La deuxième partie de l'entrevue consiste à faire des entrevues avec des informateurs clés ayant une compréhension ou une expérience sur ces changements, décisions ou événements. Les chercheurs s'intéressent à communiquer avec des gens du gouvernement municipal aussi bien que public ou du secteur privé.

L'appui financier pour cette étude provient de l'Institut canadien du vieillissement.

Qu'est ce qu'on me demandera de faire ?

1) Entrevue individuelle

On vous demandera de participer à une entrevue dans le but de partager votre compréhension ou vos points de vue sur un changement, décision ou événement communautaire ayant influencé la marchabilité pour les aînés. Vous allez être questionnés à savoir comment le processus du changement, décision ou événement a pris place. Vous allez être aussi questionnés sur les individus, les groupes, les ressources et les liens qui ont pu avoir influencé ce changement, décision ou événement.

Avec votre permission, cette entrevue sera enregistrée sur une cassette sonore.

2) Recommandation d'autres informateurs clé

Vous allez être demandés si vous connaissez une ou deux autres personnes (p.e. des membres ou chefs communautaires) ayant des connaissances spécifiques, pouvant être différentes des vôtres, relatives à ce changement, décision ou événement. Si les informations pour rejoindre ces personnes ne sont pas publiques, on vous demandera soit de leurs faire parvenir un courriel de la part des chercheuses ou de leurs demander leurs permissions pour que nous puissions les contacter. Les chercheuses défrayeront les frais de courrier.

Vous ne serez pas exigés d'expliquer le processus ou les détails de l'étude ou de demander aux informateurs clé d'y participer. Votre participation à cette étude n'exige pas que vous consentiez à recommander d'autres gens.

La rencontre durera combien de temps ?

L'entrevue sera prévue pour une durée de 60 minutes.

Où sera tenue l'entrevue ?

L'entrevue se tiendra dans un endroit privé et pratique à vous y rendre. S'il s'avère nécessaire la chercheuse se déplacera à vous.

Qui assistera à l'entrevue ?

Vous même et la chercheuse, Theresa Grant, seront présents.

Quels sont les avantages d'y participer?

Il n'y a aucun avantage direct en participant à cette étude. Par contre, les données recueillies pourront être utiles pour les gens du gouvernement municipal et autres personnes dans la communauté qui sont intéressés à créer un environnement agréable, pratique et sécuritaire où les aînés pourront y marcher.

A-t-il des risques à participer à cette étude?

Autres que les risques de la vie quotidienne, il n'y a aucun risque physique. Pendant l'entrevue on vous demandera si vous avez eu des désaccords ou des problèmes au sujet de la marchabilité qui se sont présentés. Il se peut que vous vous sentiez inconfortables à parler de ces mécontentements antérieurs. Vous pourrez refuser de répondre aux questions. Vous aurez à répondre seulement aux questions auxquelles vous vous sentez à l'aise de discuter. Il y a peut être un risque à garder vos réponses discutées anonymes lors de l'entrevue. Ces risques sont énumérés plus bas.

L'information sera-t-elle gardée confidentielle et anonyme?

Toutes informations que vous partagez seront gardées strictement confidentielles. Dans le but de protéger votre anonymat, votre nom ne sera pas enregistré d'aucune façon avec vos réponses. Un code unique vous sera assigné pour pouvoir retracer votre cassette sonore de l'entrevue et le manuscrit. Vos opinions partagées durant l'entrevue seront compilées avec ceux des autres et seront analysées selon les idées et thèmes principaux. Avec votre permission, vos citations verbales de votre entrevue pourront être utilisées dans des publications, sans y émettre aucune codification identifiable.

Il y a une petite possibilité, selon le contexte de l'information partagée tant que participant, qu'il devienne difficile pour les chercheuses de garder l'anonymat des commentaires divulgués. Par exemple, discuter de sujet où seulement quelques

personnes peuvent y avoir accès, pourrait permettre aux autres de deviner votre identité. Si votre identité est devinée ceci pourrait engendrer des jugements sociaux. Dûe à cette possibilité, les citations verbales seront choisies avec précision pour empêcher que l'identité des participants ne soient dévoilées.

Rangement des données

Les cassettes sonores, la documentation informatisée et les notes associées à cette entrevue seront entreposées dans un classeur qui sera barré sous clé dans le bureau du D^r Heidi Sveistrup à l'Université d'Ottawa. Les formulaires de consentement signés et les codes d'identification uniques seront gardés dans un autre classeur différent aussi barré sous clé. Les données ne seront pas utilisées à d'autres fins autre que pour cette étude et seront détruites 10 ans après les publications.

Participation volontaire

Votre participation est volontaire pour toutes les parties de cette étude. Vous pouvez en tout temps vous retirer sans aucune répercussion et sans avoir à provenir aucune explication aux chercheuses.

Vous n'aurez pas à fournir aucune information que vous ne désirerez pas partager.

Questions:

Si vous avez des questions ou préoccupations au sujet de la recherche s.v.p. rejoindre:

Theresea Grant

Vous pouvez aussi rejoindre une des chercheuses mentionnées au début de ce document.

Les questions ou préoccupations touchant la déontologie pour cette étude pourront être adressées à:

La responsable de la déontologie en recherche
Université d'Ottawa
550 rue Cumberland
Pavillon Tabaret, pièce 159
Ottawa, On
K1N 6N5

Téléphone: 613-562-5387
Courriel: ethics@uottawa.ca

Réception des résultats finals de l'étude

Si vous désirez recevoir un résumé des données de cette étude, s.v.p. nous faire parvenir ci-bas, votre adresse postale ou votre courriel.

**APPENDIX 8:
PERSONAL INFORMATION QUESTIONNAIRE FOR PHASE ONE DATA
COLLECTION**

Information Form

This form will ask you to provide some information about yourself, your walking habits and your neighbourhood. The information that you provide will not be associated with your name.

SECTION 1: The following questions have to do with your walking habits:

1 a) In a typical week, how often do you walk for **exercise or pleasure**?

- never
 1 – 2 days / week
 3 – 4 days / week
 5 – 7 days / week

1 b) On average, how many minutes per day do you spend walking for **exercise or pleasure**?

- less than 20 minutes / day
 20 – 30 minutes / day
 30 – 60 minutes / day
 More than 60 minutes / day

2 a) In a typical week, how often do you walk to **do errands**?

- never
 1 – 2 days / week
 3 – 4 days / week
 5 – 7 days / week

2 b) On average, how many minutes per day do you spend walking to **do errands**?

- less than 20 minutes / day
 20 – 30 minutes / day
 30 – 60 minutes / day
 More than 60 minutes / day

3 a) What time of day do you walk outside in your neighbourhood for **exercise or pleasure**?

