Greenspace Planning in Ontario's High-rise Environments:

The greenspace planning context and experiences of families with children in high-rises

by

Joy Anne Tigchelaar

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Authors Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Abstract

Despite a growing number of families with children living in urban settings, cities remain largely unequipped to support families, particularly in high-rise settings that are marketed and designed towards singletons, young professionals, and the elderly. However, children remain a largely underrepresented population in municipal planning and very few researchers have investigated the experiences of families living in high-rises, including how they access and use greenspace. While a few studies from Australia have investigated families' experiences in high-rises, there is no known published Canadian research that seeks to understand the experiences of high-rise families within Canadian communities. In response to these gaps, this thesis seeks to understand "how municipal planning in Ontario facilitates the creation of child-friendly outdoor greenspaces surrounding high-rise developments?" and "How do families with children living in high rises experience using and accessing their neighbourhood greenspace?" Respectively this thesis will respond to these questions through a policy analysis of Ontario municipal planning documents for a diverse set of communities and interviews with families living in high-rises within the Cities of Kitchener, Waterloo, and Cambridge, three urbanizing cities in Ontario. While few municipalities within this study considered the needs of children and families living in high-rises in their high-level planning documents, guidelines such as the *Growing Up* guidelines from the City of Toronto should inspire growing municipalities to begin considering the diverse populations that live in high-rise settings. Furthermore, based on the experiences of high-rise families, the ability to access and use their neighbourhood greenspaces is vital for play and socialization due to the spatial limitations of their dwelling, which is particularly constraining during winter months. Future municipal policy should consider these needs and future research should investigate the experiences of families in high-rises further through various methods and within different geographies to tailor planning approaches to local contexts.

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Chapter 1.0: Introduction

1.1 Problem Context: The Necessity for Child-Friendly Cities

Cities are growing more rapidly than ever before in human history, and this trend will continue in the future (Blanco et al., 2009). In Ontario, the creation of "complete communities" is the primary vision for growth, whereby the places people live, work, shop, play, and access services are within proximity, meet daily needs, and support healthy and active living (Ontario, 2020). One primary indicator of "complete community" development is the growing number of new apartments as a percentage of all new housing stock, a form of residential intensification that symbolizes proximity to other daily activities and needs. For example, new high-rise development increased from 30% in 2006 to 42% in 2013 within Ontario's most populated region, the Greater Golden Horseshoe (Ontario, 2023). The growth in high-rise developments suggests the creation of more complete communities as a greater number of people live within the same geographic boundaries (Ontario, 2020).

However, high-rises, a high-density form of apartment housing stock, are not typically designed for families with children, and living in these settings is often associated with limited access to outdoor greenspaces such as parks, wooded areas, trails, riverbanks, and backyards (Roy et al., 2012) that are essential for healthy child development (Andrews et al., 2019; Barros et al., 2019; Evans, G. W., 2021). Rather, high-rises are frequently designed and marketed towards young singles, couples, and empty nesters (Andrews et al., 2019). This is a relevant planning problem because even though a growing number of children live in high-rises, demand for child-friendly outdoor greenspaces surrounding high-rise developments far outstrip supply in some cities (Easthope & Tice, 2011). The term child-friendly refers to a conceptual framework that cities can use to assess whether children's needs and priorities are met within its physical environment, governance system, and services (Gleeson & Sipe, 2006; Riggio, 2002; UNICEF, 2019).

Even though the child-friendly framework is recognized by several Canadian municipalities (UNICEF, 2022), the organization and design of Canadian communities are often unfriendly to children, limiting their ability to access and freely use greenspace (Bishop & Corkery, 2017). While this is also a suburban phenomenon (Flouri et al., 2014), it is especially true of growing urban and Transit-Oriented Development (TOD) areas (i.e., development along

public transit corridors) that need intensified forms of housing such as high-rises (Flouri et al., 2014) to support public transit use, among other sustainability goals (Huang et al., 2021).

1.1.1 Urban Greenspace, High-Rise Living, and Healthy Child Development

The places children live and the outdoor greenspaces they go to play are key determinants of health that have implications that extend across the life course (Evans, G. W., 2021; Kalache & Kickbusch, 1997). Among other factors, the planning and design of these spaces can influence healthy child development (Feng, Xiaoqi & Astell-Burt, 2017; Hartig et al., 2014; James et al., 2015a; Ward Thompson & Aspinall, 2011a), including within high-rise settings (Andrews & Warner, 2020; Evans, G. W., 2021). The toxic stress model illustrates how the social and physical environments of these spaces can influence healthy child development (refer to Figure 1.1). The key facets of healthy child development encompass social skill and aptitude, emotional maturity, verbal and cognitive development, physical development, and knowledge and communication ability (Dunn, J. R., 2020). From this lens, health can be understood as a tool which can be used to manage everyday life and participate in society. However, across health-related disciplines there is no agreed-upon definition for health (McCartney et al., 2019).
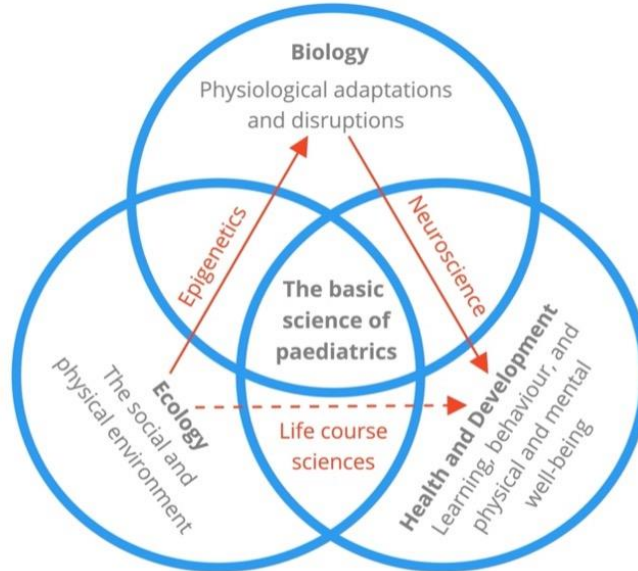
Figure 1.1 Toxic stress model illustrating the relationship between the social and physical environments and healthy child development. Modified from (Dunn, J. R., 2020). Permission from Pediatrics, Vol.129, page(s) 232-246, Copyright 2012 by the AAP needed for official submission.

Childhood is a profound period of cognitive, social, emotional, and physical development that is strongly influenced by external forces such as family and society. Thus, one way to define child health is "the extent to which individual children or groups of children are able or enabled to (a) develop and realize their potential (b) satisfy their needs, and (c) develop the capabilities that allow them to interact successfully with their biological, physical, and social environments (National Research Council & Institute of Medicine, 2004)." This definition will be used by this thesis as it captures the dimensions and forces that influence health, enables the comparison of various populations and development stages, and helps assess the influence of different policies and interventions on child health (National Research Council & Institute of Medicine, 2004), including the planning and design of the place's children live, learn and play (Fyfe-Johnson et al., 2021).

Finding a balance between nature and the built environment sparks a compelling question for cities, *what is nature's place in human society and what role does society play in nature* (Kellert, Stephen R. et al., 2011)? According to the Biophilic Theory, the human-nature connection is instrumental to the health and productivity of both parties due to humanities inherent need to affiliate with natural systems and processes, also known as *biophilia* (Kellert, Stephen R. et al., 2011). Although the term *biophilia* was coined by German social psychologist Erich Fromm, it was later used by entomologist E.O. Wilson to describe the innate or hereditary connection humans have with the natural world (Beatley, 2016). This understanding of humanities predisposition for nature requires continual cultural support and exercise within the built environment. Today, we see this through the practice of biophilic planning and design (Beatley, 2016; Kellert, Stephen R. et al., 2011), a practice that will be described in more detail in Section 2.2.4 of the literature review and is the theoretical underpinning for this study.

Despite the growing number of children living in urban settings (Brown et al., 2019), many city planners do not have sufficient knowledge to make greenspaces more child-friendly (Bishop & Corkery, 2017). High-rise living may consequently create several barriers that limit children's access to nature, which may limit the nurturing of their love and respect for the natural world and a desire to protect it (Kellert, Stephen R. et al., 2011). As such, some efforts to create more child-friendly neighbourhoods and cities may result in unintended consequences such as differences in the quality and quantity of greenspace across cities and the gentrification of neighbourhoods (Wolch et al., 2014)..

To date, no known published Canadian research has examined whether current planning policy facilitates the creation of child-friendly outdoor greenspaces surrounding high-rise developments. Additionally, while greenspace access and use are critical for healthy child development, no known published Canadian research has examined how children living in high-rises access, use, and experience neighborhood greenspace. This is a major gap for two reasons. First, as noted, high-rise housing stock will continue to grow to meet demand and provincial density targets, especially in mid-sized cities. Second, with a better understanding of how children access, use and experience greenspace, municipalities can incentivize or require developers to make plans that support families within intensified, TOD neighborhoods. Therefore, to promote the creation of complete communities an understanding of how the current planning context encourages and facilitates the development of child-friendly greenspaces is necessary.

1.2 Research Purpose, Significance and Objectives

This study examines whether and how the current planning context in Ontario, Canada supports the development of child-friendly outdoor greenspaces surrounding high-rises, and to understand how families with children living in high-rises use and access greenspace through interviews with child-parent dyads. Although access to child-friendly greenspace is good for child health, children are frequently overlooked in the design and planning of these spaces, particularly within and surrounding high-rise settings that represent a growing proportion of Ontario's urban housing stock. Thus, the overarching research questions guiding this thesis are: "How does municipal planning in Ontario facilitate the creation of child-friendly greenspaces surrounding high-rise developments?" and "How do families with children living in high rises, access, use, and experience their neighbourhood greenspaces?"

These research objectives will be addressed through a policy analysis of various Ontario planning documents and interviews with child-parent dyads living in high-rises. Each method addresses the research objectives through the following questions:

- **Method 1: Policy Analysis Findings**
    1. "How does municipal planning in Ontario support the greenspace needs and interests of children in high-rises?"
- **Method 2: Interview Findings**

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2. "How do families with children living in high-rises access, use and experience their neighborhood greenspaces in Kitchener, Waterloo, and Cambridge Ontario?"

1.3 Thesis Overview

This thesis is composed of six chapters, including the enclosed Chapter that outlines the problem context, study purpose, objectives, and significance. Following, Chapter 2 provides a summary of the reviewed literature, including an outline of the search strategy, and an overview of the main bodies of literature that informed this study. This includes the influence of housing on child health, particularly that of high-rise living, the influence of greenspace on child health, and the synergy between these two bodies of research through a deeper understanding of the Biophilic Theory. In Chapter 3, this thesis turns to a reflection of the author's philosophical worldview, a review of the methods, and a summary of the ethical considerations applied to undertake the research summarized in Chapter 4.1 and Chapter 4.2. While Chapter 4.1 provides a content or policy analysis of all high-level formal, non-statutory, and secondary planning documents within the selected regions of Ontario, Chapter 4.2 provides additional context to the findings from Chapter 4.1. It provides additional context through a summary of semi-structured interviews with parent-child dyads living in high-rises. The interviews provide a glimpse into how high-rise families access, use, and experience their neighbourhood greenspaces. Last, Chapter 5 provides a summary of the key findings of this study, providing a conclusion by highlighting the key research objectives addressed and some critical reflections from the findings that inform future research, practice, and social action.

Chapter 2.0: Literature Review

2.1 Introduction

Despite a growing proportion of children living in urban settings (Brown et al., 2019), most cities remain unfriendly to the needs and interests of children (Gleeson & Sipe, 2006; Riggio, 2002; UNICEF, 2019). In developed countries, like Canada, children often live in rigidly planned communities, through a top-down and process-oriented planning system known as the Rational Comprehensive Model of planning (Seasons, 2021), that limits children's ability to freely explore, play, and socialize (Bishop & Corkery, 2017; Riggio, 2002). Today's children are also challenged by the influence of technologies such as high-rise living, automobile traffic, and computer screens that separate them from nature (Jago et al., 2005). Among other factors, the planning and design of cities, which often overlooks the perceptions, needs, and interests of children, has a large influence on child health, including access to nature which encourages independent mobility, curiosity, and physical exercise, among others (Feng, X. et al., 2022; Hartig et al., 2014; James et al., 2015b; Ward Thompson & Aspinall, 2011b).

Unlike any other stage within the life course, childhood is a profound period of cognitive, social, emotional, and physical development that is strongly influenced by external forces such as family and society. Thus, child health is defined as "the extent to which individual children or groups of children are able or enabled to (a) develop and realize their potential (b) satisfy their needs, and (c) develop the capabilities that allow them to interact successfully with their biological, physical, and social environments (National Research Council & Institute of Medicine, 2004, p. 33)." This definition will be used by this thesis as it captures the dimensions and forces that influence health, enables the comparison of various populations and development stages, and helps assess the influence of different policies and interventions on child health (National Research Council & Institute of Medicine, 2004), including the planning and design of the places children live, learn and play (Fyfe-Johnson et al., 2021).

This study seeks to understand whether and how the current planning context in Ontario supports the creation of child-friendly greenspaces, which are important settings for child life, play and development, in high-rise settings. In this Chapter, I situate my thesis within it's relevant background and theoretical contexts including (1) the value of urban greenspace and its influence on child health, and (2) the relationship between housing and child health, with an

emphasis on children in high-rise settings. This review conveys an understanding of the influence of urban greenspace and high-rise living on child health, the barriers children face accessing urban nature, and the existing gaps in knowledge within the Canadian context. This chapter will also illuminate the substantive and theoretical areas of consensus and inconsistency, and the methodological approaches most consistently used and overlooked within the literature. This Chapter will then conclude with an articulation of the gaps that this thesis aims to address, the recommendations that emerged through the literature for future research, and highlight the research objectives of this thesis.

