

Age Friendly Communities: An Assessment of the Built Environment of

Downtown Corner Brook

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Abstract

The concept of an age-friendly community is one that provides supportive physical and social environments enabling older people to live active, safe, and meaningful lives, while also providing the opportunity for older people to contribute to community life. The age-friendly community concept garnered much international attention when it was adopted by the World Health Organization (WHO) as a policy response to demographic ageing and urbanization. In 2007 the WHO published a report titled Global Age-Friendly Cities: A Guide, which highlights a critical issue and provides eight broad domains of features that must be considered to make a community age-friendly. The purpose of this study was to apply two of the domains from the WHO checklist to the downtown area of Corner Brook to assess where improvements can be made in terms of accessibility to older persons and those with disabilities.

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There has been considerable debate in recent years over the concept of developing sustainable communities as a response to some of the pressing global problems currently facing society. The general premise of creating sustainable communities is to meet the needs of the current population without compromising the ability of future populations to meet their needs (United Nations, 1987). In order to be sustainable, a community must be able to provide the structures and services to support the well-being, health, and productivity of all of who reside there (World Health Organization, 2007). Older people in particular require more supportive and enabling living environments in order to compensate for some of the physical and social changes associated with aging (World Health Organization, 2007). Therefore, the concept of an age-friendly community goes hand-in-hand with the goal of creating sustainable communities.

The concept of an age-friendly community is one that provides supportive physical and social environments enabling older people to live active, safe, and meaningful lives, while also providing the opportunity for older people to contribute to community life (Lewis *et al.* 2013). Ensuring that communities are focused on attaining some degree of age-friendliness going forward is critical. This is because the World Health Organization (WHO) has outlined the forces of population aging and increased urbanization, as two of the most significant demographic trends of the twenty first century (Buffel, Phillipson, & Scharf, 2012; Plouffe *et al.* 2013).

The global impact of these trends has the potential to induce a wide range of housing and community needs in urban areas in the near future (Buffel, Phillipson, & Scharf, 2012). By the year 2030, it is predicted that upwards of two thirds of the global population will be residing in

urban areas, with at least one quarter consisting of people sixty years of age and older (Buffel, Phillipson, & Scharf, 2012). This represents both a large proportion of the population, as well as one of the most vulnerable segments of the population. Therefore, governments and international organizations are in agreement that supporting older people in continuing to live in their homes within the community, for as long as possible makes sense (Lui *et al.* 2009). This is not an easy task however, as older people are at an increased risk of a decline in functional independence as they age. This decrease in independence correlates strongly with higher rates of hospitalization and mortality, thus compromising the health and well-being of older populations (Berke *et al.* 2007).

The model age-friendly community is one that encourages active and healthy aging through the optimization of opportunities for physical activity, social participation, safety, security, tolerance, fairness, and social justice with the goal of enhancing the quality of life for older people as they age (Buffel, Phillipson, & Scharf, 2012). It is important to make the distinction that health is not simply the absence of disease or injury. It is also a state of mental and social well-being (World Health Organization, 2007). Therefore, a central doctrine in the concept of age-friendly communities is the elimination of barriers to the full participation in both the physical, and the social aspects of everyday life (World Health Organization, 2007). While age-friendly inclusive forms of development have been gaining some momentum recently, they are far from established mainstream practice (Sakkas & Peresz, 2006). While the challenge of increasing the frequency of the design and promotion of age-friendly communities may pose a daunting task, it may be easier if it is taken into consideration that age-friendly communities provide social, health, environmental, and economic benefits to all of society, not just older persons.

Social Benefits

Although it is widely recognized that age-friendly communities provide many benefits to older people, there are many positive factors that can benefit all segments of society. Age-friendly communities often utilize methods of design that are universal in nature (World Health Organization, 2007). Universal design refers to products and environments that can be used by all people to the greatest extent possible without any specialized design or adaptation (Steinfeld & Smith, 2012). This ensures the construction of environments that can be used by all segments of the population, not just older persons. Some of the features that are important for older persons may also prove to be beneficial for pregnant women, small children, injured persons, or people with disabilities (Sakkas & Perez, 2006; WHO, 2007).

Environmental Benefits

Age-friendly communities inadvertently provide benefits for the environment as well. Two central components of an age-friendly community are that it is pedestrian oriented and that it has an affordable, accessible, and reliable transit system (World Health Organization, 2007). The focus on the pedestrian rather than the vehicle, and transit oriented forms of development can impact the environment by aiding in the reduction of individual automobile trips. This reduction in automobile trips eliminates the greenhouse gas emissions associated with those trips. As greenhouse gas emissions are a known contributor to global climate change, designing communities according to these principles can ameliorate the effects of global climate change.

Health Benefits

The widespread adoption of active forms of transportation not only has a positive impact on the environment, but also has a positive impact on human health (Giles-Corti, 2006). Contemporary community design practices that emerged in the first half of the twentieth century are based primarily on facilitating automobile travel (Kerr, Rosenberg, & Frank, 2012). The pedestrian and transit oriented focus of age-friendly communities increases the accessibility of more sustainable forms of transportation such as walking and biking. This type of physical activity has a plethora of health benefits for older adults in the domains of physical, cognitive, and emotional health (Kerr, Rosenberg, & Frank, 2012). Regular walking may produce not only weight related and cardio respiratory health benefits, but also strength and flexibility, which provide older persons with the ability to retain some of their independence (Kerr, Rosenberg, & Frank, 2012). In addition, pedestrian oriented neighborhoods are more socially engaging. This is important for older persons in terms of social and mental well-being, as it is common for older persons to become socially isolated if living in an environment where their only method of mobility is an automobile (Berke *et al.* 2007). A final health benefit of the design and creation of age-friendly communities is the reduction in air pollution as a result of fewer automobile trips.

Economic Benefits

Age-friendly communities have several economic benefits as well, the first directly associated with the increased levels of older adult physical activity (Spinney, 2011). The increase in active transportation that is a result of providing a friendly pedestrian environment correlates strongly with healthier populations. Healthier older populations are less susceptible to injury and disease and therefore reduce stress and dependence on health care. This in turn will reduce the

costs associated with health care. Healthier older populations are also generally more independent and mobile which allows older persons to age in place (World Health Organization, 2007). This means allowing older people to remain in their own homes as they age. This can further reduce health care costs as the demand for long term care facilities and old age homes decline.