- | | | | | |
|-----------|--------------------------------|------------------------------------|---------------------------------|--------------------------------|
| Morning | <input type="checkbox"/> often | <input type="checkbox"/> sometimes | <input type="checkbox"/> rarely | <input type="checkbox"/> never |
| Afternoon | <input type="checkbox"/> often | <input type="checkbox"/> sometimes | <input type="checkbox"/> rarely | <input type="checkbox"/> never |
| Evening | <input type="checkbox"/> often | <input type="checkbox"/> sometimes | <input type="checkbox"/> rarely | <input type="checkbox"/> never |

3 b) What time of day do you walk outside in your neighbourhood to **do errands**?

| | | | | | | | | |
|-----------|--------------------------|-------|--------------------------|-----------|--------------------------|--------|--------------------------|-------|
| Morning | <input type="checkbox"/> | often | <input type="checkbox"/> | sometimes | <input type="checkbox"/> | rarely | <input type="checkbox"/> | never |
| Afternoon | <input type="checkbox"/> | often | <input type="checkbox"/> | sometimes | <input type="checkbox"/> | rarely | <input type="checkbox"/> | never |
| Evening | <input type="checkbox"/> | often | <input type="checkbox"/> | sometimes | <input type="checkbox"/> | rarely | <input type="checkbox"/> | never |

4. Do you use anything to help you walk outdoors in your neighbourhood?

yes no

If you do, please indicate what you use and under what conditions:

| | Winter | Seasons without snow |
|------------------------------|---|---|
| Walker | <input type="checkbox"/> always <input type="checkbox"/> sometimes <input type="checkbox"/> never | <input type="checkbox"/> always <input type="checkbox"/> sometimes <input type="checkbox"/> never |
| Cane or walking stick | <input type="checkbox"/> always <input type="checkbox"/> sometimes <input type="checkbox"/> never | <input type="checkbox"/> always <input type="checkbox"/> sometimes <input type="checkbox"/> never |

Other:

SECTION 2: The following questions will ask you to provide some information about yourself to help us create a general description of the people who participated in this study.

5. Are you female or male? (Please check the space that applies.)

6. How many years have you lived in your neighbourhood? _____ years

7. Do you live in accommodation that you:

own? rent? other? (Please check the space that applies.)

8. How old are you? _____ years

9. Please indicate the level of education that you have completed. Check all that apply:

- grade school
- high school
- Some - trade, technical or vocational school
- Some – community college, CEGEP or nursing school
- Diploma or certificate from - trade, technical or vocational school
- Diploma or certificate from – community college, CEGEP or nursing school
- Bachelor's or undergraduate degree
- Master's degree
- Degree in medicine, dentistry, veterinary medicine or optometry
- Doctorate

SECTION 3: The following questions have to do with the characteristics of your neighbourhood. Think about the different facilities in and around your neighbourhood by this we mean the area ALL around your home that you could walk to in 10 – 15 minutes.

10. What is the main type of housing in your neighbourhood?

- Detached single family housing
- Townhouses, row houses, apartments, or condos of 2- 3 stories
- Mix of single family residences and town houses, row houses, apartments, or condos
- Apartments or condos of 4 -12 stories
- Apartments or condos of more than 12 stories
- Don't know/Not sure

11. Many shops, stores, markets or other places to buy things that I need are within easy walking distance of my home. Would you say that you ...

- Strongly disagree
- Somewhat disagree
- Somewhat agree
- Strongly agree
- Don't know/Not sure

12. It is within a 10-15 minute walk to the transit stop (such as bus or train) from my home. Would you say that you...

- Strongly disagree
- Somewhat disagree
- Somewhat agree
- Strongly agree
- Don't know/Not sure

13. There are sidewalks on most of the streets in my neighbourhood. Would you say that you ...

- Strongly disagree
- Somewhat disagree
- Somewhat agree
- Strongly agree
- Does not apply to my neighbourhood
- Don't know/Not sure

14. There are facilities to bicycle in or near my neighbourhood, such as special lanes, separate paths or trails, shared use paths for cyclists and pedestrians. Would you say that you ...

- Strongly disagree
- Somewhat disagree
- Somewhat agree
- Strongly agree
- Does not apply to my neighbourhood
- Don't know/Not sure

15. My neighbourhood has several free or low cost recreation facilities, such as parks, walking trails, bike paths, recreation centres, playgrounds, public swimming pools, etc. Would you say that you ...

- Strongly disagree
- Somewhat disagree
- Somewhat agree
- Strongly agree
- Don't know/Not sure

16. The crime rate in my neighbourhood makes it unsafe to go on walks at night.
Would you say that you ...

- Strongly disagree
- Somewhat disagree
- Somewhat agree
- Strongly agree
- Don't know/Not sure

17. Over the last 10 years, would you say that the overall walkability of your neighbourhood has gotten...

- Better
- Worse
- Stayed the same
- Don't know/Not sure

Comments:

This is the end of the information form, thank you for participating.

Formulaire d'informations

Dans ce formulaire, on vous demandera de nous fournir de l'informations de vous-même, de vos habitudes de marches et de votre quartier. Les informations que vous fournirez ne seront pas associées avec votre nom.

SECTION 1: Les questions suivantes portent sur vos habitudes de marche.

1 a) Dans une semaine régulière, combien souvent marchez-vous pour de l'exercice ou pour le plaisir ?

- jamais
- 1 – 2 jours / semaine
- 3 – 4 jours / semaine
- 5 – 7 jours / semaine

1 b) En moyenne, combien de minutes par jour passez-vous à marcher pour de l'exercice ou pour le plaisir ?

- moins de 20 minutes / jour
- 20 – 30 minutes / jour
- 30 – 60 minutes / jour
- plus de 60 minutes / jour

2 a) Dans une semaine régulière, combien de fois marchez-vous pour faire des courses ?

- jamais
- 1 – 2 jours / semaine
- 3 – 4 jours / semaine
- 5 – 7 jours / semaine

2 b) En moyenne, combien de minutes par jour passez-vous à marcher pour faire des courses ?