2.2 Literature Review Methodology

2.2.1 Search Strategy, Literary Sources, Screening Process, and Eligibility Criteria

To search and analyze the literature, a set of key search themes and search terms were developed. The databases searched include the University of Waterloo Library, Scopus, PubMed, JSTOR, and Taylor and Francis. The databases were selected to be comprehensive and capture a wide range of perspectives. The key search themes include child health, housing, high-rises, and urban greenspace. As denoted by Table 2.1, search terms were organized by search themes and were sometimes applied across thematic categories to capture all the relevant literature. Some studies were also identified through the citation list of key articles referenced through the search strategy, through my supervisor and committee member, Dr. Leia Minaker and Dr. Jennifer Dean, my peers, and other planning coursework at the University of Waterloo.

Table 2.1 Search Themes and Terms

Child Health	**health AND child OR child health OR child physical health OR child physical activity OR child mental health OR child mental well-being OR child social health OR child social well-being OR child socialization OR child development OR healthy child development OR child AND health OR children AND health OR children's health OR child-friendly OR child play**
Housing	housing OR home OR dwelling OR living environment OR neighbourhood OR residential OR residential AND neighbourhood OR community OR living community OR residential AND community OR low-income area OR marginalized community OR deprived context
High-rises	high-rise OR high-rise building OR high-rise residential OR high-rise dwelling OR apartment OR flat OR tall building OR compact AND dense housing OR compact development OR upward development
Urban Greenspace	green space OR greenspace OR neighbourhood greenspace OR neighbourhood playspace OR public amenity space OR public greenspace OR public space OR public realm OR private greenspace OR backyard OR shared amenity space OR shared greenspace OR urban parks AND trails AND forests OR biophilic planning OR biophilia OR biophilic design OR biophilic planning AND design

A two-stage screening process was used to assess the relevance of studies identified in the search of each database. During the initial screening phase, the titles and abstracts of the articles were reviewed for key terms and study relevancy. If the literature met the below criteria, a full review of the document was completed. Articles and books were reviewed if they were provided in the English language and written after the year 2000 to capture the current evidence and knowledge within the primary areas of interest. However, older studies were also included if they helped support the synthesis of key evidence. All study designs were included within the literature review and any intervention used to examine child health was included. Additionally, if research highlighted the value, role and makeup of urban greenspace or the influence of urban greenspace or high-rise living on child health, the study was included. Furthermore, studies that included adult participants were included if they helped provided context to child experiences within housing, high-rises, or greenspace. Further, the review includes studies of children from urban, suburban, and rural settings if they helped contextualize how urban settings differ. If an article's eligibility was unclear, a full-text review was conducted. As summarized by Figure 2.1, a total of 517 articles were identified, with 153 articles included in this review.

2.2.2 Data Management and Literature Review Matrix

All relevant articles were procured for a full-text review and uploaded to RefWorks, a reference and database management system. Pajo's (2017) literature review guidelines were then used to compile data in an Excel spreadsheet for documentation and coding. Each of the relevant articles were included as a row and columns were used to organize the materials into various categories such as author, date, location, theoretical framework, methods used, participants, study design, data sources, findings, discussion materials, personal notes, and key themes. The matrix was organized into two Excel sheets to separate the two main bodies of research, greenspaces and child health, and high-rises and child health. If there was any overlap between the two sheets, these were noted by the corresponding author. Overall, this strategy helped with the organization of all the relevant literature and highlighted any points of comparison or debate.
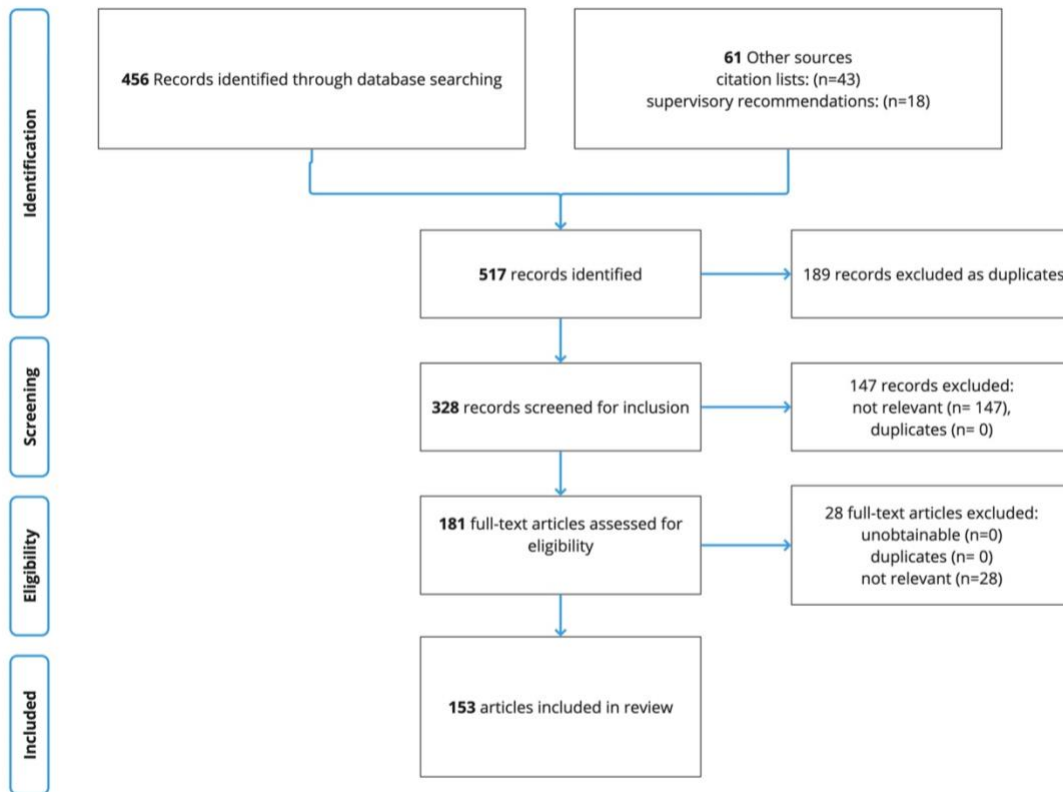
Figure 2.1 Flowchart of study the selection process (conducted between January 2022-July 2023).

2.3 Key Findings from the Literature

The findings below will discuss the key themes in the literature related to the influence of greenspaces and high-rises on health. It will do so with a specific emphasis on how these urban environments influence child health. First, the review will unpack how the literature identifies greenspace, and its value and role in urban settings. It will continue to discuss the value of greenspace by honing-in on how greenspace influences human health, particularly that of child health. Second, the review will turn to a discussion regarding how housing, specifically high-rise living, influences human and child health. Third, it will describe how biophilic design principles can contribute to positive greenspace experiences within intensified housing. The review will then conclude with an articulation of the gaps that this thesis aims to address, provide recommendations for future research, and highlight the research objectives of this thesis.

2.3.1 The Value, Role, and Makeup of Urban Greenspace

Greenspaces are vital to urban life, providing a range of benefits to its inhabitants and the environment. Greenspaces have the power to shape a city and its neighbourhoods, create a sense of place, promote health, happiness, productivity (Beatley, 2016), and provide a habitat for wildlife and valuable ecosystem services (Sadler et al., 2010). Whether urban, rural, or somewhere in-between, humans have an inherent need to affiliate with natural systems and processes that are essential to human health (Beatley, 2016; Kellert, Stephen R. et al., 2011). Over the past 30 years, both academics and planning practitioners have expressed a growing concern for the diminishing quality of greenspaces and the insufficient number of opportunities to connect with nature in cities (SWANWICK et al., 2003). This increased concern is largely driven by the pressures of urbanization (Kondo et al., 2018; Lee & Maheswaran, 2011a), climate change (Lookingbill et al., 2022), health-related research (Fyfe-Johnson et al., 2021; Hartig et al., 2014), and environmental equity initiatives that highlight the disparities created by unequal greenspace distribution (Babey et al., 2007), and inadequate greenspace infrastructure (SWANWICK et al., 2003).

In recent years, the awareness of environmental inequities has shifted the focus of environmental equity initiatives towards establishing an equitable and inclusive greenspace planning processes (Low, 2016; Tooke et al., 2010). The conceptual *Child-friendly Cities* and the *Inclusive-Healthy Places* frameworks applied and introduced in more detail in Chapter 3 and Chapter 4 are two examples of environmental equity initiatives within greenspace planning. As cities continue to grow and evolve, it is important to strike a balance between the built form and greenspace, including sustainability (Beatley, 2016) and environmentally equitable outcomes (Agyeman, 2005). Finding a balance calls municipalities to review their existing greenspace provision (Cohen et al., 2010; Gilliland et al., 2006) and quality (Smoyer-Tomic et al., 2004) in addition to identifying visitor preferences, including an understanding of the similarities and differences that may arise due to race, ethnicity, or gender, among other factors (Bjerke et al., 2006; Gobster, 2002).

Finding a balance between nature and the built environment also sparks a compelling question for cities, *what is nature's place in human society and what role does society play in nature* ((Kellert, Stephen R. et al., 2011)? According to the Biophilic Theory, the human-nature connection is instrumental to the health and productivity of both parties due to humanities

inherent need to affiliate with natural systems and processes, also known as *biophilia* (Kellert, Stephen R. et al., 2011). Although the term *biophilia* was coined by German social psychologist Erich Fromm, it was later used by entomologist E.O. Wilson to describe the innate or hereditary connection people have with the natural world (Beatley, 2016). A *biophilic* understanding of humanities predisposition for nature requires continual cultural support and exercise within the built environment. Today, we see this through the practice of biophilic planning and design (Beatley, 2016; Kellert, Stephen R. et al., 2011), a practice that will be described in more detail in Section 2.2.4 of this review and is the underpinning theoretical framework for this study. The technological and engineering advancements of the past 5000 years have progressively separated humanity from nature, with variation in the human-nature connection across space, place, and time (Kellert, Stephen R. et al., 2011). For instance, in the Western context, the importance of greenspaces became most evident during the industrial revolution of the nineteenth century. During this time, greenspaces became a more common element of European cities, acting as an escape from the air and noise pollution produced by industrialization (SWANWICK et al., 2003). Today, cities are challenged with the balance of maintaining greenspaces in the face of competing priorities such as density and compactness (Beatley, 2016).

Although the influence of greenspace on urban life is an emerging area of interest, there is ambiguity concerning how greenspace is defined within and across disciplines, with very few publications that define greenspace. Since the term's advent in the 1970s, during the urban conservation movement and greenspace planning period in Britain (Swanwick et al., 2003, p. 97), the word greenspace has been used an umbrella term, encompassing a diverse range of both public and private environments in largely urban settings. This includes parks and reserves, forests, play and open spaces, outdoor sports and recreational spaces, city farms and community gardens, wetlands, streams and riverbanks, trails, street trees, institutional grounds, cemeteries, green roofs, backyards, and semi-shared outdoor spaces of apartment buildings, among others (Roy et al., 2012; SWANWICK et al., 2003; Wolch et al., 2014).

Most of the publications related to greenspace are produced in countries in the northern hemisphere, including the United Kingdom and other countries in north-western Europe, North America, and Asia. The term is also used across a broad number of journals related to medical and health sciences, biological sciences, architecture, and urban landscapes. While greenspaces have historically been described using two words, *green space,* there is an emerging use of its

compounded form, *greenspace*. The authors suggest that because compounded words are more helpful to distinguish the term (Verhoeven & van Huyssteen, 2013), *greenspace* should be the preferred use in future research (Taylor, Lucy & Hochuli, 2017).

Due to the lack of consensus, it is important for researchers to explicitly define and operationalize greenspace in their studies. Researchers can operationalize the term using multiple criteria by providing a description, examples, size, ownership, landscape, ecological information, access, amenities, or tree cover to encourage research progression in both qualitative, and quantitative contexts. The development of a common definition is additionally important for planners to help inform decision-making. For the purposes of this thesis, greenspace encompasses, the broad range of land uses described above.

2.3.2 Urban Greenspace and Human Health

There is a large body of research identifying a positive relationship between greenspace and various measures of human health, including several literature reviews of the existing empirical evidence (Bogar & Beyer, 2016; Bowler et al., 2010; Chawla, 2015; Gascon et al., 2015; Haluza et al., 2014; James et al., 2015b; Kondo et al., 2018; Lee & Maheswaran, 2011a; Seymour, 2016). An area of particular interest relates to the influence of urban greenspaces on health. A recent systematic review by Kondo et al. (2018) provides a helpful overview of the existing evidence.

As summarized by Kondo et al. (2018), exposure to greenspace in urban areas is commonly associated with lower heart rates, premature mortality, and violence. Greenspace exposure also improves attention, mood, and levels of physical activity (Foster et al., 2005; Kondo et al., 2018; Owen et al., 2004; Ward Thompson et al., 2016), provides a meeting place for social interaction (Morris, 2003b), and can help alleviate feelings of loneliness by creating a perceived sense of social support (Maas et al., 2009). However, there is no substantial evidence that urban greenspace improves general health, weight status, depression, or cortisol concentration, a key indicator of stress. Further, more rigorous study is needed to generalize how urban greenspaces influence birth outcomes, blood pressure, heart rate variability, cancer, diabetes, or the respiratory system (Kondo et al., 2018).

Within Kondo's (2018) review there were dissenting findings showing how the built environment can facilitate (Bedimo-Rung et al., 2005; Morris, 2003a; Morris, 2003b) or constrain activity (Hu et al., 2008; Ohta et al., 2007). For example, a study of medical records

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from 195 practitioners in the Netherlands observed that living environments with more greenspaces within a 1 kilometre radius from people's homes resulted in a lower annual prevalence of 15 out of the 24 disease clusters observed. This includes cardiovascular, musculoskeletal, mental, respiratory, neurological, and digestive health. A household's proximity to greenspace was also strongly associated with a reduction in anxiety and depression in populations of lower socioeconomic status who lived in slightly urban as opposed to strongly urban areas (Maas et al., 2009).

While proximity promotes nature access, this is not enough to solely improve health. Rather, the characteristics of greenspace such as its features, conditions, accessibly (Owen et al., 2004), and visitor perceptions including sense of safety, alter the influence of greenspace exposure on health (Lee & Maheswaran, 2011b). For example, places that are poorly maintained may make a person feel unsafe as it sends a message that there is a lack of care and a lower-level of acceptable behaviour for such environments (Bedimo-Rung et al., 2005). In contrast, parks with expansive space may help resident's sense of belonging as they create potential opportunities for social interaction and engagement with one's local environment (Ward Thompson et al., 2016).