Younger generations no longer represent the biggest economic growth market, which means age-friendly communities can provide further economic benefits. The baby boomer generation comprises the so-called “senior surge” and will be numerically superior as well as controlling the bulk of wealth and spending in the coming decade (Lewis *et al.* 2013). Building accessible community environments can promote the spending of this wealth in the local economy as barriers are removed, so that older persons can venture into downtown business and retail outlets (World Health Organization, 2007).

World Health Organization Report

The age-friendly community concept garnered the most international attention through its adoption by the WHO as a policy response to global demographic ageing and urbanization (Plouffe *et al.* 2013). In 2006 the WHO initiated a global collaborative research project to identify key features of an age-friendly city. The goal was to stimulate and guide municipalities in successfully addressing the needs of older persons and promoting their contributions to society. (Plouffe *et al.* 2013; Neal & Delatorre, 2009). The project was conducted in collaboration with governments, non-governmental organizations, and academic partners from 33 cities in 22 countries around the world. In these cities the WHO led focus group consultations with older people, older person care givers, and providers of service to older people in an effort

to determine the age-friendly features deemed important to them (Plouffe *et al.* 2013). This was aimed at garnering a better understanding of the characteristics that make a community age-friendly and the characteristics that constitute barriers to older persons (Neal & Delatorre, 2009).

Based on the findings from the consultations, the WHO published the report *Global Age Friendly Cities: A Guide* in 2007 (Plouffe *et al.* 2013). The report describes and summarizes the age friendly features deemed important during focus group consultations, which were grouped into eight broad categories as illustrated in figure 1 (Plouffe *et al.* 2013). One of the intended outcomes of this guide is to help communities identify methods that allow a community to become “friendly” for all age groups and abilities (Neal & Delatorre, 2009). The project exemplifies a model for highlighting a critical issue and points out specific steps that business, agencies, health care, social service providers, urban planners, and policy makers can take to make communities better places for people of all ages and abilities (Neal & Delatorre, 2009).



Figure 1. Characteristics of an age friendly city (WHO, 2007).

The 8 Domains

The report published by the WHO grouped the features deemed important in the focus group consultations into eight broad categories (Figure 1). The following section will contain a brief summary of each domain to provide background information on the type of barriers that older people may face.

Outdoor Spaces and Buildings

The outside environment and public buildings have a major impact on the quality of life of older people and affect their ability to “age in place” (World Health Organization, 2007). It is well documented that the built environment can have an impact either positively or negatively on the population that utilizes it. However, older people can be particularly vulnerable to the environments in which they live because key features of a community’s physical environment have a strong influence on personal mobility, safety from injury, security from crime, health, and social participation (Menec et al. 2011; World Health Organization, 2007). When people view a neighborhood as safe and accessible it encourages outdoor activities or engagement with the larger community (Lewis *et al.* 2013). When people view an environment as unsafe or inaccessible, it compromises the ability to experience such benefits. For instance, mobility limitations can create unique challenges in crossing a busy intersection, dealing with cracked sidewalks, or entering a building that can only be accessed via steps (Menec *et al.* 2011). This is why creating barrier-free public spaces and buildings enhance mobility and independence of people with disabilities, young and old by creating spaces that are safe and secure (World Health Organization, 2007).

Increasing the accessibility of outdoor spaces and buildings involves removing barriers that limit opportunities for people with disabilities, including older adults with age-related impairments. This provides the opportunity for these segments of the population to participate in social activities, or to access important health and social services (Lewis *et al.* 2013). It should be normal in an age-friendly city for the natural and built environment to anticipate users with different capacities instead of designing for the mythical “average” person (Buffel, Phillipson, & Scharf, 2012).

Transportation

Transportation, including accessible and affordable public transit, is a key factor influencing active ageing (World Health Organization, 2007). Access to such transportation is even more important when driving becomes stressful or challenging for the individual (Lewis *et al.* 2013). This is because when one can easily move about in the community, they are able to experience social and civic participation, as well as access community and health services (World Health Organization, 2007). The condition and design of transportation related infrastructure such as signage, traffic lights, and sidewalks affects mobility (Lewis *et al.* 2013). Communities that have user-friendly transportation systems, while being compact and walkable, are more accessible for persons with disabilities and declining mobility. This allows further participation in the community by working, shopping, and living in a more integrated setting (Danenberg *et al.* 2003).

There is recognition that society’s pervasive dependence on cars and driving may isolate or severely restrict the mobility for older people who limit or cease driving as they age (Straight, 2003). Therefore, designing more pedestrian and transit oriented communities is imperative to

ensure the physical, social, and mental well-being of all segments of the population going forward.

Housing

The home is an important consideration when designing age-friendly communities. This is because older people often spend a substantial amount of time within their place of residence. In fact people aged 70 years and above tend to spend upwards of 80 percent of their time in the home (Buffel, Phillipson, & Scharf, 2012). For many older adults, ageing in place is desirable as it allows the retention of independence (Lewis *et al.* 2013). Therefore, the availability of appropriate, affordable housing with a choice of styles and locations that incorporate adaptive and universal design features, is essential for age-friendly communities (Lewis *et al.* 2013).

As one ages, the home becomes an anchor, a place where one receives the necessary support service to remain in a choice of setting (Pynoos, Caraviello, & Cicero, 2009). However, conventional housing is not easily adaptable to meet the changing needs of individuals across a lifetime (Pynoos, Caraviello, & Cicero, 2009). Variation in human function is the norm not the exception, yet current construction practices ignore variability in function, thereby creating problems for residents that can lead to premature institutionalization (Pynoos, Caraviello, & Cicero, 2009). For instance individuals must be able to navigate their home with minimal risk to injury (Pynoos, Caraviello, & Cicero, 2009). Yet, most falls occur in or near the home and represent the leading cause of injuries resulting in death amongst older adults (Pynoos, Caraviello, & Cicero, 2009). Therefore there is a need to provide housing that is able to adapt to functional variability providing a safe and secure environment that promotes aging in place. A possible solution is the design and creation of supportive housing. This variation of housing

refers to an environment that meets specific physical requirements and connects its resident (s) with the services they need while also facilitating social engagement (Pynoos, Caraviello, & Cicero, 2009).