- moins de 20 minutes / jour
- 20 – 30 minutes / jour
- 30 – 60 minutes / jour
- plus de 60 minutes / jour

3 a) Pendant quel moment de la journée marchez-vous dans votre quartier pour de l'exercice ou pour le plaisir ?

| | | | | |
|------------|----------------------------------|-----------------------------------|-----------------------------------|---------------------------------|
| Matin | <input type="checkbox"/> souvent | <input type="checkbox"/> des fois | <input type="checkbox"/> rarement | <input type="checkbox"/> jamais |
| Après-midi | <input type="checkbox"/> souvent | <input type="checkbox"/> des fois | <input type="checkbox"/> rarement | <input type="checkbox"/> jamais |
| Soir | <input type="checkbox"/> souvent | <input type="checkbox"/> des fois | <input type="checkbox"/> rarement | <input type="checkbox"/> jamais |

3 b) Pendant quel moment de la journée marchez-vous dans votre quartier pour faire des courses?

| | | | | |
|------------|----------------------------------|-----------------------------------|-----------------------------------|---------------------------------|
| Matin | <input type="checkbox"/> souvent | <input type="checkbox"/> des fois | <input type="checkbox"/> rarement | <input type="checkbox"/> jamais |
| Après-midi | <input type="checkbox"/> souvent | <input type="checkbox"/> des fois | <input type="checkbox"/> rarement | <input type="checkbox"/> jamais |
| Soir | <input type="checkbox"/> souvent | <input type="checkbox"/> des fois | <input type="checkbox"/> rarement | <input type="checkbox"/> jamais |

4. Utilisez-vous quelque chose pour vous aidez à marcher dans votre quartier à l'extérieur ?

oui non

Si oui, s.v.p. indiquez ce que vous utilisez et dans quelles conditions :

| | Hiver | Saisons sans neige |
|----------------------------------|---|---|
| Marchette | <input type="checkbox"/> toujours <input type="checkbox"/> des fois <input type="checkbox"/> jamais | <input type="checkbox"/> toujours <input type="checkbox"/> des fois <input type="checkbox"/> jamais |
| Cannes ou bâton de marche | <input type="checkbox"/> toujours <input type="checkbox"/> des fois <input type="checkbox"/> jamais | <input type="checkbox"/> toujours <input type="checkbox"/> des fois <input type="checkbox"/> jamais |

Autre :

SECTION 2: Les questions suivantes vous demanderont de fournir de l'information à votre sujet dans le but de nous aider à produire une description générale des gens qui participent dans cette étude.

5. Êtes-vous une ___ femme ou un ___ homme ? (S.v.p. cochez le tiret qui vous concerne.)

6. Combien des années avez-vous vécu dans votre quartier ? _____ ans

7. Habitez-vous dans un logement que vous:

_____ possédez ? _____ louez ? _____ autres ? (S.v.p. cochez le tiret qui vous concerne.)

8. Quel âge avez-vous ? _____ ans

9. S.v.p. indiquez le niveau d'éducation que vous avez complété . Cochez tous ce qui vous concerne :

- ___ école primaire
- ___ école secondaire
- ___ une partie d': école de commerce, technique ou professionnelle
- ___ une partie du : collège communautaire, CÉGEP ou école infirmière
- ___ Diplôme ou certificat de l': école de commerce, technique ou professionnelle
- ___ Diplôme ou certificat du: collège communautaire, CÉGEP ou école infirmière
- ___ Baccalauréat ou niveau sous gradué
- ___ Maîtrise
- ___ étude en médecine, étude dentaire, médecine vétérinaire ou optométrie
- ___ Doctorat

SECTION 3: Les questions suivantes ont trait aux caractéristiques de votre quartier et des alentours de votre maison, ce qui incluent toutes régions que vous pouvez atteindre dans un délai de 10 à 15 minutes de marche.

10. Quels types de logements se retrouvent dans votre quartier ?

- ___ Maisons uni-familiales détachées
- ___ Maisons en rangées, appartements, ou condos de 2- 3 étages
- ___ Mélange de maisons uni-familiales et maisons en rangées, appartements, ou condos
- ___ Appartements ou condos de 4 -12 étages
- ___ Appartements ou condos de plus de 12 étages
- ___ Je ne sais pas / Pas certain(e)

11. Plusieurs boutiques, magasins, marchés ou autres, où je peux acheter des articles dont j'ai besoin, sont à une distance dans laquelle je peux marcher. Diriez-vous que vous êtes ...

- Fortement en désaccord
- Un peu en désaccord
- Un peu en accord
- Fortement en accord
- Je ne sais pas / Pas certain(e)

12. L'arrêt d'autobus ou la gare de train sont à une distance équivalente à 10-15 minutes de marche de ma maison. Diriez-vous que vous êtes ...

- Fortement en désaccord
- Un peu en désaccord
- Un peu en accord
- Fortement en accord
- Je ne sais pas / Pas certain(e)

13. Il y a des trottoirs sur la plupart des rues de mon quartier. Diriez-vous que vous êtes ...

- Fortement en désaccord
- Un peu en désaccord
- Un peu en accord
- Fortement en accord
- Ne s'applique pas à mon quartier
- Je ne sais pas / Pas certain(e)

14. Il y a des accès pour les cyclistes tels que des voies spéciales, pistes séparées, des pistes partagées pour les cyclistes ou pour les piétons qui se retrouvent dans ou, près de mon quartier. Diriez-vous que vous êtes ...

- Fortement en désaccord
- Un peu en désaccord
- Un peu en accord
- Fortement en accord
- Ne s'applique pas à mon quartier
- Je ne sais pas / Pas certain(e)

15. Dans mon quartier on peut retrouver quelques endroits récréatifs abordables tels que des parcs, pistes pour piétons, pistes cyclables, centres récréatifs, aires de jeux, piscines publiques, etc... Diriez-vous que vous êtes ...

- Fortement en désaccord
- Un peu en désaccord
- Un peu en accord
- Fortement en accord
- Je ne sais pas / Pas certain(e)

16. Dû aux taux de criminalité dans mon quartier, il devient non-sécuritaire d'y marcher la nuit. Diriez-vous que vous êtes...

- Fortement en désaccord
- Un peu en désaccord
- Un peu en accord
- Fortement en accord
- Je ne sais pas / Pas certain(e)

17. Au courant des 10 dernières années, diriez-vous que l'ensemble de la marchabilité de votre quartier est devenue ...

- Mieux
- Pire
- Est resté pareil
- Je ne sais pas / Pas certain(e)

Commentaires:

C'est maintenant la fin du formulaire d'informations, merci d'avoir participé.

調查問卷

問卷以不記名方式，要求提供你的資料，你的步行習慣和你的社區情況。

第一部分：以下問題是有關你的步行習慣

1. a) 通常在一周之內，你有多少次步行出外運動或消遣呢？

- 沒有
- 一周 1 至 2 天
- 一周 3 至 4 天
- 一周 5 至 7 天

1. b) 你一天平均步行多少分鐘出外運動或消遣呢？

- 一天少過 20 分鐘
- 一天在 20 至 30 分鐘
- 一天在 30 至 60 分鐘
- 一天多過 60 分鐘

2. a) 通常在一周之內，你有多少次步行出外處理瑣碎事務呢？

- 沒有
- 一周 1 至 2 天
- 一周 3 至 4 天
- 一周 5 至 7 天

2. b) 你一天平均步行多少分鐘出外處理瑣碎事務呢？

- 一天少過 20 分鐘
- 一天在 20 至 30 分鐘
- 一天在 30 至 60 分鐘
- 一天多過 60 分鐘

3. a) 你會在一天中的甚麼時間步行出外運動或消遣呢？

早上 經常 有時 很少 不會

下午 ___ 經常 ___ 有時 ___ 很少 ___ 不會
 黃昏 ___ 經常 ___ 有時 ___ 很少 ___ 不會

3 b) 你會在一天中的甚麼時間步行出外處理瑣碎事務呢？

早上 ___ 經常 ___ 有時 ___ 很少 ___ 不會
 下午 ___ 經常 ___ 有時 ___ 很少 ___ 不會
 黃昏 ___ 經常 ___ 有時 ___ 很少 ___ 不會

