

AGE-FRIENDLY POLICY: EVALUATING WALKABLE ENVIRONMENTS  
FOR OLDER ADULTS IN MID-SIZED ONTARIO MUNICIPALITIES

by

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A Major Research Paper  
presented to Ryerson University

in partial fulfillment of the requirements for the degree of

Master of Planning  
in  
Urban Development

Toronto, Ontario, Canada, 2021

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# **AGE-FRIENDLY POLICY: EVALUATING WALKABLE ENVIRONMENTS FOR OLDER ADULTS IN MID-SIZED ONTARIO MUNICIPALITIES**

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## **ABSTRACT**

Ontario's population is aging. The changing demographics and increase in adults over the age of 65 call into question whether local governments are ready to support an aging population, and suggests a need for planners to (re)evaluate current plans and policies to ensure they meet community needs. This MRP explores age-friendly walkable built environments for older adults from a planning policy perspective. A plan quality evaluation was used to assess official plans (and cross-referenced documents) of three mid-sized cities in Ontario: Norfolk County and the Cities of Sarnia and Thunder Bay. Findings suggest some policy support for environments enabling of older adult walkers, but older adults themselves are not as prioritized in the Official Plans of these aging cities. It is recommended that planners at provincial and municipal levels of government improve their practice by developing statutory policies that better contribute to age-friendly environments that support older adult walkers.

Key words: age-friendly, older adults, walkable environments, planning policy, plan quality evaluation.

## ACKNOWLEDGEMENTS

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First and foremost, I would like to thank my WON-DER-FUL supervisor Dr. Samantha Biglieri for doing really cool research on accessibility and age-friendly planning, and for all of her support throughout this MRP. Not only am I grateful for Sam's guidance, patience, positivity and words of encouragement, but also for helping me get a little closer to finding my place within this big, wide, multi-disciplinary world of planning. I am incredibly lucky to have had Sam as my supervisor!

Secondly, I would like to thank Nicole Goodbrand for being my second reader. Nicole's insights into planning practice and the contribution of her time and valuable feedback on this MRP were GREATLY appreciated!

I would also like to extend my thanks to the planning staff at Norfolk County, the City of Sarnia, and the City of Thunder Bay for aiding my research by sharing additional resources with me.

Lastly, I would like to send out one big thank you to everyone who helped me through the waves of this MRP – from the first word on my title page all the way down to the final punctuation mark on my reference list. T H A N K Y O U !! :)

## TABLE OF CONTENTS

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<b>Author's Declaration for Electronic Submission of an MRP .....</b>	<b>ii</b>
<b>Abstract .....</b>	<b>iii</b>
<b>Acknowledgements .....</b>	<b>iv</b>
<b>List of Tables .....</b>	<b>vii</b>
<b>List of Figures .....</b>	<b>ix</b>
<b>List of Appendices .....</b>	<b>x</b>
<b>1.0 Introduction .....</b>	<b>1</b>
1.1 Planning Policy in Ontario .....	3
1.2 Government Support for Age-Friendly Communities in Canada and Ontario.....	7
<b>2.0 Literature Review .....</b>	<b>12</b>
2.1 Benefits of Age-Friendly Communities .....	12
2.2 WHO Age-Friendly City Features and Older Adult Lived Experiences .....	13
2.3 Plan Evaluations and Plan Quality Evaluations .....	26
2.4 Research Rationale .....	29
2.5 Research Questions .....	30
<b>3.0 Methodology .....</b>	<b>31</b>
3.1 Study Areas .....	31
3.2 Plan Quality Evaluation .....	33
3.3 Document Acquisition.....	37
3.4 Indicator Development .....	38
3.5 Scoring System .....	40
3.6 Pre-Test Evaluation .....	40
<b>4.0 Plan Quality Evaluation Findings and Discussion.....</b>	<b>41</b>
4.1 Fact Base .....	43
4.2 Goals .....	45
4.3 Policies .....	47
4.4 Implementation .....	73
4.5 Monitoring and Evaluation .....	75
4.6 Public Participation .....	76
4.7 Inter-Organizational Coordination.....	77
4.8 Organization and Presentation .....	80
4.9 Summary .....	81

<b>5.0 Plan Quality Evaluation Implications, Analysis and Discussion .....</b>	<b>83</b>
5.1 Relationship Among Plan Characteristics .....	83
5.2 Geographic Context .....	85
5.3 Use of Language.....	86
5.4 Policy Status .....	89
5.5 Influence of the Age-Friendly Community Plan .....	90
5.6 Limitations.....	91
<b>6.0 Conclusion and Recommendations.....</b>	<b>93</b>
6.1 Conclusion.....	93
6.2 Recommendations for Planners.....	95
6.3 Areas for Future Research .....	99
<b>References .....</b>	<b>124</b>

## LIST OF TABLES

---

<b>Table 1.</b> Comparison of age-friendly policy between the PPS 2005, 2014 and 2020.....	6
<b>Table 2.</b> Grant support for planning age-friendly communities.....	11
<b>Table 3.</b> Definition of plan characteristics and their applications in Guyadeen et al.'s (2019) plan quality evaluation on climate change plans. ....	27
<b>Table 4.</b> Background information for Norfolk County and the Cities of Sarnia and Thunder Bay. ....	33
<b>Table 5.</b> Plan characteristic application in Guyadeen et al.'s (2019) study and adaptation for this MRP. ....	34
<b>Table 6.</b> Documents reviewed in the evaluation of the three mid-sized cities.....	37
<b>Table 7.</b> Total number of indicators per plan characteristic. ....	39
<b>Table 8.</b> Summary of plan quality evaluation score frequency ( <i>f</i> ; %) across all plan characteristics and municipalities.....	42
<b>Table 9.</b> <i>Fact base</i> indicator scores and score frequency.....	44
<b>Table 10.</b> Age-friendly guiding principles from the Cities of Sarnia and Thunder Bay OPs.....	46
<b>Table 11.</b> <i>Goals</i> indicator scores and score frequency. ....	46
<b>Table 12.</b> <i>Policy</i> indicator scores and score frequency ( <i>f</i> ; %) broken down by index. ....	47
<b>Table 13.</b> Topography indicator scores and score frequency.....	48
<b>Table 14.</b> Walking surface conditions indicator scores and score frequency.....	50
<b>Table 15.</b> Street design indicator scores and score frequency.....	55
<b>Table 16.</b> Connectivity indicator scores and score frequency. ....	57
<b>Table 17.</b> Land use indicator scores and score frequency.....	59
<b>Table 18.</b> Density indicator scores and score frequency. ....	60
<b>Table 19.</b> Blue spaces indicator scores and score frequency. ....	61
<b>Table 20.</b> Green spaces indicator scores and score frequency.....	62
<b>Table 21.</b> Rest areas indicator scores and score frequency. ....	64
<b>Table 22.</b> Amenities indicator scores and score frequency.....	64
<b>Table 23.</b> Wayfinding indicator scores and score frequency.....	65
<b>Table 24.</b> Weather indicator scores and score frequency.....	66
<b>Table 25.</b> Aesthetics indicator scores and score frequency. ....	68
<b>Table 26.</b> Personal safety indicator scores and score frequency. ....	69
<b>Table 27.</b> Cleanliness indicator scores and score frequency.....	70
<b>Table 28.</b> Pollution indicator scores and score frequency.....	71

<b>Table 29.</b> <i>Implementation</i> indicator scores and score frequency. ....	74
<b>Table 30.</b> <i>Monitoring and evaluation</i> indicator scores and score frequency. ....	75
<b>Table 31.</b> <i>Public participation</i> indicator scores and score frequency. ....	77
<b>Table 32.</b> <i>Inter-organizational coordination</i> indicator scores and score frequency. ....	79
<b>Table 33.</b> <i>Organization and presentation</i> indicator scores and score frequency. ....	81
<b>Table 34.</b> The total number of the <i>policy</i> indicators that are present for scores of 1 and 2, and overall. .	88
<b>Table 35.</b> Comparison of <i>policy</i> indicator presence between OP and cross-referenced documents. ....	90



**LIST OF FIGURES**

---

**Figure 1.** The WHO’s eight age-friendly city topic areas. .... 2

**Figure 2.** High level overview of Ontario’s planning framework. .... 4

**Figure 3.** Support for age-friendly communities over the last 30 years. .... 9

**Figure 4.** The geographic location of Norfolk County (A), City of Sarnia (B) and City of Thunder Bay (C) within the Province of Ontario. .... 32

**Figure 5.** The frequency of 0, 1 and 2 plan evaluation scores across mid-sized cities. .... 41

**LIST OF APPENDICES**

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**Appendix 1:** Plan Quality Evaluation Table..... 101  
**Appendix 2:** Plan Quality Evaluation Scores (Consolidated) ..... 121

## 1.0 INTRODUCTION

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Over the past 60 years, Canada has experienced a consistent increase in the proportion of senior residents within its population (Statistics Canada, 2016). In 2018, the Province of Ontario had more than 2.4 million older adult residents over the age of 65 (16.9% of the total population) and has a growth forecast of 4.6 million older adults (23.4%) over the next 25 years (Ministry of Finance, 2019). These growing numbers and changing demographics call into question whether communities are ready to support an aging population and suggests a need for planners to (re)evaluate current plans and policies to ensure they meet the needs of local residents.

The concept of the person-environment fit, with respect to aging, discusses the relationship between an older individual and their environment (Lawton & Nahemow, 1973). If environments are supportive and an older adult is able to meet his or her needs at his or her current level of competence or ability, then there is less “environmental press” exerted on the individual (Lawton & Nahemow, 1973). For example:

“[A]n older adult loses his driver’s license. If he lives somewhere where he can still walk to get groceries or visit friends, the environmental press on him is lessened, because he is still able to continue his activities despite losing the ability to drive. If he lives in a location that has poor public transport access and nothing within walking distance, the environmental press is strong, affecting his ability to easily go about his daily activities” (Hartt & Biglieri, 2018, p. 627).

Planning for age-friendly communities intends to minimize environmental presses and create environments that improve quality of life for older adults (Ontario Seniors’ Secretariat et al., 2019). As defined by the Government of Ontario, “[a]ge-friendly communities create supportive social and physical environments that enable older people to live active, safe and meaningful lives and continue to contribute in all areas of community life” (Ontario Seniors’ Secretariat et al., 2019, Age-Friendly Characteristics, para. 2).

The concept of age-friendly communities arose with the promotion of active aging by the World Health Organization (WHO) in the 1990s (Hartt & Biglieri, 2018). The WHO (2002) defines active aging as

“the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age” (p. 12). In 2007, the WHO released a report entitled *Global Age-friendly Cities: A Guide* for the purpose of “help[ing] cities see themselves from the perspective of older people, in order to identify where and how they can become more age-friendly” (p. 11). Findings from this project were reported by older adults, caregivers and service providers from 33 cities across 23 countries (WHO, 2007). Eight age-friendly city themes were identified in this report and are illustrated in Figure 1.

**Figure 1.** The WHO’s eight age-friendly city topic areas.



*Note.* Graphic sourced from the WHO (2007).

The WHO’s (2007) “Outdoor Spaces and Buildings” topic area is the focus for this paper. This topic area is identified to impact older adults’ mobility, quality of life, autonomy and capability to age in place, as well as captures a set of built environment features that act as barriers or enablers for older adults, including but not limited to, green spaces, rest areas, pavements, and pedestrian crossings (WHO, 2007). Specifically, this Major Research Paper (MRP) will explore walkable built environments for older adults in the following three mid-sized municipalities in the Province of Ontario, Canada: Norfolk

County and the City of Sarnia and the City of Thunder Bay. Details on the selection of these municipalities as well as additional background information can be found in Chapter 3.0.

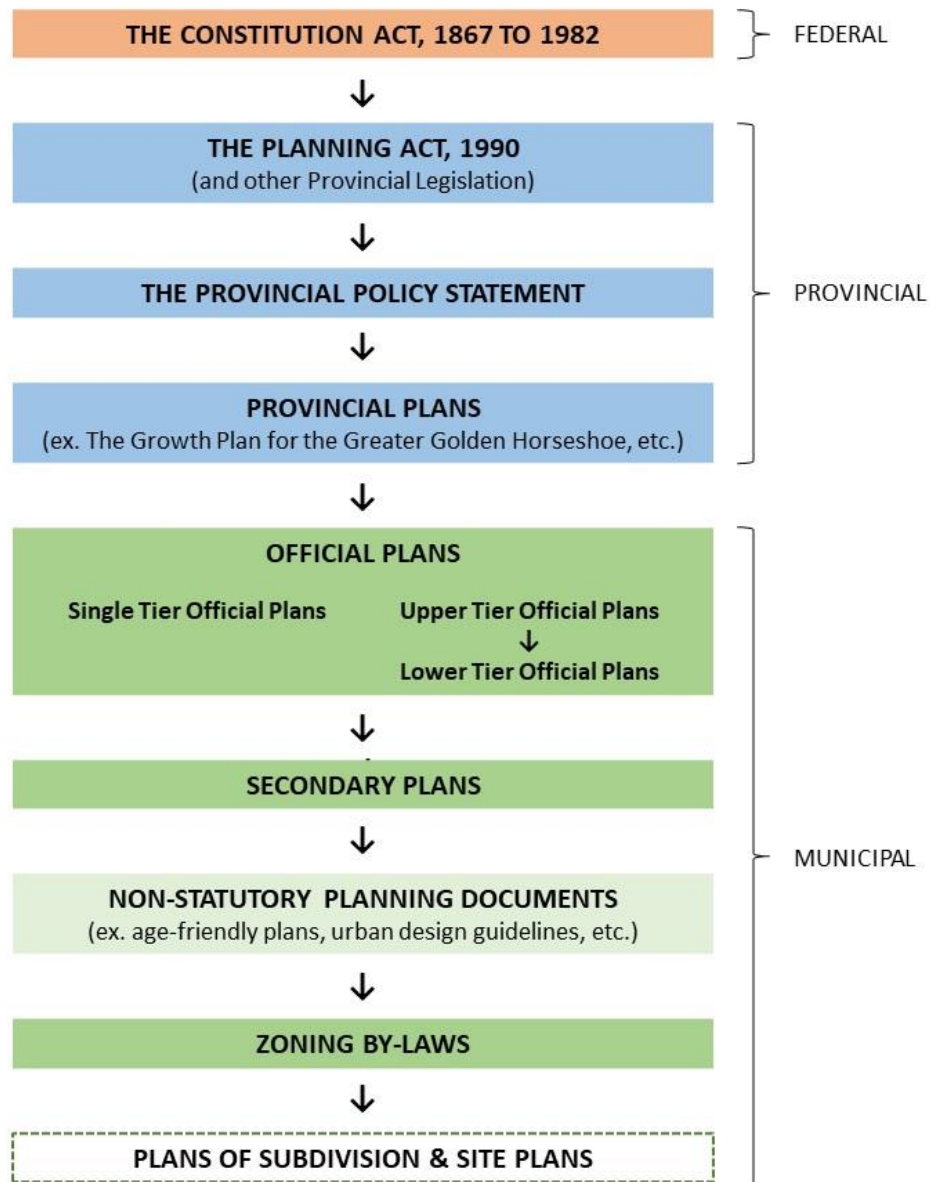
This paper's focus on walkability for older adults is drawn from the vast literature on the importance of mobility in older adults' lives, and further, the call for planners to consider their needs when designing communities (Kerr et al., 2012). Transportation modes that served individuals in the younger years of their lives, may not offer the same experiences throughout later life stages (Stjernborg et al., 2015). Losing the ability to drive is a particular mobility barrier for older adults (Negron-Poblete et al., 2016). This is especially troubling where distances between the home and destinations are further apart, potentially leading to isolation and decreased quality of life (Kerr et al., 2012). Additionally, public transit, a viable option for moving around certain neighbourhoods, towns and cities, may pose barriers for older adults such as the inability to access a transit stop, insufficient service, first and last mile of trips, and impolite transit drivers (Buys et al., 2012; Golant, 2019). However, focusing on active modes of transport, such as walking, can allow older adults to remain mobile and engaged in their immediate surroundings (Klicnik & Dogra, 2019). Therefore, planning for walkable built environments that support the needs of older adults has the potential to increase their overall motility (Kerr et al., 2012).

## **1.1 PLANNING POLICY IN ONTARIO**

In Canada, planning matters are the responsibility of provinces (or territories) as set out in Canada's *Constitution, 1867 to 1982*, and provinces then create legislation to guide planning practices (Seasons, 2021). In Ontario, this is the *Planning Act, 1990*, which dictates planning in the province. Subsequent Provincial policies and plans have also been developed to direct planning in Ontario, whereby some apply province wide, like the *Provincial Policy Statement (PPS)* issued under Section III of the *Planning Act, 1990*, while others apply to specific geographic regions, such as the *A Place to Grow: Growth plan for the Greater Golden Horseshoe* issued under the *Places to Grow Act, 2005*. Municipalities

must be consistent or conform to these Provincial planning documents (where applicable) in the preparation and review of their own plans and policies (Seasons, 2021). Figure 2 provides a high level summary of the planning framework in Ontario.

**Figure 2.** High level overview of Ontario’s planning framework.



*Note.* Colour coding used in this figure coincides with the different levels of government: federal (red), provincial (blue), and municipal (green). The lighter green box at the municipal level is used to differentiate non-statutory planning policy documents from the statutory planning policy documents (darker green boxes). Plans of subdivision and site plans are included at the end of the figure in a hollow box with a dashed border as they are not policy documents, but rather pertain to development applications within Ontario’s planning framework. Adapted from Seasons (2021).

The distinction between statutory and non-statutory planning policy intervention is central to this MRP. Statutory planning requirements in Ontario are prescribed by the *Planning Act, 1990*, which is a Provincial statute that in part directs municipalities to prepare mandatory planning documents to guide and regulate future planning and development. Examples of statutory municipal planning documents outlined in the *Planning Act, 1990* include official plans as well as an array of by-laws. An official plan (OP) is a planning policy document which sets out how growth and land use are directed and managed by and within a municipality (Ministry of Municipal Affairs and Housing, 2020a). OPs provide the overarching planning framework that guides other planning documents (ex. zoning by-laws) in a municipality (Ministry of Municipal Affairs and Housing, 2020a). Other plans, like an age-friendly plan, are considered non-statutory since they are not mandated by the *Planning Act, 1990*, and therefore are not a required policy for municipalities to create, nor review. As a result, the implementation of non-statutory plans, like an age-friendly plan, rests upon available funding and resources, as well as community and political will (Hartt & Biglieri, 2018).

From a Provincial policy standpoint in Ontario, the PPS does include policy for the benefit of older adults (Ministry of Municipal Affairs and Housing, 2005, 2014, 2020b). The current in-force version is the PPS from 2020 contains specific reference to “older persons” in two policies regarding healthy community development (policies 1.1.1b) and 1.1.1f); Table 1), as well as in two definitions (“special needs” and “institutional use”; Ministry of Municipal Affairs and Housing, 2020). The reference to “older persons” in policies and definitions has been present since the PPS, 2014, where there was an update in the use of language from “elderly” as used in the PPS, 2005 (Ministry of Municipal Affairs and Housing, 2005, 2014). The specific inclusion of “older persons” in policy 1.1.1b) was added in 2014, while the general language and intent of policy 1.1.1f) has carried through the PPS since at least 2005 (Ministry of Municipal Affairs and Housing, 2005, 2014). “Age-friendly” is not mentioned in the PPS, 2020 (Ministry

of Municipal Affairs and Housing, 2020b), nor does it appear in the *Planning Act, 1990*, at the time of writing this MRP.

**Table 1.** Comparison of age-friendly policy between the PPS 2005, 2014 and 2020.

Policy	PPS, 2005	PPS, 2014	PPS, 2020
1.1.1b)	<p>“Healthy, liveable and safe communities are sustained by: b) accommodating an appropriate range and mix of residential, employment (including industrial, commercial and institutional uses), recreational and open space uses to meet long-term needs;”</p> <p>(Ministry of Municipal Affairs &amp; Housing, 2005, p. 4)</p>	<p>“Healthy, liveable and safe communities are sustained by: b) accommodating an appropriate range and mix of residential (<b>including second units, affordable housing and housing for older persons</b>), employment (including industrial and commercial), <b>institutional (including places of worship, cemeteries and long-term care homes), recreation, park and open space, and other uses</b> to meet long-term needs;”</p> <p>(Ministry of Municipal Affairs &amp; Housing, 2014, p. 6)</p>	<p>Healthy, liveable and safe communities are sustained by: b) accommodating an appropriate <b>affordable and market-based range and mix of residential types (including single-detached, additional residential units, multi-unit housing, affordable housing and housing for older persons)</b>, employment (including industrial and commercial), institutional (including places of worship, cemeteries and long-term care homes), recreation, park and open space, and other uses to meet long-term needs;”</p> <p>(Ministry of Municipal Affairs &amp; Housing, 2020b, p. 7)</p>
1.1.1f)	<p>“Healthy, liveable and safe communities are sustained by: f) improving accessibility for persons with disabilities and <b>the elderly by removing and/or preventing</b> land use barriers which restrict their full participation in society; and”</p> <p>(Ministry of Municipal Affairs &amp; Housing, 2005, p. 4)</p>	<p>“Healthy, liveable and safe communities are sustained by: f) improving accessibility for persons with disabilities and <b>older persons by identifying, preventing and removing</b> land use barriers which restrict their full participation in society;”</p> <p>(Ministry of Municipal Affairs &amp; Housing, 2014, p. 6)</p>	<p>Healthy, liveable and safe communities are sustained by: f) improving accessibility for persons with disabilities and <b>older persons by addressing</b> land use barriers which restrict their full participation in society;”</p> <p>(Ministry of Municipal Affairs &amp; Housing, 2020b, p. 7)</p>

Note. Bold text indicates changes in policy.



## 1.2 GOVERNMENT SUPPORT FOR AGE-FRIENDLY COMMUNITIES IN CANADA AND ONTARIO

Canada was one of the countries which took part in the WHO's (2007) global study on age-friendly cities through the participation of four Canadian cities: Halifax, Nova Scotia; Sherbrooke, Quebec; Portage la Prairie, Manitoba; as well as Saanich, British Columbia (Government of Canada, 2016). The Government of Canada adopted the WHO's (2007) work and, altered the WHO's terminology of "age-friendly city" to "age-friendly community" in its policies (Lui et al., 2009). The Canadian Government also applied the same methodology from this project in their *Federal, Provincial, Territorial Age-Friendly Rural and Remote Communities Initiative* which focused on rural communities with a population of less than 5,000 people (Government of Canada, 2016). This initiative was endorsed by provincial and federal ministers in 2006 (Gallagher et al., n.d.). In order to assist communities further in becoming more age-friendly, the Public Health Agency of Canada created the *Pan-Canadian Age-Friendly Communities Milestones* which highlights the importance of engaging with older adults through the establishment of advisory committees, ensure local councils are supportive of age-friendliness, as well as develop, publicly post and evaluate an action plan (Government of Canada, 2016).

On a provincial level, the Government of Ontario released its *Action Plan for Seniors* to improve the lives of seniors and released a local guide on planning for age-friendly communities in 2013 entitled, *Finding the Right Fit: Age-Friendly Community Planning* (Government of Ontario, 2017a; Ontario Seniors' Secretariat et al., 2019). This document outlines steps towards becoming more age-friendly for municipalities and highlights the need for establishing a steering committee related to age-friendliness, conducting a needs assessment to understand how to improve the age-friendliness of a community, creating and implementing an age-friendly action plan, as well as evaluating the action plan during and after implementation to ensure it is achieving the intended goals of the plan (Ontario Seniors' Secretariat et al., 2019).

Ontario has also supported age-friendly initiatives through provincial funding contributions. In 2015, the *Age-Friendly Community Planning Grant* (\$1.5 million) was allocated to local and regional municipalities to contribute to age-friendly community projects (Hartt & Biglieri, 2018). Funds ranged between \$25,000-\$50,000 depending on the size of a municipality and supported the development of age-friendly policy initiatives (Biglieri & Hartt, 2017). Although this contribution from the Province progressed age-friendly planning practices, the monetary investment went toward non-statutory projects (Hartt & Biglieri, 2018). In 2017, Ontario announced an expansion to the *Age-Friendly Community Planning Grant* by \$7 million over a three year period as well as an update to the implementation process (Government of Ontario, 2017b). In 2016, Ontario has also announced the launch of the *Age-Friendly Communities Recognition Program* to recognize communities who have created and publicly shared an age-friendly community action plan, or communities who have implemented and evaluated their plan (Government of Ontario, 2019). Figure 3 provides a timeline of support for age-friendliness over the years.

Figure 3. Support for age-friendly communities over the last 30 years.



Similar to Ontario, British Columbia has also outlined steps to achieve age-friendly communities through advisory committees, council resolutions, and action plans in their guide entitled, *Becoming an Age-friendly Community: Local Government Guide* (Seniors' Healthy Living Secretariat, 2014). British Columbia has also funded municipal age-friendly initiatives since 2005 and has created a recognition program for age-friendly community projects (Hartt & Biglieri, 2018). Despite the efforts made by the Ontario Government, there are learning opportunities through the work done by the Government of British Columbia (Hartt & Biglieri, 2018). Hartt and Biglieri (2018) note the western province has developed a document which outlines how municipalities can plan for older adults and persons with a disability using statutory planning policies (Mahaffey et al., 2010), making it particularly progressive in fostering meaningful change.

In other words, in British Columbia there are guidelines for statutory Official Community Plans (equivalent to OPs in Ontario) about explicitly planning for older adults and persons with disabilities, whereas Ontario's guiding document for age-friendly communities speaks to the issue more broadly without precise directives specifically for planners. Furthermore, the Government of Ontario possesses funds for age-friendly communities, but this funding has been allocated to non-statutory plans, contrasting the Government of British Columbia which provides funds to statutory as well as non-statutory projects (Ontario Seniors' Secretariat, 2013; Union of BC Municipalities, n.d.). Table 2 provides a comparison of how age-friendly planning funding resources are allocated in Ontario and British Columbia.