While there is significant evidence highlighting the positive relationship between greenspace and health, the influence of greenspace exposure is also confounded by several socioeconomic variables including age, gender, ethnicity, and income-status. More attention should be paid to how greenspaces can be delivered in meaningful ways to different people and groups (Dinnie et al., 2013). For example, greenspace proximity and quantity appear to have the greatest benefit to low-income groups and is the only group where greenspace access is associated with lower mortality (Lachowycz & Jones, 2014; Mitchell & Popham, 2008). While the majority of research used a before-and-after and cross-sectional study designs to understand the relationship between greenspace and human health, it is important that future research focuses on nature contact and exposure to various greenspace elements (Frumkin, 2003; Groenewegen et al., 2006; Hartig et al., 2014).

2.3.2.1 Urban Greenspace and Child Health

Although greenspace has an influence on health, the extent of its influence varies across sub-populations, including children. The impact of greenspace on child health is unique from other cohorts due to the significant cognitive, social, physical, and emotional development in

childhood and the family and social forces that influence children more than any other age group (National Research Council & Institute of Medicine, 2004). Resultingly, uses and experiences of greenspace among children change as they develop (Astell-Burt et al., 2014; Feng, Xiaoqi & Astell-Burt, 2017) and their perceptions of greenspace may also be moderated by various parental and societal factors. While greenspace influences child health, the planning and design of residential neighbourhoods often overlook the needs and perspectives of children (Berg & Medrich, 1980; Gleeson & Sipe, 2006). Due to children's inherent *biophilia*, it is important for them to be exposed to natural systems and processes at an early age to develop patterns of behaviour that unlock the potential physical, mental, and social health benefits of greenspace exposure into adulthood (Moore, L. et al., 2003).

<u>The Influence of Urban Greenspace on Child Physical Health:</u> The time a child spends outside is the biggest indicator of physical activity (Sallis et al., 2000) and a strong metric for physical health (Ward Thompson & Aspinall, 2011b). The recent COVID-19 pandemic emphasized this, as individuals and families were limited to their homes and surrounding neighbourhoods (Gagné et al., 2021). However, more generally, children are not spending enough time outside (Kellert, Stephen R. et al., 2011). In Canada alone, only 7% of children spend the recommended 60 minutes a day doing moderate to vigorous physical activity (MPVA) (Colley et al., 2017, p. 8). Irrespective of age, time outside may be influenced by the environmental qualities of greenspace, and the physical character and demographic makeup of a community. For children, time in greenspace may also be moderated by their individual interests and stage of development, the availability of other playmates, and adult values and perceptions towards the urban context (Kellert, Stephen R. et al., 2011).

First, the design and environmental qualities of greenspace can facilitate a child's physical activity (Engemann et al., 2021) and physical health (Ward Thompson & Aspinall, 2011b). For example, time in greenspace exposes children to cleaner air (Escobedo et al., 2011), can boost immune systems (Ring 2005), and motivate exploration and engagement with the environment (Obee et al., 2021; Veitch et al., 2021). However, in North America, the design of neighbourhood playgrounds and greenspaces often overlooks the needs of all children (Berg & Medrich, 1980), limiting their accessibility. While playgrounds and open spaces have become the dominant outdoor space for child play (Dodd et al., 2021), and the use of universal design principles may improve accessibility (Parker & Al-Maiyah, 2022), children generally find these

environments unengaging. Rather, when asked about their preferences, children preferred wooded and unplanned spaces (Hart, 1979; Moore, R., 1986) over the traditional playground that is promoted by adults who direct planning discourse and implementation (Francis, 1984; McKendrick, 1999).

The physical character of a neighbourhood may also impact child physical activity in greenspace (Feng, Xiaoqi & Astell-Burt, 2017; Flouri et al., 2014; Hartig et al., 2014; James et al., 2015a; Ward Thompson & Aspinall, 2011a). The neighbourhood characteristics that influence physical activity relate to greenspace proximity, weather and seasonality, and the sense of community and safety within a neighbourhood (Molina-García et al., 2022; Talal & Santelmann, 2021). Furthermore, the planning and design of residential neighbourhoods often overlooks the needs of children (Berg & Medrich, 1980). While some movement has been made to reclaim neighbourhood spaces for child play, such as "playstreet" initiatives ((Eubank-Athrens, 1991; Francis, 1984; Moore, R., 1980), progress in this area is slow-moving (Pucher & Dijkstra, 2003). To ensure that children can safely experience the world around them, it is important for planners to review the connections throughout greenspace systems to promote child independent mobility and physical activity (Berg & Medrich, 1980; Woolley, 2006).

Furthermore, the demographic composition of children themselves, their households and their neighbourhoods may impact child physical activity within greenspaces. Among others, this includes one's gender, immigration status (Choi et al., 2021), socioeconomic status, the mental well-being of a child's caregivers, and a community's geographic and population size. For example, while boys generally spend more time doing adventurous play (Dodd et al., 2021), girls spend approximately 3.1 more times in greenspace and have 2 times more person-to-person interactions than boys (Freeman et al., 2021). Additionally, socioeconomic status plays a large role in greenspace activity (Rehling et al., 2021). Interestingly, while children of lower socioeconomic status spend less time in greenspace, they spend the most time outdoors, highlighting the need to assess greenspace distribution across cities (Rehling et al., 2021). This is particularly true for children between the ages 3-5 due to their dependency on caregivers (Ezeugwu et al., 2021), and non-urban children who spend less time being active (Christiana et al., 2021) and have a lower sense of autonomy than children in urban areas (Percy-Smith 2002). This is exacerbated by a parent's mental wellbeing that may decrease their interest and increase the number of perceived barriers visiting greenspaces (Gustafsson et al., 2021).

While most research measures greenspace activity through surveys, accelerometers, video observations, and body cameras (Asta et al., 2021; Bijnens et al., 2022; Yuchi et al., 2022), future research should continue investigating what greenspace qualities and design features stimulate child physical activity. Furthermore, while the relationship between greenspace and child physical health is complex (Melo et al., 2021), it is critical for future research to seek the perspectives of children and youth to create empirical evidence that supports planning decisions (Riggio, 2002).

The Influence of Urban Greenspace on Child Mental Health: In addition to a physical impact, urban greenspace may influence a child's mental health and wellbeing, including feelings of calmness and reduced stress (Adams & Beauchamp, 2021; Davis et al., 2021), a transcendence of time and reality (Adams & Beauchamp, 2021; Engemann et al., 2021), and increase socialization, and ability to complete tasks (Engemann et al., 2021). Greenspace access and use is additionally an indicator of child stress-levels and ability to cope with emotions (Evans, G. W., 2021; Gifford, 2007; Kalantari & Shepley, 2020). However, the relationship between greenspace and child health is influenced by a number of factors including proximity to greenspaces (Bloemsma et al., 2021; Davis et al., 2021), the design and accessibility of greenspaces, a child's age (Adams & Beauchamp, 2021; Bloemsma et al., 2021; Luque-García et al., 2022), parental influence (Luque-García et al., 2022; Nagata & Liehr, 2021; Passmore et al., 2021), and the degree of community consultation involved in the greenspace planning process (Vidal et al., 2022).

The biggest factors of greenspace access that influence child mental health include parental socioeconomic status and affinity to visiting greenspace (Nagata & Liehr, 2021), residential proximity to greenspace (Pérez-del-Pulgar et al., 2021), and the quality of park or natural amenities (Veitch et al., 2021). For example, parks that have good air quality and facilities may be associated with a lower risk of ADHD (Asta et al., 2021; Yuchi et al., 2022) Children living in proximity to urban greenspaces also have higher performance, global IQ (Almeida et al., 2022), and faster reaction time than those living beyond 800 m and 2000 m (Almeida et al., 2022; Bijnens et al., 2022).

The common indicators used to measure child mental health include the Cox Proportional Hazards Models to measure ADHD incidence, WISC-II Cognitive Scores, the Stroop Test, Goodman's Strengths and Difficulties Questionnaire, Behavior Rating Inventory of Executive

Function, the Mental Component Score (MCS), the Spence Children's Anxiety Scale (SCAS), Children's Depression Inventory 2 (CDI 2), Diurnal Cortisol Slope, and ELISA Technique to Measure Oxidative Stress. However, these indicators may not capture the diverse parental, societal, and individual factors that influence greenspace access such as parental attitudes towards greenspace (Putra et al., 2021), or the environmental quality (Figuracion & Lewis, 2021), and design of neighbourhood greenspace (Parker & Al-Maiyah, 2022). Thus, the methods used to observe child behaviour should be carefully considered to further understand the influence of greenspace on child mental health (Kellert, Stephen R. et al., 2011). Further, generalization of findings is challenging because there is inconsistent evidence of the effectiveness across indicators and differences in what each indicator is measuring.

The Influence of Urban Greenspace on Child Social Health: There is also some evidence supporting an association between child development and greenspace, including the promotion of prosocial behaviour (Jimenez et al., 2021; Putra et al., 2021), reduced behavioural issues (Zare Sakhvidi et al., 2022), and cognitive development (Mastorci et al., 2021). For example, Veitch (2021) who observed individuals' perceptions of 42 different park features, found that elements such as an adventure park, a large slide, or obstacle course were important for child socialization and park visits. These impacts may differ between and within various sociodemographic groups and highlight the importance of understanding how park features influence children's greenspace experiences.

In summary, there is strong evidence that children's access to and use of greenspaces is strongly associated with mental and physical health outcomes. Greenspace also has the power to promote several physical, mental, and social or developmental health benefits. Among other factors, the design and accessibility of greenspace amenities, the neighbourhood accessibility of greenspaces, and various other neighbourhood and demographic characteristics influence the relationship between greenspace and health. This includes child health which is also affected by various societal and parental forces more than any other age cohort. While several studies investigate the associations between health and children's perspectives towards greenspace, there is limited evidence of any causal relationship. This highlights the need to assess the unequal distribution of greenspace across cities and the impact of greenspace exposure on various demographic groups (Rehling et al., 2021). It is also critical that future research seeks the

perspectives of children and youth to better understand how neighbourhood greenspace impacts their health and create empirical evidence that supports planning decisions (Riggio, 2002).

2.3.3 The Influence of Housing on Health

While greenspace plays a significant role in child health, children's housing may limit their direct experiences of natural processes and materials in early childhood (Kellert, Stephen R. et al., 2011). To increase the friendliness of urban neighbourhoods for children (de Vries et al., 2007), structural changes may be needed to create safe and active living environments for all residents (Frank et al., Mackett et al., 2004). The following section of the literature review will investigate the importance of housing on health and how it can mediate children's connection with nature.

2.3.3.1 The Relationship between Housing and Health: A High-level Framework

The relationships between housing and health are deeply intertwined, representing an association that extends beyond the formal advent of planning and public health (Barros et al., 2019; Crawford et al., 2010; Kochtitzky et al., 2006). While housing is often described by the physical materials that make-up shelter such as a roof, walls and doors, housing takes on a much more meaningful role when it becomes a home. Home is both the material sphere that people live in and an affective space (Blunt, 2005) that can invoke feelings of safety, stability, privacy, identity and belonging or the opposite of these attributes (Kerr et al., 2021). As Madden and Marcuse (2016) explain:

> Housing means many things to different groups...Housing is the precondition both for work and for leisure … More than any other item of consumption, housing structures the way that individuals interact with others, with communities, and with wider collectives. Where and how one lives decisively shapes the treatment one receives by the state and can facilitate relations with other citizens and with social movements. No other modern commodity is as important for organizing citizenship, work, identities, solidarities, and politics. It is this side of housing-its lived-universally necessary, social dimension, and its identity as home- that needs defending. (p. 11-12)

Housing can come in many shapes and forms and people's experiences in them varies, including how it influences one's health.

While housing is a key determinant of health (Howden-Chapman et al., 2017), its impacts are complex and extend across the life course (Perry & Pollard, 1998). There are three primary attributes of both housing and its surrounding environment that influence health. These include:

(1) the biological, chemical, and physical hazards within housing; (2) the physical design of housing, and (3) its psychological, social, financial, and locational features. As denoted by the housing and healthy child development framework in Figure 2.2, these attributes are moderated by housing tenure, income level, disability, age, gender, race, ethnicity, and household type and composition (BCCDC, 2018; Dunn, J. R., 2020). According to the framework, the ideal housing outcome is one that provides a stable, safe, and affordable living environment (Bovell-Ammon et al., 2021; Taylor, Lauren, 2018).

The current evidence related to how housing influences more than just one's physical health is limited (Ige et al., 2019), with findings also significantly varying by geography and degree of urbanity. According to Dunn (2020), housing can influence five domains of child development including their social, emotional, language and cognitive, physical, and communication skills. While Dunn's framework for healthy child development may slightly differ from this thesis's definition of child health provided in Section 2.1 due to its specific focus on housing, both definitions view child health as multi-dimensional and include child development as a major element of child health, enabling the comparison of various populations and development stages.

Figure 2.2 Housing, a pillar within healthy built environments and a framework that outlines the attributes of housing that influence healthy child development. Modified from (BCCDC, 2018; Dunn, J. R., 2020). According to Dunn, the relationship between housing and healthy child development may be moderated by various household and demographic characteristics, as listed in the figure.

Although there is more empirical evidence related to how housing influences child health in urban as opposed to suburban or rural areas, findings generally lack the rigor to support causal relationships in either setting (Taylor, Lauren, 2018). Furthermore, a study's geographic context may alter participants' perspectives towards various housing typologies. For example, in the Global North, single detached homes (Kitchen et al., 2012) and missing-middle housing, low-to-medium density residential buildings with multiple units, are often associated with families (Huang et al., 2021; Opit et al., 2021). In contrast, higher-density housing is frequently associated with young adults, singletons, and the elderly (Andrews et al., 2019). These assumptions often shape societal expectations of where people should live and how different housing types, and their surrounding streetscapes such as greenspace, are planned and designed. These decisions can in turn influence human health and healthy child development (Bovell-Ammon et al., 2021).