4. 你會使用任何工具幫助步行出外嗎？

___ 會 ___ 不會

若會的話，請指出你使用甚麼工具和甚麼情況下使用：

| | 冬天 | 其他無雪的季節 |
|--------|----------------------------|----------------------------|
| 助步車 | ___ 經常 ___ 有時 ___ 不會 | ___ 經常 ___ 有時 ___ 不會 |
| 手杖或助步棍 | ___ 經常 ___ 有時 ___ 不會 | ___ 經常 ___ 有時 ___ 不會 |

其他

第二部分：以下問題是回答你的個人資料以便對參與者有一般的了解

5. 你是 ___ 女性 或 ___ 男性 (請選擇適用的)

6. 你在你的社區居住了多少年？ ___ 年

7. 你的住宅是：

___ 自置 ___ 租賃 ___ 其他 (請選擇適用的)

8. 你今年幾歲? _____ 歲
9. 請指出你完成的教育水平 (請選擇所有適用的)
- _____ 小學
 - _____ 中學
 - _____ 一些 -- 貿易, 技術或旅遊學校
 - _____ 一些 -- 社區專科學院或護士學校
 - _____ 文憑或證書 -- 貿易, 技術或旅遊學校
 - _____ 文憑或證書 -- 社區專科學院或護士學校
 - _____ 學士學位或學士程度
 - _____ 碩士學位
 - _____ 藥劑師, 牙醫, 獸醫, 檢光師
 - _____ 醫生

第三部分:以下問題是有關你的社區特點, 請細想哪些社區周圍的設施你可以從家中步行 10 至 15 分鐘可以抵達的

10. 你社區內的房子主要是甚麼類型?
- _____ 獨立屋
 - _____ 鎮屋, 排屋, 大廈, 一層至兩層的公寓
 - _____ 混合式獨立屋, 鎮屋, 排屋, 大廈, 或公寓
 - _____ 四層至十二層的大廈或公寓
 - _____ 十二層以上的大廈或公寓
 - _____ 不知道 / 不肯定
11. 你可以很容易從住所步行短距離到達商店, 士多, 市場或其他地方購物。你的意見是...
- _____ 極不同意
 - _____ 某程度上不同意
 - _____ 某程度上同意
 - _____ 十分同意
 - _____ 不知道 / 不肯定
12. 從家中步行 10 至 15 分鐘可到達車站(如公車站或火車站)。你的

意見是...

- _____ 極不同意
- _____ 某程度上不同意
- _____ 某程度上同意
- _____ 十分同意
- _____ 不知道 / 不肯定

13. 社區中大部分街道都有行人路。你的意見是...

- _____ 極不同意
- _____ 某程度上不同意
- _____ 某程度上同意
- _____ 十分同意
- _____ 不知道 / 不肯定

14. 社區或鄰近地方有使用單車的設備，例如單車專線，小徑或通道，專為居民使用的行人路等。你的意見是...

- _____ 極不同意
- _____ 某程度上不同意
- _____ 某程度上同意
- _____ 十分同意
- _____ 不知道 / 不肯定

15. 社區有幾個免費或低收費的康樂設施，例如公園，步行徑，單車徑，康樂中心，球場，公共泳池等。你的意見是...

- _____ 極不同意
- _____ 某程度上不同意
- _____ 某程度上同意
- _____ 十分同意
- _____ 不知道 / 不肯定

16. 社區的罪案率令晚上步行不安全。你的意見是...

- _____ 極不同意
- _____ 某程度上不同意

- 某程度上同意
- 十分同意
- 不知道 / 不肯定

17. 過去十年，社區整體的步行區域情況變得

- 更好
- 更差
- 不變
- 不知道 / 不肯定

其他意見：

調查結束，多謝你的合作和參與。

**APPENDIX 9:
INTERVIEW GUIDES**

Interview guide for senior focus groups

As participants arrive they will be introduced to the researchers and directed to help themselves to refreshments. The participants will also be given a copy of the information form and asked to fill it in. The researchers will offer their help and answer any questions regarding filling in the form. This initial period is expected to take 10 minutes.

Introduction:

“I’d like to thank everyone for taking the time to participate in this study. As you know the purpose of the study is to develop a better understanding of outdoor neighbourhood walkability for seniors and the community processes associated with walkability. Walkability refers to the characteristics in your neighbourhood that affect the enjoyment, safety or convenience of walking outdoors. Examples of these things include traffic, scenery, sidewalks and interesting destinations. Today I would like you to think about the kinds of things in the outdoor environment that make it convenient, enjoyable or safe for you to walk outdoors. I would also like you to think about changes that have been made over the last 10 years in your neighbourhood which have affected walkability. I consider everyone’s opinion to be important. I expect there will be differences of opinion and I want to hear from everyone. I will ask everyone in the room to respect the confidentiality of all opinions expressed during the session. This means that no one’s identity should be associated with what is said in the room.”

Questions:

1. What kinds of things make it enjoyable, safe or convenient for you to walk outdoors in your neighbourhood?

Probes: *Where do you walk? Tell me about this... why?*
 Are there reasons that you chose one route over another?
 Can you walk to the shops and services that you need?

2. What kinds of things make it unpleasant, unsafe or inconvenient for you to walk outdoors in your neighbourhood?

Probes: *Are there places that you would like to walk but don’t?*
 Do you find it difficult to walk in the winter?
 Do you walk at night?

3. Are there changes that have happened in your neighbourhood over the last 10 years that have made it better for walking outdoors?

Prompts: Tell me about them.
 Why have these changes made the neighbourhood better for walking outdoors?
 Are there particular people, leaders or groups who have been involved with these changes?

4. Are there changes that have occurred in your neighbourhood over the last 10 years that have made it worse for walking?

Prompts: Tell me about them.
 Why have these changes made the neighbourhood better for walking?
 Are there particular people or leaders who have been involved with these changes?

5. In your opinion, what are the most important things that must be done to improve outdoor walkability in your neighbourhood? Why?

Conclusion:

“Thank-you for participating in this study. The data collection will continue for another year or so. If you would like to receive a summary of the final findings please let me know if you haven’t already indicated this.”

Instructions to note-taker:

The note-taker’s role is to sit and take detailed notes. The note-taker should sit to the side of the focus group circle. Do not record any of the participants’ names. The note-taker should not ask the participants any questions during the discussion (this might interrupt the moderator’s flow). After the focus group, it is expected that the note-taker will share his or her insights with the moderator at the debriefing session.