**Table 2.** Grant support for planning age-friendly communities.

Grant Details	Ontario <sup>a</sup>	British Columbia <sup>b</sup>
Donor Government	Ontario Seniors' Secretariat funds age-friendly initiatives through the <i>Age-Friendly Community Planning Grant</i> .	Ministry of Health provides grants to fund age-friendly projects in the <i>Age-Friendly Communities Program</i> .
Eligible Applicants	Local governments (including Indigenous communities) and community groups.	Local governments (Stream 1 and 2 projects) and Indigenous communities (Stream 1 projects only).
Project Types and Requirements	<p>Partial or full development of an age-friendly plan:</p> <ul style="list-style-type: none"> <li>• Identification and definition of local principles;</li> <li>• Generation of a needs assessment custom to the community;</li> <li>• Development of an age-friendly action plan;</li> <li>• Implementation of an age-friendly action plan; and</li> <li>• Evaluation of an age-friendly action plan's results.</li> </ul>	<p>Project Stream 1:</p> <ul style="list-style-type: none"> <li>• Develop assessments and plans, such as age-friendly plans, and/or update policies to be age-friendly;</li> <li>• Engage older adults in planning initiatives; and</li> <li>• Add an age-friendly lens to existing plans and documents including but not limited to Official Community Plans, design guidelines, zoning by-laws, and community health plans.</li> </ul> <p>Project Stream 2:</p> <ul style="list-style-type: none"> <li>• Prevention, promotional and planning supportive projects related to age-friendliness; and</li> <li>• To qualify for Stream 2 projects, applicants must already have an age-friendly assessment or plan in place, or prove how their Official Community Plan, Integrated Sustainability Community Plan, or other related plans include and address age-friendliness.</li> </ul>
Funding Amount (Maximum)	<p>Funding is allocated by population size:</p> <ul style="list-style-type: none"> <li>• \$25,000 for small municipalities (&lt;20,000 people);</li> <li>• \$35,000 for mid-sized municipalities (20,000-99,999 people); and</li> <li>• \$50,000 for large municipalities (100,000+ people).</li> </ul> <p>Funding is prohibited to be spent on capital costs.</p>	<p>Funding is allocated by project type:</p> <ul style="list-style-type: none"> <li>• \$25,000 for Stream 1 projects</li> <li>• \$15,000 for Stream 2 projects</li> </ul> <p>Up to 40% of funds received for Stream 2 projects may be considered for use toward capital expenditures under the condition that the capital expenditure is tied to the project and has a clear benefit to older adults.</p>

<sup>a</sup> Information based on: *Age-Friendly Community Planning Grant 2014-15 Program Guidelines* (Ontario Seniors' Secretariat, 2013). <sup>b</sup> Information based on: *Age-friendly Communities: 2020 Program & Application Guide* (Union of BC Municipalities, n.d.).

## **2.0 LITERATURE REVIEW**

---

This chapter highlights the benefits of age-friendly communities, reviews the findings of the WHO's (2007) age-friendly cities study in comparison to academic literature, as well as provides a background on plan quality evaluations. Reviewing literature on age-friendly communities provides an understanding of the reported lived experiences of older adults to set the context for this MRP. The review of plan quality evaluation literature provides a background on this methodological approach to ready readers for a more tailored discussion in the following chapter of how this methodology was specifically employed in this study. A rationale for the research project and an overview of the research questions conclude this chapter.

### **2.1 BENEFITS OF AGE-FRIENDLY COMMUNITIES**

Age-friendly communities result in a variety of benefits for older adults with respect to quality of life, socialization, autonomy, as well as health and wellness (Fitzgerald & Caro, 2014; Kerr et al., 2012; Klicnik & Dogra, 2019; Mitra et al., 2015; Salvo et al., 2018; WHO, 2007). When older adults can move easily throughout their environments, it is beneficial for their quality of life (Negron-Poblete et al., 2016). When spaces are planned with older adults in mind, the physical elements of the built environment contribute to spaces of social opportunity (Klicnik & Dogra, 2019; Mitra et al., 2015). For example, Mitra et al. (2015) identify parks as spaces for socialization opportunities for older adults. In contrast, Klicnik and Dogra (2019) note that environments that are unsupportive of active transportation have an inhibiting factor on older adults leaving their home and engaging in the community. Autonomy among older adults is another aspect of age-friendly outdoor spaces (WHO, 2007). An experience shared by the WHO (2007) reports an older adult from La Plata, Argentina explaining that when crossing a downtown street, he/she/they would receive help from younger individuals, demonstrating an environment that compromises his/her/their ability to move around independently. Walkable communities are also important for autonomy as older adults may lose the

ability to drive and being able to walk to destinations allows them to preserve their independence (Carr & Ott, 2010, as cited in Kerr et al., 2012; Kerr et al., 2012). Age-friendly outdoor spaces are also beneficial for the physical and mental health of older adults (Mitra et al., 2015; WHO, 2007). The WHO (2007) reports that walking and cycling paths seemingly promote healthy lifestyles for older adults, and in terms of mental health, natural spaces and greenery, such as parks, are reported to be connected to feelings of peace and well-being by older adults (Mitra et al., 2015; WHO, 2007). Overall, age-friendly communities provide multiple benefits in the lives of older adults.

In addition to the many benefits listed above, age-friendly communities are not solely beneficial for older adults, as individuals of varying ages and abilities can also benefit from these environments (WHO, 2007). Firstly, the accessibility of age-friendly communities is advantageous for individuals with a disability (Ontario Seniors' Secretariat et al., 2019). Older and younger adults also share an appreciation for safe sidewalks, while children and older adults share a fondness of park spaces (Fitzgerald & Caro, 2014). Lastly, parents who travel with infants and strollers would also benefit from the design of age-friendly communities (Ontario Seniors' Secretariat et al., 2019). Planning for age-friendly communities is not limited to one specific group, but rather has the potential to benefit a broad range of users.

## **2.2 WHO AGE-FRIENDLY CITY FEATURES AND OLDER ADULT LIVED EXPERIENCES**

In this section, findings from the WHO's (2007) *Guide* will be compared to older adults' lived experiences as reported in the literature published after its release to better understand how it aligns with more recent literature. As previously mentioned, the "Outdoor Spaces and Buildings" topic area is the focus for this MRP and encompasses the following 11 age-friendly features (WHO, 2007):

1. Pleasant and Clean Environment
2. Importance of Green Spaces
3. Somewhere to Rest
4. Age-Friendly Pavements
5. Safe Pedestrian Crossings
6. Accessibility
7. A Secure Environment
8. Walkways and Cycle Paths
9. Age-Friendly Buildings
10. Adequate Public Toilets
11. Older Customers

Of the 11 features discussed by the WHO (2007), ten are reviewed in this chapter; the “Older Customers” age-friendly feature was not included in this review as it centres around customer service experiences (ex. wait times) rather than older adults’ experiences with their physical surroundings, and for this reason, was deemed not as directly related to the built environment compared to the other features.

The academic literature selected in this review was acquired through the Ryerson University library search engine and articles recommended by the researcher’s supervisor. Key words used to search for articles included “senior(s)”, “older adult(s)”, “age-friendly”, “mobility”, “transportation mode(s)”, and “walkability”. Articles span a variety of disciplines including planning, public health, aging, social policy, medicine, and urban studies. The articles included in this review are written in English and published after the 2007 release of the WHO’s *Guide*, with an overall publication year range between 2012 and 2019. The following sections discuss how the WHO’s (2007) age-friendly features for “Outdoor Spaces and Buildings” align with the identified academic literature.

### **2.2.1 Pleasant and Clean Environment**

The first age-friendly feature to be discussed is about pleasant and clean environments. Proximity to water is a key element of the pleasant and clean environment age-friendly feature (WHO, 2007) and is reflected in the literature through a mention of waterfronts and waterfalls (Green, 2012; Lockett et al., 2005, as cited in Salvo et al., 2018). Path connections to waterfronts are also reported to be favourable for older adults (Green, 2012). Moreover, air quality is also noted as an influencer of physical activity (Moran et al., 2014, as cited in Merom et al., 2015), and air pollution is noted as another barrier to walking (Annear et al., 2009, as cited in Salvo et al., 2018). Loud noises and foul odours are additional barriers identified by the WHO (2007) and the literature (Golant, 2019; Stathi et al., 2012, as cited in Salvo et al., 2018; Van Cauwenberg et al., 2012, as cited in Salvo et al., 2018). Participants from



the WHO (2007) study recommend regulations be put forward to control noise. Additionally, crowds are another common barrier expressed by the WHO (2007) and the literature. Mitra et al. (2015) explain that crowds are a safety concern due to the inevitability of bumping into other people. It is also noted that younger pedestrians were inconsiderate toward older pedestrians (Golant, 2019). Findings from the WHO (2007) pertaining to pleasant and clean environments are consistent with the reviewed literature.

### **2.2.2 Importance of Green Spaces**

In addition to the effects of pleasant and clean environments, the WHO (2007) identifies green spaces to be an important feature for age-friendly outdoor spaces. The value placed on green spaces aligns with findings in the literature such as the conclusion drawn by Kerr et al. (2012) regarding the importance of park spaces for older adults who walk for leisure. In contrast, an unpopular finding by Merom et al. (2015) suggests perceived lower amounts of greenery was associated with greater levels of walking for exercise.

Access to park spaces and natural areas are advantageous features of age-friendly environments as they provide a pleasing aesthetic for older adults (Mitra et al., 2015; Negron-Poblete et al., 2016). Parks within a 800 metre buffer of older adults' home are reported to promote walking (Nagel et al., 2008, as cited in Kerr et al., 2012), and gardens (front yard and public) are also identified as being favourable green spaces (Klicnik & Dogra, 2019; Mitra et al., 2015). Parks are also reported to provide opportunities for socialization and fresh air while walking (Mitra et al., 2015). As well, shaded areas and drinking fountains are noted to be beneficial for older adults (Gallagher et al., 2010, as cited in Salvo et al., 2018; Mahmood et al., 2012, as cited in Salvo et al., 2018). Although not explicitly stated by the literature, these features may act as weather protective elements on warmer days, as shade provides coverage from the sun and drinking fountains allow older adults to quench their thirst. These two

features may illustrate a solution to the WHO's (2007) finding related to lack of protection from weather in green spaces.

Additionally, the WHO (2007) also reports on a number of features not identified in the reviewed literature. The first of which is older adults' concern over animals being present in parks. Instead, animal presence on walking paths and trails was identified in the literature (Klicnik & Dogra, 2019), which may be applicable to park spaces. The WHO (2007) also reports that safety concerns over sharing park spaces with others and lack of seating are considered barriers, while small and quiet parks, older adult designated parks or designated sections in parks, are considered age-friendly.

Overall, there is consistency between the literature and the WHO (2007) with respect to green spaces, as both address access to parks and older adults' inclination towards gardens. However, the WHO (2007) reports on park features such as seating, quietness and dedicated areas for older adults, while one review article discusses shade and drinking fountains.

### **2.2.3 Somewhere to Rest**

Places to rest are reported to be enabling elements of the built environment (Michael et al., 2006, as cited in Kerr et al., 2012; WHO, 2007). Green spaces, as previously discussed, also act as favourable areas to rest for older adults (Mitra et al., 2015), and access to seating in parks is reported to contribute to age-friendly environments (WHO, 2007). The presence of benches also receives great support from the literature as places to rest among older adult (Kerr et al., 2012; Mitra et al., 2015; Negron-Poblete et al., 2016; Ottoni et al., 2016). Benches and rest areas enable walking among older adults as they provide a place to take a break, which is especially supportive for older adults on longer walks, those with low stamina, or those with a mobility disability (Kerr et al., 2012; Mitra et al., 2015; Ottoni et al., 2016). Furthermore, benches and other public seating options contribute to a pleasant environment and foster opportunities for socialization (Mitra et al., 2015; Negron-Poblete et al., 2016).

Shade is reported to be another beneficial element in seating areas (Mitra et al., 2015), whereas a lack of benches and rest areas is reported to be a barrier to walking for older adults (Klicnik & Dogra, 2019; Ottoni et al., 2016; WHO, 2007). In one study, it was found that older adults use shopping malls and community centres as places to rest along their walks when there are no available benches (Mitra et al., 2015). The WHO (2007) also reports that public seating encroached by other people is considered a barrier, while well maintained, monitored, and regularly spaced seating options, are considered enabling. Findings from the WHO (2007) and the literature generally align with respect to rest areas for older adult walkers.

#### **2.2.4 Age-Friendly Pavements**

The next age-friendly feature to be discussed relates to the condition of pavements on which older adults walk. Narrow, poorly maintained sidewalks with uneven surfaces, loose stones or cracks, are considered barriers to walking for older adults (Kerr et al., 2012; Klicnik & Dogra, 2019; Negron-Poblete et al., 2016; WHO, 2007). A lack of curb cuts is also reported to be a barrier by Klicnik and Dogra (2019), in addition to poor pavement maintenance, stairs, and hills which are noted to elicit fears of falling (Kerr et al., 2012; Lockett et al., 2005, as cited in Salvo et al., 2018; Stathi et al., 2012, as cited in Salvo et al., 2018). Conversely, older adults report favouring sidewalks that are wide, well maintained and include gradual curb cuts, as these design elements facilitate their walking (Fitzgerald & Caro, 2014; Kerr et al., 2012; Klicnik & Dogra, 2019; Mitra et al., 2015; WHO, 2007). The presence of curb cuts is especially advantageous for older adults who use a mobility aid (Kerr et al., 2012).

Additionally, older adults also describe obstacles on pavements as a hindrance when encountered while walking (Negron-Poblete et al., 2016). The WHO (2007) identifies trees, cars and street vendors as obstacles that block the way for older pedestrians and highlights the interest in pedestrian prioritized environments. Although the literature in this review does not identify these

specific obstacles, Negron-Poblete et al. (2016) note electricity and telephone poles as physical obstacles that block the way for older adults who are walking, and Klicnik and Dogra (2019) mention construction as an additional obstruction while walking.

Despite the many challenges related to pavements for older pedestrians, the WHO (2007) notes that inclement weather can exacerbate these already challenging conditions. Snow covered pavements are highlighted as one feature which makes walking difficult (WHO, 2007). This is echoed in the work of Klicnik and Dogra (2019) as older adults expressed difficulty walking while using a mobility device when snow had not been cleared from pavements. In addition to snow, rain and ice are also emphasized as barriers as they contribute to slippery surfaces which prevent older adults from walking (Golant, 2019; Klicnik & Dogra, 2019; Mitra et al., 2015). In order to make pavements more age-friendly, it is important for snow and ice to be cleared away (Gallagher et al., 2010, as cited in Salvo et al., 2018; WHO, 2007).

Overall, there is consensus between the WHO (2007) and the literature with respect to age-friendly pavements being smooth, flat, well maintained, unobstructed, and free of snow and ice.

### **2.2.5 Safe Pedestrian Crossings**

In addition to the impacts of walking surfaces, road safety also plays an important role in older adult pedestrian experiences. Traffic volume is largely reported to negatively influence older adult walking patterns (Negron-Poblete et al., 2016), where wide roads with multiple lanes and numerous cars contributed to heavy traffic and congestion (Klicnik & Dogra, 2019; Mitra et al., 2015; Negron-Poblete et al., 2016). Heavy traffic is also discussed by the WHO (2007) whereby older adults fear traveling in these environments unless otherwise accompanied. The benefits of new urbanist communities being more compact compared to their traditional suburban counterparts may not always guarantee ideal walking environments as lower density neighbourhoods with lighter traffic may be viewed as more favourable walking locations for leisure (Golant, 2019; Kerr et al., 2012). Kerr et al. (2012) echo these findings by

concluding that calmed car traffic can enable age-friendly walking environments. As well, the WHO's (2007) findings regarding heavier traffic being a barrier to older pedestrians are consistent with findings from the literature in this review.

Car centric neighbourhood designs pose dangers for older adults as they give rise to more pedestrian-motorist mobility conflicts resulting in unsafe walking experiences (Klicnik & Dogra, 2019; Negron-Poblete et al., 2016). Reports of careless driving and speeding from drivers and cyclists are expressed by older adults in their experiences sharing the road with other users (Annear et al., 2009, as cited in Salvo et al., 2018; Mahmood et al., 2012, as cited in Salvo et al., 2018; Marquez et al., 2014, as cited in Salvo et al., 2018; Van Cauwenberg et al., 2012, as cited in Salvo et al., 2018). The WHO (2007) also makes reference to disrespectful motorists which can be illustrated by Klicnik and Dogra's (2019) study that reveals there is a lack of enforcement related to cars failing to yield and/or stop at crosswalks, and suggests fines should be introduced as a means of intervention. In addition, the ambiguity surrounding rights-of-way with multiple road users decreases the inclination towards walking for older adults (Grant et al., 2010, as cited in Salvo et al., 2018). In order to combat the incompatible relationship among road users, separation from vehicular traffic is noted by scholars in a review by Salvo et al. (2018). Building on concept of separating pedestrians from hasty drivers and cyclists, the incorporation of buffer zones placed in between sidewalks and streets may be used to enable safer walking environments for older pedestrians (Negron-Poblete et al., 2016). Although the WHO (2007) does not discuss buffer zones and separation between modes specifically on roadways, a similar discussion about separating pedestrians and cyclists exists in terms of walkways and cycle paths (see Section 2.2.7).

Another barrier associated with safe pedestrian crossings is a lack of crosswalks (Klicnik & Dogra, 2019). The WHO (2007) proposes that additional crosswalks should be designed that are not solely located at intersections to improve pedestrian safety. The incorporation of pedestrian bridges is also noted by the WHO (2007) and Salvo et al.'s (2018) review of the literature to enable safe crossing

environments. However, even in circumstances where crosswalks are plentiful, a lack of signals fosters unsafe crossing conditions for older adults, which is particularly dangerous when crossing distances at intersections are reported to be long (Kerr et al., 2012). The presence of pedestrian signals at crosswalks is reported to be advantageous (Kealey et al., 2005, as cited in Kerr et al., 2012; Merom et al., 2015), illustrating its effectiveness in creating age-friendly walking communities. Kerr et al. (2012) also highlight that crossing signals with loud noises and bright lights are supportive for those with depreciating hearing and vision, respectively. This consideration for older adults with a sensory disability is also acknowledged by the WHO (2007). Mitra et al. (2015) also found that the presence of stop signs allow for safer experiences when crossing streets.

In addition to general insufficiencies regarding pedestrian crossing signals, crossing time is another inadequacy consistent between findings from the WHO (2007) and the literature. Crossing times are identified to be too quick and inadequately accommodate the pace older adults walk, whether they are assisted with a mobility aid or not (Klicnik & Dogra, 2019; Mitra et al., 2015; Negron-Poblete et al., 2016); but this is particularly hazardous for older adults who use canes, walkers, or other mobility aids (Klicnik & Dogra, 2019). Ill timed cross walks connect to the car centric environment barrier discussed earlier suggesting the primacy of the automobile, making crossing experiences dangerous for older pedestrians (Negron-Poblete et al., 2016). In order to create age-friendly environments for older pedestrians, it is important to provide sufficient crossing times that are accommodating of older adult walking speeds (Michael et al., 2006, as cited in Kerr et al., 2012; Mitra et al., 2015), and have a traffic management system supportive of safe crossings for older adults (Green, 2012). Medians or islands situated halfway through large intersections are mentioned by the WHO (2007) and within the literature as an enabler of walking among older adults. Mitra et al. (2015) note the absence of traffic medians reinforces the unsafe walking experiences associated with quick crossing times.

Overall, there is consistency between the literature and the WHO (2007) with respect to safe pedestrian crossings, as both address the barrier of heavier traffic, crossing infrastructure and signalization, crossing times and traffic medians. However, the academic literature further reports on the relationship between different travel modes and sharing the right-of-way.

### **2.2.6 A Secure Environment**

Perceptions and feelings of safety are determinants that influence walking behaviour among older adults. Lighting is one element discussed by the WHO (2007) and the literature. Inadequate lighting during darker times of the day elicits fear among older walkers (Mitra et al., 2015). In unpopulated open spaces, Kerr et al. (2012) highlight that older adults may feel unsafe or defenseless, suggesting that they find safety in numbers. This situation is more apparent for older adults who walk for leisure than for commuting purposes (Kerr et al., 2012). In contrast, well lit streets and populated areas contribute to feelings of safety among older adults on their walks (Lowen et al., 2015; Mitra et al., 2015).

Safety from crime is another aspect that is advantageous for older walkers (Kealey et al., 2005, as cited in Kerr et al., 2012; WHO, 2007). Older adults express fears of being assaulted while walking, particularly in low density neighbourhoods (Mitra et al., 2015). A lack of phonebooths also contributes to feelings of unsafety (Klicnik & Dogra, 2019), as well as concerns being voiced about homelessness and drugs (Golant, 2019; Klicnik & Dogra, 2019; WHO, 2007). In Salvo et al.'s (2018) review, littering, vandalism and illegally parked cars on the sidewalk are also noted as non-violent crimes that discouraged walking among older adults due to feelings of unsafety (Mahmood et al., 2012, as cited in Salvo et al., 2018; Stathi et al., 2012, as cited in Salvo et al., 2018). Neighbourhood watch groups and security cameras are two features that make older adults feel safer on walks (Mitra et al., 2015; WHO, 2007). Patrolled areas and an increase in police presence can enhance perceptions of safety for walkers

(Gallagher et al., 2010, as cited in Salvo et al., 2018; Klicnik & Dogra, 2019). This finding is also noted on the WHO's (2007) checklist for age-friendly outdoor spaces. However, a stronger police presence can have the opposite effect. For instance, in Salvo et al.'s (2018) review of the literature, they also discuss that in a minority neighbourhood, an increased police presence may be a barrier to physical activity due to racial profiling and unnecessary intervention. Although this discussion is framed around a younger age group, the broader notion of police presence not always being positively received may be applicable to older adults.

Another element that can influence a sense of security among older adults while walking is climate. The WHO (2007) indicates that reducing the risks associated with natural disasters – for example, injuries resulting from earthquakes – contribute to age-friendly outdoor spaces. Fitzgerald and Caro (2014) address natural disasters, but their discussion is centred around preparation and community services and response. This finding from the WHO (2007) could be scaled down and applied to seeking protection from inclement weather, a factor identified to influence walking among older adults. Fitzgerald and Caro (2014) also discuss that extreme weather conditions can decrease the ability of older adults to partake in outdoor activities. Salvo et al.'s (2018) review of the literature echo this argument by also mentioning snow, heat and other adverse weather conditions are barriers to physical activity; for example, snow may lead to slippery conditions which result in unfavourable walking environments. Lastly, shade can also influence an older adult's decision to walk and the route they choose to take (Negrón-Poblete et al., 2016).

Overall, the WHO (2007) is consistent with the literature with respect to secure environments being well lit, safe from crime, and weather protective. Although police presence enabling walking among older adults is also noted as a consistent finding, it should be interpreted with caution as not all experiences with law enforcement are positively received.



### **2.2.7 Walkways and Cycle Paths**

The WHO (2007) acknowledges that walkways and cycling paths are an important feature to promote healthy living among older adults. However, cyclists pose threats to older pedestrians along shared routes (WHO, 2007). Although this finding is discussed in the literature relating more to road and crossing safety (Strath et al., 2007 as cited in Salvo et al., 2018), the concept of separating road users may be applied to having separate paths for cyclists and pedestrians, a solution reported in the WHO's (2007) study.

Access and connectivity are additional elements that contribute to age-friendly environments. The WHO (2007) identifies accessible, wheelchair inclusive, trails to be supportive of older adult walkers. Access to paths and walkways is highlighted as beneficial (Gallagher et al., 2010, as cited in Salvo et al., 2018; Mahmood et al., 2012, as cited in Salvo et al., 2018), along with well maintained and paved trails (Klicnik & Dogra, 2019), consistent with the WHO (2007). However, in their review, Salvo et al. (2018) note discussions around poor access to bike paths and having to drive in order to access a path, which in the context of this paper, may be applied to walking paths and how poor access is a barrier for older adults. As noted earlier in this review, pathways that are connected to parks and waterfronts are also considered advantageous for older adults (Green, 2012). The literature and the WHO (2007) are in alignment with respect to walkways and cycle paths.

### **2.2.8 Accessibility and Age-Friendly Buildings**

Although separate features in the WHO's (2007) guide, these two features are discussed together in this review due to their related and overlapping content. Steps and stairs are identified as a barrier in the literature, especially for persons with a disability (Shumway-Cook et al., 2005, as cited in Kerr et al., 2012). Access to ramps is reported to be a supportive environmental feature by the WHO (2007) and the literature, and it is important for ramps to have an appropriate incline that facilitates

walking, because ramps that are too steep can elicit fears of falling among older adults (Bjornsdottir et al., 2012, as cited in Salvo et al., 2018; Klicnik & Dogra, 2019; Lockett et al., 2005, as cited in Salvo et al., 2018; Stathi et al., 2012, as cited in Salvo et al., 2018). In environments with stairs and steeper inclines, hand rails are described as supportive features for older adults by the WHO (2007) and literature (Kerr et al., 2012; Mahmood et al., 2012, as cited in Salvo et al., 2018).