2.3.3.2 The Influence of High-Rise Living on Human Health

As identified within the housing and healthy child development framework, housing type and composition moderate the relationship between housing and health. However, the influence of high-rises, a high-density form of housing stock, on health is still debated. To make matters more complex, a definition for what constitutes a high-rise building remains unclear. This section of the literature review will outline how high-rises and their neighbourhoods influence the physical, mental, and social dimensions of health. It will do so by first defining what is meant by a high-rise building. It will then investigate how high-rise buildings and their surrounding neighbourhoods influence health. Last, it will describe existing Canadian research on the topic. While various housing types and compositions influence health, a deeper understanding of these associations is needed.

What is a Residential High-rise: Although it is commonly understood that a residential high-rise is a dense form of housing, there is a lack of consensus amongst the few who have defined it regarding the specific attributes that makeup a high-rise building. For example, Barros et al. (2019) conducted a systematic review of articles related to high-rises and mental health between 1971 to 2016 and found that only seven of the 23 eligible articles defined the term high-rise. High-rises, as defined by Barros et al. (2019), refer to "buildings with at least four storeys that necessarily, but not exclusively, contains a number of private residences (also referred to as apartments or flats) reached via shared entrance, stairwell and/or lifts." However, some

variations in definitions exist, such as those provided by Gifford (2007) who suggests that a high-rise should be a minimum of three storeys or Kalantari (2020), who states that they must be more than seven storeys.

Nonetheless, Barros et al.'s (2019) definition will be used by this thesis alongside the definition provided by a recent Canadian study conducted by Peters (2021) which aligns with the practical definitions used by Statistics Canada (Statistics Canada, 2022b) and the Canadian Mortgage and Housing Corporation (CMHC) (CMHC, 2021), that define high-rises as buildings with five or more storeys. Thus, for the purposes of this thesis, a high-rise dwelling refers to a building with at least five storeys, containing several private residences that can be accessed through a shared entrance, stairwell, or lift.

The Dimensions of High-rise living that Influence Human Health: There are several dimensions of high-rise living that influence an individual's health including its height, massing, and orientation, building materials, unit sizes, lighting, and security systems. These design features can influence a buildings ability to conserve energy (CHMC, 2012)(CHMC, 2012), ventilate the air (Wilson, J. et al., 2020), protect against fire (Glauberman, 2020; Sundrani, 2012), perform in an earthquake or environmental event (Sundrani, 2012) and impact Emergency Medical Service visits (Morrison et al., 2005). These environmental and design features of high-rises may consequently impact one's physical, mental, and social health.

First, while further evidence is needed, high-rise living may influence an individual's physical health by discouraging physical activity (Jackson, 2003) and exposing inhabitants to environmental hazards such as smoking in common areas (Anastasiou et al., 2020) and the transmission of communicable diseases (Gao et al., 2008). While the fear of contagion may lead people to feel further isolated, the recent COVID-19 pandemic also emphasizes the importance of good ventilation, cleaning systems, natural lighting, and temperature regulation in high-rises due to the number of high-touch surfaces (Gifford, 2007) and increased time spent indoors (Peters & Halleran, 2021). However, studies from both Dubai and Korea, warn against assumptions that those living in taller buildings are less healthy as there is not sufficient evidence to support such claims (Je & Lee, 2010; Jung et al., 2021).

Whether high-rises support mental health and social well-being is also still debated. While some believe high-rises are "unnatural" places to live due to their absence of human scalability (Evans et al., 2003; Gifford, 2007) (refer to Figure 2.3), others perceived them

positively due to their smaller footprints which may leave more room for open space, the potential for good views, their generally central locations with various services and transportation options nearby, and their potential to promote greater social interaction and reduce the fear of crime due to controlled entrances and increased proximity (Gifford, 2007).
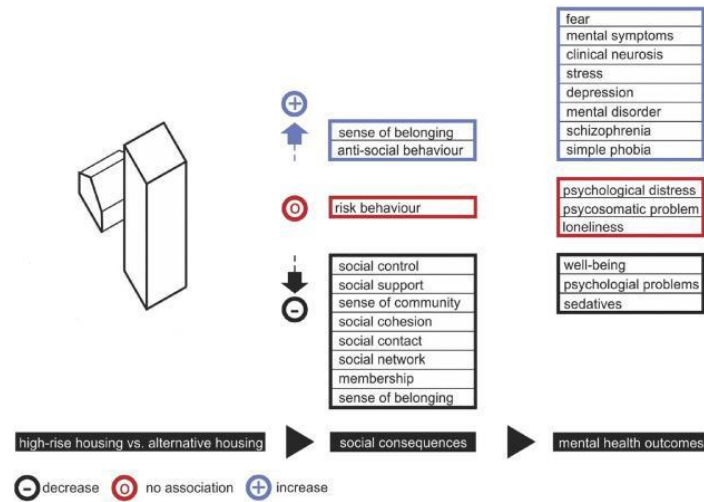
Figure 2.3 Key mental health outcomes associated with High-Rise Housing (housing type). Retrieved from (Barros et al., 2019) systematic review of mental health and high-rise housing.

There is also evidence to suggest that high-rise dwellers experiences and perceptions may also differ from those within the same building. For example, those who live on higher floors often experience a greater sense of well-being than those on lower floors due to lower traffic noise (Kearns et al., 2012), exposure to air pollution (Zhang et al., 2015), and better views of green and open space that promote positive emotions, increased cognitive functioning, productivity, and self-discipline (Olszewska-Guizzo et al., 2018). However, access to greenspace (Akbari et al., 2021) and changes to design guidelines that direct a buildings massing, shape, orientation, and size may accommodate for these differences in perception (Olszewska-Guizzo et al., 2018).

Furthermore, greater geographical and population-level contextualization is needed to understand and verify these associations (Barros et al., 2019; Verhaeghe et al., 2016). As identified by Barros et al.'s systematic review (2019), most research between 1971 and 2016 related to high-rises and mental health was conducted in higher-income nations within the Global North such as the United Kingdom, the United States, South Korea, the Netherlands, and Canada. As such, evidence should be drawn from a broader range of communities to develop a better understanding of high-rise living and its true influence on mental health.

High-rise Living in Canada and its Influence on Health: To date more than 8.8% of Canadian households live in high-rises (LeVasseur et al., 2017). However, only three known studies investigate the influence of high-rise living on health in Canada. One related to the physical health implications of COVID-19 and high-rise living (Peters & Halleran, 2021) and the remaining two associated with Canadian mental health and social wellbeing (Ghosh, 2014; Kitchen et al., 2012). However, the two studies which examined high-rises in relation to mental health and social well-being had conflicting results (Ghosh, 2014; Kitchen et al., 2012).

Kitchen et al. (2012) examined the mental health and social well-being of Canadians across various communities of different sizes and discovered that those living in high-rises experienced the lowest sense of belonging and highest prevalence of negative mental health outcomes in comparison to single-detached homes. In contrast, Ghosh (2014) observed the experiences of Bangladeshi people living in high-rises within Toronto and found that those who lived in high-rises felt a greater sense of belonging. These differences potentially reflect the "place effect on health" as high-rise housing may better reflect the values of those from Bangladesh than the Canadian population at large (Macintyre et al., 2002). These findings highlight the importance of including demographic data in future high-rise research. Furthermore, various methodological issues exist across studies including a lack of conceptual consensus, a limited number of studies that focus on the positive mental health outcomes of high-rises, and poor geographical contextualization.

Although high-rises influence human health, the evidence is mixed depending upon the geography, demographics of the study population, and potential design and environmental factors of the buildings and neighbourhood in question. Thus, studies which investigate how high-rises influence health should help contextualize their research in its appropriate geographic and demographic context and provide a clear definition of what is meant by a high-rise. It is recommended that future Canadian research use a similar definition of what constitutes a high-rise to maintain consistency and encourage the progression of high-rise health research in the country.

The Health of Children in High-Rise Settings: High-rises are home to children all around the world. However, the influence of high-rise living on child health is a largely unexplored area of research (Baxter & Lees, 2009; Plunz, 2018). In the Western context, high-rises are often not designed for families with children and living in these settings is often viewed as temporary

(Andrews & Warner, 2020; Evans et al., 2003; Raynor, 2018). Resultingly, high-rise living is associated with the struggle of families to raise children due to the physical limitations of dwelling units and the negative social pressures that view high-rises as an inadequate place to raise a child (Andrews et al., 2019; Kerr et al., 2021). High-rise living may also be restrictive of child play due to various design and management features within these buildings and the surrounding neighbourhood. To better understand how high-rise living influences child health, future research must seek the perspective of families with children in high-rises settings.

Despite a growing number of families living in high-rises in the Western world (Easthope & Tice, 2011), these settings are repeatedly characterized as unsuitable places for children to live (Andrews & Warner, 2020; Evans et al., 2003; Raynor, 2018). However, these claims may not be accurate, as families' experiences are often overlooked by researchers (Kearns et al., 2012; Nethercote & Horne, 2016) and planning practitioners (Riggio,2002). There are also many families who happily live in high-rise settings such as in London (Baxter & Lees, 2009), New York City (Plunz, 2018), or India (Muhuri & Basu, 2021a). Despite these global examples, Western perspectives often endorse high-rises as an unfavorable setting for families to live and raise children (Andrews & Warner, 2020; Evans et al., 2003; Raynor, 2018).

The perceptions of where and how families should live differs across geographies and is a concept that has dramatically shifted over time (Smith, M. E., 2007). In the Western context, high-rises were once seen as buildings for low-income households, however, the market has pivoted and broadened its scope towards the affluent (Kalantari & Shepley, 2020). While high-rise settings are still perceived as an important affordable housing option that helps parents maintain a work-life balance (Andrews et al., 2019), these buildings are typically designed for young couples, singletons, and empty nesters (Andrews et al., 2019; LeRoy, 2006).

Although Western families may choose to live in a high-rise by choice or necessity (Raynor, 2018), several studies highlight the difficulties families experience in making these spaces feel like home due to their various spatial, density, design, management, and neighbourhood considerations (Andrews et al., 2019). High-rises are also perceived as temporary, transitional, and unsuitable for families to live (Kerr et al., 2021). Parents with children who live in high-rises have additionally expressed feelings of failure due to the external pressures from family and friends that question their housing decisions (Kerr et al., 2021). Cultural expectations seem to lag behind family housing choices and development patterns.

Some research has found that minor spatial and amenity modifications to high-rise buildings may help families make these settings feel more like home (Kearns et al., 2012; Kerr et al., 2021).

Irrespective of perspectives on whether children *should* live in high-rises, an increasing number of children *do* live in high-rises in Canada. However, many elements influence child health and development both within and surrounding high-rise settings. The limitations of high-rise settings can include a restricted amount of space and storage within each unit for living that limit the ability to play and store play equipment such as bikes or strollers, the continual monitoring of child noise levels (Andrews et al., 2019; Andrews & Warner, 2020), and often limited and unsuitable outdoor spaces for play. This is believed to have a negative impact (Andrews et al., 2019). The management practices of high-rise settings may also monitor resident behaviour, ban children from playing in common areas or limit children's right to freely play (Easthope & Tice, 2011). The greenspaces and playgrounds immediately surrounding high-rise settings are also critical for physical activity, socialization, and development (Andrews & Warner, 2020)

The design of high-rise units often poses safety hazards for children such as windows and balconies, parking areas, entrances and exits (Andrews et al., 2019). Around high-rises, heavy traffic, pollution, and illicit drug exposure create fear around allowing children to walk outside the home (Andrews & Warner, 2020), in part due to parents' limited ability to monitor activities (Easthope & Tice, 2011). Parents also note the limited family services near high-rises and their choice to grocery shop with home delivery to avoid the safety risks of walking with their kids on the street. However, this problem may also apply to other urban settings (Verhaeghe et al., 2016). Andrews et al. (2019) recommends that high-rise environments should adapt to child-friendly urban design guidelines such as those in many Canadian cities, however, does not indicate which cities have good design policies or specify what these policies look like.

The relationship between housing and health is complex. However, there are various factors that influence health including the design and typology of housing. High-rise buildings will continue to be a significant housing typology within the Ontario and global landscape. While the research related to high-rise living and child health generally indicates a negative relationship, there are several examples from around the world, such as in London (Baxter &. Lees, 2009), New York (Plunz 2018) and Brazil (Muhuri & Basu, 2021b) that suggest otherwise. Additionally, while most evidence related to families' experiences in high-rises is from larger

Australian cities such as Melbourne or Brisbane that limits its generalizability, generalization is not necessarily the ultimate goal of high-rise and healthy child development research as it is important to capture the diverse experiences and influence of place on child health (Macintyre et al., 2002; Raynor, 2018; Warner & Andrews, 2019). Thus, it is important for high-rises to be designed with all inhabitants in mind, including children to satisfy their needs and support their development. While this relates to the physical units' families choose to live within, it also includes the outdoor private and shared amenity spaces in high-rise neighborhoods that support play and socialization.

2.3.4 Integrating Nature in High-rise Environments though Biophilic Design

The inherent value of the human-nature connection is known as *biophilia*. In recognition of the importance of humanity's place in nature, many architects, planners, and urban designers have applied the concept of *biophilia* through the practice of *biophilic design* (Kellert, Stephen R. et al., 2011, p.3)*.* The idea of *biophilic design* arose from an understanding that humanity has evolved through an adaptive response to the conditions and stimuli of the natural world such as sunlight, weather, water, plants, animals, landscapes, and habitats (Kellert, Stephen R. et al., 2011). Biophilic Theory would argue that these conditions and stimuli are still critically important for human survival, development, and well-being (Kellert, Stephen R. et al., 2011).