The home also needs to be accessible to visitors. When homes are not designed to accommodate a variety of mobility and functional levels it can pose problems. For instance, older people with physical impairments are often unable to visit friends and family, therefore have fewer opportunities for community engagement (Pynoos, Caraviello, & Cicero, 2009). Housing in an age-friendly community needs to embrace the concept of visitability. Visitability refers to a set of principles in home design to promote basic accessibility and the elimination of three fundamental barriers, front steps, narrow hallways, and inaccessible first floor bathrooms (Pynoos, Caraviello, & Cicero, 2009). An example of a design embracing visitability principles is zero step entrances. Zero step entrances make it easier to move heavy items through the door, host people that have trouble with steps, roll a baby stroller or luggage in or out, and facilitate a quick exit in a time of crisis or emergency (Pynoos, Caraviello, & Cicero, 2009). There is a link between appropriate housing and access to community and social services in influencing the independence and quality of life for older people (World Health Organization, 2007).

Social Participation

Living in one's home can mean continuity and comfort, but in some cases it may also be socially isolating (Menec *et al.* 2011). Social participation and social support are strongly connected to good health and well-being throughout life (World Health Organization, 2007). Social participation in the context of age-friendly communities involves the level of interaction that older adults have with other members of their community, and the extent that the community

itself makes this interaction possible (Lewis *et al.* 2013) There is a concern about the extent and possible increase in feelings of loneliness in older persons (Gray, 2009). Isolation or lack of companionship is one of the most common components of a poor quality of life, and the likelihood of isolation rises sharply in persons aged 75 and above (Gray, 2009). A method of combating isolation is facilitating the participation in leisure, social, cultural, and spiritual activities in the community and with family. This provides older people with the opportunity to exercise their competence, enjoy respect and esteem, and maintain or establish supportive or caring relationships (World Health Organization, 2007). The opportunities for participation must include social, civic, and employment aspects, as well as other forms of participation, such as physical or spiritual activity (Menec *et al.* 2011). Opportunities in the community for participation may thus also include exercise programs, games, lifelong learning programs (e.g. computer classes), and volunteer options (Menec *et al.* 2011).

The inclusion of older people in the community creates important social capital. Social capital is the array of social contacts that give access to social, emotional, and practical support throughout the community (Gray, 2009). Therefore, by increasing social participation of older persons, there is also an increase in the cohesion and resiliency of the community as a whole (Hodge & Gordon, 2014). While social capital is beneficial to the community as a whole, research has shown that social capital is more important for older people in general when compared to younger persons, and it is an important resource for maintaining health as one ages (Muckenberger, Stronegger, & Freidl, 2013). Therefore, social ties with kin, particularly spouses and adult children, or with fellow members of organizations such as religious groups, social clubs, tenants groups, and sports clubs are vital for maintaining the well being of older persons (Gray, 2009).

Respect and Social Inclusion

The WHO report found a mixture of perspectives in terms of attitudes, respect, and social inclusion with regards to older persons in cities around the world (World Health Organization, 2007). On one hand, some older people feel they are respected, recognized, and included. However, on the other hand, many older persons experience a lack of consideration in the community, service provisions, and in the family (World health organization, 2007). This lack of respect toward older persons has been termed ageism (Van Den Heuvel, 2012). Ageism can manifest in several manners such as prejudicial and negative attitudes towards older people, the process of ageing, institutional regulations that confirm stereotypes about older people, and the exclusion of services, treatment, or help for older persons (Van Den Heuvel, 2012). Ageism may stem from societies perspective of an aging population as an economic threat in terms of an expected increase in costs from pensions and health care, the lack of personnel for productive work, and reducing economic growth overall. The phenomenon of ageism can endanger the welfare and care provided for older persons, while such negative expectations may stimulate the creation of intergenerational conflicts thereby, further ostracizing older citizens (Van Den Heuvel, 2012). Fostering positive community attitudes, such as general feelings of respect and recognizing the beneficial role that older adults play in society, are critical factors for establishing an age-friendly community going forward (Lewis et al. 2013).

Civic Participation and Employment

Implicit in the notion of age-friendly communities is that the inclusion of older adults is an integral part of ensuring that older persons views are taken into consideration for decisions, policies, and planning (Menec et al. 2011). It is essential that older adults are involved in

identifying areas of need, prioritizing key issues, and ensuring appropriate implementation of prospective plans and strategies (Menec et al. 2011). This implies the encouragement of bottom up participation and genuine involvement of older persons. This allows individuals to voice their concerns and participate in identifying characteristics of services and facilities that are either beneficial or constitutes barriers (Lui *et al.* 2009). Contrary to this, older persons are often found to be invisible at the discussion table. This is problematic as older persons contribute invaluable expertise to the decision and planning process, including historical knowledge about the community, and a large commitment to the improvement of the immediate community (Buffel, Phillipson, & Scharf, 2012).

Additionally, older people do not stop contributing to their communities upon retirement. Many older persons are willing to provide unpaid and voluntary work for their families and communities (World Health Organization, 2007). In some areas, economic circumstances force older people to take paid work long after they should have retired (World Health Organization, 2007). Economic security is important for many older adults, particularly those with low and fixed incomes and the ability of an older adult to remain employed or find new employment can provide that economic security (Lewis et al. 2013). This can benefit both older adults whom obtain economic security, and employers that recognize the experience and commitment that older employees bring to the workplace (Lewis et al. 2013).

A truly age-friendly community provides options for older people to continue to contribute to their communities, through paid employment or voluntary work if they so choose, while also through engagement in the political process (World Health Organization, 2007). Civic engagement also includes older adults desire to be involved in aspects of the community beyond

day-to-day activities. These aspects can include but are not limited to volunteering, becoming politically active, voting, and working on committees (Lewis et al. 2013). An age-friendly community will provide opportunities for older persons to pursue such activities.

Communication and Information

Focus group participants in the World Health Organization's global collaborative research project strongly agreed that staying connected with events and people, and getting timely, practical information to manage life and meet personal needs is vital for active and healthy ageing (World Health Organization, 2007). Age-friendly communities make sure that information about community events or important services is readily available, accessible, and in formats that are appropriate for older adults (Lewis et al. 2013). This involves recognizing the diversity within the older adult population and promoting outreach initiatives to non-traditional families, ethno cultural minorities, newcomers, and aboriginal communities (Lewis et al. 2013). However, access to information remains a key challenge facing older people, which can seriously impact their capacity to age in an active and healthy manner (World Health Organization, 2007).