Proximity to shops, services and facilities is another feature identified by the WHO (2007) and the literature. Amenities that are not within proximity to where people live or are too far to walk, are considered barriers (Klicnik & Dogra, 2019; Lowen et al., 2015). However, access to nearby retail establishments and other services are reported to encourage physical activity and walking (Lowen et al., 2015; Mitra et al., 2015), especially when walking was for transportation and/or commuting purposes (Kerr et al., 2012). Destinations within an 800 metre buffer of home encourage walking for transportation and leisure (Nagel et al., 2008, as cited in Kerr et al., 2012), and shorter block lengths and proximity to mixed uses (400 metre buffer) promote walking (Satariano et al., 2010, as cited in Kerr et al., 2012).

Signage also contributes to the age-friendliness of an environment. Kerr et al.'s (2012) review of the literature reveals that suitable signage improves wayfinding for older adults, particularly those with diminishing cognitive functioning. Negron-Poblete et al. (2016) suggest that clear signage which identifies pedestrian paths in parking lots would be beneficial. This concept may be translated to the greater built environment as clear signage can improve the legibility of older adults' surroundings beyond parking lots. The WHO (2007) also mentions signage, but it is contextualized as a necessary age-friendly element for buildings, as opposed to the greater built environment.

Additional information provided by the WHO (2007) on accessibility that is not addressed in this review include the presence of elevators and escalators, however, these structures are more related to

interior spaces than outdoor spaces. This point aside, there is agreement between the WHO (2007) and the literature regarding accessible environments and proximity to destinations enabling walking behaviour among older adults. Signage is the only identified feature in this review to not be as explicitly discussed in terms of the built environment by the WHO (2007) compared to the academic literature.

### **2.2.9 Adequate Public Toilets**

Public toilets are recognized as their own distinct age-friendly feature by the WHO (2007), however, less attention is received within the academic literature. Two review articles included in this review reveal that the presence of public washrooms contributes to physical activity among older adults (Kerr et al., 2012; Salvo et al., 2018). The WHO (2007) notes that public toilets located in parks and along walkways and paths are conducive to age-friendly cities, consistent with findings identified by Kerr et al. (2012) and Salvo et al. (2018), respectively. Klicnik and Dogra (2019) also acknowledge a lack of washrooms as a barrier for older adults who partake in active transportation. Additional information provided by the WHO (2007) on this topic reveal that cramped washrooms and heavy doors create access barriers for older adults whereas cleanliness, signage and accessibility (location-wise and for persons with a disability) are enabling features. Ultimately, only three articles included in this review address public toilets in some capacity, but the WHO (2007) provides greater details into the impacts of this age-friendly feature compared to the academic literature.

### **2.2.10 Comparison Summary**

Overall, the findings from the WHO's (2007) age-friendly cities study are largely consistent with the academic literature included in this review, but there are some variations. When discussing green spaces, additional features mentioned by the WHO (2007) include dedicated park spaces for older adults, while the academic literature mentions drinking fountains (Salvo et al., 2018). As well, in the discussion on rest areas the WHO (2007) addresses seating encroachment, while the literature

addresses shade (Mitra et al., 2015). Additionally, the academic literature also adds to the discussion on pedestrian crossings by providing more details about different road users sharing the right-of-way (Salvo et al., 2018). On the topic of accessibility and age-friendly buildings, the literature speaks more to signage (Kerr et al., 2012), while the WHO (2007) provides information on building interiors. Lastly, although the WHO and the academic literature both address public toilets, the WHO (2007) speaks to this age-friendly feature in greater detail.

### **2.3 PLAN EVALUATIONS AND PLAN QUALITY EVALUATIONS**

The necessary second component of this MRP draws on plan evaluation literature. In the field of planning, plans are considered to be a product that is produced from the planning process (Guyadeen & Seasons, 2016). Plans are defined as “...long-range policy documents that provide the legal, political, and logical rationale behind a community’s development-management program, and ultimately settlement patterns within a local jurisdiction over a 20–30-year time frame” (Berke et al., 2006, as cited in Guyadeen & Seasons, 2016, p. 216). Examples of plans include OPs (statutory), as well as age-friendly plans, strategic plans and climate change plans (non-statutory).

Plan evaluations assess the plan, processes and outcomes against a set of pre-determined indicators (Laurian et al., 2010). Plan evaluations differ from program evaluations with respect to what is being evaluated, as program evaluations focus on government activities and their operations (Guyadeen & Seasons, 2016). Plan evaluations can also be formative or summative (Guyadeen & Seasons, 2016). Formative evaluations take place early on and advise on how a matter can be adjusted to reach intended outcomes (McDavid & Hawthorn, 2006, as cited in Guyadeen & Seasons, 2016; Weiss, 1998, as cited in Guyadeen & Seasons, 2016). Summative evaluations occur after policy implementation and identify if the intended outcomes of a policy match the actual outcomes (Cousins et al., 2014 as cited in Guyadeen & Seasons, 2016; McDavid & Hawthorn, 2006 as cited in Guyadeen & Seasons, 2016).

Plan quality is a measure of the “...extent of the presence or absence of key components within a plan...” (Guyadeen et al., 2019, p. 122). Berke and Godschalk (2009) assert that plan quality evaluations have internal and external components, where the internal quality refers to the content of the plan that guides future land use, and the external plan quality refers to the relevance of the plan as it relates to stakeholder values and local the context. According to Guyadeen et al. (2019) and Lyles and Stevens (2014), there are eight core plan characteristics to be evaluated for their quality:

1. Fact base
2. Goals
3. Policies
4. Implementation
5. Monitoring and evaluation
6. Public participation
7. Inter-organizational coordination
8. Organization and presentation

Table 3 provides a breakdown of Guyadeen et al.’s (2019) definition for each plan characteristic as well as how they are applied in their study on climate change plans.

**Table 3.** Definition of plan characteristics and their applications in Guyadeen et al.’s (2019) plan quality evaluation on climate change plans.

Plan Characteristic	Definition According to Guyadeen et al. (2019)	Guyadeen et al.’s (2019) Application to Climate Change Plans
Fact Base	<p>“[T]he empirical foundation for a plan and helps to rationalize and prioritize plan goals and policies” (p. 124).</p> <p>Fact base information is noted to be commonly found within the introduction of climate change plans.</p>	Fact base addresses climate change awareness, climate change as a local issue, an emissions inventory, current and forecasted emissions trends, climate change impacts, and a vulnerability assessment (i.e., geographic areas, demographics and industries to be disproportionately impacted).
Goals	“[A]mbition statements about desired future conditions derived from the fact base analysis and from community and stakeholder consultations” (p. 124).	Goals address climate change adaptation and mitigation.
Policies	“[A]ction-oriented mechanisms used to guide public and private decision-making in order to achieve plan goals” (p. 124).	Policies address land use, transportation, waste, natural resources and water management, food and agriculture, as well as hazard reduction.

Plan Characteristic	Definition According to Guyadeen et al. (2019)	Guyadeen et al.'s (2019) Application to Climate Change Plans
Implementation	"[A] commitment to follow through on plan policies, including the steps needed to ensure that actions are carried out" (p. 124).	Implementation addresses actions taken to implement the plan, priorities, timelines, organizational responsibility, and financial resources.
Monitoring and Evaluation	"[A] systematic framework for continually tracking implementation activities and assessing the outcomes of those activities, [to] determine the extent to which plan goals are being achieved" (p. 124-125).	Monitoring and evaluation address organizational responsibility, timelines for plan updates, and plan progress measurement.
Public Participation	"[H]ow the public and various stakeholder groups were engaged in the plan creation process" (p. 125).	Public participation addresses the identification of engaged stakeholders and the public, a rationale for engagement, and the evolution of the plan.
Inter-Organizational Coordination	"[T]he interrelated nature of the plan creation and implementation processes...This includes ensuring proper coordination among various organizations and agencies between the different levels of government and municipal departments...[as] policies are often associated with other plans and initiatives" (p. 125).	Inter-organizational coordination addresses connections to other local plans, as well as upper level government (i.e., regional, provincial, federal) plans.
Organization and Presentation	"[T]he communicative aspects of a plan... A clearly organized and well-presented plan is readable, user-friendly, and, above all, relevant to the needs of the community" (p. 125).	Organization and presentation address the presence of an executive summary, table of contents, glossary and illustrations (i.e., diagrams).

To identify plan quality evaluation research on walkable built environments for older adults, the author carried out a search. Key words used in the search included "older adult", "senior", "elderly", "plan evaluation", "urban planning", and "walk". Articles from this search were combined with an additional article the author found in a previous, non-plan evaluation related search, as well as an article

passed along from the author's supervisor. Within a sample of acquired work<sup>1</sup> spanning over the last 20 years, only one study assessed plans with an exclusive focus on older adults (Krawchenko et al., 2016), and only one study assessed plans with a focus on physical activity (including walking; Hassan et al., 2017), exclusively in a Canadian context. Krawchenko et al. (2016) study the connection between age-friendly communities and place and social vulnerability, as it relates to climate change, in rural communities in Nova Scotia. A component of the authors' methodology includes a content analysis of municipal policy (including OPs) and findings from this analysis reveal that place and social vulnerability with respect to climate change is not effectively addressed in statutory planning documents (Krawchenko et al., 2016). Hassan et al.'s (2017) study explores the inclusion of physical activity (and physical activity-related) supportive policies in Official Community Plans (equivalent to OPs) in Saskatchewan cities with a population of 4,500+ people. The study finds that Official Community Plans lack policy support for physical activity and there is opportunity to improve plans in the future (Hassan et al., 2017). The limited research (based on this sample of work) about older adults and walkable environments reveals an opportunity to explore this MRP topic further using a plan quality evaluation methodology.

## **2.4 RESEARCH RATIONALE**

There has been much attention paid to the lived experiences of older adults and the walkability of their built environments in the literature (Klicnik & Dogra, 2019; Mitra et al., 2015; WHO, 2007). This project will build on, and complement, the existing experiential literature from a policy planning point of view, as it is not as abundantly studied in the literature. Exploring OPs provide greater insight into the

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<sup>1</sup> The sample of work from the author's search and from previously acquired articles included 21 articles (Benelli & Magaudda, 2017; Bittner et al., 2013; Campbell, 2009; Dedekorkut et al., 2010; Edwards & Haines, 2007; Gough, 2015; Guyadeen et al., 2019; Harris et al., 2019; Hassan et al., 2017; Hausman & Becker, 2000; Kim & Kakimoto, 2014; Krawchenko et al., 2016; Luo & Qi, 2019; Manaugh et al., 2015; Muhlbach, 2012; Park et al., 2020; Price et al., 2018; Raparathi, 2015; Ren et al., 2008; Seasons, 2002; Xu & Yang, 2019).

future vision, land use patterns, development direction, and values of cities (Berke & Godschalk, 2009; Kaiser & Godschalk, 1995), and it is noteworthy to identify whether age-friendly considerations are addressed. OPs provide insights into the statutory policy framework currently in-force, compared to policies contained in non-statutory plans (Biglieri & Hartt, 2017; Hartt & Biglieri, 2018). Statutory policy documents act as better gauges to determine and understand the degree of age-friendliness of a municipality as developments must conform to statutory policies as directed in the *Planning Act, 1990*, whereas non-statutory policies can be characterized as “nice to have” (Hartt & Biglieri, 2018).

This research aims to provide a better understanding of age-friendly community planning in Ontario, Canada from a planning policy perspective. The lessons learned from this project allow for greater insights into the professional planning values, vision, and statutory policy support for age-friendly communities, through the exploration of walkable built environments for older adults living in mid-sized cities with greater older age dependency ratios. Findings from this project have the potential to highlight key policy areas and scales requiring further attention from planners to become more age-friendly and walkable, as well as improve the quality of life for a growing aging population.

## **2.5 RESEARCH QUESTIONS**

This research answers the following questions:

1. After the release of the WHO's *Guide* in 2007, have mid-sized cities in Ontario integrated age-friendly walkable built environments into their OPs?
  - a. What built environment features are present in OPs that suggest environments are supportive of older adults who walk?
  - b. Are older adults mentioned in policies where built environment features are present?
  - c. Are built environment features presenting themselves directly in OPs, or in cross-referenced plans and other planning-related documents?



## 3.0 METHODOLOGY

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Chapter 3.0 details the research methods employed in this study. The contents of OPs from three mid-sized municipalities in Ontario were evaluated to gather information on age-friendly walkable environments. The three municipalities were selected based on their high population dependency ratios, and the public accessibility of their OPs online. Further details on the selected municipal case studies are discussed in the following section, followed by subsequent discussions on plan quality evaluation, indicator development, evaluation scores, and pre-testing.

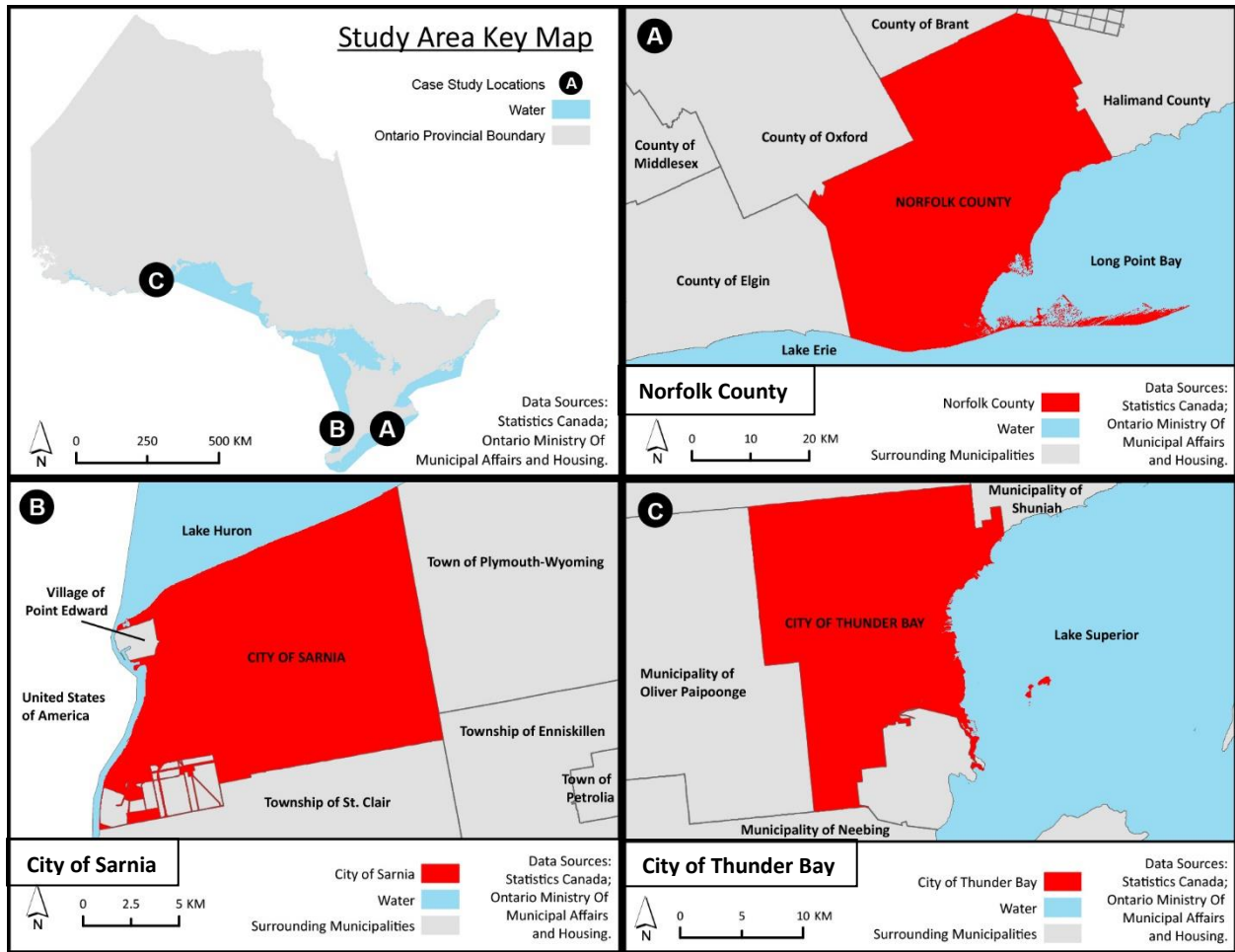
### 3.1 STUDY AREAS

Mid-sized municipalities in Ontario are the focus of this research project. Mid-sized cities have a greater fiscal capacity to undergo and implement age-friendly initiatives compared to smaller municipalities, in addition to having a greater ability to retain a sense of locality in their endeavors compared to larger municipalities (Biglieri & Hartt, 2017). Drawing on Seasons' (2003) methods, as cited in Hartt and Biglieri (2018), mid-sized municipalities are characterized as having a population between 50,000 to 500,000 people, compared to small and large municipalities with populations of 10,000 to 50,000 people and over 500,000 people, respectively.

The three mid-sized municipalities of Norfolk County, the City of Sarnia, and the City of Thunder Bay were selected as case studies to explore this research topic (Figure 4). These municipalities were selected because they are among the top five mid-sized municipalities in Ontario identified to experience a large increase in their older adult population over the next 15-20 years (Biglieri & Hartt, 2017). The OPs of these municipalities were also publicly accessible on each respective municipal website and are dated after 2007. The rationale behind using the year 2007 as a threshold for OP selection is because it is the year the WHO released its guide for creating age-friendly cities. The Norfolk County OP is dated January 1, 2020 as per an office consolidation, the City of Sarnia OP is dated July 15,

2016 upon approval by order of the Ontario Municipal Board (currently the Local Planning Appeal Tribunal), and the City of Thunder Bay OP is dated and March 11, 2019 following approval and modifications from the Ministry of Municipal Affairs and Housing. Table 4 provides a brief background of each of the three municipalities.

**Figure 4.** The geographic location of Norfolk County (A), City of Sarnia (B) and City of Thunder Bay (C) within the Province of Ontario.



**Table 4.** Background information for Norfolk County and the Cities of Sarnia and Thunder Bay.

Background Information	Norfolk County	City of Sarnia	City of Thunder Bay
Government Structure <sup>a</sup>	Single-tier	Two-tier (Lower-tier)	Single-tier
Geographic Area (Census Subdivision) <sup>b</sup>	1,607.55 km <sup>2</sup>	164.85 km <sup>2</sup>	328.36 km <sup>2</sup>
Total Population (2016; Census Subdivision) <sup>b</sup>	64,044	71,594	107,909
2013 Population Proportion of Older Adults <sup>c</sup>	20%	20%	18%
2036 Projected Population Proportion of Older Adult <sup>c</sup>	36%	32%	33%
2013-2036 Percent increase <sup>c</sup>	79%	60%	79%

<sup>a</sup> Data acquired from Association of Municipalities of Ontario (2020). <sup>b</sup> Data acquired from Statistics Canada, 2016 Census of Population. <sup>c</sup> Data acquired from Biglieri and Hartt (2017).

### 3.2 PLAN QUALITY EVALUATION

A plan quality evaluation was undertaken to assess each OP. As previously mentioned, the purpose of a plan quality evaluation is to measure “...the extent of the presence or absence of key components within a plan...” (Guyadeen et al., 2019, p. 122). Below are the following OP characteristics assessed in this study:

1. Fact base
2. Goals
3. Policies
4. Implementation
5. Monitoring and Evaluation
6. Public Participation
7. Inter-Organizational Coordination
8. Organization and Presentation

Table 5 builds on Table 3 from Section 2.3 by summarizing how these plan characteristics used in Guyadeen et al.'s (2019) study were adapted for this project.

**Table 5.** Plan characteristic application in Guyadeen et al.’s (2019) study and adaptation for this MRP.

Plan Characteristic	Definition According to Guyadeen et al. (2019)	Guyadeen et al.’s (2019) Application to Climate Change Plans	Adaptation for this MRP
Fact Base	<p>“[T]he empirical foundation for a plan and helps to rationalize and prioritize plan goals and policies” (p. 124).</p> <p>Fact base information is noted to be commonly found within the introduction of climate change plans.</p>	<p>Fact base addresses climate change awareness, climate change as a local issue, an emissions inventory, current and forecasted emissions trends, climate change impacts, and a vulnerability assessment (i.e., geographic areas, demographics and industries to be disproportionately impacted).</p>	<p>Fact base addresses an awareness of an aging population, population aging as an issue, current and forecasted population trends, the impacts of an aging population, the importance of planning for age-friendly communities, and the geographic distribution of older adults within a city.</p>
Goals	<p>“[A]mbition statements about desired future conditions derived from the fact base analysis and from community and stakeholder consultations” (p. 124).</p>	<p>Goals address climate change adaptation and mitigation.</p>	<p>Goals address quality of life, healthy communities, walkable environments, and age-friendly communities.</p>
Policies	<p>“[A]ction-oriented mechanisms used to guide public and private decision-making in order to achieve plan goals” (p. 124).</p>	<p>Policies address land use, transportation, waste, natural resources and water management, food and agriculture, as well as hazard reduction.</p>	<p>Policies address land use, built form, community development and/or services, city systems, infrastructure, and healthy communities.</p>
Implementation	<p>“[A] commitment to follow through on plan policies, including the steps needed to ensure that actions are carried out” (p. 124).</p>	<p>Implementation addresses actions taken to implement the plan, priorities, timelines, organizational responsibility, and financial resources.</p>	<p>Implementation addresses how age-friendly walkable environments will be implemented, if they are prioritized, timelines, and financial resources. Excludes organizational responsibility.</p>

Plan Characteristic	Definition According to Guyadeen et al. (2019)	Guyadeen et al.'s (2019) Application to Climate Change Plans	Adaptation for this MRP
Monitoring and Evaluation	"[A] systematic framework for continually tracking implementation activities and assessing the outcomes of those activities, [to] determine the extent to which plan goals are being achieved" (p. 124-125).	Monitoring and evaluation address organizational responsibility, timelines for plan updates, and plan progress measurement.	Monitoring and evaluation address on-going and post evaluation, and metrics related to age-friendly walkable environments. Excludes organizational responsibility and plan update timelines.
Public Participation	"[H]ow the public and various stakeholder groups were engaged in the plan creation process" (p. 125).	Public participation addresses the identification of engaged stakeholders and the public, a rationale for engagement, and the evolution of the plan.	Public participation addresses identification of engaged stakeholders and the public. Excludes a rationale for engagement and the evolution of the plan.
Inter-Organizational Coordination	"[T]he interrelated nature of the plan creation and implementation processes...This includes ensuring proper coordination among various organizations and agencies between the different levels of government and municipal departments... [as] policies are often associated with other plans and initiatives" (p. 125).	Inter-organizational coordination addresses connections to other local plans, as well as upper level government (i.e., regional, provincial, federal) plans.	Inter-organizational coordination addresses other local plans, regional plans (as applicable), and provincial or federal plans.
Organization and Presentation	"[T]he communicative aspects of a plan... A clearly organized and well-presented plan is readable, user-friendly, and, above all, relevant to the needs of the community" (p. 125).	Organization and presentation address the presence of an executive summary, table of contents, glossary and illustrations (i.e., diagrams).	Organization and presentation address the presence of a distinct table of contents section, defined terms, and maps and/or diagrams about age-friendly walkable environments. Excludes an executive summary.

*Note.* Exclusions based on *Planning Act, 1990* mandates (i.e., organizational responsibility, timeline for plan updates, rationale for engagement) and typical OP structure (i.e., no executive summary).

The plan quality evaluation involved a plan content analysis of the different sections of each of the selected OPs. A plan content analysis is “...a systematic process of measuring the characteristics of a plan using content analysis techniques” (Lyles & Stevens, 2014, p. 434). Content analysis refers to “the objective description of the content of information contained in a written document like a comprehensive plan, oral messages like radio and tele- vision broadcasts, and tape recordings of interviews” (Berke & Godschalk, 2009, p. 236). This is a preferred methodological approach by researchers because plans are publicly accessible, do not have apparent research ethics concerns, as well as have no requirements for travel and specialized software, among other factors (Lyles & Stevens, 2014).

If OPs cross-referenced other plans, guidelines, standards and documents within its text, then those documents were also included in the evaluation due to their inclusion in the OPs. Relevant cross-referenced documents were identified through their mention in applicable policies and OP sections as they relate to this project. For example, OP sections and policies pertaining to walkable environments, roads, transportation, and active transportation. Cross-referenced documents were reviewed when evaluating the *policies* plan characteristic for a better understanding of the policy support for walkable environments for older adults. Since multiple plans were utilized in this evaluation as they pertain to individual OPs, the order of review during the evaluation was as follows: the primary sections of OPs, followed by secondary plan sections (if applicable) and then cross-referenced documents. Table 6 outlines the documents reviewed for this project. Additionally, to gather information on who was engaged in the development of each OP, engagement and/or staff reports and related documentation were reviewed to evaluate the *public participation* plan characteristic.

**Table 6.** Documents reviewed in the evaluation of the three mid-sized cities.

Norfolk County	City of Sarnia	City of Thunder Bay <sup>a</sup>
Official Plan (includes Secondary Plan; 2009, 2020)	Official Plan (includes Secondary Plans; 2016)	Official Plan (2019a)
Design Criteria (2017)	Specification Standards (Divisions 4.3, 4.4, 4.5, 5.0; 2020a, 2020b, 2020c, 2020d)	Engineering and Development Standards (2019b)
Integrated Sustainable Master Plan (ISMP; 2016)	Transportation Master Plan (2014)	Transportation Master Plan (2019b)
	Lambton County Official Plan (2020)	Active Transportation Plan (2019a)
	Engagement Materials: Official Plan Staff Report (2014c) and June Consultation Presentation (2014a)	Transportation Demand Management Plan (2011)
		Urban Design and Landscape Guidelines (2012e)
		Image Route Guidelines (Sections 1-6; 2012b, 2012a, 2012c, 2012d, 2014)
		Engagement materials: the City's Infrastructure Discussion Paper (n.d.)