In recognition of this, biophilic design "is the deliberate attempt to translate an understanding of the inherent human affinity to affiliate with natural systems and processes-known as biophilia (Kellert, S. & Wilson, 1993; Wilson, E. O., 1984) into the design of the built environment" (Kellert, Stephen R. et al., 2011). In application, the practice of biophilic design is composed of two theoretical dimensions. The first is the organic or naturalistic dimension which relates to natural or natural-like shapes and forms and the second is the place-based of vernacular dimension which conveys humanities place-based connection with local ecology. Each of the dimensions within biophilic design are composed of six attributes that include: natural shapes and forms, natural patterns and processes, light and space, place-based relationships and evolved human-nature relationships that together compose more than 70 features (Kellert, Stephen R. et al., 2011, p.6). The theory of biophilic design would suggest that when these attributes are applied to the built form, they help to strengthen the human-nature connection (Kellert, Stephen R. et al., 2011).

However, we have a limited understanding of the magnitude of the value humans attach to specific attributes in nature, such as a water feature in a park or a gravel trail. These place limitations on our ability to transfer this understanding into practice. It is important that future research taps into the value people place on nature and the specific elements that make people feel more connected to nature. In high-rise settings, it is important for this connection to be recognized to understand and promote the health of the population and that of children living in these settings so that their biophilic tendencies can be fully nurtured and realized (Kellert, Stephen R. et al., 2011).

2.4 Addressing Research Gaps and Future Research Opportunities

The places children live and go to play are key determinants of health, laying the foundation for healthy child development (Evans, G. W., 2021; Kalache & Kickbusch, 1997). Among other factors, the planning and designed of these spaces can influence child health (Feng, X. et al., 2022; Hartig et al., 2014; James et al., 2015b; Ward Thompson & Aspinall, 2011b), including within high-rise settings (Andrews & Warner, 2020; Evans et al., 2003). However, the influence of high-rises on health remains unclear. In Canada, studies have either been conducted at a very large scale such as the national level (Kitchen et al., 2012) or a narrow scale, focusing on a particular group and geographic area (Ghosh, 2014).

This thesis addresses these gaps by aiming to better understand how high-rise settings influence health for children. Second, this thesis will outline the definitions of key terms that are commonly used in the literature and within Canadian practice to promote a consistent use of key terms. Third, this thesis will justify the importance of the selected study area and seek participant demographic information to provide a strong geographic contextualization of high-rise housing and health in Canada.

The experiences of families in high-rises are also frequently stigmatized and overlooked, despite the growing number of families that live in these spaces (Barros et al., 2019). To date, no Canadian study has examined the experiences of families with children in high-rise settings and whether the existing planning policy system supports those who live in high-rises. Although one study within this literature review pointed to Canadian cities as an example of applying child-friendly urban design principles (Andrews et al., 2019), it did not specify where these guidelines were specifically implemented. Additionally, while greenspace access and use are critical for

healthy child development, no known published Canadian research has examined how children living in high-rises access, use, and experience neighborhood greenspace.

This study intends to aid the normalization of families living in high-rise settings in Canada and support their quality of life in these settings. It will do so by contextualizing whether and how municipal planning and design practices in Ontario's cities facilitate the creation of child-friendly greenspaces within and around these settings. The observation of small-to-large sized cities is important due to the growing population and number of high-rise developments across the province (Ontario, 2020). The methods used to address this gap include a policy scan of formal municipal planning documents across a range of municipalities in Ontario, including small, medium, and large municipalities and their regional governments. It will also use semi-structured qualitative interviews with children and their caregivers to better understand how children access, use, and experience greenspace. The findings from interviews conducted with parent/child dyads living in high-rises in Cambridge, Kitchener and Waterloo, Ontario, will help inform the planning practices within these three rapidly growing mid-sized cities.

2.5 Research Objectives and Questions

As noted in Chapter 1, this study will address some of the existing gaps identified within the literature review through the following three objectives to contribute to the existing literature related to child-friendly cities and encourage child-friendly planning in Ontario:

(1) Identify how municipal planning policy within Ontario supports the planning, construction, design, and management of child-friendly greenspaces in high-rise settings.

(2) Investigate how children and their parents living in high-rises access, use, and experience neighbourhood greenspace.

(3) Identify if the current planning policy helps or hinders the creation of child-friendly greenspaces based on the experiences of families with children living in high-rises.

These research objectives will be addressed through the methods described in Chapter 3.

2.6 Summary

Through the Literature Review Chapter, I situated my thesis within its relevant background and theoretical contexts, including the gaps in knowledge. The main bodies of literature reviewed include: (1) the value, role and make of greenspace in urban neighborhoods and its influence on child health, and (2) the relationship between housing and child health, with an emphasis on children in high-rise settings. This was valuable for understanding the influence

of urban greenspace and high-rise living on child health, the barriers children face accessing the benefits of nature in urban settings, and the existing gaps in knowledge, particularly within the Canadian context. Within Canada, no known study has examined whether the planning system supports those living in high-rises, including their connection with nature. This thesis aims to fill this gap.

Chapter 3.0: Research Methods Overview

3.1 Introduction

This Chapter outlines the underlying assumptions and methods used to investigate how planning policy in Ontario helps or hinders the creation of child-friendly greenspaces in high-rise settings. Based on the findings in the literature, children and youth often represent an overlooked group within urban planning, including high-rise settings that are a growing form of development in intensifying places. Thus, to most effectively advocate for planning policy that supports the creation of greenspaces for children and their families that live in high-rises, a pragmatic lens will be used through the application of a postpositivist and transformative worldview. These worldviews are both appropriate and effective for addressing the research question and objectives due to the pluralistic, problem-centred, and real-world orientation of the pragmatic lens, and the justice and change-orientation of the transformative lens. Through the research methods chapter, I intend to first describe the philosophical perspectives of the postpositivist, transformative and pragmatic paradigms that guided this research. I will then outline the qualitative and quantitative approaches and methods used in Chapter 4. Last, the various ethical considerations and limitations of the selected study design and methods are discussed.

3.2 Philosophical Paradigms and Perspectives

All research is influenced by a basic set of beliefs, also known as paradigms (Lincoln et al., 2011; Mertens, 2010), worldviews (Guba, 1990) or ontology and epistemology (Crotty, 1998). Thus, it is important for the researcher to understand how their research practice is influenced by the underlying assumptions that shape their views of the world (Creswell & Creswell, 2018, p. 4; Farthing, 2016, p. 17). According to May (2001), values arise at five key stages of the research process: (1) the researcher's interests that lead to the research, (2) the goals, objectives, and approach of the research, (3) how data is collected, (4) how data is interpreted, and (5) how research findings are used (Farthing, 2016). Developing an understanding of how the researcher assigns meaning to the things under observation (Fischer, 2003), and where one's worldviews arise helps the researcher understand what to look for, where they should start, and what they will observe (Farthing, 2016, p. 16). The following sections will describe the guiding philosophical paradigms or ontology and epistemology used to guide this study.

3.2.1 Guiding Philosophical Paradigms: An Application of the Postpositivist and Transformative Worldviews through a Pragmatic Lens

Two primary worldviews, the postpositivist and transformative worldview, lay the foundational underpinnings that guided this study. While these worldviews may inherently oppose one another due to their understanding of reality and how the researcher is to engage with reality, they can be applied together under the pragmatic lens. The pragmatic lens is appropriate for this study, as it seeks to use the best set of tools, through the best set lenses to address a problem. Therefore, the pragmatic lens is appropriate due to this study's concern with how planning practice considers the greenspace needs and interests of high-rise families and the practical solutions that can arise from this problem-centered investigation (Creswell & Creswell, 2018, p. 10; Patton, 1990). In the face of urbanization, cities continue to develop, with very little knowledge of how they impact the families with children who live there. This includes the high-rise settings that are a common form of development used to accommodate growth. From a pragmatic lens, this is a problem because whether a city is built for families or not, families will continue to live in urban areas, which has significant consequences for their health and well-being.

Thus, this study seeks to develop a better understanding of how we plan for high-rise families by specifically exploring how we plan for greenspaces in these settings and seeking to understand how families who live in high-rise access, experience, and use their neighbourhood greenspaces. This is a pluralistic approach as it acknowledges that while cities continue to grow, the planning system cannot forget about the experiences of the people who live there. The likely consequence of neglecting this issue could result in the creation of urban centres that are unfriendly to families with children, particularly those predominated by high-rise living.

To address the problem, knowledge obtained will help inform future research and planners about how to plan greenspaces with high-rise families in mind. The pragmatic lens accommodates this pluralistic approach, giving the researcher the freedom to choose the set of methods and techniques that best address a problem. This is because the pragmatist is not committed to one philosophical reality, seeing the world as independent from the mind or within the mind. Moreover, truth is relative to the intended consequences of the research, giving the researcher rationale for mixing both quantitative and qualitative methods to address a problem (Creswell & Creswell, 2018).

Ontology and Epistemology

While ontology calls the researcher to ask, "what is the nature of reality", epistemology asks "what is the nature of knowledge and the relationship between the knower and the would be known" (Blaikie, 2000; Farthing, 2016). Due to this study's pragmatic lens, two philosophical paradigms, the postpositivist and the transformative worldviews are applied. On one hand, the postpositivist views the world as independent of the mind, where absolute truth can never be fully known (Phillips & Burbules, 2000). This ontology or way to understanding reality is often applied through epistemologies that observe and measure the world through quantitative inquiry. This way of knowing and conducting research helped guide the second, more quantitative stage within the policy analysis to measure how we plan for high-rise families and the enforceability of such plans.

On the other hand, the transformative worldview allowed the researcher to conduct qualitative inquiry through the first pass of the policy data and through interview discussions with families living in high-rises. This worldview was important for shaping this inquiry as truth is of the mind and the lives and experiences of diverse groups, particularly those who are marginalized, which is of central importance to this study. Based on the transformative understanding of the world, inquiry is also political in nature. This paper is political in the sense that interviews and critiques of planning policy focus on the potential injustices created due to a failure to consider the needs of high-rise families with children when planning cities across Ontario.

This paper protects the right of "home", "child-friendly" city building, and people's "biophilic" relationship with nature. It sought to protect these rights by collaborating with community partners and meeting with architects and urban designers in its study design and interviewing children and their parents who live in high-rises. The researcher also had coffee chats with an individual from *8-80 cites*, a non-for-profit striving to create equitable public places for people of all ages, and *Indwell,* an affordable housing non-for-profit in southern Ontario. Although this study may also appear to apply the constructivist worldview by seeking to understand "multiple participant meanings" (Creswell & Creswell, 2018, p. 8), this thesis is more than just an attempt at understanding high-rise family's greenspace experiences. Rather it is an initiative to inform policy action by highlighting gaps in how we plan for families, particularly children, living in high-rises.

3.3 Research Design: An Exploratory Sequential Mixed Methods and Phenomenological Case Study Approach

This thesis employs two different research designs to Chapter 4. While Chapter 4.1 has an exploratory sequential mixed methods approach, Chapter 4.2 takes on a phenomenological case study approach, that is qualitative in nature. The combination of the two research designs composes a nested case study approach. While an exploratory sequential mixed methods approach is one where the researcher first uses qualitative research methods to identify the themes and patterns within a dataset that then help build into a second, quantitative phase (Creswell & Creswell, 2018, p.15). The phenomenological case study approach is a form of inquiry that describes the experiences of one or more individuals through interviews (Creswell & Creswell, 2018, p. 13; Giorgi, 2009; Moustakas, 1994). A case study approach is useful for this research as it is bounded by time and activity. The interviews are also nested within the primary case study of the broader policy analysis of municipalities in Ontario (Creswell & Creswell, 2018, p. 14; Stake, 1995; Yin, 2018).

Under the pragmatic worldview, researchers are given the liberty to draw from more than one philosophical reality and apply both quantitative and qualitative assumptions to their investigations. These strategies were selected as they both align with the postpositivist and transformative worldviews and helped contextualize each manuscript in addition to measuring the prevalence of various patterns. On balance, this research is qualitative dominant in that the mixed methods approach utilized in Chapter 4.1 is used to complement the qualitative data in Chapter 4.2 to build a narrative that describes how we plan for and understand the greenspace experiences of children and their parents who live in high-rises within Ontario cities. This is particularly important during a period of significant population change and intensification. Section 3.3.1 and Section 3.3.2 below outline the research methods applied in Chapter 4.1 and Chapter 4.2 respectively.

3.3.1 The Exploratory Sequential Mixed Methods Approach

The exploratory sequential mixed methods approach was selected for the policy analysis in Chapter 4.1 by first employing qualitative methods to help inform a subsequent series of quantitative methods. The researcher began with a qualitative research phase by exploring the themes and patterns across policy documents. Upon reviewing policy documents, qualitative themes related to greenspaces, children and high-rises were identified and documented, along

with their associated quotations. The qualitative data from phase one was then analyzed and used to build a second, quantitative phase. During the second pass of the data, themes were organized into a framework and documented based on the number of mentions and scale of their enforceability, with a summary of key patterns and quotes highlighted for each theme. Here the quantitative phase was used to build an instrument that helped make sense of the data by organizing key themes within the planning framework. This helped the researcher interpret how children and their parents who live in high-rises are considered throughout the greenspace planning process. Figure 3.1 provides a helpful illustration of the exploratory sequential mixed methods approach. The research methods used to employ this design are described in more detail in Section 3.3.1 below for Method 1.

Phase One
Qualitative data collection, analysis, and results

Phase Two
Quantitative data collection, analysis, and results

Results
Interpretation
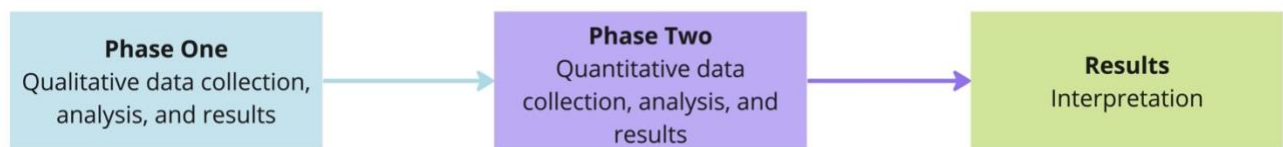
Figure 3.1 Exploratory Sequential Mixed Methods Approach

3.3.2 The Phenomenological Case Study Qualitative Methods Approach

As noted in Section 3.2, the case study approach enables the researcher to conduct an in-depth analysis of a particular phenomenon, at a particular period of time and was used for Method 2. For the purposes of this research, semi-structured interviews, alongside a demographic questionnaire enabled both open and closed ended questions and the provision of descriptive statistics. This was helpful for understanding the experiences of high-rise families in the cities of Kitchener, Waterloo, and Cambridge, Ontario, at a time of significant population growth and change. The selection of qualitative methods is best suited for this research as the experiences of children accessing and using greenspace within and surrounding high-rises has not been explored within the Canadian context.