Interview guide for individual interviews with seniors

Introduction: Thank you for taking the time to meet with me. The purpose of this interview is to get your perspectives on neighbourhood walkability. Walkability refers to the characteristics in your neighbourhood that affect the enjoyment, safety or convenience of walking. I'm also interested in hearing about the changes that have occurred to walkability over the last 10 years and about how you think neighbourhood walkability could be improved. I'll also ask you to tell me about how you chose to live in this neighbourhood.

Questions:

1. What kinds of things make it enjoyable, safe or convenient for you to walk outdoors in your neighbourhood?
 - Prompts: Where in your neighbourhood do you most like walking?
Tell me about this... why?
Can you walk to the shops and services that you need?

2. What kinds of things make it unpleasant, unsafe or inconvenient for you to walk outdoors in your neighbourhood?
 - Prompts: Are there places that you'd like to walk but don't?
Do you find it difficult to walk in the winter?
Do you walk at night?

3. Are there changes that have happened in your neighbourhood over the last 10 years or since you have lived in the neighbourhood that have made it better for walking outdoors?
 - Prompts: Tell me about them.
Why have these changes made the neighbourhood better for walking outdoors?
Are there particular people, leaders or groups who have been involved with these changes?

4. Are there changes that have occurred in your neighbourhood over the last 10 years or since you have lived in the neighbourhood that have made it worse for walking?
 - Prompts: Tell me about them.
Why have these changes made the neighbourhood better for walking?
Are there particular people or leaders who have been involved with these changes?

5. In your opinion, what are the most important things that must be done to improve outdoor walkability in your neighbourhood? Why?

6. Tell me about why you chose to live in this neighbourhood.

Conclusion: Thank you for participating. The interview is now over.

Guide d'entrevue pour le groupe de discussion pour les aînés

Introduction :

J'aimerais vous remercier d'avoir pris le temps pour participer à cette étude. Comme vous le saviez bien, cette étude a pour but de développer une meilleure compréhension au sujet de la marchabilité du quartier extérieur pour les aînés et des processus entamés par la communauté associés à la marchabilité. Le terme marchabilité se réfère aux caractéristiques de votre quartier qui influencent le plaisir, la sécurité ou la convenance de marcher à l'extérieur. La circulation, le paysage, les trottoirs et les destinations intéressantes en sont quelques exemples. Aujourd'hui, j'aimerais que vous réfléchissez aux aspects dans votre environnement extérieur qui rendraient la marche extérieure plus pratique, sécuritaire ou agréable. Ainsi, j'aimerais que vous réfléchissez aux changements ayant eu un impact sur la marchabilité, qui ont été faits dans votre quartier au courant des 10 dernières années. Toutes vos opinions sont importantes et seront considérées. J'estime qu'il y aura des différences d'opinions et je veux toutes les entendre. Je vais demander à tous de bien vouloir respecter la confidentialité des opinions exprimées lors de la rencontre. Néanmoins, aucune identité ne doit être associée avec les opinions exprimées ici.

QUESTIONS :

1. Quels aspects rendent vos marches à l'extérieur dans votre quartier plus agréables, sécuritaires et pratiques ?

Incitations: Dans quelle partie de votre quartier préférez-vous marcher ? Parlez-moi de celle-ci ... pourquoi ?
Pouvez-vous marcher aux magasins et aux services dont vous avez besoin ?

2. Quels aspects rendent vos marches à l'extérieur dans votre quartier plus déplaisantes, non sécuritaires ou inconvenients ?

Incitations: Y-a-t-il des endroits où vous aimeriez marcher et que vous évitez ?
Marchez-vous la nuit ?
Trouvez-vous difficile de marcher en hiver ?

3. A-t-il eu des changements dans les derniers 10 ans qui ont amélioré la marche à l'extérieur ?

Incitations: Parlez-moi de ceux-ci.
Pourquoi ces changements ont-ils avantagé le quartier en ce qui a trait à la marche extérieure ?
Qui a été impliqué dans ces changements ? Des personnes en particulier, des chefs ou un groupe ?

4. A-t-il eu des changements dans votre quartier au courant des 10 dernières années qui ont empiré les conditions de la marche?

Incitations: Parlez moi-en.

Pourquoi ces changements ont empiré les conditions de la marche?

A-t-il eu des particuliers ou des chefs qui se sont impliqués dans ces changements?

5. Selon vous, quels seraient les changements les plus importants qui amélioreraient les conditions de la marchabilité dans votre quartier ? Pourquoi ?

Conclusion :

Je vous remercie de votre participation à cette étude. La collection des données continuera pour une durée d'environ un an. S.v.p. m'indiquer, si ce n'est pas déjà fait, si vous souhaitez recevoir un résumé des données finales.

Guide d'entrevue individuelle pour les aînés

Merci de prendre le temps pour se rencontrer avec moi. Le but de cette entrevue est de recevoir vos perspectives et vos expériences de marcher dans votre quartier. La marchabilité se définit selon les caractéristiques de votre quartier ayant un impact sur le plaisir, la sécurité ou la convenance de marcher à l'extérieur. Je m'intéresse aussi à entendre des changements qui est arrivé durant ces 10 dernières années qui a affecté la marchabilité du quartier et comment vous pensez que la marchabilité pourrait être amélioré à l'avenir. Je vous demanderai aussi de parler de pourquoi vous avez choisi d'habiter en votre quartier.

QUESTIONS :

1. Quels aspects rendent vos marches à l'extérieur dans votre quartier plus agréables, sécuritaires et pratiques ?

Incitations: Dans quelle partie de votre quartier préférez-vous marcher ? Parlez-moi de celle-ci ... pourquoi ?
Pouvez-vous marcher aux magasins et aux services dont vous avez besoin ?

2. Quels aspects rendent vos marches à l'extérieur dans votre quartier plus déplaisantes, non sécuritaires ou inconvenients ?

Incitations: Y-a-t-il des endroits où vous aimeriez marcher et que vous évitez ?
Marchez-vous la nuit ?
Trouvez-vous difficile de marcher en hiver ?

3. A-t-il eu des changements dans les derniers 10 ans qui ont amélioré la marche à l'extérieur ?

Incitations: Parlez-moi de ceux-ci.
Pourquoi ces changements ont avantagé le quartier en ce qui a trait à la marche extérieure ?
Qui a été impliqué dans ces changements ? Des personnes en particulier, des chefs ou un groupe ?

4. A-t-il eu des changements dans votre quartier au courant des 10 dernières années qui ont empiré les conditions de la marche?

Incitations: Parlez moi-en.
Pourquoi ces changements ont empiré les conditions de la marche?
A-t-il eu des particuliers ou des chefs qui se sont impliqués dans ces changements?

5. Selon vous, quels seraient les changements les plus importants qui amélioreraient les conditions de la marchabilité dans votre quartier ? Pourquoi ?
6. Pourquoi avez vous choisi d'habiter en ce quartier?