The number and range of information sources potentially available has increased dramatically over the past decades, particularly with advancement in information and communication technologies (Everingham *et al.* 2009). However, research suggests that, despite the proliferation of information and information sources, many older persons are not well informed and therefore not well connected to their community (Everingham et al. 2009). This is because as an expanding range of information becomes available through the Internet and other communication technologies, a new array of access issues for older people emerges (Everingham

et al. 2009). For instance it was found at the WHO focus meetings that while many older persons appreciate the instant access to information that the internet provides, this is accompanied by a sense of exclusion as many older persons are not able to effectively use computers or mobile devices (World Health Organization, 2007). Therefore, an effort must be made to increase the proficiency of older adults in using new technology, or there must be a recognition that communication and information must occur through a variety of mediums.

In recognizing the importance of information to the social inclusion of older people and their capacity to age well, what is needed is a deeper understanding of the obstacles older people face and of their information seeking behavior (Everingham et al. 2009). The sources of information available and the channels or media used to convey it are central to accessibility and must relate to complex information seeking behavior (Everingham et al. 2009). For instance it was found at the WHO focus groups that font size on text material, both hard copy and visual displays are too small to read for many older persons (World Health Organization, 2007). Additional barriers included auditory information that was spoken too quickly on radio and televisions commercials, and confusing page layouts (World Health Organization, 2007). This variability in older person's ability to process information must be taken into account to ensure that such barriers are removed allowing easier access to important information and more universal methods of communication.

Community Support and Health Services

An important consideration for age-friendly communities is the access to community related services that support physical and mental well-being (Lewis *et al.* 2013). This is because health and support services are vital in maintaining the independence for older persons within the

community (World Health Organization, 2007). Effective support for older persons within the community would entail a variety of approaches to link the various components of the urban system. This can range from housing varieties, the design of streets, reliable transportation, and improved accessibility to shops and services (Buffel, Phillipson, & Scharf, 2012). There were however, concerns during the WHO focus group consultations with the availability of sufficient, good quality, appropriate, and accessible health care and support services (World Health Organization, 2007). The absence of such support can lead older adults residing within the community to experience diminished independent functioning which could in turn compromise the ability of these persons to stay within the community, possibly leading to premature institutionalization (Gallagher & Truglio-Londrigan, 2004).

Older adults that live in the community are likely to need some form of support at some juncture in their life regardless of health. This support goes beyond just the physical aspects related to healthcare and can include social or formal methods of support (Gallagher & Truglio-Londrigan, 2004). Family and friends provide social support. Social support can have many positive health promoting benefits such as decreasing the number of negative stressful life events, buffering the negative effects of stressful life events, and providing feedback and encouragement that actions taken are leading to the persons individual goals (Gallagher & Truglio-Londrigan, 2004). On the other hand formal support is generated from public, private, and government agencies, as well as community organizations (Gallagher & Truglio-Londrigan, 2004). This type of support is differentiated from social support as it provides older adults with resources and assistance that family and friends may not be able to provide. Formal support provides benefits such as health-related services, counseling, housing, and economic or financial help (Gallagher & Truglio-Londrigan, 2004). Without some form of support even the smallest

tasks such as running errands can prove to be difficult for older adults, therefore an age-friendly community will strive to promote a variety of support and health services (Gallagher & Truglio-Londrigan, 2004).

A Focus on the Built Environment

As highlighted in the above section, there are eight broad categories of features that are important to take into consideration when discussing age-friendly communities. However, for the purpose of the present study, the focus will be on the built environment and transportation network in the downtown area of the City of Corner Brook, located in the province of Newfoundland and Labrador. The rationale for the focus on the built environment is based on the finding that the outside environment and public buildings have a major impact on the mobility, independence and quality of life of older persons thereby directly affecting older person's ability to age in place (World Health Organization, 2007). The rationale for the focus on the downtown area is that it provides an important transfer medium through which social, physical, and economic interactions may take place. This study also assesses the transportation network because accessible and affordable public transport is a key factor influencing active aging due to the tendency to walk even short distances to arrive at transit stops (World Health Organization, 2007). Additionally, if the downtown area is inaccessible, it is inconsequential how well it is designed, because people will be unable to reach it. The purpose of this study is to assess where improvements can be made in the downtown area of the City of Corner Brook to make it a more accessible and inclusive environment.

Methods

Study Area

The province of Newfoundland and Labrador has a much higher percentage of older persons than the global average. Persons sixty-five years of age and older constitute 25% of the population, more than double the global average percentage of 11% (Newfoundland and Labrador Statistics Agency, 2014; World Health Organization, 2007). Therefore, it is especially important that communities in Newfoundland and Labrador adopt age-friendly characteristics in future design and development. The study focused on the City of Corner Brook because of its close proximity to the university campus. West Street and Broadway were used as a representative sample of the downtown area because they represent the two busiest streets in the community in terms of commercial and retail businesses.

Participants

The majority of the data in this study was collected using naturalistic observation. However, there were a small number of participants whom were questioned to gather information that could not be obtained via naturalistic observation. The participants included a representative from each public retail business on West Street and Broadway, a representative from each of Star Taxi, City Cabs, Birchy Cabs, and Corner Taxi, and a representative from Murphy Brothers (Corner Brook transit system).

Materials

The data was collected and analyzed using several checklists adapted from the World Health Organization (WHO) report *Global Age-friendly Cities: A Guide* (Refer to appendix A

and B for copies of the checklists used in this study). There was also utilization of a camera to capture visual evidence of the findings.

Procedure

For the first part of the study naturalistic observation was used to collect data. The study area (West Street and Broadway) were evaluated on three separate occasions using the adapted checklist from the WHO report. A second part of the study entailed obtaining a transit pass in order to evaluate the Corner Brook transit using a second checklist adapted from the WHO report. Additional information was obtained through posing several interview style questions to the participants noted above. A third part of the study entailed contacting a representative from each public retail business to determine whether or not there was access to a public restroom at that particular business. Each interview style question used is included in appendix B.

Results and Discussion

Cleanliness

Throughout the study there was a variation in the amount of garbage and debris found in the study area each of the times evaluated. The earliest evaluation of the study area yielded no garbage or debris. The second evaluation yielded eight instances where garbage or debris was encountered. During the third evaluation there was garbage and debris encountered along the entirety of the study area. Each subsequent evaluation increased the probability of encountering garbage or debris. This may have been influenced by the changing of the season. The earlier evaluations occurred in the middle of winter, while some of latter evaluations took place as temperatures were beginning to increase leading to snow melting in the study area. This leads to the conclusion that garbage and debris may have been present on the earlier observations but had been covered with recently fallen snow.