<sup>a</sup> The City of Thunder Bay OP also mentions the City's *Parks and Open Space Standards and Specifications*, however, it was deemed not as applicable to the project and therefore was not included in the review. Multi-use trails were assumed to be included and addressed in this document, but the OP specifically references the *Active Transportation Plan* for more information about multi-use trails.

### 3.3 DOCUMENT ACQUISITION

OPs (inclusive of secondary plans, text, schedules, etc.) were downloaded from municipal websites in September 2020. Cross-referenced documents were also downloaded from municipal websites, but if they could not be located, a request was placed with each municipality between November 2020 and January 2021. Engagement materials detailing engaged participants in the development of OPs were requested from each municipality and acquired (as available) between December 2020 and February 2021.

### 3.4 INDICATOR DEVELOPMENT

A set of indicators was developed to assess each OP's support (or lack thereof) for age-friendly walkable built environments across the eight plan characteristics listed in Section 3.2. Indicators were identified based on scholarly articles, scoping and systematic reviews, as well as non-profit and government documents<sup>2</sup>. Scoping and systematic reviews on the topic of age-friendly built environments were acquired through the researcher's own searches, assistance from a Ryerson University librarian, as well as those recommended by the researcher's supervisor. Reviews were used in this study because they are conducted by expert scholars, encompass multiple individual studies within a single review, and represent a systematic understanding of the literature. Grey literature (like non-profit and government documents) were selected to complement the findings from the academic literature and were also found through the researcher's own searches and resources passed along from the researcher's supervisor. The selected grey literature sources represent the official communications about age-friendly built environments from the global (WHO) and provincial (Ontario and British Columbia) scales, as well as communications on pedestrianized environments from the non-profit realm (8 80 cities and Street Plans).

*Policy* indicators were specifically informed by built environment features that facilitate or inhibit older adults' walking behaviours as identified through scoping and systematic reviews, non-profit, and government documents. Many *policy* indicators were identified based on the literature so related indicators were grouped into higher level indices. *Goal* indicators arose from learnings derived from the literature reviewed in Chapter 2.0. Additional indicators used to evaluate *fact base*,

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<sup>2</sup> This exercise included 10 scoping and systematic review articles (Barnett et al., 2017; Cerin et al., 2017; Fitzgerald & Caro, 2014; Hand et al., 2012; Kerr et al., 2012; Levasseur et al., 2015; Rosso et al., 2011; Salvo et al., 2018; Van Cauwenberg et al., 2011; Yen et al., 2009), an Open Streets Toolkit (8 80 Cities & Street Plans, n.d.), Ontario's age-friendly community planning guide (Ontario Seniors' Secretariat et al., 2019), British Columbia's age-friendly and disability-friendly planning guide (Mahaffey et al., 2010), and the WHO's (2007) age-friendly cities guide.



*implementation, monitoring and evaluation, public participation, inter-organizational coordination, and organization and presentation* were based on Guyadeen et al.'s (2019) study and were adapted to the context of this research project (Table 5). Ontario's *Finding the Right Fit* (Ontario Seniors' Secretariat et al., 2019) was also used to inform indicators relating to *monitoring and evaluation*. A total 87 indicators were used in this research project and sub-totals of indicators for each of the eight plan characteristics are summarized in Table 7.

**Table 7.** Total number of indicators per plan characteristic.

Plan Characteristic	Number of Indicators
Fact Base	7
Goals	4
Policies	61
Implementation	4
Monitoring and Evaluation	3
Public Participation	2
Inter-Organizational Coordination	3
Organization and Presentation	3
<b>Total</b>	<b>87</b>

*Note.* Not all indicators were applicable to every municipality's OP.

All indicators were organized into an evaluation table adapted from Guyadeen et al.'s (2019) plan quality evaluation. The full evaluation table used in this study includes all indices, indicators and accompanying descriptions, scores, and score descriptions. The evaluation table can be found in Appendix 1 to this MRP.

### **3.5 SCORING SYSTEM**

A numeric scoring system, similar to Guyadeen et al. (2019) was used to assess plans. All eight plan characteristics evaluated in this study were equally weighted.<sup>3</sup> A score range between 0 and 2 was used to evaluate plans based on walkable built environments and the mention of older adults. A score of 0 means no mention of older adults nor walkable built environment features, a score of 1 means a partial or implicit mention, and a score of 2 means the explicit mention of older adults and walkable built environment features. Please see Appendix 1 for specific descriptors of each score as they pertain to each specific indicator.

### **3.6 PRE-TEST EVALUATION**

A pre-test evaluation was conducted by the researcher prior to the formal evaluation, as recommended by the literature (Putt & Springer, 1989, as cited in Lyles & Stevens, 2014). For the purpose of this project, the pre-test was conducted using the Norfolk County OP (2020a) and involved the author testing for each of the indicators used in this study to identify and resolve any errors or miscommunications with respect to indicator descriptions and/or scoring schemes. Any necessary revisions made to improve the evaluation protocol were done so in consultation with the author's supervisor.

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<sup>3</sup> Guyadeen et al. (2019) assigned equal weights to all eight plan characteristics, but note that this may lead to some characteristics being undervalued while others are overvalued.

## 4.0 PLAN QUALITY EVALUATION FINDINGS AND DISCUSSION

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The findings arising from this MRP are reported in this chapter. Sections 4.1 to 4.8 provide a detailed report of each individual plan characteristic and supporting indicators, while Section 4.9 summarizes the findings from the entire chapter. A consolidated table of scores for all 87 indicators employed in this study can be found in Appendix 2.

The frequency of 0, 1 and 2 scores follow a similar pattern across all three municipalities (Figure 5). Scores of 1 were most frequent, followed by scores of 0 and then 2. The score frequency breakdown indicates that most of the support for age-friendly walkable environments in OPs (and applicable cross-referenced documents) is partial or implicit, with few direct addresses of older adults with respect to walking supportive environment features. The scores of Norfolk County and the City of Sarnia are more similar to one another than that of the City of Thunder Bay. Additionally, the City of Thunder Bay received the fewest scores of 0 and the most scores of 1 and 2, by comparison. This indicates greater support for walkable environments for older adults by the City of Thunder Bay compared to the other two cities.

**Figure 5.** The frequency of 0, 1 and 2 plan evaluation scores across mid-sized cities.

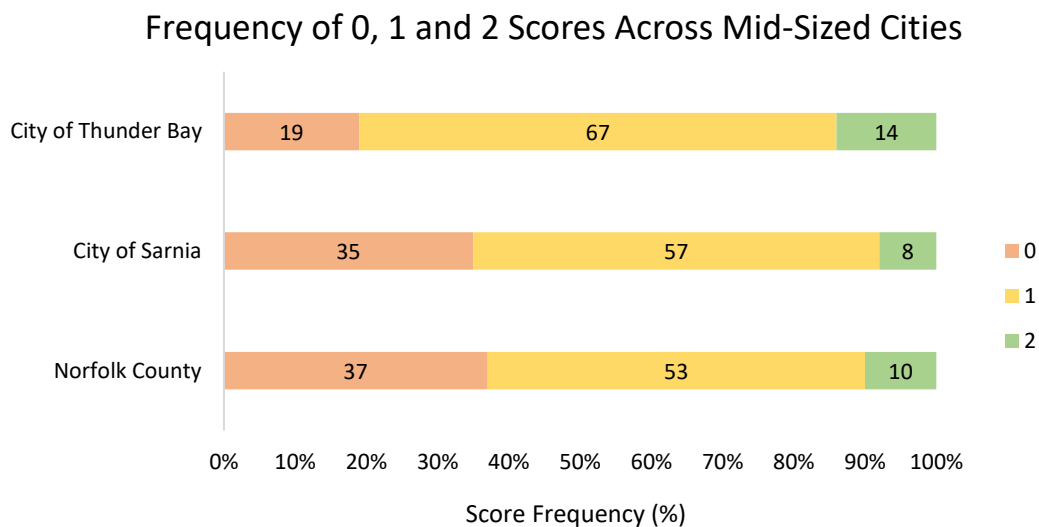


Table 8 summarizes the frequencies of plan quality evaluation scores for each plan characteristic and city. The overarching finding suggests that not all plan characteristics are addressed to the same extent across the three cities.

**Table 8.** Summary of plan quality evaluation score frequency (*f*; %) across all plan characteristics and municipalities.

Plan Characteristic	Norfolk County			City of Sarnia			City of Thunder Bay		
	<i>f</i> 0	<i>f</i> 1	<i>f</i> 2	<i>f</i> 0	<i>f</i> 1	<i>f</i> 2	<i>f</i> 0	<i>f</i> 1	<i>f</i> 2
Fact Base	86	14	0	86	14	0	29	14	57
Goals	25	75	0	25	75	0	0	75	25
Policies <sup>a</sup>	33	55	12	28	64*	8*	16	79*	5*
Implementation	50	50	0	50	50	0	50	50	0
Monitoring & Evaluation	67	33	0	67	33	0	67	33	0
Public Participation	-	-	-	100	0	0	0	0	100
Inter-Organizational Coordination	0	50	50	0	33	67	0	0	100
Organization & Presentation	0	100	0	0	100	0	0	100	0
Total Present Indicators <sup>b</sup>	63 (52/83)			65 (57/87)			81 (70/86)		

*Note.* Dashes mean no data available. Parentheses indicate the total number of present indicators, numerator, per total indicators for each city, denominator.

<sup>a</sup> Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score. <sup>b</sup> Norfolk County and the City of Thunder Bay have a smaller denominator than the City of Sarnia because they are single tier municipalities, thus rendering an indicator for the *inter-organizational coordination* plan characteristic not applicable, and therefore not included in the total. Additionally, engagement information could not be acquired for Norfolk County so the total was reduced by another two indicators (*public participation*). Lastly, one of the *policy* indicators was not applicable to Norfolk County further reducing the denominator by one.

## 4.1 FACT BASE

The *fact base* lays out the context or foundation for a plan and provides justification for *goals* and *policies* (Guyadeen et al., 2019). For the purpose of this study, the *fact base* was centred around population aging awareness and impacts, population trends, the importance of age-friendly planning and the geographic distribution of older adults within a city, to understand whether cities acknowledge this demographic shift and how it is contextualized in OPs.

Information about OP *fact base* was primarily found within the introductory sections of the plans, however, due to the differing organization styles, some information was found in other sections (ex. population forecast information was found in Section 6 of Norfolk County's OP (2020a)). OPs for Norfolk County (2020a) and the City of Sarnia (2016) both had one of seven *fact base* indicators present in their respective plans (Table 9). The Norfolk County OP (2020a) received a score of 1 for the inclusion of a population forecast for their population as a whole, while the City of Sarnia OP (2016) included its current population number; however, both did not specifically mention the older adult population. In contrast, the City of Thunder Bay's OP (2019a) received a higher *fact base* score, as five of the seven indicators were present (Table 9). The City's OP (2019a) identifies an awareness and understanding of the city's aging population and indicates the impacts of such a demographic shift (albeit, in terms of housing not walkable built environments, but impacts are still acknowledged), as well as the importance of planning for age-friendly communities. The City of Thunder Bay OP (2019a) does provide a current number for its population as a whole (approximated from the 2016 census), but does not provide a specific numeric population forecast; the City only broadly states the older adult population (individuals over the age of 60 according to the OP) will encompass a larger proportion of the city's future population. An indication of the distribution of older adults by geographic area across each municipality was not found in any of the three OPs. Ultimately, the City of Thunder Bay OP (2019a) provided a more comprehensive *fact base* compared to the Norfolk County OP (2020a) and the City of Sarnia OP (2016).

**Table 9.** *Fact base* indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Awareness	0	0	2
Understanding	0	0	2
Aging Population	0	1	1
Population Forecasts	1	0	0
Impacts	0	0	2
Importance	0	0	2
Distribution	0	0	0
		Frequency, count (%)	
0 Scores	6 (86)	6 (86)	2 (29)
1 Scores	1 (14)	1 (14)	1 (14)
2 Scores	0 (0)	0 (0)	4 (57)

#### 4.1.1 Discussion

*Fact base* findings illustrate a lack of awareness and regard for the issue of population aging in the OPs of Norfolk County (2020a) and City of Sarnia (2016), with each municipality scoring 0 except for one indicator each (out of seven), which only scored a 1. Neither city contextualizes this forecasted demographic shift into the foundation of its OP, suggesting a lack of knowledge and support, which is needed to adequately set the stage for the other components of the plan, like *goals* and *policies*. However, the City of Thunder Bay OP (2019a) indicates a clear awareness for the aging population issue in the city through an informed *fact base* (with four out of seven indicators getting scores of 2, one getting a score of 1, and only two with a score of 0) that can be used to further justify *goals* and *policies* to address this demographic shift. It is notable that population projections were not mentioned in two out of three OPs, and when it was mentioned in the other, older adults were not specified. This is problematic, especially considering these municipalities have the highest projected dependency ratios in

the province (Biglieri & Hartt, 2017). Further, none of the OPs included population distribution of older adults in their municipalities, which is a missed opportunity as understanding the concentration of older adults in particular neighbourhoods can help planners decide where to concentrate resources (Biglieri & Hartt, 2018).

## 4.2 GOALS

*Goals* outline the desired future state of a city and are derived from the *fact base* as well as consultations (Guyadeen et al., 2019). *Goals* about quality of life, healthy communities, walkable environments and age-friendly communities were evaluated in this study.

All three OPs address *goals* in one way or another, even if they are not conventionally addressed in a distinct section entitled “goals”. All indicators were present for the City of Thunder Bay (with one of four indicators scoring a 2) while Norfolk County and the City of Sarnia were both identified to have three of four indicators present (majority scores of 1; Table 11). The Norfolk County (2020a) and the City of Thunder Bay (2019a) OPs each contain a goal regarding quality of life, however, neither specifically mention older adults. The City of Thunder Bay’s (2019a) quality of life goal was derived from the “Crime Prevention Through Environmental Design” (CPTED) subsection included in the “Implementation” section of the OP, as CPTED principles have a goal of improving quality of life.<sup>4</sup> All three mid-sized cities include at least one goal within each respective OP regarding healthy communities, but there is no specific reference to older adults. A goal of walkable environments was also found in each OP. The Norfolk County OP (2020a) includes a goal addressing all modes of transportation that is further supported by an objective specifically referencing walking, while the OP of the Cities of Sarnia (2016)

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<sup>4</sup> Caution should be exercised when discussing CPTED as it has exclusionary underpinnings which can privilege some users and further disadvantage others (Cozens & Love, 2017). For example, installing barricades over air vents to prevent those who are homeless from sleeping on them (Cozens & Love, 2017).

and Thunder Bay (2019a) include a guiding principle regarding each City’s transportation system inclusive of walking. Once again, older adults were not specifically mentioned in terms of this goal, but the City of Thunder Bay’s OP (2019a) did include the phrase “all ages and abilities.” The Cities of Sarnia and Thunder Bay both include a guiding principle regarding age-friendly communities, but the City of Sarnia OP (2016) addresses age more generally, whereas the City of Thunder Bay OP (2019a) specifically mentions seniors (Table 10). Overall, the City of Thunder Bay OP (2019a) included more supportive goals for the development of age-friendly walkable environments compared to the OPs of Norfolk County (2020a) and City of Sarnia (2016).

**Table 10.** Age-friendly guiding principles from the Cities of Sarnia and Thunder Bay OPs.

City of Sarnia OP (2016)	City of Thunder Bay OP (2019a)
<p>“2.6 Improve Accessibility and Connectivity</p> <ul style="list-style-type: none"> <li>• ensure equitable access to resources and opportunities regardless of ethnicity, income level, age, gender, cultural background, religion or other characteristics” (p. 8)</li> </ul>	<p>“Age-Friendly: The City recognizes that community members of all ages, including seniors and children, are vital assets to the community. Appropriate and accessible services, programs, housing, transportation, and amenities are needed to strengthen residents’ opportunities to grow, thrive, and age in place.” (p. 5)</p>

**Table 11.** Goals indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Quality of Life	1	0	1
Healthy Communities	1	1	1
Walkable Environments	1	1	1
Age-Friendly Communities	0	1	2
		Frequency, count (%)	
0 Scores	1 (25)	1 (25)	0 (0)
1 Scores	3 (75)	3 (75)	3 (75)
2 Scores	0 (0)	0 (0)	1 (25)



### 4.2.1 Discussion

Findings from the evaluation of the *goals* plan characteristic suggest that the three municipalities do show support for a future state that promotes the *goals* that may contribute to walkable environments for older adults, despite not regularly specifying older adults (majority of scores at 1). However, findings also show that the City of Thunder Bay OP (2019a) and City of Sarnia OP (2016) address age inclusivity, with the City of Thunder Bay specifically mentioning seniors (score of 2), signifying that a desired future state for these cities is cognisant of age, with specific attention to older adults in Thunder Bay.

### 4.3 POLICIES

Guyadeen et al. (2019) define *policies* as actionable mechanisms that guide decision-making to achieve *goals*. Policies evaluated in this study focused on land use, built form, community development and/or services, city systems, infrastructure and healthy communities. A breadth of different *policy* indicators was identified for this evaluation and indicators were categorized into 16 indices (Table 12) which are further discussed in Sections 4.3.1-4.3.16.

**Table 12.** Policy indicator scores and score frequency (*f*; %) broken down by index.

Index	Norfolk County			City of Sarnia			City of Thunder Bay		
	<i>f</i> 0	<i>f</i> 1	<i>f</i> 2	<i>f</i> 0	<i>f</i> 1	<i>f</i> 2	<i>f</i> 0	<i>f</i> 1	<i>f</i> 2
Topography	100	0	0	0	100*	0	100	0	0
Walking Surface Conditions	25	50	25	25	75	0	25	75*	0
Street Design	48	35	17	44	52*	4*	13	83*	4*
Connectivity	0	100	0	0	100	0	0	100	0
Land Use	0	86	14	12.5	75*	12.5	12.5	75	12.5
Density	0	0	100	0	0	100	0	100	0
Blue Spaces	0	100	0	0	100	0	0	100	0
Green Spaces	0	100	0	0	100	0	0	100	0
Rest Areas	0	100	0	0	100	0	0	100	0

Index	Norfolk County			City of Sarnia			City of Thunder Bay		
	<i>f</i> 0	<i>f</i> 1	<i>f</i> 2	<i>f</i> 0	<i>f</i> 1	<i>f</i> 2	<i>f</i> 0	<i>f</i> 1	<i>f</i> 2
Amenities	50	50	0	50	50	0	25	75*	0
Wayfinding	50	50	0	50	50	0	50	50	0
Weather	67	33	0	0	100*	0	0	67*	33*
Aesthetics	0	100	0	0	100	0	0	100*	0
Personal Safety	67	33	0	67	33	0	67	33	0
Cleanliness	0	100	0	0	100	0	0	100*	0
Pollution	0	100	0	0	0	100	0	100	0
Total Present Policy Indicators <sup>a</sup>	67 (40/60)			72 (44/61)			84 (51/61)		

Note. Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score. Parentheses indicate the total number of present indicators, numerator, per total indicators for each city, denominator.

<sup>a</sup> Norfolk County has a smaller denominator than the Cities of Sarnia and Thunder Bay because one of the land use indicators was not applicable to the County reducing the denominator by one.

#### 4.3.1 Topography

The only acknowledgement of topography in terms of walkable environments was found within the City of Sarnia's *Transportation Master Plan* (2014), which was cross-referenced within the OP (2016). The *Transportation Master Plan* (2014) notes the city's topography is largely flat implying ease of travel, however, this finding did not include a specific mention of older adults, and as a result received a score of 1 (Table 13). The topography index was not addressed by the other two cities.

**Table 13.** Topography indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Topography	0	1*	0
	Frequency, count (%)		
0 Scores	1 (100)	0 (0)	1 (100)
1 Scores	0 (0)	1 (100)	0 (0)
2 Scores	0 (0)	0 (0)	0 (0)

Note. Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score.

### 4.3.2 Walking Surface Conditions

The walking surface conditions index consists of indicators for well maintained sidewalks and/or pavements and paths and/or trails, as well as surface repair and obstructions to walking. The majority of scores for this index were 1, with Norfolk County receiving the only score of 2 for one of the four indicators (Table 14). The Norfolk County OP (2020a) includes a policy that indicates the presence of well maintained sidewalks and/or pavements as well as trails and/or paths as the policy sets out to ensure public spaces, which may include sidewalks, pavements, trails and/or paths, are accessible and should be maintained and improved accordingly. This policy specifically targets persons with a disability, but does not also give reference to older adults, and as a result a score of 1 was granted. Scores of 1 were also given to the Cities of Sarnia and Thunder Bay since older adults were not explicitly mentioned in each OP as well. The City of Sarnia OP (2016) mentions maintaining the road network inclusive of sidewalks and a specific trail which connects multiple areas in the city, while the Thunder Bay OP (2019a) also mentions sidewalk maintenance, in addition to the City's *Active Transportation Plan* (2019a), which is cross-referenced in the OP (2019a), mentioning that multi-use trails are maintained when they replace sidewalks located along boulevards. Out of the three OPs, Norfolk County (2020a) and the City of Sarnia (2016) also include at least one policy mentioning the improvement or rehabilitation of walking environments (ex. sidewalks). Furthermore, the Norfolk County OP (2020a) policy is specific to downtown areas, but does address older adults, and received a score of 2. No policy addressing obstacles for older adults who walk was identified in the OPs of Norfolk County (2020a) and the City of Sarnia (2016). Within the City of Thunder Bay's *Urban Design and Landscape Guidelines* (2012e), that are cross-referenced in the OP (2019a), there is a performance standard pertaining to downtown areas and main streets whereby pedestrian routes should be free from obstructions, but a score of 1 was given since there was no mention of older adults; the performance standard referenced accommodating individuals using mobility aids. Overall, the walking surface conditions index was

represented in all three cities (with mostly scores of 1), but Norfolk County was the only mid-sized city to indicate policy support for older adults in at least one of the indicators (score of 2). Interestingly, obstacles were only addressed by one of the three cities.

**Table 14.** Walking surface conditions indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Well Maintained Sidewalks/ Pavements	1	1	1
Well Maintained Paths/Trails	1	1	1*
Repair	2	1	0
Obstacles	0	0	1*
	Frequency, count (%)		
0 Scores	1 (25)	1 (25)	1 (25)
1 Scores	2 (50)	3 (75)	3 (75)
2 Scores	1 (25)	0 (0)	0 (0)

*Note.* Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score.

**4.3.3 Street Design**

The street design index spans a breadth of indicators covering built environment elements such as complete streets, street trees, short blocks, sidewalks, traffic, rights-of-way, crossing environments, curbs, ramps, stairs and hand rails. The street design index primarily resulted in scores of 0 and 1 (scores of 0 were more frequent for Norfolk County and the City of Sarnia), with infrequent scores of 2 across all three cities (Table 15). All three OPs include a policy about designing roads to be complete streets. Each OP received a score of 1 for this indicator since each did not explicitly state older adults in the policy, but rather used language such as “all users” (Norfolk County, 2020a) and language similar to “all ages and abilities” (City of Sarnia, 2016; City of Thunder Bay, 2019a) suggesting their implicit acknowledgement.

The three OPs also received a score of 1 for their inclusion of at least one policy regarding the provision (City of Thunder Bay, 2019a), and management and protection (City of Sarnia, 2016; Norfolk County, 2020a) of street trees, as older adults were not acknowledged in such policies. The Norfolk County OP (2020a) policy on street trees is specific to urban areas, while Cities of Sarnia (2016) and Thunder Bay (2019a) OPs discuss street trees along urban and rural streets. The presence of a policy addressing short block lengths also resulted in scores of 1, where applicable, as older adults were not mentioned in identified policies. Norfolk County's "Lakeshore Special Policy Area Secondary Plan" (2009) contains a policy that encourages shorter blocks to foster variety in routes and walking efficiency, and the *Urban Design and Landscape Guidelines* (2012e) that are cross-referenced in the City of Thunder Bay OP (2019a) include a performance standard addressing block layout which supports shorter block lengths and specifies an average length of 200 metres. No mention of short blocks was found within the City of Sarnia OP (2016).

Scores of 1 were granted to all three OPs regarding the presence of sidewalks. The OPs of Norfolk County (2020a) and Thunder Bay (2019a) both direct that sidewalks are to be provided on both sides of arterial and collector roads, and at least one side of local roads. Norfolk County (2020a) may require sidewalks on both sides of local roads depending on high pedestrian traffic routes or safety concerns, while the City of Thunder Bay (2019a) generally tries to provide for them on both sides. The City of Sarnia OP (2016) directs sidewalks be provided in the urban area to assure a comfortable and safe environment and minimize distances to destinations. Sidewalk width was addressed by the Cities of Sarnia and Thunder Bay, and both received scores of 1. Wider sidewalks in areas of higher pedestrian traffic volumes are to be considered by the City of Sarnia in growth areas and in close proximity to major institutions as set out in the OP (2016), and are preferred by the City of Thunder Bay in downtown areas and along main streets as set out in the *Urban Design and Landscape Guidelines* (2012e) that are cross-

referenced in the City's OP (2019a). Results for sidewalk presence and width predominantly pertained to urban areas and did not address older adults (scores of 1).

The City of Sarnia (2016) and City of Thunder Bay (2019a) OPs both received scores of 1 for indicators relating to traffic volume and speeding. The City of Sarnia OP (2016) identifies that through traffic is not accommodated on local roads implying limited traffic volume on these roads, and the City's *Transportation Master Plan* (2014), which was cross-referenced within the OP (2016), also includes an array of traffic calming measures which could be used to address speeding. The City of Thunder Bay OP (2019a) includes a policy about monitoring traffic volumes for pedestrians, cyclists and motor vehicles, as well as a policy supporting traffic calming to reduce traffic speeds. The Norfolk County OP (2020a) also contains a policy about traffic calming. The policy addresses the implementation of traffic calming measures as guided by the *Canadian Guide to neighbourhood Traffic Calming* (Transportation Association of Canada, 2018), which addresses both speed and traffic volume on roads entering neighbourhoods. Norfolk County's OP (2020a) received scores of 2, as it was the only plan to address older adults in some capacity for both traffic speed and volume by specifying traffic calming measures may be implemented near nursing homes.