Conclusion :

Je vous remercie de votre participation à cette étude. La collection des données continuera pour une durée d'environ un an. S.v.p. m'indiquer, si ce n'est pas déjà fait, si vous souhaitez recevoir un résumé des données finales.

Interview guide for community stakeholders

Introduction

Thank you for taking the time to meet with me. The purpose of this interview is to get your perspectives on the community processes that affect neighbourhood walkability issues for seniors.

Researcher will explain senior-identified walkability issue derived from senior focus group data.

Open-ended question:

I'd like you to share your knowledge on this particular *event / decision / change* with me.

Prompts: What happenedthen what happened?
 What groups or individuals were involved? How were they involved?
 What kinds of resources did the neighbourhood draw on?
 Were there links between the neighbourhood and municipal government that influenced this *event / decision / change*?
 Were there links between the neighbourhood and any other group that influenced this *event / decision / change*?
 What other conditions influenced this *event / decision / change*?
 Were there disagreements that arose during the course of this *event / decision / change*? Can you tell me a bit about these?
 Where there any barriers or problems that arose during the course of this *event / decision / change*? Can you tell me a bit about these?

Thank-you for your participation the interview is now complete.

Further Participation

The researchers are interested in getting a variety of perspectives on this issue. We want to hear from people in government as well as the public and private sectors. Would you be able to recommend one or two other potential key informants with specific knowledge or experience on this issue that may be different from yours?

If the contact information for these community members is not public information,

Would you be able to forward a message to these community members from the researchers, asking for permission to be contacted?

If yes, Thank you. I will provide you with the message now. Your assistance is greatly appreciated.

If no, Thank you for your participation in this study. It is greatly appreciated.

Guide d'entrevue pour les dépositaires de la communauté

Introduction

Je vous remercie d'avoir pris le temps d'être ici aujourd'hui. Le but de l'entrevue est de récolter votre perspective sur les mesures communautaires influençant la marchabilité dans votre quartier pour les aînés.

La chercheuse expliquera les inquiétudes soulevées sur la marchabilité par les aînés suite aux informations recueillis lors de leur groupe de discussion.

Questions d'ouverture et de fermeture:

J'aimerais que vous puissiez partager avec moi vos connaissances sur cet *événement / changement / décision* particulière.

- Incidations:
- Que s'est-il passé et par la suite que s'est-il passé ?
 - Qui étaient les personnes ou groupes impliqués ? De quelle façon étaient-ils impliqués ?
 - Quelles ressources ont été utilisées par votre quartier ?
 - A-t-il eu des liens entre votre quartier et le gouvernement municipal qui ont influencé cet *événement / décision / changement*?
 - Avait-il des liens entre votre quartier et un autre groupe qui ont influencé cet *événement / décision / changement* ?
 - Quelles autres conditions ont influencé cet *événement / décision / changement* ?
 - A-t-il eu des désaccords au courant de cet *événement / décision / changement* ? Pouvez-vous brièvement me les décrire ?
 - A-t-il eu un problème ou un obstacle au courant de cet *événement / décision / changement* ? Pouvez-vous en discuter ?

L'entrevue est maintenant terminée, je vous remercie de votre participation.

Participation future

Les chercheuses sont intéressées à connaître plusieurs points de vue à ce sujet, autant du point de vue gouvernemental, que public ou du secteur privé. Seriez-vous capable de nous faire une recommandation d'une ou deux informateurs clé, ayant des connaissances ou expériences spécifiques différentes de les vôtres à ce sujet ?

Si les informations pour rejoindre les membres de ces communautés ne sont pas publiques,

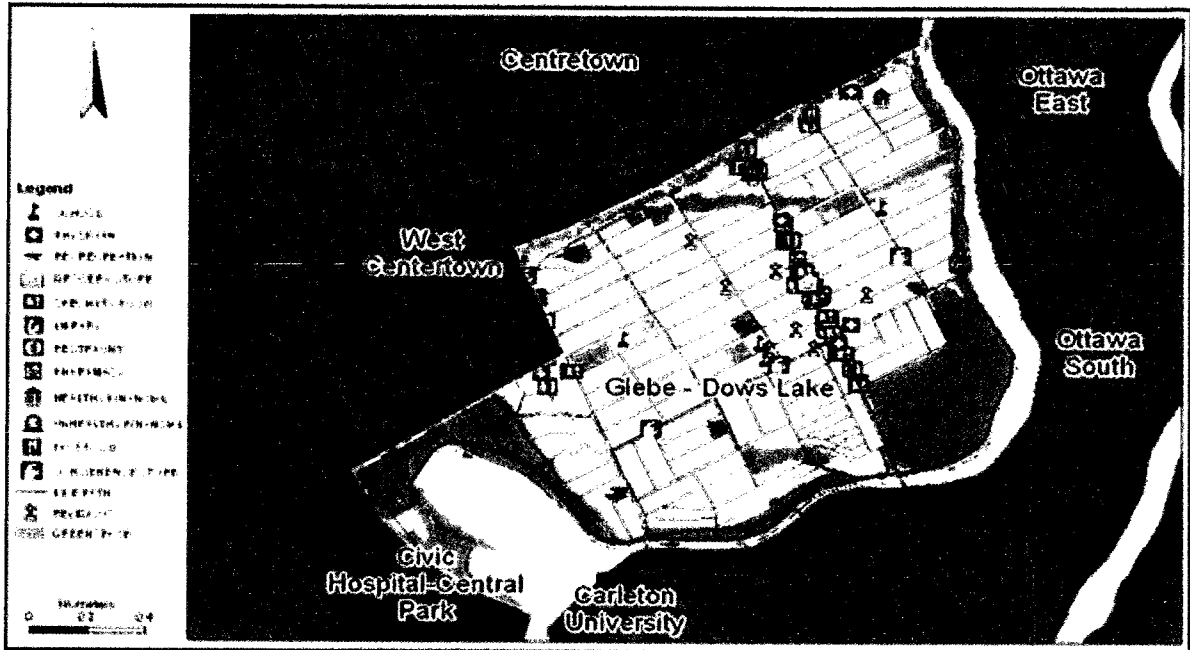
Seriez-vous en mesure de faire parvenir un message à ces membres, de la part des chercheuses, demandant leurs permissions d'être contactés ?

Si oui, merci. Je vous donnerai le message immédiatement. Votre aide est grandement appréciée.

Si non, merci d'avoir participer à cette étude. C'est grandement apprécié.