There are 15 garbage bins throughout the study area. Eight along West Street which service 1.2 kilometers of pedestrian walkway, and seven along Broadway which service 1 kilometer of pedestrian walkways. A frequent occurrence throughout observations was encountering garbage bins that were completely obstructed by snow (refer to Appendix D, figure 4) or that were full to the point of overflowing. While this was only counted as one instance of encountering garbage or debris a strong wind could potentially spread this throughout the downtown area. There was little information on how frequently or how many garbage bins should be utilized for the size and density of a particular street in the literature. It can be inferred from the results of this study that because of the large amount of garbage and debris present there are three possible scenarios. The first is that there are not enough garbage bins for the study area.

The second is that there are enough, however, they are inaccessible because of snow cover or because they are full. A final scenario is a combination of both with the possibility of there not being enough bins, and that the bins that are there are inaccessible.

Green Spaces

There are five green spaces located in the study area (two on Broadway, three along West Street). These spaces were inaccessible during the winter due to heavy snowfall and because they are used by municipal snow clearing workers as places to push snow from the downtown area. There were instances where there were paths cleared through some of the greenspaces, however, this would occur sporadically.

According to the WHO report green spaces need to be well maintained and safe with adequate shelter, toilet facilities and seating that can be easily accessed (World Health Organization, 2007). In terms of the study area, there were no toilet facilities and it was not possible to discern if there may have been seating in the area as they were all covered with a large amount of snow. There was one green space along West Street that provided shelter in the form of a gazebo. This was inaccessible because of snow cover (refer to Appendix D, figure 5). It is also expected that an age-friendly community will have green space with pedestrian friendly walkways that are free from obstructions and have a smooth surface (World Health Organization, 2007). The study area presented walkways that were occasionally cleared of snow. It was however, found that large pieces of ice or snow were frequently encountered along the cleared walkways. The regular clearing of walkways, as well as keeping shelter such as the gazebo clear of snow is a simple method of improving this area.

Pedestrian Walkways

Pedestrian walkways were for the most part kept quite clear. The City of Corner Brook receives on average 4.87 meters (16 feet) of snow each winter (Corner Brook: About Corner Brook, 2015). This led to the postulation that keeping walkways clear would be problematic. On the contrary, during observation it was found that the walkways in the study area were generally kept clear of snow. There were many instances however, where vehicles were found blocking the walkways (refer to Appendix D, figure 6). Despite walkways being kept clear, they were not clear to the pavement. There were often thin layers of hard packed snow left along the walkways. This could be problematic as it made walking more tiresome as one's foot had a tendency to slip backwards slightly with each step. Additionally, it would make getting around in a wheelchair or with a walker quite difficult.

Seating

There were five benches or seating areas found throughout the study area (three on Broadway, two on West Street). Both of the benches on West Street were new and in good condition while the three benches on Broadway were old and in poor condition. During the first two evaluations all of the seating was buried under several feet of snow making it inaccessible to any segment of the population (refer to Appendix D, figure 7). During the last evaluation, two of the benches on Broadway were accessible because the snow had melted, while the other benches were still inaccessible due to snow cover.

Proper seating in public areas should be comfortable and safe while also providing protection from inclement weather, noise from cars, and water or mud that could potentially be sprayed from passing vehicles (Catt, 1996). In terms of the study area none of the seating areas

provided any protection from inclement weather, the noise associated with vehicles or the potential for water or mud to be sprayed from vehicles.

Seating or rest areas in an age-friendly community must be readily accessible to older persons because of the tendency for older persons to tire more rapidly than a younger adult due to some of the physical changes associated with aging. For instance it has been found that for every decade following the age of thirty, adults generally experience an 8-16 percent reduction in maximum oxygen uptake, as well as a 10-15 percent decrease in muscle strength (Kerr, Rosenberg, & Frank, 2012). For the duration of the study period, there were no seating areas accessible which leads to the conclusion that this is an area that can be improved upon. This is an issue that can be resolved relatively easy as it simply requires regular snow clearing to provide resting areas. It is possible that there were more seating areas in the study area, but were not visible due to snow cover.

Pedestrian Crossing

There were a total of fifteen pedestrian crosswalks throughout the study area. There were eight on West Street with five being delineated by white crosswalk signs (refer to Appendix D, figure 8), two by visual cues at intersections, and one with a flashing yellow light hanging over the crosswalk. There were seven crosswalks along Broadway, four delineated with visual cues at intersections, and three delineated by white signs. Crosswalks were spaced quite evenly and frequent. However, there were many instances where a smaller adjacent street would connect with one of the streets from the study area, disrupting the sidewalk without a crosswalk provided.

It has been found in the literature that even if there are a large number of street crossings, many older adults may not feel comfortable negotiating street crossings due to problems such as

unmarked intersections and large crossing distances (Kerr, Rosenberg, & Frank, 2012). The case in the study area is that the crosswalks that are delineated by only white signs are often obstructed (refer to Appendix D, figures 9 & 10). In addition to being obstructed, the signs are white in color. The large amounts of snowfall in the area result in these white crosswalk signs often having a white backdrop (snowbank) making them even more difficult to see. The results of a study by Koepsell (2002) found that despite the good intentions of traffic engineers, crosswalks that are marked, but not marked well are associated with elevated levels of risk for pedestrian vehicle collisions. This is because marked crosswalks give pedestrians a false sense of security resulting in pedestrians not being as vigilant in ensuring that oncoming traffic is slowing down before stepping into the road. Conversely, because the crosswalk signs are difficult to see due to coloring or obstruction, motorists are less vigilant in ensuring that pedestrians are not stepping into the road (Koepsell, 2002). This leads to a safety issue for all pedestrians, not just older persons. However, older persons have been found to be at a relatively higher risk for fatalities and injuries in the event of a collision with a vehicle (Berke *et al.* 2007). Regardless of the implications in providing an age-friendly environment, this result constitutes a safety issue that must be addressed.

An additional concern associated with pedestrian crossings, is the amount of time allotted for one to cross the street at intersections that provide visual cues (World Health Organization, 2007). During the WHO focus group consultations, one older person went as far as to say that “cross lights are made for Olympic runners” (World Health Organization, 2007). The case in the study area is that crossing light times were twenty-six seconds, thirty-two seconds, and thirty-nine seconds. The measured average walking speed of persons aged sixty and above ranges from 0.94 meters per second to 1.24 meters per second (Bohannon & Williams Andrews, 2011). This

means that in the allotted time walkers falling at the bottom of this range would make it 24 meters, 30 meters, and 36 meters respectively, while walkers at the top of this range would make it 32 meters, 39 meters, and 48 meters respectively.