The interview method is the most effective tool to describe human experience (Rubin & Rubin, 2011) and offers helpful insight for corroboration and triangulation of research findings where there is little or no research evidence (Strauss & Corbin, 1998). In particular, the use of semi-structured interviews captured the unique experiences of families with children in a more informal setting (Gubrium & Holstein, 2002) while also providing flexibility to explore issues of importance that may arise during conservations (Clifford et al., 2016; Dunn, K., 2000, p. 79). It

is critical to do research with children, who are important users of greenspace and agentive subjects in the processes of creating child-friendly greenspaces. However, the perspectives of children in the creation, modification, and maintenance of greenspace are often overlooked. This study method helped avoid imposing the researchers own understanding of high-rise living upon the situation and gleaned an understanding from study participants (Farthing, 2016, p. 76).

3.4 Research Methods

3.4.1 Method 1: Policy Analysis of Municipal Planning Documents

In response to the first research objective in Section 1.2 of Chapter 1, a content analysis of all high-level formal, secondary, and non-statutory municipal planning documents related to high-rises, children, and greenspaces within municipalities of various sizes in Ontario was conducted to understand whether they facilitate the creation of child-friendly greenspaces within high-rise settings.

3.4.1.1 Data Collection

All high-level formal, secondary, and non-statutory planning documents related to high-rises, children, and greenspaces including Official Plans, Secondary Plans, guidelines, and special studies were the primary data source for the content analysis. These documents were selected, as they are the primary documents that guide and inform formal municipal planning action related to high-rises, greenspaces, and children (City of Toronto, 2022).

Non-statutory Master Plans and Strategic Plans including municipal transportation plans, pedestrian and cycling plans, infrastructure plans related to greenspace or high-rises, greenspace and recreation master plans, master neighborhood plans or age or disability related planning documents were also included in this study. Furthermore, secondary planning documents were also included in this study including transit-oriented development plans, urban design guides or reviews. While many secondary planning documents are not landing use planning in the "proper" sense, they relate to adjacent or planning-related fields that influence and impact the land use planning of greenspaces and high-rises. However, secondary plans, community plans, and zoning by-laws were excluded from this study as they were far too granular in geographic scale for the scope of this study. Future studies could review these plans if conducting a locally specific analysis to understand how various levels of the planning hierarchy influence greenspace planning for high-rise children. For example, how a zoning by-law organizes greenspaces and different types of residential zones.

All planning documents were obtained through municipal websites and recorded in a Microsoft Excel spreadsheet (Microsoft, 2023a). Although each municipality had their own unique set of formal documents, this study only included those that guided the high-level planning and design of greenspaces or high-rises. Notably, the term greenspace may not be used by all municipalities. Thus, a list of related terms was generated to identify relevant documents. Policy documents were searched alphabetically by each municipalities name beginning with Official Plans, Secondary Plans, guidelines, and then special studies. Document titles and introductions were read to assess their study relevancy. Once policy documents were identified via municipal websites, they were recorded in the Excel spreadsheet and downloaded to a OneDrive folder where they were organized by municipality and document type for easy access and identification (Microsoft, 2023a; Microsoft 2023b). These documents were then reviewed by the researcher for analysis and findings were recorded on an Excel spreadsheet (Microsoft, 2023a). Refer to Appendix D for an overview of the key findings table.

Ontario's Planning Framework

In Ontario, land use planning is legislatively guided by the *Planning Act, R.S.O. 1990, c.P.13,* which outlines how land is controlled, who controls it, and how land use processes are to be conducted, including the phases within the process, the timing of each phase, and engagement requirements. The *Planning Act* outlines the provincial interest and provides the basis for developing other provincial planning documents. Underneath the *Planning Act*, land use planning is directed by the *Provincial Policy Statement (2020)*, and its secondary documents that outline the province's land use planning policies (Province of Ontario, 2023).

The *Planning Act* additionally requires municipalities to develop an Official Plan, a key document that provides the basis for land use planning at the local level and guides the long-term growth and change in a municipality. When developing their Official Plan, municipalities must ensure that they are consistent with the guidance provided by the *Provincial Policy Statement*. Official Plans are required at both the regional and local levels, with the upper-tier municipality providing the higher level of authority in terms of land use planning matters. This includes the regulation of high-rise developments, how land is conveyed or dedicated to parkland, and how greenspace is conveyed or allocated (Province of Ontario, 2023).

This study includes Official Plans, Non-statutory Master Plans, and several Secondary Planning documents including Transit-Oriented Development Plans, Urban Design Review, and

Design Guidelines. However, Secondary Plans, Community Plans or any study or planning document that is more geographically specific or regulatory, for example, a Zoning By-law were excluded from this study as they are regulatory in nature. As illustrated by Figure 3.2 below, the plans included in this study are highlighted in colour. The plans that were excluded are outlined in grey. The highlighted plans were selected for this study due to their high-level or city-wide nature, and their common effort to plan for children, high-rises, or greenspace. While regional plans are helpful for understanding the upstream determinants of population growth and change, local plans are useful for identifying lower-stream determinants. For example, if a municipality operates as a lower-tier municipality, planning decisions must be consistent with the upper-tier municipality's policy maaking precedent over the lower-tier municipalities.
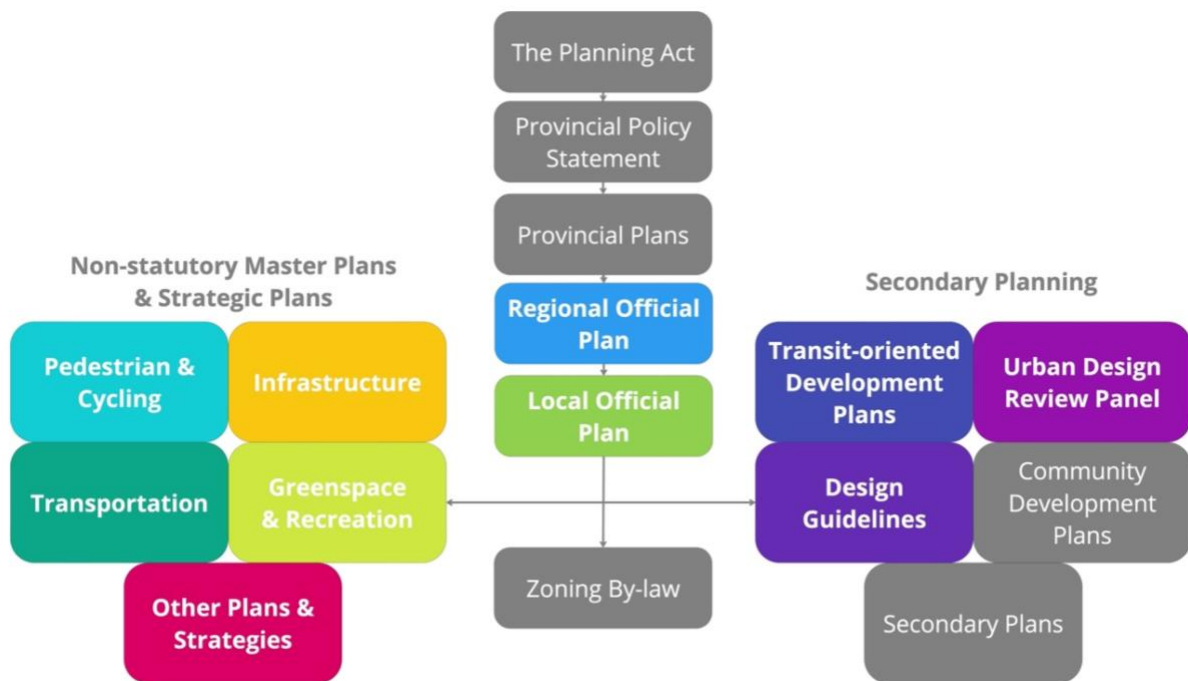
Figure 3.2 Author's rendering of the planning hierarchy in Ontario and an overview of the plans included in this study.

Notably, this study was conducted at a unique time in land use planning across the Province of Ontario due to the release of Bill 23, the *More Homes, More Choices Act* in 2022 (Barnett et al., 2022). The introduction of the Act in October 2022 and passing in November 2022, made fundamental shifts to the land use planning system through changes to the *Municipal Act, Planning Act,* and *Development Charges Act,* among others. These changes impacted nearly

all facets of planning, including the development of housing, site plan control, the conveyance and allocation of parks, heritage, the environment, and development charges, and municipal governance structure, among others. For example, the Bill altered the maximum amount of land that can be conveyed or paid in-lieu to 10% of the land or its value for sites. On the other hand, while the Bill attempts to encourage affordable housing through inclusionary zoning and "attainable housing" policies, there is no requirement for developers to provide a parkland dedication. This creates concern for future policy development that is to align with provincial policy interest.

Geographic Context

The search of these documents was limited to the municipalities of Toronto and Ottawa, two large single-tier municipalities, representing the provincial and national capitals. It also included two regional municipalities, the Regin of Peel and the Region of Waterloo, along with their lower tier municipalities. This includes the City of Mississauga, City of Brampton, the Town of Caledon from the Region of Peel, and the City of Kitchener, City of Cambridge, City of Waterloo, Township oof Woolwich, Township of Wilmot, Township of Wellesley, and Township of North Dumfries from Waterloo Region (refer to Figure 3.2). From the 14 municipalities, a total of 78 planning documents were reviewed. See Appendix B for an overview of the reviewed documents. However, it is important to note that during the research process, a decision was made to dissolve the Region of Peel's planning authorities. While the Region has dissolved, findings from the analysis are still helpful for informing future planning and research practice due to the continually evolving planning landscape (Barnett et al., 2022).
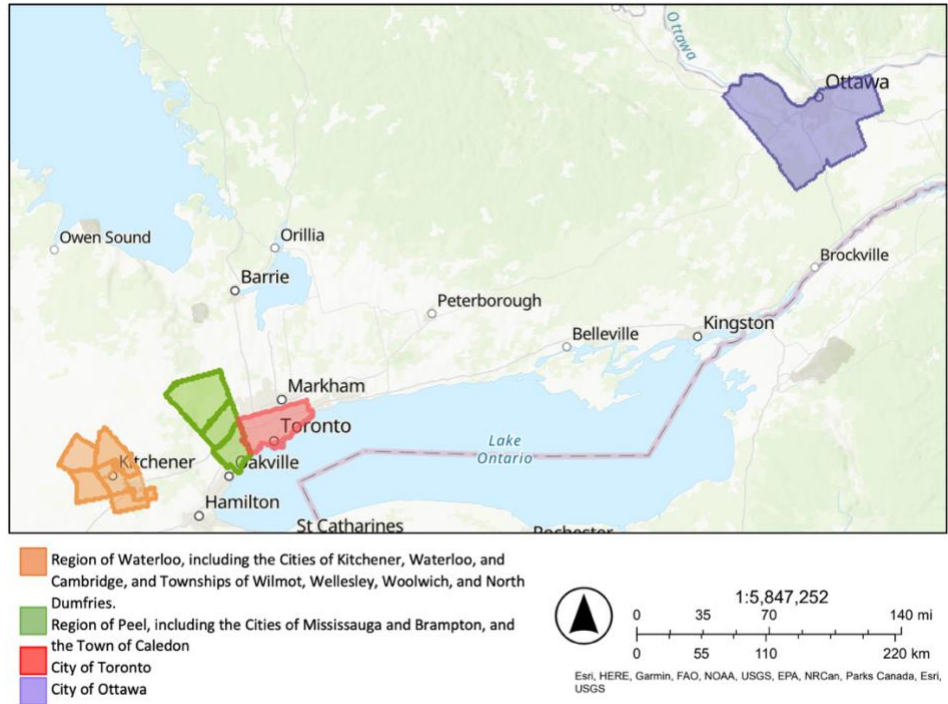
Figure 3.3: Map illustrating the study's geographic context.

While the City of Toronto and the City of Ottawa are single-tier or self-governing municipalities by the *Municipal Act, 2001* (Province of Ontario, 2023)*,* two-tier municipalities such as the Region of Peel and the Region of Waterloo, function where the upper-tier municipality provides a certain set of services within a larger geographic boundary. In contrast, the lower-tier municipality provides services to a smaller geographic region within the upper-tier municipalities boundaries. Additionally, some services are provided by both municipalities, where the upper-tier municipality often has a higher level of authority. Due to the differences in jurisdictional authority and influence, it is valuable to compare upper-tier and lower-tier municipalities. Such analysis will help develop an understanding of if high-rise families are a consideration of upper-tier municipalities or their lower-tier counterparts.

Aside from their legal powers, municipal responsibilities, or organization, each municipality represents a unique geographic landscape, both urban and rural, population, economic base, and proportion of high-rise buildings in its community. For example, while communities like the Township of Wilmot, Wellesley, Woolwich, and North Dumfries have either no or very few high-rise buildings due to their low-population density and rural character, other communities have varying degrees of apartments. Additionally, while these rural

communities were not anticipated to have many high-rise buildings, they were included to observe how they may be preparing for intensified development forms in the future. Refer to Appendix A for a summary of each municipality's key socio-demographic characteristics.

3.4.1.2 Data Analysis

A latent manifest content analysis was used to analyze the policy documents. This method was helpful to infer themes and patterns within a large qualitative dataset (Stake, 1995; Yin, 2018). It also helped clarify the goals, trends, and conditions within policy documents and identify potential policy alternatives (Howland et al., 2006; Lasswell, 1968). Further, the latent manifest approach allowed for a deeper interpretive analysis by deriving both the underlying and explicit meaning of policy content (Cash and Snider, 2014; Grey and Densten, 1998).