Indicators for clearly defined rights-of-way and separated travel lanes primarily resulted in scores of 1. The City of Sarnia OP (2016) directs the use of boulevards to separate sidewalks from the road, where possible, thus contributing to a more clearly defined right-of-way. The City of Thunder Bay's *Urban Design and Landscape Guidelines* (2012e) that are cross-referenced in the City's OP (2019a) also include a performance standard about boulevard design which specifies the use of particular paving to illustrate the sidewalk as a place of pedestrian priority. Dedicated cycling facilities were addressed by each of the three municipalities through the Norfolk County "Lakeshore Special Policy Area Secondary Plan" (2009), as well as the City of Sarnia's *Transportation Master Plan* (2014) and City of Thunder Bay's *Active Transportation Plan* (2019a), both cross-referenced in each respective OP (City of Sarnia, 2016;

City of Thunder Bay, 2019a). Although cyclists are not pedestrians, cyclist separation may result in more dedicated travel spaces for pedestrians. The City of Sarnia was the only mid-sized city to receive a score of 2 for this indicator as it makes note of older adults in its *Transportation Master Plan (2014)* by acknowledging the safety concerns when pedestrians and cyclists share travel spaces (i.e., sidewalks), by specifically mentioning seniors. No policy regarding pedestrian-only streets was found in any of the three OPs.

Indicators pertaining to crossing design were also included in the street design index. At least one policy was identified for each of the three OPs (including “Secondary Plan 2” for the City of Sarnia (2016)) regarding the presence of street crossings, but there was no mention of older adults, resulting in scores of 1. The only presence of a policy addressing frequent street crossings was identified in the City of Thunder Bay *Active Transportation Plan (2019a)* that was cross-referenced in the City’s OP (2019a). A score of 1 was granted as there is an action area within the *Active Transportation Plan (2019a)* that addresses crosswalks through the exploration and intent of adding more crosswalks along the City’s pedestrian priority and neighbourhood greenway corridors, but there was no mention of older adults. Additionally, scores of 1 were primarily given to each mid-sized city for the presence of signalized crosswalks. The City of Sarnia’s *Specification Standards (“Division 5.0”;* 2020d), cross-referenced within the City’s OP (2016), includes a drawing that addresses the design of pedestrian crossings at signalized intersections. The Norfolk County “Lakeshore Special Policy Area Secondary Plan” (2009) and the City of Thunder Bay’s *Urban Design and Landscape Guidelines (2012e)*, that are cross-referenced in the City’s OP (2019a), also mention crosswalks having signals, in the context of crossing timings. Moreover, indications of safe and sufficient crossing times were found in the aforementioned Norfolk County and the City of Thunder Bay plans. Norfolk County received scores of 2 for the policy identified to satisfy indicators for signalized crosswalks and crossing times, as it pertained to supporting the development of accommodations for seniors (Norfolk County, 2009), whereas the City of Thunder Bay received scores of

1 since older adults were not addressed. The presence of visual and auditory crossing cues as well as traffic islands for safe crossings were only found to be present within the City of Thunder Bay's *Urban Design and Landscape Guidelines* (2012e). The presence of visual and auditory crossing cues received scores of 1, while the presence of traffic islands received a score of 2. Traffic islands are described to act as rest stops for seniors, as well as individuals who use a mobility aid (Brook McIlroy, 2012e). No policy regarding pedestrian bridges to aid crossing the street was found in any of the three OPs. The presence of indicators related to crossings were predominantly found within the Lakeshore Secondary Plan area for Norfolk County (2009) and within urban areas such as downtowns and main streets for the City of Thunder Bay (*Urban Design and Landscape Guidelines*; Brook McIlroy, 2012e).

Street design indicators related to curbs were found for the Cities of Sarnia and Thunder Bay, and resulted in scores of 1 for each city. The City of Thunder Bay *Active Transportation Plan* (2019a), cross-referenced in the City's OP (2019a), encourages the City to undertake reviews of intersections to improve safety. Two features which may be considered for improvement are curb extensions, as well as constructing curb drops at intersections along pedestrian priority and neighbourhood greenway corridors where none previously existed (IBI Group, 2019a). The City of Sarnia OP (2016) directs street enhancements, inclusive of curb ramps, to be a part of development and redevelopment projects. Additionally, the City's *Transportation Master Plan* (2014), which was cross-referenced within the OP (2016), includes the presence of curb extensions as listed as a traffic calming tool.

Additional indicators included in the street design index are ramps, stairs and hand rails. The Norfolk County OP (2020a) includes a policy that addresses ramps as an accessibility element to be reviewed in site plan applications regarding community design, but specific mention is solely made to persons with disabilities, rather than also mentioning older adults. "Division 4.3" of the City of Sarnia's *Specification Standards* (2020a), cross-referenced in the OP (2016), does address the construction of wheelchair ramps, but does not mention older adults, and as a result was granted a score of 1. The City



of Thunder Bay was the only municipality of the three to address spaces with stairs and the inclusion of hand rails, but did not mention older adults and received scores of 1 accordingly. The City's *Engineering and Development Standards* (2019b) that are cross-referenced in the OP (2019a) direct that hand rails are to be installed along both sides of stairs.

Overall, many of the street design indicators were addressed by the City of Thunder Bay, while just over half were addressed by Norfolk County and the City of Sarnia. A majority of indicators were identified to be present in at least one of the three cities' plans, but greater policy support could exist for crossing environments, particularly for the City of Sarnia (majority scores of 0), as well as curbs, particularly for Norfolk County (all scores of 0). Additionally, Norfolk County mentioned older adults in more street design-related policies than the other two cities.

**Table 15.** Street design indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Sidewalk Presence	1	1	1
Wide Sidewalks	0	1	1*
Stairs	0	0	1*
Curbs Cuts	0	1	1*
Curb Extensions	0	1*	1*
Ramps	1	1*	0
Hand Rails	0	0	1*
Traffic Volume	2	1	1
Presence of Street Crossings	1	1	1
Frequent Street Crossings	0	0	1*
Crosswalk Lights/Signals	2	1*	1*

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Crossing Times	2	0	1*
Short Blocks	1	0	1*
Traffic Islands	0	0	2*
Pedestrian Bridges	0	0	0
Visual Crossing Cues	0	0	1*
Auditory Crossing Cues	0	0	1*
Speeding	2	1*	1
Rights-of-Way	1	1	1*
Separated Street/ Traffic Lanes	1	2*	1*
Pedestrian-Only Streets	0	0	0
Street Trees	1	1	1
Complete Streets	1	1	1
		Frequency, count (%)	
0 Scores	11 (48)	10 (44)	3 (13)
1 Scores	8 (35)	12 (52)	19 (83)
2 Scores	4 (17)	1 (4)	1 (4)

*Note.* Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score.

#### 4.3.4 Connectivity

The connectivity index includes both street and trail connectivity indicators. All three OPs address all connectivity indicators, but only scores of 1 were given since there was no mention of older adults (Table 16). The Cities of Sarnia (2016) and Thunder Bay (2019a) OPs address street connectivity through the inclusion of a policy focused on a connected road network for all modes of transportation, while the Norfolk County OP (2020a) includes an area-specific policy for the Port Dover Waterfront area specifically geared towards street and sidewalk connectivity for pedestrians. Each OP also includes at

least one policy addressing trail connectivity, through interconnecting existing walking trails (Norfolk County, 2020a), encouraging the creation of a robust trails network (including walking trails) in the urban area (City of Sarnia, 2016), as well as encouraging trail linkages between different land uses (City of Thunder Bay, 2019a). Since there was no explicit mention of older adults in the policies where street and trail connectivity indicators were identified to be present, each OP received scores of 1 for each respective indicator. Overall, the connectivity index was covered in all three OPs, aside from there not being explicit mentions of older adults in the identified policies (scores of 1).

**Table 16.** Connectivity indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Street Connectivity	1	1	1
Trail Connectivity	1	1	1
	Frequency, count (%)		
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	2 (100)	2 (100)	2 (100)
2 Scores	0 (0)	0 (0)	0 (0)

**4.3.5 Land Use**

The land use index encompasses indicators related to land use mix, proximity to trails and transit stops, as well as proximity to destinations. The evaluation of the land use index primarily resulted in scores of 1 across the three cities (Table 17). At least one policy was identified regarding planning for mixed-use areas that are walkable (City of Thunder Bay, 2019a; Norfolk County, 2020a) or supportive of active transportation (City of Sarnia, 2016), however there was no mention of older adults (scores of 1). The OPs of Norfolk County (2020a) and Thunder Bay (2019a) include at least one policy describing trails being located within or between different land uses suggesting some degree of proximity to trails from

the listed uses (ex. residential, recreational, commercial, etc.). The City of Sarnia OP “Schedule A” (2014b) illustrates proposed land uses for Secondary Plan Area 1 which includes a Natural Trail use and a Trail Extension use adjacent to multiple residential uses within and beyond the Secondary Plan Area 1 boundary implying proximity. Since older adults were not addressed in policies, each city received a score of 1. Moreover, at least one policy about proximity to transit was found in the OPs of the Cities of Sarnia (2016) and Thunder Bay (2019a) regarding transit stops being in walking distance within urban areas, but there was no mention of older adults in either City’s OP (scores of 1). No such policy was found within Norfolk County’s OP (2020a) since no available transit exists in the rural municipality due to the size and distance between communities. As a result, this indicator was noted to be not applicable (N/A) to the County as opposed to receiving a score of 0. However, it is noteworthy to acknowledge that the reality of a non-existent public transit system in the municipality is problematic.

Indicators pertaining to destinations were also included in the land use index. All three OPs include at least one policy about accessing destinations (in general), but the OPs of Norfolk County (2020a) and Thunder Bay (2019a) specifically address older adults, and as a result, received scores of 2. At least one policy regarding commercial destinations was also identified within urban areas of all three OPs, but in this case, there was no specific mention of older adults (scores of 1). A policy about malls was not found in the Thunder Bay OP (2019a), however, malls are mentioned within the Norfolk County OP (2020a) and the City of Sarnia *Transportation Master Plan* (2014) which is cross-referenced with the City’s OP (2016). Norfolk County and City of Sarnia OP Schedules and Maps (City of Sarnia, 2014b; Norfolk County, 2020b) illustrate land use designations pertaining to malls to be adjacent to residential uses potentially suggesting malls to be in close proximity to dwellings, but there is no explicit indication as to whether residents of these areas are older adults (scores of 1). In terms of food stores, the Norfolk County OP (2020a) encourages them in underserved areas where they are walkable from residential areas, but does not refer to older adults (score of 1). The City of Thunder Bay OP (2019a) directs smaller

size food stores to be permitted within residential areas suggesting a level of proximity, but the OP makes no explicit mention of older adults (score of 1). At least one policy on proximity to recreational destinations was found in all OPs, but the Norfolk County (2020a) and City of Thunder Bay (2019a) OPs generally state “pedestrians” as opposed to specifying older adults in its policy (scores of 1). However, the City of Sarnia OP (2016) encourages access to community services and facilities by way of active transportation, and a different but related policy further notes that new or improved services or facilities may be based on demographic changes, and specifically acknowledges seniors (score of 2).

Overall, the OPs of the three mid-sized municipalities covered a majority of the land use indicators. Although older adults were not explicitly addressed in many indicators (each municipality only had one score of 2 out of eight indicators – seven indicators for Norfolk County), each municipality included at least one policy about destinations that specifically references older adults (generally speaking for Norfolk County and the City of Thunder Bay and specifically in terms of recreational destinations for the City of Sarnia; scores of 2).

**Table 17.** Land use indicator scores and score frequency.

Indicator	Norfolk County	City of Sarnia	City of Thunder Bay
	Scores		
Mixed Use	1	1	1
Paths/Trails	1	1	1
Transit Stops	N/A	1	1
Destinations (General)	2	1	2
Commercial Destinations	1	1	1
Malls	1	1*	0
Food Stores	1	0	1
Recreational Destinations	1	2	1

	Norfolk County	City of Sarnia	City of Thunder Bay
	Frequency, count (%)		
0 Scores	0 (0)	1 (12.5)	1 (12.5)
1 Scores	6 (86)	6 (75)	6 (75)
2 Scores	1 (14)	1 (12.5)	1 (12.5)

*Note.* Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score. N/A means not applicable.

#### 4.3.6 Density

Evaluations of density in this research project centre on residential density. All three OPs exhibit the presence of at least one policy regarding higher order residential densities (medium and high), with a score of 1 given to the City of Thunder Bay OP (2019a) and scores of 2 given to the Norfolk County OP (2020a) and the City of Sarnia OP (2016; Table 18). The OPs of Norfolk County (2020a) and the City Sarnia (2016) received scores of 2 by addressing older adults through the specific mention of seniors' homes and related housing (ex. nursing homes) as well as seniors' apartments, respectively. Identified policies satisfying the residential density indicator were predominantly found in urban areas and downtowns. Overall, the density index was addressed by all three OPs, and especially well for the Norfolk County (2020a) and the City Sarnia (2016) OPs which specifically address older adults in its policy (scores of 2).

**Table 18.** Density indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Residential Density	2	2	1
	Frequency, count (%)		
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	0 (0)	0 (0)	1 (100)
2 Scores	1 (100)	1 (100)	0 (0)

### 4.3.7 Blue Spaces

The blue spaces index exclusively resulted in scores of 1 across all cities (Table 19). All OPs include a policy which addresses public access to the waterfront or lakeshore, and received a score of 1 due to lack of acknowledgement of older adults. The City of Thunder Bay OP (2019a) encourages trail connections between Strategic Core Areas and the waterfront, the City of Sarnia OP (2016) commits to maintaining a public walkway along the water and provide pedestrian access to the waterfront, and the Norfolk County “Lakeshore Special Policy Area Secondary Plan” (2009) includes at least one policy that strives to bring Ontario’s South Coast Scenic Route, which is intended to consist of walking trails, in closer proximity to the lakeshore. Overall, the blue spaces index was covered in all three OPs, but there were no explicit mentions of older adults in the identified policies (all scores of 1).

**Table 19.** Blue spaces indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Blue Spaces	1	1	1
	Frequency, count (%)		
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	1 (100)	1 (100)	1 (100)
2 Scores	0 (0)	0 (0)	0 (0)

### 4.3.8 Green Spaces

The green spaces index consists of indicators for parks and gardens. All three OPs address both green spaces indicators, but only scores of 1 were given (Table 20). The OPs indicated that parks are to be accessible by walking from neighbourhoods (ex. within 800 metres or a 10 minute walk for neighbourhood parks; Norfolk County, 2020a), pedestrian infrastructure is provided in urban areas to minimize the walking distance to parks (City of Sarnia, 2016), and that parks are planned to be located

throughout the city and in support of active transportation (City of Thunder Bay, 2019a). Two OPs also include at least one policy on gardens, such as non-commercial and botanical gardens potentially being permitted as a secondary use in parks (City of Sarnia, 2016), and community gardens that provide for recreational opportunities (Norfolk County, 2020a), which may include walking. The City of Thunder Bay OP (2019a) includes a policy about incorporating urban agriculture (includes the growing of flowers among other products) into public spaces such as parks and boulevards, which could potentially beautify streetscapes and make public spaces such as parks more attractive and streets more supportive of walking. Since there was no explicit mention of older adults in the policies where green space indicators were identified to be present, each OP received scores of 1 for parks and gardens. Overall, both green spaces indicators were addressed in all three OPs, however there was no explicit mentions of older adults resulting in scores of 1 only.

**Table 20.** Green spaces indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Parks	1	1	1
Gardens	1	1	1
	Frequency, count (%)		
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	2 (100)	2 (100)	2 (100)
2 Scores	0 (0)	0 (0)	0 (0)

#### 4.3.9 Rest Areas and Amenities

The rest areas index includes a more general rest areas indicator, while the amenities index includes indicators for benches and/or public seating, drinking fountains, access to public toilets and accessible public toilets. The rest areas index was dominated by scores of 1 across all indicators and



cities (Table 21), while the scores for amenities consisted of 0 and 1 (Table 22). Rest areas, more generally speaking, were present in at least one policy in two of the three OPs included in this study. The City of Sarnia OP (2016) mentions the incorporation of rest areas in green spaces with stormwater management ponds and the City of Thunder Bay OP (2019a) encourages new developments to provide rest areas for pedestrians. The Norfolk County OP (2020a) includes at least one policy about benches more specifically, which was used to satisfy the rest areas and benches/public seating indicators. A policy addressing benches was also identified within the City of Sarnia OP (2016), and benches are also present in a performance standard for street furniture within the context of downtown and main street areas within the City of Thunder Bay's *Urban Design and Landscape Guidelines* (2012e), that are cross-referenced in the OP (2019a). The City's *Urban Design and Landscape Guidelines* (2012e) also include a performance standard regarding parks and open space addressing the provision of drinking fountains and public washrooms in urban areas. Public washrooms are also included in at least one policy of the OPs of Norfolk County (2020a) and the City of Sarnia (2016), specifically in tourism areas (ex. the lakeshore and downtown areas) and in waterfront areas, respectively; no presence of drinking fountains was found in the OP of either municipality (scores of 0). Additionally, the accessibility of public washrooms was not mentioned by any of the three municipalities (all scores of 0). Lastly, there was no specific mention of older adults in the identified policies where rest areas, benches, public washrooms and drinking fountain indicators were identified to be present, resulting in scores of 1. Overall, the rest areas and amenities indices were represented across the three cities, but more informed policies regarding the provision of drinking fountains and accessible public toilets could be created, as well as including more direct references to older adults since there were no scores of 2 within these indices.

**Table 21.** Rest areas indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Rest Areas	1	1	1
	Frequency, count (%)		
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	1 (100)	1 (100)	1 (100)
2 Scores	0 (0)	0 (0)	0 (0)

**Table 22.** Amenities indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Benches/Public Seating	1	1	1*
Drinking Fountains	0	0	1*
Access to Public Toilets	1	1	1*
Accessible Public Toilets	0	0	0
	Frequency, count (%)		
0 Scores	2 (50)	2 (50)	1 (25)
1 Scores	2 (50)	2 (50)	3 (75)
2 Scores	0 (0)	0 (0)	0 (0)

*Note.* Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score.

#### 4.3.10 Wayfinding

The wayfinding index includes indicators for street and public toilet signage. The wayfinding index resulted in scores of 0 and 1 for all cities (Table 23). The presence of street signage was identified in at least one policy across all three OPs. Norfolk County's OP (2020a) mentions street signage within its downtown areas with a focus on visitors to the County, while the policies identified in the Cities of Sarnia (2016) and Thunder Bay (2019a) OPs were not identified to be area-specific. No policy was

identified in any of the three OPs regarding signage for public washrooms (all scores of 0). Additionally, there was no explicit mention of older adults regarding wayfinding and signage policies, resulting in the scores of 1. Ultimately, the wayfinding index could be better covered in each of the OPs as there was only policy support for street signage (all scores of 1) and no signage pertaining to public toilets (all scores of 0), as well as no direct reference made to older adults.

**Table 23.** Wayfinding indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Street Signage	1	1	1
Public Toilet Signage	0	0	0
		Frequency, count (%)	
0 Scores	1 (50)	1 (50)	1 (50)
1 Scores	1 (50)	1 (50)	1 (50)
2 Scores	0 (0)	0 (0)	0 (0)

**4.3.11 Weather**

The weather index encompasses indicators for adverse conditions, snow and/or ice clearance, and shade. The weather index primarily resulted in scores of 1 across the three cities, with the City of Thunder Bay receiving the only score of 2 for one out of three indicators (Table 24). No policy was found regarding adverse weather conditions for older adults who walk in Norfolk County’s OP (2020a). The OP for the City of Sarnia (2016) includes at least one policy encouraging pedestrians are protected from the weather (ex. rain), and the *Urban Design and Landscape Guidelines* (2012e) cross-referenced in the City of Thunder Bay OP (2019a) includes a performance standard dedicated to year round seasonal design of the private realm to provide shelter for pedestrians. In both cases, there was no explicit mention of how weather protective environments are supportive for older adults who walk, resulting in scores of 1.

Additionally, snow and/or ice clearance was also identified in cross-referenced plans for the latter two cities, but not Norfolk County. The City of Sarnia’s *Transportation Master Plan* (2014) mentions that streets and trails in which pedestrians may travel be maintained so that they are free of snow and ice. The City of Thunder Bay *Active Transportation Plan* (2019a) specifically addresses older adults by identifying that routes containing senior facilities will be prioritized for snow clearance under specified conditions, and as a result received a score of 2. Lastly, all three municipalities received a score of 1 for their address of shade since no connection was made to older adults. Shade was identified to be an environmental feature to encourage active transportation and provide a comfortable pedestrian environment in the OPs for Norfolk County (2020a) and the City of Sarnia (2016), as well as the City of Thunder Bay *Image Route Guidelines* (2012b) that are cross-referenced within the OP (2019a). Overall, the Cities of Sarnia and Thunder Bay address weather-related built environment features more than Norfolk County (majority of scores of 0).

**Table 24.** Weather indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Adverse Conditions	0	1	1*
Snow/Ice Clearance	0	1*	2*
Shade	1	1	1*
		Frequency, count (%)	
0 Scores	2 (67)	0 (0)	0 (0)
1 Scores	1 (33)	3 (100)	2 (67)
2 Scores	0 (0)	0 (0)	1 (33)

*Note.* Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score.

#### 4.3.12 Aesthetics

The aesthetics index contains indicators for nice scenery, architecture, and monuments. This index was dominated by scores of 1 across all three indicators for all three cities (Table 25). The presence of scenic areas and views was identified in OP policies about lakeshore and waterfront areas (City of Sarnia, 2016; Norfolk County, 2020a) and views at a street intersection and park (City of Thunder Bay, 2019a). The presence of scenic areas or views in each of the OPs received scores of 1 as there was no accompanied regard for older adults. In terms of architecture, the Norfolk County OP (2020a) identifies that the historical architecture of the downtowns and main streets, with a focus on the pedestrian scale and streetscape, is to be protected and enhanced. The City of Thunder Bay's *Urban Design and Landscape Guidelines* (2012e), that are cross-referenced in the OP (2019a), also mention how the architecture of buildings along main streets contribute to aesthetic appeal, define the streetscape, and foster an environment that is human scaled. The City of Sarnia's "Secondary Plan 1" (2016) includes a policy which encourages the use of architecture to create streetscapes that have aesthetic appeal, however it should be noted that this is a Secondary Plan policy and does not apply city-wide. Lastly, at least one policy regarding monuments was also present the Norfolk County OP (2020a), which encourages the preservation of built heritage resources, and the City of Sarnia OP (2016), which supports the protection and conservation of monuments through the designation of built heritage resources. The *Image Route Guidelines* (2012a) for the City of Thunder Bay are cross-referenced within its OP (2019a) and direct "monumental art" (p. 54) along Arthur Street in close proximity to the South Core area. Overall, Norfolk County and the Cities of Sarnia and Thunder Bay suggest policy support for aesthetic environments, but do not reference older adults (all received scores of 1).

**Table 25.** Aesthetics indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Nice Scenery	1	1	1
Architecture	1	1	1*
Monuments	1	1	1*
	Frequency, count (%)		
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	3 (100)	3 (100)	3 (100)
2 Scores	0 (0)	0 (0)	0 (0)

*Note.* Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score.

#### 4.3.13 Personal Safety

The personal safety index includes indicators for lighting, vandalism, and vacant lots. Scores of 0 made up the majority of plan quality evaluation scores for this index (two out of the three indicators), with scores of 1 encompassing the remainder (one out of the three indicators; Table 26). At least one policy on lighting was identified in each of the OPs included in this study. Lighting was discussed to be pedestrian in scale (City of Thunder Bay, 2019a; Norfolk County, 2020a), improve streetscapes (City of Sarnia, 2016; Norfolk County, 2020a) and encourage active transportation (Norfolk County, 2020a), however, there was no explicit mention of older adults. As a result, each OP received a score of 1 for lighting. No policy regarding vandalism or vacant lots was identified in any of the three OPs (all scores of 0). The personal safety index was not well covered in the three OPs as only one indicator was identified to be present and there were no accompanying mentions of older adults (no scores of 2).

**Table 26.** Personal safety indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Lighting	1	1	1
Vandalism	0	0	0
Vacant Lots	0	0	0
	Frequency, count (%)		
0 Scores	2 (67)	2 (67)	2 (67)
1 Scores	1 (33)	1 (33)	1 (33)
2 Scores	0 (0)	0 (0)	0 (0)

#### 4.3.14 Cleanliness

All three municipalities received a score of 1 with respect to cleanliness (Table 27). The Norfolk County OP (2020a) promotes streetscape improvements which include providing waste receptacles, and similarly the City of Sarnia OP (2016) directs street enhancements, inclusive of garbage and recycling facilities, to be a part of development and redevelopment projects. The City of Thunder Bay's *Urban Design and Landscape Guidelines* (2012e), cross-referenced in the OP (2019a), also include a performance standard specific to waste receptacles with respect to their inclusion in higher activity street locations, specific to downtown and main street areas. No direct reference to older adults was found in association with indications of clean environments (all scores of 1). Overall, Norfolk County and the Cities of Sarnia and Thunder Bay suggest policy support for clean environments, but do not reference older adults in the identified policies.