The presence of snow made it impossible to obtain an accurate measurement of the width of the streets where these crosswalks are located. The Integrated Municipal Sustainability Plan for the City of Corner Brook does not provide street specifications stating “a new street may not be constructed except in accordance with and to the design and specifications set out by the authority” (City of Corner Brook, 2012). Therefore, referring to the charter of new urbanism information on streets, it states that the widest street in a neighborhood should be 34 feet (11.3 meters) wide with marked parking on both sides (Duany, Plater-Zyberk, & Speck, 2011). Given that there is marked parking on only one side of either West Street or Broadway, and the slowest walker is able to cover double this distance in the allotted time, it can be concluded that this is adequate time to allow older persons to cross the street.

Although older persons are given adequate time to cross the road, the only signals to inform pedestrians that it safe to cross the road are visual. There are no audio cues which make crossing the road problematic for persons with sight impairment, or those that are blind. For instance it was observed that two blind persons who frequented the study area and had to resort to trusting that motorists would allow them to cross the road, even in the case that traffic was not being stopped by lights. A last problematic issue related to pedestrian crosswalks is that it was observed that many of the crosswalks were separated from the cleared pedestrian walkway by mounds of snow. This creates a tripping hazard, and provides a barrier for those with declining mobility or those using a wheelchair or a walker. The introduction of accessible pedestrian

signals would improve the safety of the study area considerably. Accessible pedestrian signals communicate information about “walk” and “do not walk” intervals at intersections with signals in non-visual formats for people with vision impairments or are blind (Harkey *et al.* 2007). This would aid in eliminating any confusion and provide the opportunity for safer crossings for those with limited vision or who are blind.

Lighting

The quality of lighting was split in the study area, with one street having excellent lighting and the other with lighting that was not so good. West Street has a total of thirty-seven streetlights along its 0.6 kilometer length. While the sidewalk actually represents 1.2 kilometers, the streetlights were staggered allowing adequate lighting. In order to ensure that this does indeed constitute adequate lighting along the street there were several trips made down West Street in the night. The result was that the street was illuminated well from end to end. On the other hand, there were seventeen lights along the 0.5 kilometer length of Broadway. The West end of Broadway was well illuminated during the same nighttime trips. However, the East end was illuminated primarily by business signs, which led to several very dark areas and low visibility. The low visibility is problematic for older persons as they may be more inclined to trip and fall as it is difficult to see where one is walking.

Adequate lighting is important for a number of reasons. This can include deterring potential offenders by increasing the risk that they will be seen or recognized when committing crimes, more surveillance by the maintenance light workers, increasing the visibility of Police forces thus leading to a decision to desist from crime, and encourage residents to walk late or spend more time in the area thus increasing informal surveillance (Zissis & Kitsinelis, 2012).

This makes the several dark areas along Broadway theoretically more susceptible to crime.

However, assessing which street suffers from more criminal activity is beyond the scope of this paper.

Building Accessibility

Building accessibility was cited as a major issue in all cities around the world in the WHO report (World Health Organization, 2007). In the study area there were sixty-four public retail businesses. Of those sixty-four businesses fifty-one buildings required at least one step to enter. Of those fifty-one buildings, five provided ramps to facilitate entry for those with mobility limitations or those using a wheelchair or walker. An additional four buildings provided railings to assist pedestrians with entering those buildings with steps.

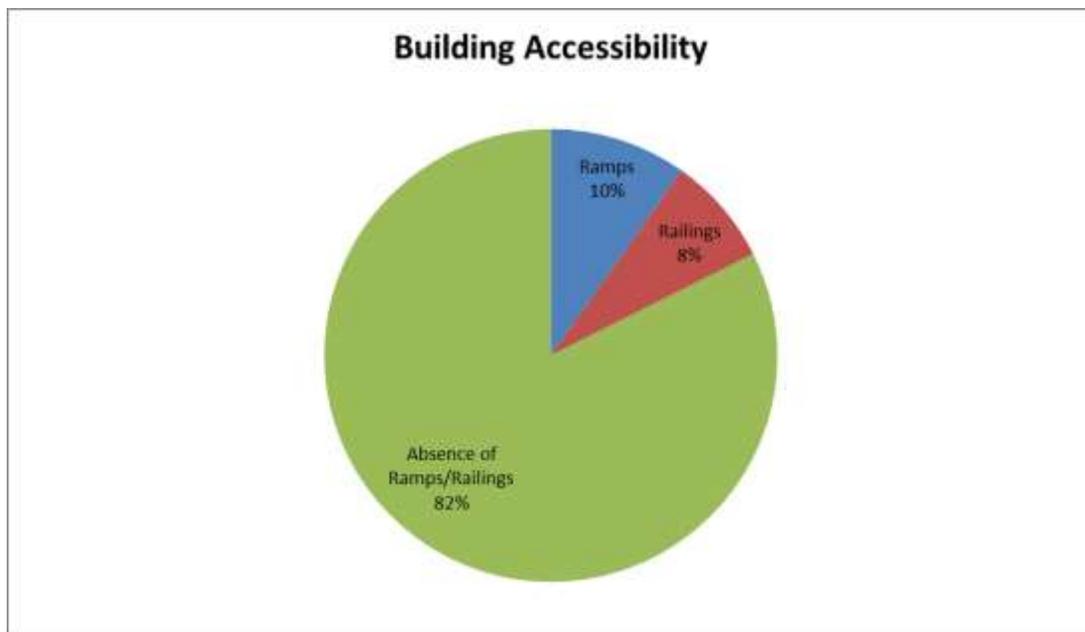


Figure 2. Percentage of Buildings with Stairs Providing Ramps or Railings

As older adults experience a decline in their mobility associated with strength and metabolic changes related to aging, building accessibility becomes problematic (Menec et al. 2011). In the study area building accessibility constitutes a major barrier to a truly inclusive and accessible urban environment. This is because when considering all of the buildings in the study area that required steps to enter, 82 percent of those buildings are not easily accessible to a person using a wheelchair or walker (refer to *figure 2*).