Data was interpreted through a two-phased process. While the primary objective of the first pass of the data was to develop a general sense of a documents nature through a latent approach, the second pass organized the data into meaningful categories based on their subject, the stage with the planning process that they related to, and its enforceability-the degree to which a policy aspired to or required a particular action through a manifest approach. The organization of key themes was based on an adaptation of Jan Gehl's *Inclusive Health Places* framework (Gehl Institute, 2018), *with the enforceability of policy documents measured against the Planning Act's* legal tests (Province of Ontario, 1990). The process behind each analysis phase and a description of the framework are provided below.

The First Pass of the Data: Within the first pass of the data, documents were read by the researcher to develop a general sense of their nature. Documents were then read a second time and organized into three thematic buckets based on their relevancy to the primary spheres of research interest: greenspaces, high-rises, and children. If the policy document made mention of high-rises, children, or greenspaces they were documented in Microsoft Excel (Microsoft Corporation, 2018) and designated a thematic code. The codes were generated based upon the underlying nature of the relevant quote. Documents were then coded in the order of their document type beginning with Official Plans, Secondary Plans, and guidelines, followed by special studies to analyze them in the order of their position within the planning hierarchy (Barrie, 2022). The codes generated during this phase were then discussed and revised by the researcher's supervisor. This structure was intended to create a data analysis plan that ensured

consistency and interrater readability (Belotto, 2018). In-text citations of all policy documents were indicated as ([city name], [year of publication]) and are labeled in Appendix B.

The Second Pass of the Data: Once each of the policy documents had been reviewed and documented, a second Microsoft Excel (Microsoft Corporation, 2018) spreadsheet was developed to organize the thematic codes created in phase one and applied to an adapted framework inspired by Jan Gahl's *Inclusive Healthy Places* (Gehl Institute, 2018). The purpose of the second phase was to understand how the primary spheres of research interest- high-rises, greenspaces, and children-overlap. Developing an understanding of where these spheres overlap ultimately helped the researcher respond to the research question by first understanding what municipalities consider the greenspace needs and interests of high-rise families with children. It then identifies how and at what stage of the planning process documents consider these needs and preferences (refer to Figure 3.2).

Figure 3.4 Modification of Jan Gehl's Inclusive-Healthy Places Framework.

The framework used to analyze the data was organized into four major categories aligned with the *Inclusive Healthy Places* framework: (1) Planning Context, (2) Planning Process, (3) Design and Programing, and (4) Plan Monitoring and Evaluation (Gehl Institute, 2022). First, the planning context relates to if a plan identifies a community's predictors of inclusion/exclusion in public space, its characteristics, and health context. Second, the planning process relates to how a municipality goes about their planning practices, including the facets of developing social capital, participation, and civic trust. Third, based on the *Inclusive-Healthy Places* framework (Gehl Institute, 2022), the design and programming of public greenspace relates to the quality, safety, and accessibility of greenspace for its various users. Last, plan monitoring and evaluation

relates to how a municipality intends to maintain ongoing representation, community stability, collective efficacy, ongoing investments, and preparedness for change. These categories helped the researcher evaluate how municipalities in Ontario support the creation of child-friendly greenspaces in high-rise settings. A detailed summary of how the thematic codes were applied to the framework is provided by Appendix C.

References and quotations were also organized based on their relevancy to the research question. While all implicit and explicit references related to each sphere of research interest – greenspaces, high-rises, and children were documented in the first phase of data collection, only references related to all three spheres of interest-high-rises, greenspaces and children were included in phase two of this study. This includes greenspace planning statements that implicitly and explicitly include children who live in high-rises. For example, a reference that *implicitly* includes children who live high-rises within greenspace planning used phrases such as "all citizens" or "people of all ages." In contrast, references that *explicitly* refer to children living in high-rises provide an aspirational or policy statement that directly refers to children living in high-rise settings.

The enforceability of each reference was documented based on the language used. Enforceability was then divided into four categories. These include aspirational/not enforceable, shall have regard for, shall be consistent with, and shall conform with/shall not conflict with. These categories were inspired by the primary legal tests developed by the *Planning Act*, R.S.O., 1990, Chapter P13, Part 1, Section 3 (8). This section of the *Planning Act* deems what is a policy statement in the eyes of *the Act* and outlines how plans can be in alignment with the provincial interest provided in Section 2 of the *Planning Act*. While these categories were designed to help decision-makers understand how plans, guidelines, and actions related to the *Planning Act* are to be interpreted and litigated, they may also be applicable to understanding the strength of language used in policy documents (Province of Ontario, 1990). In the case of this study, these legal categories were applied to how we plan and design greenspace for children that live in high-rises. A summary of how these categories were applied to the thematic codes identified in phase one of this study is provided in Table 3.1 below.

Table 3.1 Enforceability of Municipal Plans, Guidelines, and Strategies

Enforceability Category	Application
Aspirational/not enforceable	This category was applied to guidelines, or strategies that were aspirational in nature and/or did not require or encourage enforceability for planning practices that considered the greenspace needs and interests of children that live in a high-rise. These are not considered a policy as they have no "teeth".
Shall have regard for	While this phase has a range of interpretations this thesis applied the "scrutinize and carefully consider" approach as adopted by Ottawa (City) v. Minto Communities Inc., 2019 (Johnathan Woolley, 2010). Thus, this category was applied to policies that routinely and carefully consider the greenspace needs of children in high-rises.
Shall be consistent with	This category was applied to policies that are more stringent than the "have the regard for" category by requiring planning action to follow a principle, value or logic of a policy.
Shall conform with/shall not conflict with	This category was applied to policies that required adherence to the policy by the actor.

3.4.2 Method 2: Interviews with Parent-Child Dyads

In response to the second research objective in Section 1.2 of Chapter 1, semi-structured qualitative interviews were used to explore how children/youth (ages 5-17) and their families living in high-rises access, use, and experience their neighbourhood greenspaces for play and socialization. Interviews were conducted with parent/child dyads living in high-rises within Cambridge, Kitchener, and Waterloo, Ontario. The use of semi-structured interviews helped contextualize the policy-stakeholder interactions introduced in Chapter 4.1 by exploring the experiences of children and their families in high-rise settings.

The interview method is the most effective tool to understand human experience (Rubin & Rubin, 2011) as it is a flexible approach that may elicit meaningful information that is outside a narrow set of study questions and allows the interviewer to better understand participants through personal interaction (Mannan & Afni, 2020). Interviews also offer helpful insight where there is little or no research evidence (Strauss & Corbin, 1998). In particular, the use of semi-structured interviews helps to capture the unique experiences of children within a more informal setting (Gubrium & Holstein, 2002) while also providing flexibility for the researcher to explore issues of importance that may arise during conservations (Clifford et al., 2016; Dunn, 2000, p. 79). This is important for addressing the second objective of this thesis by investigating how children and their parents living in high-rises access, use, and experience neighbourhood greenspace to understand whether current planning context helps or hinders the creation of child-friendly greenspaces Kitchener, Waterloo, and Cambridge, Ontario.

Geographic Context

While the policy analysis chapter provided a review of planning documents across an array of municipalities in Ontario, Canada, the interview chapter provides a case study of how families that live in high-rises access, use, and experience greenspaces in Kitchener, Waterloo, and Cambridge. The cities of Cambridge, Kitchener, and Waterloo are three mid-sized, rapidly growing cities within the Province of Ontario. Located within the Region of Waterloo, an upper-tier municipality situated approximately 100 kilometers west of Toronto, the tri-cities of Cambridge, Kitchener, and Waterloo (CKW) predominantly shape the fourth largest metropolitan area in Ontario and the tenth in Canada. In 2021, the CKW metropolitan area consisted of a population of 575,847 and saw a 9.9% population increase since 2016 (Statistics Canada, 2019). A large proportion of this growth is attributed to high immigration rates.

Dimensions of the Child-friendly Cities Framework

Cities can use the child-friendly cities framework to assess whether children's needs and priorities are met within their physical environments, governance systems, and services (Gleeson & Sipe, 2006; Riggio, 2002; UNICEF, 2019). Developed by UNICEF and UN-Habitat in 1996, the framework is a useful tool for local communities to assess the degree to which children's right to life, survival and development, best interests, dignity, and unique identity are respected (UNICEF, 2022). As denoted by Figure 3.4, the child-friendly cities framework is composed of nine guiding principles for governance practices. This includes respecting a child's right to life, survival and development, non-discrimination, dignity, and best interests. It also includes environments, services and processes that promote child and inclusion, accountability and transparency, equity and inclusion, child participation, effectiveness and responsiveness, and flexibility to adapt to change and find sustainable solutions.

Figure 3.5 The guiding principles for building a child-friendly city. A governance framework and practice developed by UNICEF and UN-Habitat in 1996 that respects children's right to life, survival and development, best Interests, dignity, and unique identity.

While this framework was not used to understand how children and their parent's access, use, and experience their neighbourhood greenspaces, this framework was helped the researcher understand what constitutes a child-friendly neighbourhood greenspace. For example, a parent and a child who express that all their neighbourhood greenspaces are far away may suggest an issue of equity with regards to how greenspaces are distributed within a community. In contrast, a parent or child who expresses that their playground is accessible to all users may suggest that parents may perceive sufficient equity in greenspace planning in their neighbourhoods. The child-friendly framework also provides a helpful tool for planners to understand how they can more effectively respond to the greenspace needs and wants of high-rise families, how they can be better included within the public participation process and holds them accountable and calls them to transparency in their actions. The attributes of the child-friendly principles are useful for connecting high-rise family's experiences to planning activities and resultingly informing where action is needed to improve such experiences.

3.4.2.1 Sampling Criteria

The primary study population of the semi-structured interviews were children and youth between the ages of 5-17 years of age and their parents or guardians who lived in a high-rise dwelling. The study sample was limited to high-rises families within the geographic boundaries

of Cambridge, Kitchener and Waterloo, Ontario. For the purposes of this study, a high-rise included both residential condominium or apartment building styles equal to 4 stories or more with a common entrance. This definition aligns with both the recent research and practical definitions used to describe high-rises in Canada, including the Canada Mortgage and Housing Corporation, and Statistics Canada (Barros et al., 2019; CMHC, 2021; Peters & Halleran, 2021; Statistics Canada, 2022b). Furthermore, written consent by the parents and verbal assent by the children were required before the research interview was conducted. Both children and their parents or guardians were required to participate in the interview process to be included in this study.

This study excluded children younger than 5 years of age, because the semi-structured interview method is challenging for young children as they are still in their early years of development and may struggle to provide clear answers, provide their individual perspectives independent of their parents, and stay engaged for the interview duration (Vogl, 2015). On the other hand, children older than 15 years of age are at the stage of development where they are increasingly becoming independent from their parents. Children during this stage may also resist or not feel comfortable answering questions in front or with their parents due to their desire to be independent (Mack et al., 2009). The semi-structured interviews with parent-child dyads may not be the best suited method for children older than 15, however were still included in this study due to the difficulties developing a purposeful sample during the recruitment process.

Eligibility screening was conducted during the consent process when participants were asked to acknowledge their eligibility to participate in the study. If individuals were not eligible, they were thanked for their interest and told they could not participate in the study because they did not meet the eligibility criteria. We did not collect any data from participants unless they were deemed eligible. Information received via email to the research team indicating interest in participating in the study was deleted if participants were deemed ineligible.

Children's perspectives are important for shaping Canadian cities, however, they are often neglected and overlooked (Kearns et al., 2012). Therefore, children have been selected as the primary data source, with parents being present to emotionally support children by creating an environment that makes them feel more comfortable sharing their experiences (Mack et al., 2009). While high-rise parents were asked a set of questions, these were followed by and recorded independently from their child. Children and their parents who live in high-rises were

accessed through non-probabilistic sampling methods, such as snowballing through various property management companies, community organizations and social networks. All high-rises were identified using GIS data from the City of Kitchener's open data of buildings greater than 4 stories (City of Kitchener, 2023) and visual identification using Google Earth for high-rises in the City of Waterloo (Google Earth, 2023). Once high-rises were identified, the first author coordinated the placement of tear away posters located on bulletin boards in high-rise buildings.

3.4.2.3 Sampling Strategies

Over the study recruitment period between September 2022 to April 2023, one probabilistic and two different non-probabilistic strategies were employed. While probabilistic sampling methods provide a chance for every unit of the population to participate (Farthing, 2016, p. 85), non-probabilistic sampling methods cannot grantee complete inclusion (Farthing, 2016, p. 87). This involved the use of random sampling methods, volunteer sampling and snowballing methods to encourage participation. These approaches will be described below:

Random Sampling Strategy: First, the researcher attempted to develop a random sample by identifying every high-rise building in the City of Kitchener and Waterloo followed by the creation of a randomized call list from each city. To recruit participants through this method, the researcher identified every high-rise building within Kitchener and Waterloo using Google Earth and GIS data. If the location and eligibility of a high-rise building was in question due to the lack of online information, the researcher conducted a drive-by site visit to determine if the building qualified. Once all the high-rises were identified, the researcher randomly selected a list of 40 high-rise buildings in the two cities and added them to a call list. The call list was then used to connect with a building's property manager or attendant to either seek permission to enter the high-rise and distribute flyers advertising the study or permission to post the study flyer on the building's communal bulletin board (Farthing, 2016, p. 57-58).

For this study, two buildings provided permission to distribute flyers within their building, and nine buildings provided permission to post on their bulletin board. All other contacts either denied permission or failed to provide follow-up. This recruitment process was attempted between the months of September 2022 to December 2022. A total of four child-parent dyads participated through this approach. Notably, the City of Cambridge was not originally included in the call list, however, was added to the list in January 2023 due to recruitment challenges.