**Table 27.** Cleanliness indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Cleanliness	1	1	1*
	Frequency, count (%)		
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	1 (100)	1 (100)	1 (100)
2 Scores	0 (0)	0 (0)	0 (0)

*Note.* Asterisks (\*) indicate documents cross-referenced in OPs contributed to the evaluation score.

#### 4.3.15 Pollution

The pollution index consisted of air/odour and noise indicators. When addressing pollution, the City of Sarnia OP (2016) received scores of 2, while the other two OPs (City of Thunder Bay, 2019a; Norfolk County, 2020a) received total scores 1 (Table 28). All three OPs address pollution with respect to ensuring sensitive uses (ex. residential areas) had appropriate separation from noise and air/odour adversities. Norfolk County's OP (2020a) also notes employing noise reduction tools and greening initiatives (ex. tree planning) to improve air quality, while the City of Thunder Bay OP (2019a) specifically mentions buffers as an option to minimize adverse effects of noise and odour. The City of Sarnia's OP (2016) was the only plan to address older adults in some capacity for both indicators with respect to its list of potential sensitive uses being inclusive of nursing homes (scores of 2). All three cities' OPs address pollution, but only the City of Sarnia got full points for also addressing older adults in its policies.



**Table 28.** Pollution indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Air/Odour	1	2	1
Noise	1	2	1
	Frequency, count (%)		
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	2 (100)	0 (0)	2 (100)
2 Scores	0 (0)	2 (100)	0 (0)

#### 4.3.16 Discussion

Overall, many of the *policy* indices and indicators are present within OP policies, or within cross-referenced documents, for all three cities. Unfortunately, in most cases, older adults are not explicitly mentioned in the policies where built environment features were identified to be present (scores of 1 were most common across all cities). This was specifically the case for the connectivity, blue spaces, green spaces, rest areas, aesthetics and cleanliness indices since all indicators within these indices were identified to be present in policies across the three cities, but lacked explicit reference to older adults (all scores of 1). The topography and weather indices are also applicable in this instance for the City of Sarnia, as well as the pollution index for Norfolk County and the City of Thunder Bay. Additionally, the land use index for all cities and the walking surface conditions index specifically for Norfolk County, also primarily resulted in a lack of explicit acknowledgment of older adults in policies. However, in these specific cases, all indicators within these indices did not receive exclusive scores of 1, as some indicators received scores of 0 and 2 as well. Overall, these findings for the *policies* plan characteristic indicate that there is policy support within these indices for walkable environments that older adults find favourable, but older adults themselves were not usually mentioned within the policies.

Street design, amenities, wayfinding and personal safety indices were identified to be least represented across the three cities, and often without explicit reference to older adults. Numerous indicators were not present at all in the street design index (particularly for Norfolk County and the City of Sarnia; many scores of 0), only half of the amenities indicators were present for two cities (benches/public seating and access to public toilets; Norfolk County and the City of Sarnia), only half of the wayfinding indicators were present for all three cities (street signage), and only the lighting indicator for personal safety was addressed by the three cities (one out of three indicators). Additionally, topography was only acknowledged by the City of Sarnia in terms of walkable environments, and not by Norfolk County or the City of Thunder Bay. The weather index was also not covered well by Norfolk County (majority scores of 0). The findings imply a policy gap for built environment features that older adults favour for walking, and suggest older adults may encounter barriers while walking in certain environments, or possibly refuse to walk at all due to the inaccessibility of the built environment. Overall, the above mentioned policy indices indicate opportunities for improvement to better address the needs of older adult walkers.

The density and pollution indices were better represented in policies, particularly for Norfolk County and the City of Sarnia. Both cities include at least one *policy* about higher order residential density and address older adults (scores of 2). The City of Sarnia also addresses older adults in its policies regarding pollution. These findings indicate greater support for age-friendly walkable environments, as well as a specific acknowledgement of older adults, suggesting a consideration for their unique needs and lived experiences.

In summary, each of three cities displayed varying levels of policy support for different built environment features represented by the indices. Norfolk County displayed the greatest policy support for the density index (score of 2) compared to the topography, street design, amenities, wayfinding, weather and personal safety indices. Similarly, the City of Sarnia illustrated greater policy support for

the density index as well as the pollution index (scores of 2), compared to the street design, amenities, wayfinding and personal safety indices. Lastly, the City of Thunder Bay’s policy support did not stand out for any particular index (no *policy* index dominated with scores of 2), but it did share shortcomings with the other two cities for the topography, street design, wayfinding and personal safety indices.

#### **4.4 IMPLEMENTATION**

*Implementation* refers to following through on *policies* to realize plan actions (Guyadeen et al., 2019). *Implementation* was evaluated based on how age-friendly walkable environments will be achieved, if they are prioritized, timelines for implementation, and financial resources to better understand the viability of *policies* to be carried out.

All three OPs received two scores of 1 out of four indicators (Table 29). Within the “Implementation” section of each OP, there was no mention of age-friendly walkable environments as being a priority for *implementation*. A direct mention of how age-friendly walkable environments will be implemented was also not found in each of the three OPs, but tools such as Community Improvement Plans (Part IV of the *Planning Act, 1990*) and Community Benefits (Section 37 of the *Planning Act, 1990*) were recognized as potential implementation mechanisms applicable to walkable environments for older adults (scores of 1). The OP “Implementation” section of Norfolk County (2020a) and the City of Thunder Bay (2019a) mention Community Improvement Plans, whereas Community Benefits were identified within the City of Sarnia’s OP (2016) “Implementation” section. Financing mechanisms were identified in accordance with the two potential implementation tools mentioned above to implement walkable environments (scores of 1). No mention of implementation timelines for age-friendly walkable environments was found in any of the three OPs. No city surpassed another in having supportive *implementation* tools to bring age-friendly walkable environment policies into fruition.

**Table 29.** *Implementation* indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Implementation	1	1	1
Priority	0	0	0
Financing	1	1	1
Timeline	0	0	0
	Frequency, count (%)		
0 Scores	2 (50)	2 (50)	2 (50)
1 Scores	2 (50)	2 (50)	2 (50)
2 Scores	0 (0)	0 (0)	0 (0)

#### 4.4.1 Discussion

The evaluation of *implementation* indicates the presence of broad tools that may present shortcomings in achieving environments that are supportive of older adults who walk. Age-friendly walkable environments were not identified in any of the three OPs as a priority for implementation, and there were no specific actions or timelines identified on how applicable policies would be carried out (scores of 0). This lack of specificity suggests that any policies related to age-friendly walkable environments may rest within the pages of an OP as opposed to being realized (Berke & Godschalk, 2009). Additionally, potential implementation and financing tools were identified within OPs, but these tools are not specific to age-friendly walkable environments (scores of 1), but may be used to facilitate their implementation. However, without specific tools in place, there is no way to know for certain if or how age-friendly walkable environments will be implemented.

## 4.5 MONITORING AND EVALUATION

According to Guyadeen et al. (2019), *monitoring and evaluation* consists of tracking *implementation* and assessing *implementation* outcomes to understand the achievement of plan *goals*. *Monitoring and evaluation* was adapted in this study to include on-going and post-evaluation, as well as metrics related to age-friendly walkable environments in OPs.

*Monitoring and evaluation* did not result in a high scoring plan characteristic as all three OPs received two scores of 0 and one score 1 out of three indicators (Table 30). No indication was identified regarding whether the evaluation of age-friendly walkable environments would occur on an on-going basis, or after implementation, for each of the three municipalities (scores of 0). In terms of identifying a metric for the evaluation of age-friendly walkable environments, each of the OPs include at least one potential metric which could be applicable (scores of 1) including forecasts (Norfolk County, 2020a), population, employment and land use trends (City of Sarnia, 2016), as well as pedestrian traffic volumes and travel characteristics (City of Thunder Bay, 2019a). No city surpassed another in having specific mechanisms to monitor and evaluate OP progress toward age-friendly walkable environments.

**Table 30.** *Monitoring and evaluation* indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
On-going Evaluation	0	0	0
Post-Evaluation	0	0	0
Metrics	1	1	1
		Frequency, count (%)	
0 Scores	2 (67)	2 (67)	2 (67)
1 Scores	1 (33)	1 (33)	1 (33)
2 Scores	0 (0)	0 (0)	0 (0)

#### 4.5.1 Discussion

Similar to *implementation*, the evaluation of *monitoring and evaluation* also lacks specificity regarding age-friendly walkable environments. Without specific measures in place, it may be challenging for cities to monitor and evaluate their advancement in becoming more age-friendly with respect to walkable environments for older adults in the future (Berke & Godschalk, 2009).

#### 4.6 PUBLIC PARTICIPATION

*Public participation* outlines public and stakeholder engagement in the process of creating plans (Guyadeen et al., 2019). This plan characteristic was applied in this study to identify members of the public and stakeholders who were engaged in OP preparation to better understand the extent to which age-friendly perspectives were acknowledged.

*Public participation* scores varied across the three cities (Table 31). Unfortunately, participation information was unable to be acquired from Norfolk County, and documentation received from the City of Sarnia (2014a, 2014c) did not include a mention of older adults or relevant stakeholders being engaged pertaining to walkable environments (scores of 0). In contrast, the City of Thunder Bay's *Infrastructure Discussion Paper* (n.d.) outlined that elderly members of the population contributed to discussions around complete streets and destinations being in close proximity to residences. Additionally, planning staff at the City of Thunder Bay confirmed that the City's Older Adult group (considered a relevant stakeholder) was consulted in the development of the OP. Confirmation was received through email correspondence regarding the City's consultation reports and resources as they relate to the City of Thunder Bay OP (2019a). Overall, the consultation resources acquired from municipalities suggest that the City of Thunder Bay was most thorough in engaging older adults and relevant stakeholders (scores of 2) compared to the City of Sarnia.

**Table 31.** *Public participation* indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Stakeholder Participation	-	0	2
Public Participation	-	0	2
		Frequency, count (%)	
0 Scores	N/A	2 (100)	0 (0)
1 Scores	N/A	0 (0)	0 (0)
2 Scores	N/A	0 (0)	2 (100)

*Note.* Dashes mean no data available. N/A means not applicable.

#### 4.6.1 Discussion

*Public participation* findings reveal that older adults and relevant stakeholders, as well as their input, may not always be logged in consultation records. A lack of engagement with older adults and other relevant stakeholders, such as an older adult committee, may limit the capacity to which OPs are effectively prepared to meet the needs of this group. This is not to say that older adults and stakeholders were not consulted by the three municipalities, but for the purpose of this study, if they were not identified in acquired documentation pertaining to OP development, then the OP was considered to not be informed by these groups. Additionally, it may be conceivable that without a record of older adult or stakeholder feedback, their input shared during consultation meetings may not reach the planners preparing OPs.

#### 4.7 INTER-ORGANIZATIONAL COORDINATION

*Inter-organizational coordination* relates to the coordination between different levels of government due to the interconnectedness of creating and implementing plans and policies (Guyadeen et al., 2019). This study evaluated references to other local, regional (where applicable) and provincial

and federal plans and documents within OPs that also indicate support for age-friendly walkable environments.

The *inter-organizational coordination* plan characteristic resulted in higher scores for each mid-sized city (majority scores of 2; Table 32). The OP for the Cities of Sarnia (2016) and Thunder Bay (2019a) reference a same-level (local) municipal plan which indicates support for age-friendly walkable environments, indicated through an explicit mention of older adults (scores of 2), while the Norfolk County OP (2020a) references a plan that supports walkable environments (score of 1). Additionally, the Cities of Sarnia and Thunder Bay each have their own age-friendly action plan (City of Thunder Bay, 2015; The Age-Friendly Sarnia Steering Committee, 2017), but neither was identified to be explicitly mentioned in each respective OP. The City of Sarnia OP (2016) also references the Regional OP for Lambton County (2020), which recognizes the County's aging population, but it was not identified to be discussed with respect to walkable environments (score of 1). Norfolk County and the City of Thunder Bay are single tier government structures (Association of Municipalities of Ontario, 2020) whereby upper-level municipal plans are not applicable. Additionally, all three OPs reference the PPS as an example of provincial or federal level support for age-friendly walkable environments (scores of 2). The PPS, 2020 includes a policy about healthy communities that mentions older adults and land use barriers, which may include those that impede walking (Policy 1.1.1f); Ministry of Municipal Affairs and Housing, 2020b). Overall, the applicable plans depicting coordination between OPs and other government plans and documents identify older adults and walkable environments for the City of Thunder Bay (scores of 2), while not all plans address both older adults and walkable environments for the Norfolk County and the City of Sarnia (one score of 1 each).



**Table 32.** *Inter-organizational coordination* indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator		Scores	
Horizontal	1	2	2
Vertical (Local/Regional)	N/A	1	N/A
Vertical (Provincial/Federal)	2	2	2
		Frequency, count (%)	
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	1 (50)	1 (33)	0 (0)
2 Scores	1 (50)	2 (67)	2 (100)

*Note.* N/A means not applicable.

#### 4.7.1 Discussion

The findings related to *inter-organizational coordination* reveal that there is provincial policy depicting higher level support for walkable environments for older adults (scores of 2), while regional support (for the City of Sarnia) does not address older adults in terms of walkable environments (score of 1). Additionally, local support exists in full for the Cities of Sarnia and Thunder Bay but not for Norfolk County. A noteworthy finding from the *inter-organizational coordination* evaluation is that the Cities of Sarnia and Thunder Bay each have an age-friendly action plan, but this plan is not explicitly referenced within each respective OP. This suggests the potential for greater coordination at the municipal level to improve the presence of age-friendly policy within influential planning documents like OPs.

## 4.8 ORGANIZATION AND PRESENTATION

The *organization and presentation* plan characteristic is concerned with the communication, readability and relevance of a plan for users (Guyadeen et al., 2019). A distinct table of contents section, defined terms, and illustrations (i.e., maps or diagrams) relating to age-friendly walkable environments were evaluated in this study to determine how clearly plans present their support for this issue.

All three cities exclusively received scores of 1 for all three indicators within the *organization and presentation* plan characteristic (Table 33). Each mid-sized city includes a distinct section in its OP Table of Contents regarding walkable environments: “Walking, Cycling and Trails” (Norfolk County, 2020a) and “Active Transportation”<sup>5</sup> (City of Sarnia, 2016; City of Thunder Bay, 2019a). The identified OP section for each municipality included language that refers to individuals of “all ages” as opposed to specifically mentioning older adults, resulting in scores of 1. Moreover, none of the OPs were identified to include a glossary that lists defined terms relevant to age-friendly walkable environments, but each municipality does include undefined terminology such as “older adults” (City of Thunder Bay, 2019a; Norfolk County, 2020a) and “senior” (City of Sarnia, 2016; Norfolk County, 2020a) to some extent in its OP. Additionally, all three OPs contain at least one map illustrative of walkable environments, but there is no specific indication of older adults. For instance, OP maps contain active transportation routes (Norfolk County, 2020a), trail areas (City of Sarnia, 2016), and local roads (City of Thunder Bay, 2019a). No city surpassed another in highlighting age-friendly walkable environments within the *organization and presentation* of its OP.

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<sup>5</sup> Due to the *organization and presentation* style of the City of Thunder Bay OP (2019a), the distinct “Active Transportation” section was identified on the division page for Part 6 of the OP (“Public Infrastructure”) where there is a more specific breakdown of contents which includes the “Active Transportation” section. Although, not part of the primary Table of Contents page, this section was presented as a distinct section nonetheless and not ‘buried’ within the contents of the OP.

**Table 33.** *Organization and presentation* indicator scores and score frequency.

	Norfolk County	City of Sarnia	City of Thunder Bay
Indicator	Scores		
Distinct Section in Table of Contents	1	1	1
Glossary/ Definitions	1	1	1
Maps/ Diagrams/ Illustrations	1	1	1
	Frequency, count (%)		
0 Scores	0 (0)	0 (0)	0 (0)
1 Scores	3 (100)	3 (100)	3 (100)
2 Scores	0 (0)	0 (0)	0 (0)

#### 4.8.1 Discussion

Although the organization of each OP was largely understandable by the researcher, the presentation of age-friendly walkable environments was not obvious (scores of 1). *Organization and presentation* findings suggest a lack of organization to clearly show support for age-friendly walkable environments, or a limited or lack of planning support for age-friendly walkable environments deeper within the contents of the OPs across the three cities, resulting in inadequate representation at higher level plan organization.

#### 4.9 SUMMARY

In summary, the three OPs addressed some plan characteristics better than others. The *inter-organizational coordination* plan characteristic scored the highest overall across all eight plan characteristics for all three mid-sized cities (with majority scores of 2). This finding indicates that OPs integrate external provincial and municipal plans and documents that offer full (City of Thunder Bay) or near full (Norfolk County and City of Sarnia) support for age-friendly walkable environments for older adults. The *organization and presentation* plan characteristic received mid-range scores compared to

other plan characteristics across all three cities (all scores of 1). The *organization and presentation* score suggests that OPs across the three municipalities are not organized in a manner that clearly presents the planning support for age-friendly walkable environments in a table of contents, glossary or illustrations (i.e., map or diagram) to the reader.

The *policies, implementation and monitoring and evaluation* characteristics scored lower across all three cities. Perhaps surprisingly, considering the vast amount of literature on best practices for built environment features for older adults, the *policies* score indicates a lack of actionable directives to support walkable built environment features with older adults in mind since scores were predominantly of 1, followed by scores of 0, with few scores of 2. The *implementation and monitoring and evaluation* characteristics suggest that all of the OPs do not effectively address how the implementation of age-friendly walkable built environment *goals and policies* will be achieved, as well as how these cities will evaluate their progression in developing environments that enable older adult walkers.

Additionally, *fact base, goals, and public participation* plan characteristics resulted in varied scores across the three cities. The City of Thunder Bay scored higher than Norfolk County and the City of Sarnia for *fact base* and *goals* (more scores of 2). This suggests that in comparison to Thunder Bay, the latter two cities did not articulate the awareness and issue of population aging in their OPs as effectively to be used to prioritize *goals and policies*. Lastly, it was assumed that not all cities (actively) engage older adults or relevant stakeholders in OP development, based on available resources provided by local governments. In conclusion, the three OPs did not address each plan characteristic evenly.

## 5.0 PLAN QUALITY EVALUATION IMPLICATIONS, ANALYSIS AND DISCUSSION

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The purpose of this chapter is to first highlight the relationship among plan characteristics for Norfolk County and the Cities of Sarnia and Thunder Bay that were discussed in the previous chapter. Subsequent sections provide geographic, linguistic, policy and age-friendly analyses of the plan quality evaluation findings. The final section of this chapter acknowledges the limitations of this research.

### 5.1 RELATIONSHIP AMONG PLAN CHARACTERISTICS

Guyadeen et al. (2019) assert that by applying all eight plan characteristics in an evaluation, as opposed to a selection of the eight, a more comprehensive understanding of plan quality can be achieved. Although the researchers' evaluation focused on climate change plans, their argument of a more comprehensive understanding arising from the evaluation is applicable to this study which centres on OPs and walkable environments for older adults.

Findings from this study indicate that the OPs of Norfolk County and the Cities of Sarnia and Thunder Bay can be considered of lower quality based on the scores of each of the eight plan characteristics. Berke and Godschalk (2009) explain that the relationship between the *fact base*, *goals* and *policies* plan characteristics encompass a plan's "direction-setting framework" (p. 233) for the success of subsequent plan characteristics such as *implementation* and *monitoring and evaluation*. The less informed *fact bases* and *goals* identified in the OPs of Norfolk County (2020a) and the City of Sarnia (2016) may explain why *policies* scored lower in these two OPs, since these two plan characteristics work to support the *policies* characteristic (Guyadeen et al., 2019). However, the City of Thunder Bay OP (2019a) was reported to have a more informed *fact base* and *goals*, but this was not reflected well in the *policies* characteristic since many of the built environment features identified to be present were found in cross-referenced documents. This illustrates a disconnect within the City of Thunder Bay OP (2019a) as age-friendly communities and walkable environments are framed within the broader context and

sections of the OP, but did not carry through to *policies* and other plan characteristics which is problematic. In contrast, the lower quality contents of the *fact base* and *goals* in the OPs of Norfolk County (2020a) and the City of Sarnia (2016) seem to explain the lack of explicit mention of older adults in *policies* and overall limited support for environments that enable walking for older adults.

Furthermore, the lower quality *fact base*, *goals* and *policies* within the three OPs may explain why *implementation* and *monitoring and evaluation* are also lacking. Without a clear and explicit direction, specific implementation mechanisms may be difficult to develop (Berke & Godschalk, 2009), and thus make it challenging to carry out OP *policies* that are supportive of walkable environments for older adults. This in turn may relay challenges for *monitoring and evaluation* whereby limited *implementation* cannot be successfully monitored and evaluated to determine OP progress in developing age-friendly walkable environments in the future. Additionally, insufficient *monitoring and evaluation* resulting from low quality *implementation*, may also hinder OP improvements, such as to the *fact base*, *goals* and *policies*, to be more supportive of walkable environment for older adults, as Berke and Godschalk (2009) identify them as direction-setting plan characteristics, and thus they impact subsequent parts of a plan.

The engagement of older adults and stakeholders in the development of the City of Thunder Bay's OP seem to be reflected in the *goals* of the OP, but there were few direct mentions of older adults in OP policies. Additionally, the engagement documents received from the City of Sarnia do not specifically indicate older adults or relevant stakeholders were engaged with respect to walkable built environments or more generally in the development of the OP, suggesting why there may not be more impactful *goals* in place to set the foundation for age-friendly walkable environment supportive policies.

The *inter-organizational coordination* plan characteristic indicates integration between other municipal and provincial plans and policies with the three OPs, but policies from these external

documents may not always be explicitly stated within the OP itself. This may continue to limit the statutory policy support for age-friendly walkable environments in OPs. Additionally, since no local age-friendly action plans were explicitly referenced within the OPs, particularly for the Cities of Sarnia and Thunder Bay which have an existing age-friendly action plan, it suggests a further lack of statutory planning policy support for age-friendly walkable environments since age-friendly policies exist in a non-statutory capacity, but were not identified to be included in OPs to improve their quality.

Lastly, the limited explicit planning policy support for age-friendly walkable environments from the seven other plan characteristics discussed above may imply why it is not outwardly represented through the *organization and presentation* of the OPs.

Overall, the eight plan quality characteristics influence one another to some extent regarding support for walkable environments for older adults. This implies the need to review them all in an evaluation, and reaffirms Guyadeen et al.'s (2019) assertion that comprehensive evaluations provide a more complete understanding of overall plan quality.

## **5.2 GEOGRAPHIC CONTEXT**

The findings of this research reveal that many of the identified policies indicating the presence of built environment features that are supportive of older adult walking are within an urban setting. Specific foci include urban residential neighbourhoods (Norfolk County, 2020a), commercial areas (City of Sarnia, 2016), as well as downtowns and main streets (Brook McIlroy, 2012e; City of Sarnia, 2016; City of Thunder Bay, 2019a; Norfolk County, 2020a). This indicates that policy support for certain walkable environment features is directed to specific areas over others rather than being city-wide. This may further suggest that some areas within these mid-sized cities, for example more rural areas, may receive less support resulting in less enabling walking environments for older adults who may live in these areas, and overall, a lower level of age-friendliness.

### 5.3 USE OF LANGUAGE

The use of language was a determining factor in giving scores of 1 or 2 for present indicators. Figure 5 from Section 4.0 illustrates that there were few scores of 2 among indicators across all plan characteristics and cities (less than 15% of all scores) compared to scores of 1 (53-67% of all scores) and scores of 1 and 2 combined (63-81% of all scores). This implies that the explicit mention of older adults was not commonly found in the three OPs, and cross-referenced documents, where applicable.

There are two perspectives to approach the discussion on language: the first considers the need to specifically address certain groups (older adults) in plans, and the second considers the presence of policy (walkable built environment policy) to be sufficient.

The need to consider the specific population group of older adults will be discussed first in this section. Aimi Hamraie's (2013) paper on the concept of universal design from the intersection of feminist and disability theories discusses accessible environments and the need to name different groups to understand the unique lived experiences of different users within a given environment. Hamraie's (2013) argument frames this first discussion on addressing language and age within the OPs evaluated in this study. All three of the OPs include some specific policies and/or broader sections with overarching statements which include implicit language that may be suggestive of the inclusion of older adults. The use of the phrases "all ages" and "all abilities" and/or similar variations or combinations was commonly used and identified in policies related to almost all policy indices except for topography, density, blue spaces and pollution. Such phrasing was found in broader OP sections such as "Walking, Cycling and Trails" in the Norfolk County OP (2020a), broader section objectives regarding public infrastructure (inclusive of transportation and active transportation) and community and recreational services and facilities (City of Thunder Bay, 2019a), as well as general policies pertaining to active transportation and parks and open space (City of Sarnia, 2016). This phrasing was also found in the City



of Sarnia (2016) and City of Thunder Bay (2019a) OP contents related to the *fact base* and *goals* plan characteristics. “All ages”, “all abilities” and similar phrasing do imply a recognition of the heterogeneity of a population to some extent, but without the explicit mention of certain groups, like older adults, they may get overlooked or lost in translation, consistent with Hamraie (2013). Additionally, the use of generic population identifiers such as “residents” and “pedestrians” could be replaced by more specific terminology to acknowledge the different lived experiences of older adults falling within these broader population categorizations. This may also provide more clarity, specificity and direction to the intention and justification of policies.