Public Restrooms

There were sixty-four public retail businesses in the study area. There were six businesses that did not have an accessible public restroom. There is a caveat to this number as nine businesses were found in a single building along West Street and were serviced by public restrooms found in the basement of the building. There was no elevator in the building which means these restrooms have accessibility issues. The availability of clean, conveniently located, well-signed, handicap-accessible toilets is regarded as an integral feature in making the built environment friendlier for older persons (World Health Organization, 2007). Although the study area has an abundance of restrooms, they were not well advertised. There were no businesses with outside signage indicating that there was a restroom. This could be improved upon for the benefit of both users and businesses. If a business were to advertise that they had public restrooms that were available to be used, it would have the effect of attracting people that normally may not have entered the business. This creates the opportunity for increased business, while providing a valuable service in making the area more inviting and secure. This makes even more sense when it is taken into consideration that each business is required by law to have a bathroom that employees can use.

Public Transit

The results of the assessment of the public transportation system in Corner Brook found that none of the four taxi companies that operate in the city offer a discount to older persons. In terms of having a vehicle in their fleet that could accommodate a wheelchair or walker, the response was only if it had a collapsible design. If the wheelchair or walker is collapsible then each company had between three or four vehicles in which the collapsed unit could fit in the vehicles trunk. Taxis have been outlined as an important age-friendly transportation option in many cities around the world. However, in the cities that did not consider taxis to be a viable option the barriers identified were the cost and the lack of disability access (World Health Organization, 2007). In terms of the companies operating in Corner Brook, the cost of an average taxi is between \$10.00 and \$15.00 each way. This is not affordable or sustainable in the long run especially for older persons on a fixed income. In addition, the accessibility is suspect for those requiring a wheelchair or walker that is not collapsible, or for those using a motorized unit.

The other form of public transit found in the city is Corner Brook Transit which operates two buses each day. In terms of accessibility, there is no bus in the fleet that can accommodate a wheelchair. Each bus is able to accommodate twenty-one passengers, with the highest number of passengers at any one time during evaluations being eleven. Therefore it was not overcrowded. Corner Brook Transit offers discounts for older persons and students (refer to *figure 3*) as long as the purchase is a minimum of five rides. In terms of a monthly expense the transit fares for Corner Brook Transit are \$55.00, which is \$10.00 more than the monthly rate of St. John's Metrobus which is \$45 a month (St. John's Transportation Commission, 2015). The monthly rate

for Corner Brook Transit is much cheaper when compared to the fares of the Toronto Transit Commission which are \$132 a month (Toronto Transit Commission, 2015).

FARE SCHEDULE		
Regular Fare		\$2.50
Children (under 12)		\$1.25
Pre-school with adult accompaniment		FREE
Fares subject to change without notice		
RIDE CARDS		
Adult	5 rides	\$11.00
Senoir	5 rides	\$10.00
Student	5 rides	\$10.00
Student	50 rides*	\$55.00
*Student ride cards are valid for the month of purchase only and may be shared by more than one student. Ride cards are available at Murphy Brother's Office in Watsons Pond Industrial Park, Glenfall Campus, College of the North Atlantic, Academy Canada and City Hall.		
MONTHLY PASSES		
Adult		\$70.00/month
Senoir		\$55.00/month
Semester pass		\$220.00/month
Monthly passes are available at City Hall and Murphy Brother's Office in Watsons Pond Industrial Park		
A complete list of ticket locations is available at www.cornerbrook.com		

Figure 3. Corner Brook Transit Fare Schedule (City of Corner Brook: Bus Transit, 2015).

During evaluations the bus was always clean, there was no audio pollution, nor were there any odors present. In addition the WHO report outlined one of the major concerns as being drivers that did not wait for passengers to sit down before accelerating (World Health Organization, 2007). This would result in the passenger being thrown to the floor. During evaluations, it was observed that transit drivers would watch passengers in the mirror to ensure they were seated before moving the vehicle. An interesting finding regarding the Corner Brook Transit system from this study is that bus number and destinations are not marked or communicated in any manner on the bus. Patrons are expected to know when they wish to disembark, ringing a bell to signal to the driver that they wish to get off.

There were several instances during the trips made on the transit system that bus drivers would drive uncomfortably fast. The average speed throughout the trips was around 60

kilometers per hour based on the driver's speedometer while the speed limit in the city is 50 kilometers per hour. There were instances where the driver would speed up to as much as 80 kilometers per hour. There were also four instances where buses performed rolling stops at stop signs. This is important to note because the WHO report found that feeling safe and comfortable while riding the transit system is a large factor in the decision to use it (World Health Organization, 2007). In terms of the Corner Brook Transit system, the high speeds that the buses travel coupled with the poor condition of the roads result in quite an uncomfortable ride. Following five trips in one day there was considerable stiffness in my own back as several bumps caused me to pop completely out of my seat.

In terms of reliability, there was only one instance where the bus was late, while there were three instances where it was early. In the context of public transit, early is essentially the same as late as it can cause individuals to miss the bus. In terms of frequency the buses only run from 7:00 am to 6:00 pm, Monday to Friday. This means that getting around for people in the evenings and weekends is limited to the use of personal vehicles, the use of taxis, or some form of active transportation (walking, biking, etc.). Given the topography of the city is very hilly, active transportation, at least in terms of longer trips does not seem realistic. This is consistent with the findings in some cities around the world in the WHO report where it has been suggested that public transport systems need to be more frequent, particularly in the evenings and on weekends (World Health Organization, 2007). In comparison, St. John's Metro which offers cheaper rates than Corner Brook Transit, operates on a schedule of 7:00 am to 12:00 am, 7 days a week (St. John's Transportation Commission, 2015). The Toronto Transit Commission operates the bus service on a schedule of 6:00 am to 1:00 am, 7 days a week (Toronto Transit Commission, 2015). Both systems run on a more frequent basis. An improvement to the Corner

Brook system, specifically expanding service to evenings and weekends, would go a long way to increasing the mobility of not just older people, but the population in general.

The design, location, and condition of transport stops and stations are significant features in the decision for people to use public transport (World Health Organization, 2007). For instance, the absence of benches, shelter, and lighting at transit stops is perceived negatively when referring to age friendly communities (World Health Organization, 2007). In the study area there were five transit stops. There were three along Broadway. One of the transit stops had shelter as well as seating for two. There were no lights but as the transit system does not operate in the evening this does not pose a problem. Additionally, a wheelchair or walker would not have fit in the shelter, but again, as the buses cannot accommodate such items it proves inconsequential. The other two transit stops along Broadway did not have shelter, benches, or lights. They were delineated by a small sign. The transit stops along West Street also did not have any shelter, benches or lighting. One of the transit stops was denoted by a sign nailed to a tree. The other transit sign was very difficult to see from the sidewalk as it was tucked around the corner of a business. The condition and location of transit stops must be improved upon. The signs are very small and difficult to see, the majority of stops do not have a place to sit, and there is no shelter from the elements. In addition the stops are often located in very obscure places.