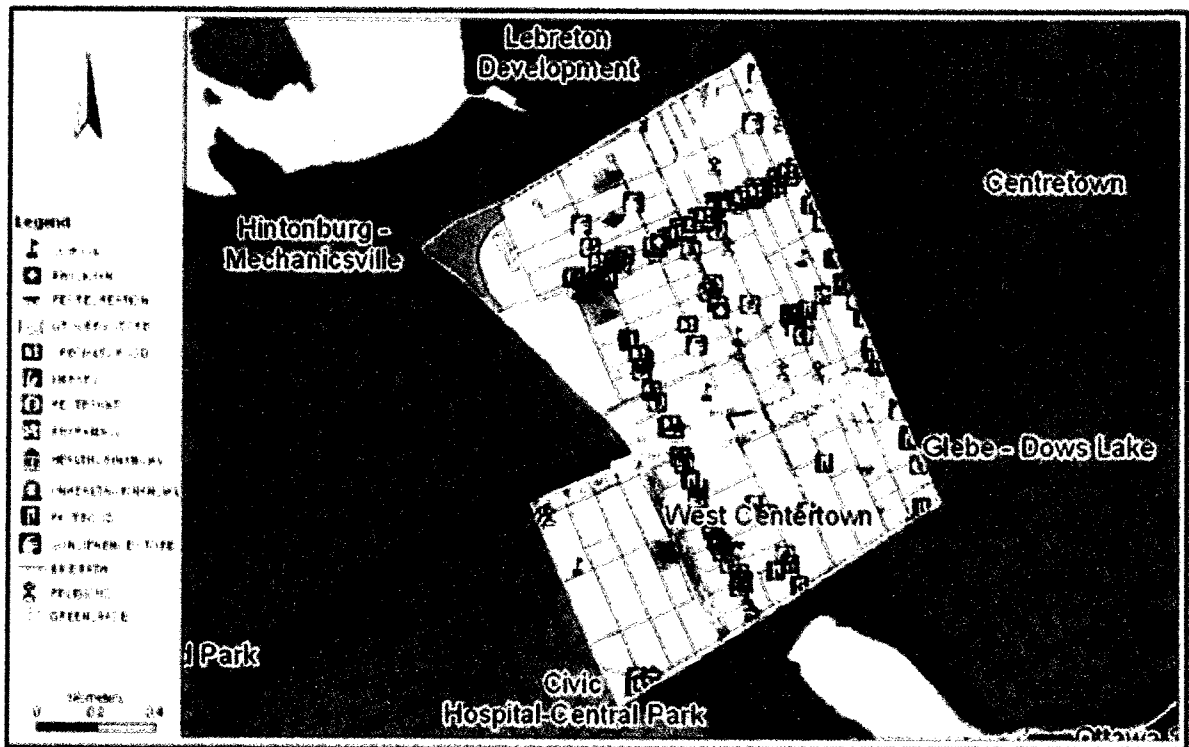
**APPENDIX 10:
NEIGHBOURHOOD MAPS**

Higher SES inner-urban neighbourhood



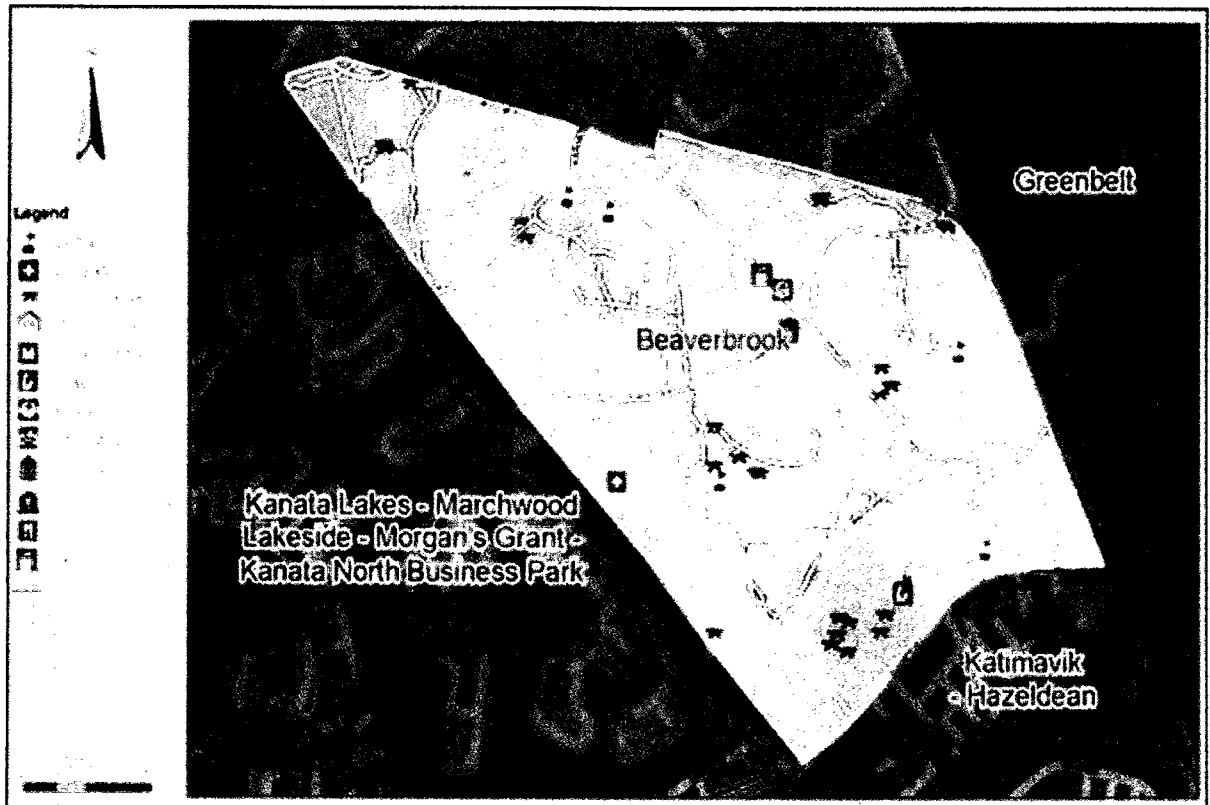
Source: Kristjansson, E., Sawata, M., & Labonte, R. The Ottawa Neighbourhood Study. Ottawa Neighbourhood [198]