Furthermore, there were specific instances where persons with disabilities were addressed regarding accessibility but additional acknowledgement was not extended towards older adults. For example, the Norfolk County OP (2020a) has a dedicated policy regarding the *Accessibility for Ontarians with Disabilities Act, 2005* that is about accessible public spaces for all, with an additional specific acknowledgement of persons with disabilities. It is not to say that policies specifically tackling accessibility concerns solely for persons with disabilities are incomplete or problematic, but the context in which accessibility is addressed should be broader to account for a variety of accessibility considerations, consistent with Hamraie’s (2013) work. For example, the Norfolk County OP (2020a) includes another policy that distinctly references persons with a disability and older adults regarding the improvement of streetscapes in downtown areas. This policy is more effective by explicitly acknowledging older adults and persons with a disability as distinct road users, as opposed to reinforcing the exclusion of non-normative users. Hamraie’s (2013) argument on universal design from a feminist-disability theory lens supports the importance of specifically considering older adults in the design of built environments.

Alternatively, the second perspective to discussing language considers the presence of built environment policy to be sufficient. Since the built environment features that older adults find

favourable for walking also benefit other population groups like parents travelling with strollers, children, adults of any age and persons with a disability (Fitzgerald & Caro, 2014; Ontario Seniors' Secretariat et al., 2019; WHO, 2007), the indicators that resulted in scores of 1 are still notable for their contributions to age-friendliness even though they do not explicitly mention older adults. These features being present provide the opportunity for their implementation and usage by older adults, but since other groups also find these features enabling, it may not be as essential for older adults to be explicitly highlighted due to the benefits provided to a variety of people. Therefore, for the purpose of this project, there is still merit in the presence of walkable built environment features identified in OPs (and cross-referenced documents) even if there is no explicit mention of older adults in policy, since these walkable environment features are identified to be supportive for older adult walkers in the literature reviewed in Chapter 2.0, as well as the review articles, government and non-profit documents used to inform the selected indicators (Chapter 3.0, Footnote #2). When strictly considering the presence of these walkable built environment features, regardless of older adults being specifically mentioned, a majority of the indicators pertaining to the *policies* plan characteristic are present (Table 34, Row 3). However, this discussion does not intend to nullify the previous points made in this section, as naming specific groups in *policies*, like older adults, contributes to greater potential for bringing awareness, understanding, and change to the groups who may need it, consistent with Hamraie (2013).

**Table 34.** The total number of the *policy* indicators that are present for scores of 1 and 2, and overall.

	Norfolk County	City of Sarnia	City of Thunder Bay
Number of Policy Indicators Present for Scores of 1	33/60	39/61	48/61
Number of Policy Indicators Present for Scores of 2	7/60	5/61	3/61
Total Number of Policy Indicators Present	40/60	44/61	51/61
Total Number of Plan Quality Evaluation Indicators Present	52/83	57/87	70/86

*Note.* Denominators vary across the three cities due to some indicators not being applicable (N/A).

## 5.4 POLICY STATUS

Since OPs referenced external plans, guidelines and other documents, the presence of *policy* indicators was not always identified in statutory planning policies (Table 35). However, in the case of Norfolk County, all present *policy* indicators were found in the County's OP (2020), inclusive of the "Lakeshore Special Policy Area Secondary Plan" (2009). The majority of the City of Sarnia's *policy* scores resulted from walkable built environment feature presence in the OP (2016), with few scores given based on contents from the City's *Transportation Master Plan* (2014) and *Specification Standards* (2020a, 2020d). Alternatively, the City of Thunder Bay's *policy* score was highest overall, but the presence of walkable built environment features resulted in a near equal split of indicators between the City's OP (2019a) and cross-referenced documents. The 25 *policy* indicators that were not identified to be present in the City of Thunder Bay's OP (2019a) were found in the *Engineering and Development Standards* (2; 2019b), *Image Route Guidelines* (2; 2012a, 2012b), *Active Transportation Plan* (6; 2019) and the *Urban Design and Landscape Guidelines* (15; 2012b). The three municipalities do an effective job at integrating other plans, guidelines and/or standards in each respective OP, but ultimately these cross-referenced documents are non-statutory and therefore do not require conformity, despite the importance placed on them by local governments. However, it is worth noting that it would be in the best interest of a development proponent to follow cross-referenced documents even though they are not compulsory. Moreover, although the City of Thunder Bay had the most built environment features present among *policy* indicators, it was Norfolk County which received the greatest built environment feature presence and most scores of 2 for *policies* when strictly looking at OPs. This implies greater statutory policy support for environments that are enabling of older adult walkers by Norfolk County compared to the other two cities, even though the County had the lowest indicator presence of walkable built environment features for *policies* overall.

**Table 35.** Comparison of *policy* indicator presence between OP and cross-referenced documents.

	Norfolk County	City of Sarnia	City of Thunder Bay
Number of Policy Indicators Present in the OP	40/60	36/61	26/61
Number of Policy Indicators Present in Cross-Referenced Documents	0/60	8/61	25/61
Total Number of Policy Indicators Present	40/60	44/61	51/61
Total Number of Plan Quality Evaluation Indicators Present	52/83	57/87	70/86

*Note.* Denominators vary across the three cities due to some indicators not being applicable (N/A).

## 5.5 INFLUENCE OF THE AGE-FRIENDLY COMMUNITY PLAN

As previously mentioned throughout this MRP, an age-friendly community plan is a planning document which provides non-statutory support for improving the lives of older adults (Hartt & Biglieri, 2018). The non-statutory nature of the plan dictates that even though policy support exists to support older populations in the Province of Ontario, policies may never be implemented without political will, community will, financial resources, and personnel (Hartt & Biglieri, 2018). Due to these barriers restricting the implementation of non-statutory age-friendly plans, it is important to consider the age-friendly policy support that exists in statutory plans, like OPs, as there is greater opportunity for policy implementation and tangible support for older adults.

Age-friendly action plans were identified for the Cities of Sarnia (2017) and Thunder Bay (2015), but not Norfolk County. Despite these two mid-sized cities having age-friendly action plans, these plans are not explicitly referenced within each respective OP (City of Sarnia, 2016; City of Thunder Bay, 2019a), limiting the opportunity for plan and policy integration.

Municipalities with age-friendly action plans received more scores of 1 and 2 overall as indicated by the greater number of present indicators (Table 35, Row 4). However, when considering the presence

of walkable built environment features directly in the OP, and not counting those present in cross-referenced documents, Norfolk County had the most scores of 1 and 2 overall (most indicators present) of the three mid-sized cities, despite not having an age-friendly community plan. This may suggest that there is more age-friendly support in general in the two cities with an age-friendly plan, but the support may not be implemented directly into the OP. The lack of integration between age-friendly community plans and OPs may limit the opportunity for age-friendly policy for walkable built environments to have statutory authority and greater implementation prospects, as well as reinforces the current environment of only drafting these policies through non-statutory exercises. Therefore, the existence of local age-friendly community plans does not appear to influence or indicate greater age-friendly support in OPs, but the potential for integration may offer opportunities to enhance statutory policy that is supportive of age-friendly walkable environments and should not be dismissed.

## **5.6 LIMITATIONS**

The research conducted for this MRP includes the following limitations. Firstly, plan quality evaluations are only conducted at a given point in time (Brody, 2003, as cited in Guyadeen et al., 2019; Stevens and Senbel, 2017, as cited in Guyadeen et al., 2019), and only provide insights into the contents of plans rather than being reflective of on-going learnings from the actual implementation of plans (Guyadeen et al., 2019). This study only uses a sample of three case studies each with OPs dated at a specific point in time (i.e., within the past 5 years) which may not accurately reflect the variations in local context for all mid-sized cities in Ontario, nor the on-going state of planning within the selected municipalities. Furthermore, while this study is rooted in Ontario's planning framework, it could be easily adapted to other jurisdictions who use a different planning framework. Secondly, this study reported on each individual plan characteristic and discussed their inter-relatedness using an equal weighting for all plan characteristics which is not always accurate as it can lead to over and undervaluing of specific plan characteristics (Tang and Brody, 2009, as cited in Guyadeen et al., 2019). However, by

examining plans in the way described in this study, it is still possible to parse out the shortcomings of plans in how well they are planning for age-friendly walkable built environments. Thirdly, the methodology in this study only employs a plan quality evaluation which only assesses planning practice through plans as products of the planning process, as opposed to gaining insights into the competency and capacity of planners who worked to develop the selected OPs. Lastly, *public participation* data could not be acquired for Norfolk County within the time frame of the research project, so the evaluation for the County could not be assessed in its entirety, potentially limiting the researcher to draw more complete conclusions and engage in more meaningful comparisons among the three cities.

## 6.0 CONCLUSION AND RECOMMENDATIONS

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The final chapter of this MRP begins by concluding on the findings and discussion of the plan quality evaluation that was undertaken for the three mid-sized cities of Norfolk County, the City of Sarnia, and the City Thunder Bay. The following section proposes recommendations on how planners may improve their practice on planning for age-friendly walkable environments for older adults. Lastly, a discussion on potential areas for future research that expand on this research round out this chapter and mark the end of this MRP.

### 6.1 CONCLUSION

The OPs of Norfolk County (2020a) and the Cities of Sarnia (2016) and Thunder Bay (2019a) suggest some support for age-friendly walkable environments for older adults, but ultimately there is room for improvement. The lack of overwhelming support from OPs in this study is congruent with earlier Canadian studies on plan evaluation which also conclude that OPs lack support on other topics like physical activity and climate change (Hassan et al., 2017; Krawchenko et al., 2016).

Findings from this study were derived using a plan quality evaluation methodology, adapted from Guyadeen et al. (2019), which involves measuring the presence or absence of different plan components. Eight plan characteristics were evaluated in this study using a total of 87 indicators and a scoring system of 0, 1 and 2. The eight plan characteristics evaluated in this project were: (1) *fact base*, (2) *goals*, (3) *policies*, (4) *implementation*, (5) *monitoring and evaluation*, (6) *public participation*, (7) *inter-organizational coordination*, and (8) *organization and presentation*. A score of 0 indicated no mention of older adults nor walkable built environment features, a score of 1 indicated a partial or implicit mention, and a score of 2 indicated the explicit mention of older adults and walkable built environment features. Plan quality evaluations can be applied across various jurisdictions and to a variety of topics and plans, such as statutory plans like OPs, as well as non-statutory plans like climate

change plans (Berke & Godschalk, 2009; Guyadeen et al., 2019). This methodology has the potential to improve planners' understanding of reviewing plans and better equip them to thoughtfully and effectively prepare meaningful plans (Berke & Godschalk, 2009).

Plan quality evaluation scores for *fact base*, *goals* and *public participation* varied across the three mid-sized cities. The plan characteristics of *policies*, *implementation* and *monitoring and evaluation* received lower scores across all three OPs suggesting a lower level of age-friendliness, while *inter-organizational coordination* received a higher score indicating that OPs do an effective job in integrating external plans which can be supportive of age-friendly walkable environments. Mid-range scores applied to the plan characteristic *organization and presentation*, indicating that support is present, but there is opportunity for improvement.

In particular, policy support for environments that are enabling of older adult walkers was found to be present with respect to the built environment feature being identified, but the explicit mention of older adults in policies was not as apparent. Additionally, many policies were identified to specifically target more urbanized areas as opposed to rural areas. Moreover, policy support was also entirely present directly in the Norfolk County OP (2020a) and predominantly present in the City of Sarnia OP (2016), with some scores granted based on support from cross-referenced documents. Scores based on cross-referenced documents were most apparent in the evaluation of the City of Thunder Bay, whereby *policy* scores included approximately equal support from the City's OP (2019a) and documentation external to the City's OP (2019a), in comparison to that of the City of Sarnia which had few, and Norfolk County which had none.

The use of language in OPs (and applicable cross-referenced documents) also adds a layer of nuance in how older adults are supported through planning policy. Although all three cities do make specific reference to older adults (or seniors, the elderly, etc.) in policy at some point, the use of broader



terms and phrases was more common. Moreover, this may not provide as much clarity and direction when interpreting policies as opposed to explicitly stating older adults. However, an alternative approach when considering language is that the explicit mention of older adults may not be as critical if a built environment feature was present in policy, as older adults could still benefit from it even if it was not directly intended for their specific use. Furthermore, it was also noted that just because a municipality has an age-friendly community plan, it does not guarantee corresponding planning support for older adults in OPs.

Overall, the three mid-sized municipalities of Norfolk County, the City of Sarnia and the City of Thunder Bay indicate some level of planning policy support for an aging population with respect to walkable built environments. Older adults may rely on walking for recreational purposes, or for transportation purposes in the case that alternative modes of travel are no longer viable options for them (Stjernborg et al., 2015). Policy support from the planning profession in these three cities has the potential to be improved in order to further contribute to fostering enhanced age-friendly communities to better serve the needs of the growing population over the age of 65 in Ontario (Ministry of Finance, 2019).

## **6.2 RECOMMENDATIONS FOR PLANNERS**

A total of five recommendations are proposed to improve the age-friendliness of the built environment for older adults and are directed at both provincial and municipal levels of government. The first two recommendations apply to the Province, while the following three recommendations apply to municipalities.

## 6.2.1 Provincial Recommendations

### ***Recommendation #1: Improve Coordination and Collaboration Between Provincial Ministries.***

The Ministry of Finance (2019) released population projections about an expected increase in the aging population forecasting that approximately 25% of the total population will be over the age of 65 in the next 25 years. However, the latest version of the PPS does not reflect significantly greater policy support for age-friendly planning or age-friendly communities (Ministry of Municipal Affairs and Housing, 2020b). The Ministry of Finance (2019) acknowledges and reports on this upcoming demographic shift, yet the Ministry of Municipal Affairs and Housing (2020b) has not made significant policy updates or added new policies to reflect this shift in the most recent version of the PPS. Better coordination between ministries could allow for greater knowledge sharing and improvements to planning directives to be more reflective of the different issues affecting the province, including that of the aging population and planning for age-friendly communities.

### ***Recommendation #2: Improve Integration of Age-Friendly Policy into Provincial Planning Documents.***

This recommendation builds on the previous and calls on the Province to incorporate more age-friendly policy into its statutory planning documents – ex. the PPS and *Planning Act, 1990*. Both documents address other issues faced the province, (ex. affordable housing), but do not address the additional incumbering issue of the "silver tsunami" (Hartt & Biglieri, 2018). This raises concerns as to why this population-related issue is not as greatly emphasized at the provincial planning level, especially since there is still time to plan for it. As stated previously, the Ministry of Finance (2019) released projections expecting an increase in the population over the age of 65 in the next 25 years so it would make sense to plan ahead, or at least along the timeline, of the expected demographic shift so future planners are not left reactively trying to retrofit existing environments.

The introduction of more explicit age-friendly policy at the provincial level now may allow for a more proactive planning course of action as opposed to reactive responses at the provincial and

municipal government levels in the future. Additionally, the incorporation of age-friendly policy at the provincial level, such as in the PPS, would mandate municipalities to also step up and incorporate age-friendly policy into their OPs since the PPS is implemented through municipal OPs. Mandated age-friendly policy at the provincial level would also direct municipalities to actively plan for age-friendly communities and prospectively improve the age-friendliness of OPs.

### **6.2.2 Municipal Recommendations**

#### ***Recommendation #3: Develop Statutory Policies Which Better Address Street Design, Amenities, Wayfinding and Personal Safety to Foster Enabling Walking Environments for Older Adults.***

The findings of this research project reveal that planners seem to do an effective job of planning for environments that support walking among older adults with respect to (residential) density and pollution *policy* indices, but more attention seems to be needed regarding street design, amenities, wayfinding and personal safety, as these indices were predominantly low scoring across the three cities (many scores of 0). In particular, planners should exercise greater consideration for older adults' crossing experiences (street design), be more cognisant of public toilets, particularly in terms of signage and accessibility (amenities and wayfinding), as well as expand policies related to safety beyond just lighting to capture additional concerns among older adults like vacant areas and vandalism (personal safety). By doing so, policy support for walkable environments that are enabling of older adults would increase, albeit to a minimum extent, but planners can also push further by specifically addressing older adults in policy – to be further discussed in the following recommendation.

#### ***Recommendation #4: Use Explicit Language in OPs When Addressing Planning Matters Affecting Older Adults.***

Explicitly addressing older adults in OP policy would acknowledge their unique needs and experiences (Hamraie, 2013) and could provide additional specificity and direction in planning for communities to encourage and ensure age-friendliness. Using more specific language could also put

more power and potential into local governments to foster meaningful and impactful change with respect to age-friendly communities since the Province's current realm of support is tied to funds being allocated towards non-statutory plans (Hartt & Biglieri, 2018). The non-statutory planning support from the province calls into question whether it is genuinely serious about developing age-friendly communities as it claims (Ontario Seniors' Secretariat, 2013), since non-statutory age-friendly community plans may have an indefinite shelf life unless actively implemented by means such as political will and available finances (Hartt & Biglieri, 2018). By preparing more specific statutory policies that address older adults, municipalities may be able to take greater control in planning and developing age-friendly communities, and improving the lives of older adults, given the lack of statutory support from the Province.

The increased use of specifying older adults in policy would also improve the quality of an OP by enhancing policies relating to multiple indices which did not reference older adults.<sup>6</sup> Upgrading such policies to mention older adults would illustrate greater acknowledgement of their needs and real world walking experiences, rather than just including the presence of walkable built environment policy within plans as a minimum.

***Recommendation #5: Implement Age-Friendly-Supportive Policies from Non-Statutory Plans and Documents into OPs.***

This recommendation draws on the importance of the *inter-organizational coordination* plan characteristic which focuses on the interrelated nature of plans (Guyadeen et al., 2019). Not all policies guiding planning and development in a city are found within statutory plans, and this research further reveals that not all policies supportive of older adults who walk are found within OPs, as policy support

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<sup>6</sup> Examples of applicable *policy* indices include connectivity, blue spaces, green spaces, rest areas, aesthetics and cleanliness. All indicators within these indices were identified to be present in OPs and external documents, but lacked specific mention of older adults (mostly scores of 1).

was identified in non-statutory documents as well. Therefore, although policies external to the OP can benefit older adults, since they are non-statutory, the likelihood of their implementation is limited, as well as their effects on the lives of older adults (Hartt & Biglieri, 2018). Adopting these policies within an OP gives them greater power in influencing the built environment to improve the lives of older adults due to the statutory nature of OPs.

One plan that could provide the greatest benefits to improve OP age-friendliness would be the meaningful integration of a municipality's age-friendly community plan as its foundation is grounded in improving the lives of older adults. Research findings reveal that there is a disconnect between the cities in this study with an age-friendly action plan in place and the abundance of statutory planning support in OPs for built environments that enable older adult walkers. This may suggest that greater integration of age-friendly plan policies within an OP is needed to direct land use and development to be conducive to the needs and lived experiences of older adults.

Specifics from local age-friendly action plans could be adopted into the *fact base* or *goals* of an OP to provide a stronger foundation for policy development, as well as adopting non-statutory policies from these plans into the OP policies themselves. This could also promote greater ease in *implementation* due to more focused directives, and further aid *monitoring and evaluation* processes which would add to the overall quality of an OP by identifying areas for improvement and providing a sense of direction to update OPs to progress towards communities that are more age-friendly.

### **6.3 AREAS FOR FUTURE RESEARCH**

This MRP contributes to the current body of knowledge on age-friendly community planning through the study of walkable built environments for older adults. This study evaluated OPs (and applicable cross-referenced documents) using a plan quality evaluation methodology to better

understand the planning policy support for built environments that support walking among older adults. This section proposes areas for future research that build off this MRP.

Firstly, a future study could re-evaluate the OPs of Norfolk County and the Cities of Sarnia and Thunder Bay in the future to identify if any improvements were made to foster walkable environments for older adults in these three mid-sized cities over a given time period. This proposed area of research stems from one of the limitations identified in this study which acknowledges that plan quality evaluations are restricted to a single point in time (Brody, 2003, as cited in Guyadeen et al., 2019; Stevens and Senbel, 2017, as cited in Guyadeen et al., 2019).

Also, since this project was rooted within the WHO's (2007) "Outdoor Spaces and Buildings" age-friendly city topic area, future research could expand on conducting plan quality evaluations focused on other topic areas to better understand how other age-friendly features, such as those pertaining to housing or transportation, are presented in OPs. This could provide additional insights into the age-friendliness of OPs and cities.

Additional future research building on this study could be to undertake qualitative research and conduct interviews or focus groups with practitioners. Future research could interview planners one on one or in focus groups to better understand the competency and capacity for taking on plan quality evaluations in practice. Additionally, interviews, focus groups, or even surveys, could be conducted with planners to better understand their knowledge and understanding of age-friendly community planning and their capacity to plan for age-friendly communities. Future studies may also explore the motivations behind age-friendly community planning at the provincial and municipal levels, as well as the associated challenges and opportunities.

## APPENDIX 1: PLAN QUALITY EVALUATION TABLE

### FACT BASE:

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
	Awareness	Does the OP mention that the municipality is experiencing / will experience an aging population?	0 <input type="checkbox"/> No, the OP does not mention the population is/will be aging. 1 <input type="checkbox"/> N/A --- 2 <input type="checkbox"/> Yes, the OP does mention the population is/will be aging.	
	Understanding	Does the OP identify population aging as an issue? (i.e., locally, nationally or globally)	0 <input type="checkbox"/> No, the OP does not identify population aging as an issue. 1 <input type="checkbox"/> N/A --- 2 <input type="checkbox"/> Yes, the OP does identify population aging as an issue.	
	Aging Population	Does the OP provide the current population numbers/statistics for older adults?	0 <input type="checkbox"/> No, the OP does not identify the current population numbers/statistics for older adults. 1 <input type="checkbox"/> Somewhat, the OP does identify the current population numbers/statistics for the broader population, but not specifically for older adults. 2 <input type="checkbox"/> Yes, the OP does identify the current population numbers/statistics for older adults.	
	Population Forecasts	Does the OP provide forecasts for their aging population?	0 <input type="checkbox"/> No, the OP does not provide forecasts for its aging population. 1 <input type="checkbox"/> Somewhat, the OP does provide forecasts for the overall population, but not specific to older adults. 2 <input type="checkbox"/> Yes, the OP does provide forecasts for its aging population.	
	Impacts	Does the OP mention the impacts of an aging population within its community/ communities/ jurisdiction?	0 <input type="checkbox"/> No, the OP does not mention the impacts of an aging population. 1 <input type="checkbox"/> N/A --- 2 <input type="checkbox"/> Yes, the OP does mention the impacts of an aging population.	
	Importance	Does the OP discuss the importance/ benefits of	0 <input type="checkbox"/> No, the OP does not discuss the importance of planning for age-friendly communities. 1 <input type="checkbox"/> N/A ---	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
		planning for age-friendly communities?	2 <input type="checkbox"/> Yes, the OP does discuss the importance of planning for age-friendly communities.	
	Distribution	Does the OP include a breakdown of older adults by neighbourhood/ geographic area?	0 <input type="checkbox"/> No, the OP does not include a breakdown of older adults by neighbourhood/ geographic area. 1 <input type="checkbox"/> Somewhat, the OP includes a breakdown of all ages by neighbourhood/ geographic area, but not specifically for older adults. 2 <input type="checkbox"/> Yes, the OP does include a breakdown of older adults by neighbourhood/geographic area.	

Note. Adapted from Guyadeen et al. (2019).

#### GOALS:

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
	Quality of Life	Does the OP include at least one goal about quality of life?	0 <input type="checkbox"/> No, the OP does not include at least one goal about quality of life. 1 <input type="checkbox"/> Somewhat, the OP does include at least one goal about quality of life for residents, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one goal about quality of life and mentions older adults.	
	Healthy Communities	Does the OP include at least one goal about healthy communities?	0 <input type="checkbox"/> No, the OP does not include at least one goal about healthy communities. 1 <input type="checkbox"/> Somewhat, the OP does include at least one goal about healthy communities for residents, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one goal about healthy communities and mentions older adults.	
	Walkable Environments	Does the OP include at least one goal about planning neighbourhoods/ communities that support walking?	0 <input type="checkbox"/> No, the OP does not include at least one goal about planning neighbourhoods/ communities that support walking. 1 <input type="checkbox"/> Somewhat, the OP does include at least one goal about planning neighbourhoods/ communities that support walking, but does	



INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
			<p>not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one goal about planning neighbourhoods/ communities that support walking and mention older adults.</p>	
	Age-Friendly Communities	Does the OP include at least one goal about age-friendly communities?	<p>0 <input type="checkbox"/> No, the OP does not include at least one goal about age-friendly communities.</p> <p>1 <input type="checkbox"/> Yes, the OP does include at least one goal about age-friendly communities, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one goal about age-friendly communities and mentions older adults.</p>	

Note. Adapted from Guyadeen et al. (2019).