Additional findings in the study area regarding the transportation network include assessing the affordability of parking. Parking throughout the study area is provided either free of charge, or at a rate of twenty-five cents for fifteen minutes. This is affordable and a positive aspect of the study area. The WHO focus group consultations found that inadequate or expensive parking constituted barriers to older persons around the world (World Health Organization,

2007). Parking is provided along the length one side of both streets in the study area in the form of on street parking, while sixteen businesses have parking lots with the ability to accommodate at least ten vehicles adjacent to the street. Each parking lot provides priority parking areas for disabled people. The on street parking does not provide priority parking bays with the exception of one business. During the observations there were several free parking spaces in close proximity to each business. The results confirm that there are both adequate and affordable parking facilities in the study area.

A final aspect of the transportation network in the study area that was assessed is the accommodation of cyclists. In the study area there are no cycling lanes provided. The manner in which the city promotes cycling is through the provision of signs (refer to Appendix D, figure 11) that read “share the road”, indicating that motorists should share the road with cyclists. Whether this is the case in practice is beyond the scope of this study. This could be improved on however, especially considering that cycling is a powerful tool for populations to meet the recommended levels of physical activity required to improve health (Oja *et al.* 2011). The provision of bike lanes removes the ambiguity around whether it is safe to bike. This is because current practice is based on questionable assumptions of motorist’s behavior in response to signs that may or may not be interpreted in the right manner. Bike lanes would reduce the prospect of motorist-cyclist collisions and negative interactions.

Limitations

There are several limitations to this study. The first is that it was conducted in the winter, therefore snow cover made it difficult to obtain a comprehensive list of the components found in the adapted checklist. For instance there was no way to evaluate the pavement and walkway

materials. However, this is an issue that is common in Canada and other northern countries. Therefore communities in these regions, will have to make provisions for adapting age-friendly measures to cold climates. A second limitation is the use of two streets as a representation of the entire downtown area. The downtown district encompasses a much larger area when compared to what was assessed in the present study. However, given the time constraints this was the best representation possible. Finally, a last limitation was the use of only two of the eight domains outlined by the WHO. Going forward it would be beneficial for future researchers to take into consideration all eight domains.

Conclusion

The concept of age-friendly communities has garnered international attention since the publication of the World Health Organization report *Global Age Friendly Cities: A Guide*. The purpose of this study was to apply the WHO checklist to the downtown area of Corner Brook to assess where improvements can be made in terms of accessibility to older persons and those with disabilities. Overall, the assessment of Corner Brook yielded some positive features that increased the accessibility of the downtown area. However, there are quite a number of features that constitute barriers to an inclusive environment and can be improved. Future research should aim to gain an understanding of the attitudes of older persons within this city. This is because although the WHO report provides generalized guidelines, each population is unique.

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Appendix A

Adapted Checklist for the Built Environment

Date:

Time:

Weather:

Street:

The city is clean:

Is there waste/debris present during the walk?	
How many instances were there waste/debris encountered?	
How many garbage cans were encountered?	

Comments: _____

Green Spaces:

How many green spaces are present?	
Are they accessible in the winter?	

Comments: _____

Pedestrian walkways:

Are there obstructions? Is so what is it?	
Is the snow cleared from the sidewalks?	
Are the sidewalks slippery?	
Are there any public restrooms along the walkway? Is so, How many?	
Are the public toilets advertised? If so, how are they advertised?	

Comments: _____

Outdoor Seating:

Is outdoor seating available?	
What is the quantity of outdoor seating?	
How often is outdoor seating encountered (distance between seating)?	
Is the seating buried in snow?	

Comments: _____

Pedestrian Crossing:

How many crosswalks are present along the road?	
How are the crosswalks delineated in the winter?	
Are there obstructions (i.e. snow) blocking the use of crosswalks?	
At intersections, how long are pedestrian crossing lights?	
Are pedestrian lights automatic or manual (i.e. push a button)?	
If manual, are the lights at a height that is reachable by everyone?	
Is the button buried with snow?	
Are there audio cues for crossing lights?	

Comments: _____

Cyclists:

Are there separate paths for cyclists?	
--	--

Comments: _____

Lighting:

How many streetlights are along the street?	
How often are there streetlights along the streets?	

Comments: _____

Building accessibility:

How many buildings/businesses require steps to enter?	
How many buildings/businesses that require steps also provide a ramp?	
How many buildings/businesses requiring steps have railings to assist pedestrians?	
How many buildings/businesses that have multiple stories also have elevators?	
Is parking affordable in the downtown area?	
Are there priority parking bays provided for older people close to uildings/business?	

Comments: _____

Public Transit:

How many Transit stops are located along the street?	
Is there seating at the transit stops?	
Is there shelter from inclement weather/sun at transit stops?	

Comments: _____

Appendix B

Adapted Checklist for Transit System

Date:

Time:

Route:

Trip Number:

Factor	Yes/No
Is the bus time?	
Is the bus overcrowded? (number of persons versus number of seats)	
Is the bus accessible to a wheelchair?	
Is the bus clean? (How much debris or garbage is present?)	
Is there audio pollution? Ex. loud music	
Are there odors present?	
Does the bus driver obey traffic regulations?	
Is the bus number and route clearly displayed?	

Comments _____

Appendix C

List of Interview Style Questions

1. Do you offer a discount to senior citizens?
2. Does your company possess a vehicle that can accommodate a wheelchair?
3. How many vehicles does your company possess that can accommodate a wheelchair?
4. Is there a public bathroom on the premises?
5. Does Corner Brook Transit possess buses that can accommodate a wheelchair?

Appendix D

Visual Evidence of Findings



Figure 4. Garbage Bin Inaccessible Because of Snow Cover



Figure 5. Gazebo Inaccessible Because of Snow Cover



Figure 6. Vehicles Blocking the Sidewalk on West Street



Figure 7. Seating Covered in Snow on Broadway



Figure 8. White Crosswalk Sign



Figure 9. Obstructed Crosswalk Sign on West Street



Figure 10. Obstructed Crosswalk Sign on Broadway



Figure 11. Share the Road Sign