Lower SES inner-urban neighbourhood



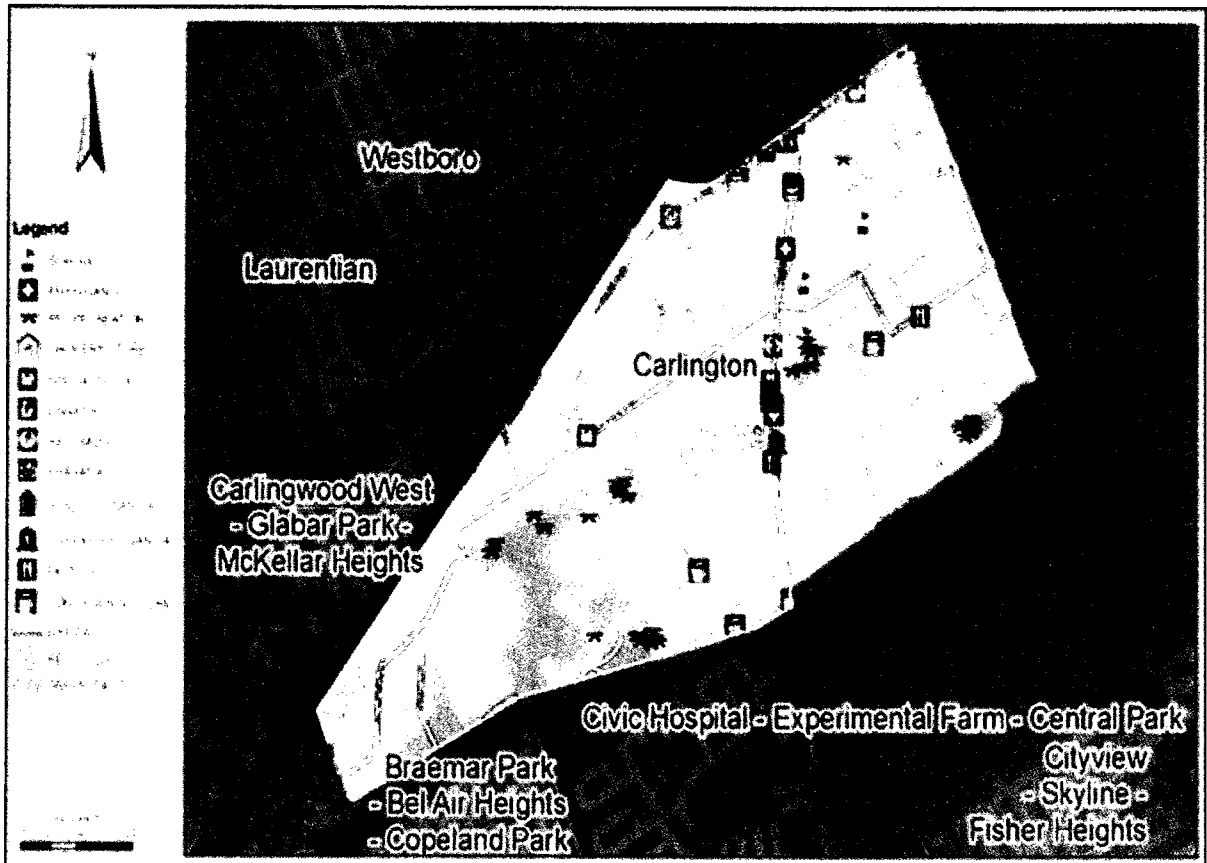
Source: Kristjansson, E., Sawata, M., & Labonte, R. The Ottawa Neighbourhood Study. Ottawa Neighbourhood [198]

Higher SES suburban neighbourhood

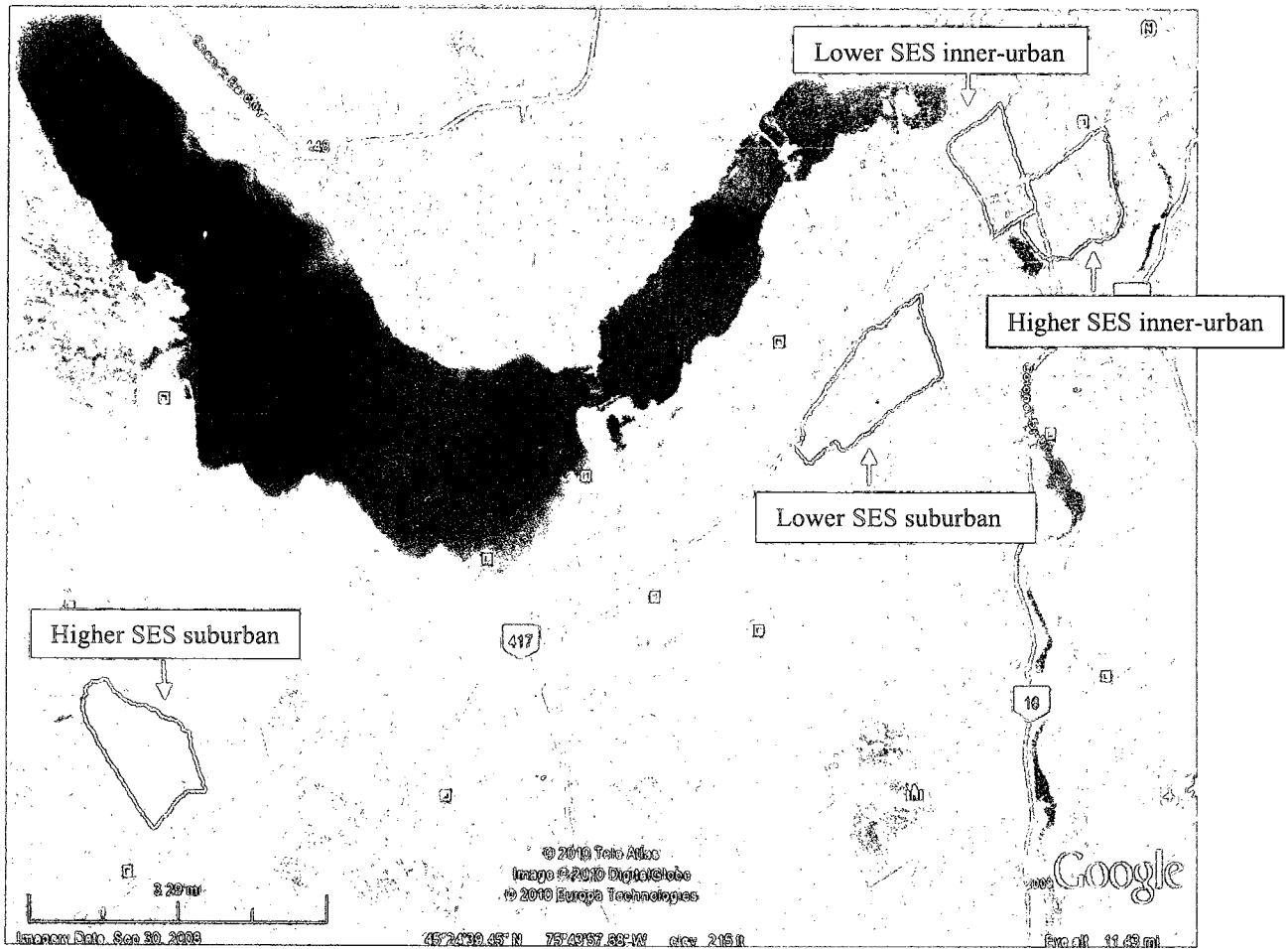


Source: Kristjansson, E., Sawata, M., & Labonte, R. The Ottawa Neighbourhood Study. Ottawa Neighbourhood [198]

Lower SES suburban neighbourhood



Source: Kristjansson, E., Sawata, M., & Labonte, R. The Ottawa Neighbourhood Study. Ottawa Neighbourhood [198]



Source: Google Earth