#### POLICIES:

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
TOPOGRAPHY	Topography	Does the OP include at least one policy that acknowledges if/how topography can impact walking?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy that acknowledges if/how topography can impact walking.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy that acknowledges if/how topography can impact walking, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy that acknowledges if/how topography can impact walking and mentions older adults.</p>	
WALKING SURFACE CONDITIONS	Well Maintained Sidewalks/ Pavements	Does the OP include at least one policy about sidewalks/ pavements being well maintained?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy about sidewalk/ pavement maintenance.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about sidewalk/ pavement maintenance, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about sidewalk/ pavement maintenance and mentions older adults.</p>	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
WALKING SURFACE CONDITIONS	Well Maintained Trails/Paths	Does the OP include at least one policy about trails/paths being well maintained?	0 <input type="checkbox"/> No, the OP does not include at least one policy about trail/path maintenance. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about trail/path maintenance, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about trail/path maintenance and mentions older adults.	
WALKING SURFACE CONDITIONS	Repair	Does the OP include at least one policy about sidewalks/pavements and/or trails/paths in poorer condition being repaired or improved?	0 <input type="checkbox"/> No, the OP does not include at least one policy about surface repair/improvement. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about surface repair/improvement, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about surface repair/improvements and mentions older adults.	
WALKING SURFACE CONDITIONS	Obstacles	Does the OP include at least one policy about addressing potential walking obstacles?	0 <input type="checkbox"/> No, the OP does not include at least one policy about addressing walking obstacles. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about addressing walking obstacles, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about addressing walking obstacles and mentions older adults.	
STREET DESIGN	Sidewalk Presence	Does the OP include at least one policy about ensuring sidewalks are present?	0 <input type="checkbox"/> No, the OP does not include at least one policy about sidewalk presence. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about sidewalk presence, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about sidewalk presence and mentions older adults.	
STREET DESIGN	Wide Sidewalks	Does the OP include at least	0 <input type="checkbox"/> No, the OP does not include at least one policy about sidewalk width.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
		one policy about sidewalk width?	1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about sidewalk width, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about sidewalk width and mentions older adults.	
STREET DESIGN	Stairs	Does the OP include at least one policy about addressing spaces with stairs?	0 <input type="checkbox"/> No, the OP does not include at least one policy about stairs. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about stairs, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about stairs and mentions older adults.	
STREET DESIGN	Curb Cuts	Does the OP include at least one policy about the inclusion of curb cuts?	0 <input type="checkbox"/> No, the OP does not include at least one policy about curb cuts. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about curb cuts, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about curb cuts and mentions older adults.	
STREET DESIGN	Curb Extensions	Does the OP include at least one policy about the inclusion of curb extensions?	0 <input type="checkbox"/> No, the OP does not include at least one policy about curb extensions. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about curb extensions, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about curb extensions and mentions older adults.	
STREET DESIGN	Ramps	Does the OP include at least one policy about the inclusion of ramps?	0 <input type="checkbox"/> No, the OP does not include at least one policy about ramps. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about ramps, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about ramps and mentions older adults.	
STREET DESIGN	Hand Rails	Does the OP include at least one policy about the inclusion of hand rails?	0 <input type="checkbox"/> No, the OP does not include at least one policy about hand rails. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about hand rails, but does not specifically mention older adults.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
			2 <input type="checkbox"/> Yes, the OP does include at least one policy about hand rails and mentions older adults.	
STREET DESIGN	Traffic Volume	Does the OP include at least one policy about managing traffic volume?	0 <input type="checkbox"/> No, the OP does not include at least one policy about traffic volume. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about traffic volume, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about traffic volume and mentions older adults.	
STREET DESIGN	Presence of Street Crossings	Does the OP include at least one policy about designing roads with crosswalks?	0 <input type="checkbox"/> No, the OP does not include at least one policy about the presence of crosswalks. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about the presence of crosswalks, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about the presence of crosswalks and mentions older adults.	
STREET DESIGN	Frequent Street Crossings	Does the OP include at least one policy about designing roads with a sufficient number of crosswalks?	0 <input type="checkbox"/> No, the OP does not include at least one policy about number of crosswalks. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about number of crosswalks, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about number of crosswalks and mentions older adults.	
STREET DESIGN	Crosswalk Lights/Signals	Does the OP include at least one policy about crosswalks having lights/signals?	0 <input type="checkbox"/> No, the OP does not include at least one policy about crosswalk lights/signals. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about crosswalk lights/signals, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about crosswalk lights/signals and mentions older adults.	
STREET DESIGN	Crossing Times	Does the OP include at least one policy about	0 <input type="checkbox"/> No, the OP does not include at least one policy about crossing times.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
		providing sufficient times to safely cross the street?	1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about crossing times, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about crossing times and mentions older adults.	
STREET DESIGN	Short Blocks	Does the OP include at least one policy about designing streets with short blocks?	0 <input type="checkbox"/> No, the OP does not include at least one policy about short blocks. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about short blocks, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about short blocks and mentions older adults.	
STREET DESIGN	Traffic Islands	Does the OP include at least one policy about including traffic islands/medians for safer street crossing?	0 <input type="checkbox"/> No, the OP does not include at least one policy about traffic islands/medians. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about traffic islands/medians, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about traffic islands/medians and mentions older adults.	
STREET DESIGN	Pedestrian Bridges	Does the OP include at least one policy about pedestrian bridges for crossing the street?	0 <input type="checkbox"/> No, the OP does not include at least one policy about pedestrian bridges. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about pedestrian bridges, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about pedestrian bridges and mentions older adults.	
STREET DESIGN	Visual Crossing Cues	Does the OP include at least one policy about visual cues for crossing?	0 <input type="checkbox"/> No, the OP does not include at least one policy about visual crossing cues. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about visual crossing cues, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about visual crossing cues and mentions older adults.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
STREET DESIGN	Auditory Crossing Cues	Does the OP include at least one policy about auditory cues for crossing?	0 <input type="checkbox"/> No, the OP does not include at least one policy about auditory crossing cues. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about auditory crossing cues, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about auditory crossing cues and mentions older adults.	
STREET DESIGN	Speeding	Does the OP include at least one policy about traffic-calming measure to reduce speeding?	0 <input type="checkbox"/> No, the OP does not include at least one policy about traffic-calming or speeding. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about traffic-calming or speeding, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about traffic-calming or speeding and mentions older adults.	
STREET DESIGN	Right-Of-Way	Does the OP include at least one policy about ensuring rights-of-way are clearly defined?	0 <input type="checkbox"/> No, the OP does not include at least one policy about clearly defined rights-of-way. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about clearly defined rights-of-way, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about clearly defined rights-of-way and mentions older adults.	
STREET DESIGN	Separated Street/Traffic Lanes	Does the OP include at least one policy about separated street lanes?	0 <input type="checkbox"/> No, the OP does not include at least one policy about separated street lanes. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about separated street lanes, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about separated street lanes and mentions older adults.	
STREET DESIGN	Pedestrian-Only Streets	Does the OP include at least one policy about pedestrian-only streets?	0 <input type="checkbox"/> No, the OP does not include at least one policy about pedestrian-only streets. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about pedestrian-only streets, but does	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
			<p>not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about pedestrian-only streets and mentions older adults.</p>	
STREET DESIGN	Street Trees	Does the OP include at least one policy about tree lined streets?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy about tree lined streets.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about tree lined streets, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about tree lined streets and mentions older adults.</p>	
STREET DESIGN	Complete Streets	Does the OP include at least one policy about Complete Streets?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy about Complete Streets.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about Complete Streets, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about Complete Streets and mentions older adults.</p>	
CONNECTIVITY	Street Connectivity	Does the OP include at least one policy about a well-connected street network?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy about street connectivity.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about street connectivity, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about street connectivity and mentions older adults.</p>	
CONNECTIVITY	Trail/Path Connectivity	Does the OP include at least one policy about a well-connected trail/path system?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy about trail/path connectivity.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about trail/path connectivity, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about trail/path connectivity and mentions older adults.</p>	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
LAND USE	Mixed Use	Does the OP include at least one policy about mixed use areas?	0 <input type="checkbox"/> No, the OP does not include at least one policy about mixed use. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about mixed use, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about mixed use and mentions older adults.	
LAND USE	Paths/Trails	Does the OP include at least one policy about proximity to paths/trails?	0 <input type="checkbox"/> No, the OP does not include at least one policy about the proximity to paths/trails. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about the proximity to paths/trails, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about the proximity to paths/trails and mentions older adults.	
LAND USE	Transit Stops	Does the OP include at least one policy about proximity to transit stops?	0 <input type="checkbox"/> No, the OP does not include at least one policy about the proximity to transit stops. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about the proximity to transit stops, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about the proximity to transit stops and mentions older adults.	
LAND USE	Destinations (General)	Does the OP include at least one policy about proximity to destinations?	0 <input type="checkbox"/> No, the OP does not include at least one policy about access to destinations. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about access to destinations, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about access to destinations and mentions older adults.	
LAND USE	Commercial Destinations	Does the OP include at least one policy about proximity to commercial destinations?	0 <input type="checkbox"/> No, the OP does not include at least one policy about access to commercial destinations. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about access to commercial destinations, but	



INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
			<p>2 <input type="checkbox"/> does not specifically mention older adults.</p> <p>Yes, the OP does include at least one policy about access to commercial destinations and mentions older adults.</p>	
LAND USE	Malls	Does the OP include at least one policy about proximity to malls?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy about the proximity to malls.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about the proximity to malls, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about the proximity to malls and mentions older adults.</p>	
LAND USE	Food Stores	Does the OP include at least one policy about proximity to food stores?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy about the proximity to food stores.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about the proximity to food stores, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about the proximity to food stores and mentions older adults.</p>	
LAND USE	Recreational Destinations	Does the OP include at least one policy about proximity to recreational destinations?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy about the proximity to recreational destinations.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about the proximity to recreational destinations, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about the proximity to recreational destinations and mentions older adults.</p>	
DENSITY	Residential Density	Does the OP include at least one policy encouraging higher order residential density?	<p>0 <input type="checkbox"/> No, the OP does not include at least one policy about higher order residential density.</p> <p>1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about higher order residential density, but does not specifically mention older adults.</p> <p>2 <input type="checkbox"/> Yes, the OP does include at least one policy about higher order</p>	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
			residential density and mentions older adults.	
BLUE SPACES	Blue Spaces	Does the OP include at least one policy about access to blue spaces?	0 <input type="checkbox"/> No, the OP does not include at least one policy about blue spaces. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about blue spaces, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about blue spaces and mentions older adults.	
GREEN SPACES	Parks	Does the OP include at least one policy about parks?	0 <input type="checkbox"/> No, the OP does not include at least one policy about parks. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about parks, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about parks and mentions older adults.	
GREEN SPACES	Gardens	Does the OP include at least one policy about gardens?	0 <input type="checkbox"/> No, the OP does not include at least one policy about gardens. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about gardens, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about gardens and mentions older adults.	
REST AREAS	Rest Areas	Does the OP include at least one policy about rest areas?	0 <input type="checkbox"/> No, the OP does not include at least one policy about rest areas. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about rest areas, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about rest areas and mentions older adults.	
AMENITIES	Benches/ Public Seating	Does the OP include at least one policy about benches/public seating?	0 <input type="checkbox"/> No, the OP does not include at least one policy about benches/public seating. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about benches/public seating, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about benches/public seating and mentions older adults.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
AMENITIES	Drinking Fountains	Does the OP include at least one policy about drinking fountains?	0 <input type="checkbox"/> No, the OP does not include at least one policy about drinking fountains. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about drinking fountains, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about drinking fountains and mentions older adults.	
AMENITIES	Access to Public Toilets	Does the OP include at least one policy about accessing public toilets?	0 <input type="checkbox"/> No, the OP does not include at least one policy about accessing public toilets. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about accessing public toilets, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about accessing public toilets and mentions older adults.	
AMENITIES	Accessible Public Toilets	Does the OP include at least one policy about accessible public toilets?	0 <input type="checkbox"/> No, the OP does not include at least one policy about accessible public toilets. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about accessible public toilets, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about accessible public toilets and mentions older adults.	
WAYFINDING	Street Signage	Does the OP include at least one policy about street signage?	0 <input type="checkbox"/> No, the OP does not include at least one policy about street signage. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about street signage, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about street signage and mentions older adults.	
WAYFINDING	Public Toilet Signage	Does the OP include at least one policy about public toilet signage?	0 <input type="checkbox"/> No, the OP does not include at least one policy about public toilet signage. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about public toilet signage, but does not specifically mention older adults.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
			2 <input type="checkbox"/> Yes, the OP does include at least one policy about public toilet signage and mentions older adults.	
WEATHER	Adverse Conditions	Does the OP include at least one policy that acknowledges if/how adverse weather conditions impact walking?	0 <input type="checkbox"/> No, the OP does not include at least one policy that acknowledges if/how adverse weather conditions can impact walking. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy that acknowledges if/how adverse weather conditions can impact walking, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy that acknowledges if/how adverse weather conditions can impact walking and mentions older adults.	
WEATHER	Snow/Ice Clearance	Does the OP include at least one policy about snow/ice clearance?	0 <input type="checkbox"/> No, the OP does not include at least one policy about snow/ice clearance. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about snow/ice clearance, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about snow/ice clearance and mentions older adults.	
WEATHER	Shade	Does the OP include at least one policy about shade?	0 <input type="checkbox"/> No, the OP does not include at least one policy about shade. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about shade, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about shade and mentions older adults.	
AESTHETICS	Nice Scenery	Does the OP include at least one policy about nice scenery?	0 <input type="checkbox"/> No, the OP does not include at least one policy about nice scenery. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about nice scenery, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about nice scenery and mentions older adults.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
AESTHETICS	Architecture	Does the OP include at least one policy about architecture?	0 <input type="checkbox"/> No, the OP does not include at least one policy about architecture. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about architecture, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about architecture and mentions older adults.	
AESTHETICS	Monuments	Does the OP include at least one policy about monuments?	0 <input type="checkbox"/> No, the OP does not include at least one policy about monuments. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about monuments, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about monuments and mentions older adults.	
PERSONAL SAFETY	Lighting	Does the OP include at least one policy about lighting?	0 <input type="checkbox"/> No, the OP does not include at least one policy about lighting. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about lighting, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about lighting and mentions older adults.	
PERSONAL SAFETY	Vandalism	Does the OP include at least one policy about vandalism?	0 <input type="checkbox"/> No, the OP does not include at least one policy about vandalism. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about vandalism, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about vandalism and mentions older adults.	
PERSONAL SAFETY	Vacant Lots	Does the OP include at least one policy about vacant lots?	0 <input type="checkbox"/> No, the OP does not include at least one policy about vacant lots. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about vacant lots, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about vacant lots and mentions older adults.	
CLEANLINESS	Cleanliness	Does the OP include at least one policy about	0 <input type="checkbox"/> No, the OP does not include at least one policy about street/path/trail cleanliness.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
		street/path/trail cleanliness?	1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about street/path/trail cleanliness, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about street/path/trail cleanliness and mentions older adults.	
POLLUTION	Air/Odour	Does the OP include at least one policy about fresh air?	0 <input type="checkbox"/> No, the OP does not include at least one policy about fresh air. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about fresh air, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about fresh air and mentions older adults.	
POLLUTION	Noise	Does the OP include at least one policy about quiet environments, or limiting excess/loud noises?	0 <input type="checkbox"/> No, the OP does not include at least one policy about quiet environments, or limiting excess/loud noises. 1 <input type="checkbox"/> Somewhat, the OP does include at least one policy about quiet environments, or limiting excess/loud noises, but does not specifically mention older adults. 2 <input type="checkbox"/> Yes, the OP does include at least one policy about quiet environments, or limiting excess/loud noises and mentions older adults.	

Note. Adapted from Guyadeen et al. (2019).

**IMPLEMENTATION:**

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
	Implementation	Does the OP identify how age-friendly walkable environments will be implemented?	0 <input type="checkbox"/> No, the OP does not specifically identify how age-friendly walkable environments will be implemented. 1 <input type="checkbox"/> Somewhat, the OP contains at least one implementation tool which could be applied to age-friendly walkable environments. 2 <input type="checkbox"/> Yes, the OP does specifically identify how age-friendly walkable environments will be implemented.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
	Priority	Does the OP identify age-friendly walkable environments to be a priority for implementation?	0 <input type="checkbox"/> No, the OP does not identify age-friendly walkable environments to be a priority for implementation. 1 <input type="checkbox"/> N/A --- 2 <input type="checkbox"/> Yes, the OP does identify age-friendly walkable environments to be a priority for implementation.	
	Financing	Does the OP include at least one policy/section outlining how age-friendly walkable environments will be financed?	0 <input type="checkbox"/> No, the OP does not specifically include at least one policy/section outlining how age-friendly walkable environments will be financed. 1 <input type="checkbox"/> Somewhat, the OP contains at least one financial tool or policy which could be applied to age-friendly walkable environments. 2 <input type="checkbox"/> Yes, the OP does specifically include at least one policy/section outlining how age-friendly walkable environments will be financed.	
	Timeline	Does the OP indicate when age-friendly walkable environments will be implemented over the identified planning horizon?	0 <input type="checkbox"/> No, the OP does not specifically indicate when age-friendly walkable environments will be implemented over the identified planning horizon. 1 <input type="checkbox"/> Somewhat, the OP does indicate when certain aspects of the plan related to age-friendly walkable environments would be implemented over the planning horizon. 2 <input type="checkbox"/> Yes, the OP does specifically indicate when age-friendly walkable environments will be implemented over the identified planning horizon.	

Note. Adapted from Guyadeen et al. (2019).

**MONITORING AND EVALUATION:**

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
	On-going Evaluation	Does the OP identify if age-friendly walkable environments will be monitored	0 <input type="checkbox"/> No, the OP does not identify if age-friendly walkable environment goals and policies will be evaluated throughout implementation.	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
		and/or evaluated throughout implementation?	1 <input type="checkbox"/> N/A --- 2 <input type="checkbox"/> Yes, the OP does identify if age-friendly walkable environment goals and policies will be evaluated throughout implementation.	
	Post Evaluation	Does the OP identify if age-friendly walkable environments will be monitored and/or evaluated after implementation?	0 <input type="checkbox"/> No, the OP does not identify if age-friendly walkable environment goals and policies will be evaluated after implementation. 1 <input type="checkbox"/> N/A --- 2 <input type="checkbox"/> Yes, the OP does identify if age-friendly walkable environment goals and policies will be evaluated after implementation.	
	Metrics	Does the OP identify at least one metric for how age-friendly walkable environments will be evaluated?	0 <input type="checkbox"/> No, the OP does not identify at least one metric for how age-friendly walkable environment goals and policies will be evaluated. 1 <input type="checkbox"/> Somewhat, the OP identifies potential metrics which could be applied to age-friendly walkable environments. 2 <input type="checkbox"/> Yes, the OP does identify at least one metric for how age-friendly walkable environment goals and policies will be evaluated	

Note. Adapted from Guyadeen et al. (2019).

#### PUBLIC PARTICIPATION:

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
	Stakeholder Engagement	Have relevant stakeholders been engaged in the OP development process as it relates to age-friendly walkable environments?	0 <input type="checkbox"/> No, relevant stakeholders were not reported to be engaged in the plan development process as it relates to age-friendly walkable environments. 1 <input type="checkbox"/> N/A --- 2 <input type="checkbox"/> Yes, relevant stakeholders were reported to be engaged in the plan development process as it relates to age-friendly walkable environments.	



INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
	Public Engagement	Have relevant members of the public been engaged in the plan development process as it relates to age-friendly walkable environments?	0 <input type="checkbox"/> No, relevant members of the public were not reported to be engaged in the plan development process as it relates to age-friendly walkable environments. 1 <input type="checkbox"/> N/A --- 2 <input type="checkbox"/> Yes, relevant members of the public were reported to be engaged in the plan development process as it relates to age-friendly walkable environments.	

Note. Adapted from Guyadeen et al. (2019).

**INTER-ORGANIZATIONAL COORDINATION:**

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
	Horizontal	Does the OP reference at least one other same-level municipal plan that supports age-friendly walkable environments?	0 <input type="checkbox"/> No, the OP does not reference at least one other same-level municipal plan that supports age-friendly walkable environments. 1 <input type="checkbox"/> Somewhat, the OP does reference at least one other same-level municipal plan, but it supports age-friendliness/older adults or walkable environments. 2 <input type="checkbox"/> Yes, the OP does reference at least one other same-level municipal plan that supports age-friendly walkable environments.	
	Vertical – Local/ Regional	Does the OP reference at least one local/regional plan that supports age-friendly walkable environments?	0 <input type="checkbox"/> No, the OP does not reference at least one local/regional plan that supports age-friendly walkable environments. 1 <input type="checkbox"/> Somewhat, the OP does reference at least one local/regional plan, but it supports age-friendliness/older adults or walkable environments. 2 <input type="checkbox"/> Yes, the OP does reference at least one local/regional plan that supports age-friendly walkable environments.	
	Vertical – Provincial/ Federal	Does the OP reference at least one federal/provincial mandate/initiative /plan that supports	0 <input type="checkbox"/> No, the OP does not reference at least one federal/provincial mandate/initiative /plan that supports age-friendly walkable environments. 1 <input type="checkbox"/> Somewhat, the OP does reference at least one federal/provincial	

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
		age-friendly walkable environments?	<p>2 <input type="checkbox"/></p> <p>mandate/ initiative /plan, but it supports age-friendliness/older adults OR walkable environments.</p> <p>Yes, the OP does reference at least one federal/ provincial mandate/ initiative /plan that supports age-friendly walkable environments.</p>	

Note. Adapted from Guyadeen et al. (2019).

**ORGANIZATION AND PRESENTATION:**

INDICES	INDICATORS	DESCRIPTION	SCORE	NOTES
	Distinct Section	Does the OP include one distinct section about age-friendly walkable environments in the Table of Contents?	<p>0 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>No, the OP does not include one distinct section about age-friendly walkable environments.</p> <p>Somewhat, the OP includes one distinct section about age-friendly communities OR walkable environments.</p> <p>Yes, the OP does include one distinct section about age-friendly walkable environments.</p>	
	Glossary/ Definitions	Does the OP include at least one defined term relevant to age-friendly walkable environments?  Ex. age-friendly, age-friendly community, age-friendly planning, aging-in-place, older adults, seniors	<p>0 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>No, the OP does not include at least one defined term relevant to age-friendly walkable environments.</p> <p>Somewhat, the OP does include at least one term relevant to age-friendly or walkable environments, but it is not defined.</p> <p>Yes, the OP does include at least one defined term relevant to age-friendly walkable environments.</p>	
	Maps / Diagrams	Does the OP include at least one map or diagram that is illustrative of age-friendly walkable environments?	<p>0 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>No, the OP does not include at least one map or diagram that is illustrative of age-friendly walkable environments.</p> <p>Somewhat, the OP does include at least one map or diagram that is illustrative of age-friendliness OR walkable environments.</p> <p>Yes, the OP does include at least one map or diagram that is illustrative of age-friendly walkable environments.</p>	

Note. Adapted from Guyadeen et al. (2019).

## APPENDIX 2: PLAN QUALITY EVALUATION SCORES (CONSOLIDATED)

Indicator	Norfolk County	City of Sarnia	City of Thunder Bay
Fact Base			
Awareness	0	0	2
Understanding	0	0	2
Aging Population	0	1	1
Population Forecasts	1	0	0
Impacts	0	0	2
Importance	0	0	2
Distribution	0	0	0
Goals			
Quality of Life	1	0	1
Healthy Communities	1	1	1
Walkable Environments	1	1	1
Age-Friendly Communities	0	1	2
Policies			
Topography			
Topography	0	1*	0
Walking Surface Conditions			
Well Maintained Sidewalks/ Pavements	1	1	1
Well Maintained Paths/Trails	1	1	1*
Repair	2	1	0
Obstacles	0	0	1*
Street Design			
Sidewalk Presence	1	1	1
Wide Sidewalks	0	1	1*
Stairs	0	0	1*
Curbs Cuts	0	1	1*
Curb Extensions	0	1*	1*
Ramps	1	1*	0
Hand Rails	0	0	1*
Traffic Volume	2	1	1
Presence of Street Crossings	1	1	1
Frequent Street Crossings	0	0	1*
Crosswalk Lights/Signals	2	1*	1*
Crossing Times	2	0	1*
Short Blocks	1	0	1*
Traffic Islands	0	0	2*
Pedestrian Bridges	0	0	0
Visual Crossing Cues	0	0	1*
Auditory Crossing Cues	0	0	1*
Speeding	2	1*	1
Rights-of-Way	1	1	1*
Separated Street/Traffic Lanes	1	2*	1*

Indicator	Norfolk County	City of Sarnia	City of Thunder Bay
Pedestrian-Only Streets	0	0	0
Street Trees	1	1	1
Complete Streets	1	1	1
Connectivity			
Street Connectivity	1	1	1
Trail Connectivity	1	1	1
Land Use			
Mixed Use	1	1	1
Paths/Trails	1	1	1
Transit Stops	N/A	1	1
Destinations (General)	2	1	2
Commercial Destinations	1	1	1
Malls	1	1*	0
Food Stores	1	0	1
Recreational Destinations	1	2	1
Density			
Residential Density	2	2	1
Blue Spaces			
Blue Spaces	1	1	1
Green Spaces			
Parks	1	1	1
Gardens	1	1	1
Rest Areas			
Rest Areas	1	1	1
Amenities			
Benches/Public Seating	1	1	1*
Drinking Fountains	0	0	1*
Access to Public Toilets	1	1	1*
Accessible Public Toilets	0	0	0
Wayfinding			
Street Signage	1	1	1
Public Toilet Signage	0	0	0
Weather			
Adverse Conditions	0	1	1*
Snow/Ice Clearance	0	1*	2*
Shade	1	1	1*
Aesthetics			
Nice Scenery	1	1	1
Architecture	1	1	1*
Monuments	1	1	1*
Personal Safety			
Lighting	1	1	1
Vandalism	0	0	0
Vacant Lots	0	0	0
Cleanliness			
Cleanliness	1	1	1*
Pollution			
Air/Odour	1	2	1
Noise	1	2	1

Indicator	Norfolk County	City of Sarnia	City of Thunder Bay
Implementation			
Implementation	1	1	1
Priority	0	0	0
Financing	1	1	1
Timeline	0	0	0
Monitoring and Evaluation			
On-going Evaluation	0	0	0
Post-Evaluation	0	0	0
Metrics	1	1	1
Public Participation			
Stakeholder Participation	-	0	2
Public Participation	-	0	2
Inter-Organizational Coordination			
Horizontal	1	2	2
Vertical (Local/Regional)	N/A	1	N/A
Vertical (Provincial/Federal)	2	2	2
Organization and Presentation			
Distinct Section in Table of Contents	1	1	1
Glossary/ Definitions	1	1	1
Maps/ Diagrams/ Illustrations	1	1	1

*Note.* Asterisks (\*) indicate scores were derived from cross-referenced documents in the OP. A dash (-) means no available data. N/A means not applicable.

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