Volunteer Sampling Strategy: Due to the high-effort and low participation ratio of the random sampling method, the researcher sent an email in November 2022 to researchers from Australia who conducted similar research. The researchers shared their similar challenges with recruitment and highlighted several initiatives to inspire the corresponding author. Strategies included those used by this study's author in addition to collaborating with a senior policy officer from the local government to advertise their study in local government buildings and volunteer sampling. While the research team attempted to use volunteer sampling methods, where participants could choose to participate in response to the study advertisement (Farthing, 2016, p. 88) in local libraries, food pantries and food banks, places of worship and transportation hubs, these methods were largely unsuccessful and only recruited two participant dyads.

Snowballing Sampling Strategy: The third, and most effective strategy used was the snowballing method, which recruited participants through suitable contacts who helped aid the process of referral to individuals (Farthing, 2016, p. 88; Noy, 2008). Although some researchers may be critical of this approach due to the potential for homophily, the tendency for social networks to be socio-demographically homogenous in nature (Kirchherr & Charles, 2018; McPherson et al., 2001) and cannot be generalizable (Kirchherr & Charles, 2018) , the snowballing method is a widely used method in social sciences that was helpful for accessing hard-to-reach, but important high-rise populations in KWC (Heckathorn, 1997). In January 2023 to April 2023, the research team pivoted their out-reach approach to community groups and associations. This recruitment method stimulated the remaining participant dyads, including eight from Kitchener, one from Cambridge, and six from Waterloo. Overall, this method, in combination with other sampling methods used, helped develop a purposeful sample and provided insight into the greenspace experiences of high-rise families in KWC.

3.4.2.4 Data Collection

Interviews were conducted with child-parent dyads between October 2022 and April 2023. Following written consent, interviews were scheduled based on the participants' stated availability and recorded using the Software provided by the Microsoft Teams or Zoom meeting platforms (Microsoft Corporation, 2023a; Zoom, 2023). Due to the changing nature of government and university-related restrictions around the COVID-19 pandemic at the time of this thesis, interviews were conducted online. Interview recordings were then exported to a secure cloud drive for safe storage and protect participant-interviewer confidentiality. A total of

30 participants or 15 parent/child dyads were interviewed through the months of October 2022 to April 2023. The interviews ranged from 40.23 to 80.10 minutes in length, averaging 55.77 minutes per interview. At the end of each interview, both parents and their children were asked to complete a demographic survey. The demographic questions were verbally asked to participants. The demographic survey consisted of a series of questions related to the participant's age, gender, ethnicity, (dis)ability, language, income level, housing type, transportation methods etc. Both the parents and the children were asked a set of demographic questions separately. If the participant(s) did not feel comfortable answering any questions they could choose to partially answer or skip that question. The completed demographic surveys were compiled into a Microsoft Excel spreadsheet (Microsoft Corporation, 2018) and were used to chart and calculate descriptive statistics related to the study population that are described in more detail in Chapter 4.2.

Interviews were transcribed using a transcription software named Otter.ai (*Otter.ai.* 2023) and uploaded to a secure cloud drive (Microsoft Corporation, 2023b). A Microsoft Excel spreadsheet was additionally used to track participant information (Microsoft Corporation, 2018), including their consent to participate in the study and timing of contact (Sin, 2005). Transcripts were then uploaded to Nvivo for coding and analysis (QSR, 2020) . An appropriate sample size in qualitative research is often based on context. However, Boddy (2016) suggests that a sample size of 12 may be adequate for theoretical saturation depending upon the population's homogeneity. For this study, a total of 15 child-parent dyads participated, it is believed that saturation was achieved as similar experiences were repeated by various dyadic groups. In other words, additional data would not likely have led to any new emergent themes (Given, 2015, p. 135). The findings that are not well understood in this study are provided in the recommendations for future research study (Saunders, B. et al., 2018).

3.4.2.5 Data Analysis

Transcription and coding: Following data collection, the completed interviews and demographic surveys were analyzed to identify how high-rise families access, use, and experience their neighbourhood greenspaces. Audio recordings were uploaded to a transcription software called Otter.ai (*Otter.ai.* 2023). While the software helped with the efficiency of the transcription process, it could not ensure accuracy. Thus, once transcription was completed by the software, the researcher reviewed the transcription files to ensure greater accuracy. While the

software was quite accurate for those with English proficiency, greater revision was often needed for participants who had an accent, or due to external background noise within the recording. The transcription process ranged anywhere from 3 to 8 hours. Following transcription, interview transcripts were uploaded to Nvivo (QSR, 2020), a qualitative coding software for analysis, to identify the experiences of high-rise families and compare the differences between and within households.

For this study, the comparative analysis approach enabled the comparison of how families in high-rises access, use, and experience greenspace and helped identify how the experiences of children living in a high-rise may differ from their parents. This is effective because the experiences of children in research are often overlooked. The distinguishing of a children's perspectives from their parents can also provide insight into how a child's experience differs from their parents. While parent's perspectives were also analyzed, they were not used by the researcher to over-ride the experiences of children. Rather parent's experiences were documented independently from their children, with similarities and differences reported in the findings.

3.4.3 Ensuring Interrater Reliability

For both manuscripts, several techniques were used to ensure accuracy and rigor, including the exercise of interrater reliability. The process of interrater reliability involves measuring the degree of agreement amongst two or more researchers to ensure the consistency of study findings (McHugh, 2012; Patton, 1999). First prior to coding, four interview transcripts and two policy documents of each type i.e., Official Plans and Urban Design Guidelines, for example, were read in whole by the author and other members of the research team to assess the overall tone and discussion of topics. Following the primary researcher's identification of themes, codes were critically discussed and revised by fellow researchers. This is a practice known as 'critical friends' which was used at various stages of the analysis process (Smith, B. & McGannon, 2018). The commonly accepted benchmark of 80% agreement (Lombard et al., 2002; Marques & McCall, 2005), was used by the research team to ensure consistency for both manuscripts. If a high level of disagreement was identified, it was important for the researchers to assess points of disagreement, and develop decision-making trees, rules, or refine codes to ensure consistency (Lombard et al., 2002; McHugh, 2012).

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3.5 Ethical Considerations

Through the transformative lens, the study of diverse experiences and groups is a critical element of inquiry. For the transformative researcher, research exploration is intertwined with advocacy efforts for social change that uplift the voices of those who are oppressed and marginalized (Creswell & Creswell, 2018, p. 9). For this study, the experiences of high-rise families, particularly in the Canadian context, remain largely unknown. This can be partially attributed to how high-rise living is often designed and marketed – for young adults, singletons, and the elderly (Andrews et al., 2019; Easthope & Tice, 2011). By highlighting the inequities experienced by high-rise families, this research seeks to inform future research and practice for the full inclusion of families with children in our cities. This includes the full inclusion of families who live in high-rise settings.

3.5.1. Creating an Ethical Research Program

Due to the presence of human participants in this study, it was important for the research proposal to undergo a formal ethical review set out by the University of Waterloo Research Board. A formal ethical review was critical for ensuring the research provided sufficient measures in place to respect study participants, and ensure the confidentiality and wellbeing of the participants, including the reduction of any potential harm to participants. Thus, a proposal was submitted to the University of Waterloo Ethics Board and received approval on July 18, 2022, ORE #44335. The research team subsequently renewed their protocol on April 27, 2023, to continue data collection. The application to the research ethics board provided general information about the study, the study population, funding, any conflicts of interest, and how data was to be stored and protected to ensure the confidentiality and trust of study participants.

The researcher additionally completed several training and learning sessions in advance of the interviews to appropriately engage with study participants. Both the ethics application and additional training allowed the interviewer to assess their own assumptions and potential bias before engaging in research inquiry. The assessment of the researchers' own assumptions also allowed them to build trust throughout the research process. Prior to study design, a full review of the University of Waterloo's Code of Ethics and Tri-Council Policy Statement (TCPS2), and Government of Canada Gender-based Analysis plus (GBA+) training was first completed by the researcher to develop a comprehensive understanding of research ethics (Refer to Appendix E for proof of completion). The researcher additionally attended the Ontario Professional Planners

Institute (OPPI) Annual Conference in September 2022 where they attended several workshops discussing the importance of age-friendly placemaking and removing bias in urban planning. Last, the researcher actively engaged in conversations with various practicing planners, including those working at *Indwell*, an affordable housing non-for-profit in southern Ontario, and *8-80 cities,* a non-for-profit striving to create equitable places for people of all ages.

3.5.2 Implementation of Ethical Research Practice

Upon data collection, consent was first obtained in written form by parents. Children were also provided the opportunity to give their written assent. However, if written assent was not provided, verbal assent was required prior to proceeding with the interview process. The perspectives of children are important for shaping Canadian cities; however, they are often overlooked in many contexts (Kearns et al., 2012). However, some initiatives have been made in recent years to change this conversation including movements such as *8-80 cities* or the UN Child-friendly cities initiative (Gleeson and Sipe, 2006). Therefore, children have been selected as the primary data source, with parents being present to provide their individual input and support their child through the interview process (Vogl, 2015). In designing the research program, careful consideration was given to the stage of development and needs of children while respecting their dignity. Therefore, this inquiry was limited to children greater than or equal to the age of five, and different interview guides were created to match the literacy of children to that of their parents to enable child participation without parental interference.

Before the interviews, participants were additionally informed of the study purpose and their right to withdraw their participation from the study at any time. If the participant provided consent, conversations were recorded, with participant identities protected with a unique identification number to maintain anonymity (Saunders, Benjamin et al., 2015). Several techniques were used to assess interview data. First, transcripts were read in full by the author to assess their overall themes. These were then read another two times to identify themes that were to be coded. Themes were then critically discussed and revised by the author's supervisor; a practice known as "critical friends" (Smith, B. & McGannon, 2018). Any relevant information related to how child access, use and experience greenspace will be isolated and compiled within transcripts to highlight emerging thematic content (Rubin & Rubin, 2011).

Ethical considerations were also given to the policy analysis in Chapter 4. Although this chapter did not require formal ethics approval, there are some ethical considerations including

how the researcher stored, interpreted, and presented its findings (Belotto, 2018). For example, it was important to avoid contributing to the stigmatization of high-rise living or perpetuating unintended consequences in these settings such as gentrification. This thesis gave careful attention to the language and tone used throughout so as not to confuse the reader with the writer's intent. Various checks were also put in place through the research process of "critical friends" to ensure rigor (Smith, B. & McGannon, 2018).

3.6 Limitations and Justification for Methodology

While this thesis applies both quantitative and qualitative approaches of inquiry to this study, each has its own strengths and limitations. On one hand, the qualitative forms of analysis are helpful for explaining people's social realities. Qualitative research also helps explore situations, feelings, perceptions, attitudes, values, beliefs, and experiences that are not well understood. This can be applied to a broad range of groups and within an individual group. In the case of this study, this relates to interviews exploring how children and their parents living in high-rises access, use, and experience their neighbourhood greenspaces. For this inquiry interviews were a helpful tool and provided the researcher flexibility to engage in more meaningful discussion and inquiry and developed an in-depth set of information about high-rise family's experiences. However, this qualitative research exposes it to degrees of subjectivity (Creswell & Creswell, 2018) and the difficulty of generalizing the information. Furthermore, the data may be influenced by the researchers' own bias (Mwita, 2022).

On the other hand, quantitative methods were used to measure the prevalence of various themes and the degree of enforceability provided within municipal documents. While quantitative methods are a helpful resource for quantifying data, it neglects to include human perceptions and beliefs, may be costly, and do not provide a detailed description of phenomena (Choy, 2014). However, this data complemented the qualitative inquiry conducted in the first phase of the policy analysis and the semi-structured interviews conducted with high-rise families in Chapter 4.2 of this thesis. Furthermore, the mixing of methods enabled the researcher to include multiple forms of data that allowed for both open-ended and closed-ended inquiry (Creswell & Creswell, 2018, p. 16). Future research should additionally conduct observational, GIS, and other study methods to develop a broader understanding of how we plan for high-rise environments and if we consider the greenspace needs and preferences of the children who live there (Gehl Institute, 2022).

3.7 Significance

While this study is limited in geographic scope, it is the first Canadian study to provide insight into the experiences of high-rise families, how they experience and access their neighborhood greenspace, and how the current planning system considers the needs and interests of children in high-rises in their planning documents. As the first study in Canada, this thesis provides several contributions to planning scholarship, practice, and Canadian society at large. The significance and limitations of this study are outlined in the subsequent sections below.

3.7.1 Contributions to Planning Scholarship

To date, while some grey literature may exist, no known published Canadian research has examined whether planning policy facilitates the creation of child-friendly outdoor greenspaces surrounding high-rise developments. Additionally, while greenspace access and use are critical for healthy child development (Feng et al., 2022; Feng, Xiaoqi & Astell-Burt, 2017), no known published Canadian research has examined how children living in high-rises access, use, and experience neighborhood greenspace. While one study by Andrews et al. (2019) points to Canadian cities as an example of child-friendly urban design, they do not indicate the specific cities that implement these policies/guidelines. Furthermore, much of the existing research outside Canada related to child-friendly greenspaces within high-rise settings is restricted in geographic scope, contextualization, and lacks cross-disciplinary collaboration and conceptual consensus regarding key terms such as health, greenspace, and high-rises. These restrictions limit the quality and generalizability of these findings to other geographies.

This study aims fill these gaps by examining whether and how the current planning context in Ontario supports the development of child-friendly outdoor greenspaces surrounding high-rises in mid-to-large sized cities. It will additionally include a cross-disciplinary supervisory team of public health and planning researchers to better understand how high-rise settings influence health. This thesis will also justify the importance of the selected study area and seek participant demographic to develop an understanding of the study population. However, it is important to note that demographic information may not provide a strong geographic contextualization of high-rise housing and health in Canada. However, the policy scan will develop an understanding of the current policy context and interviews will illustrate children and their parents perceptions of neighborhood greenspace.

As an underdeveloped research area in Canada, these findings intend to spur future research related to child-friendly cities, specifically related to high-rise settings. Future studies may use similar research methods but apply them to different sized communities in Ontario or investigate the experiences of children living in high-rises in other provinces or territories to understand how children's experiences may differ across various community sizes and planning context.

3.7.2 Contributions to Planning Practice

The findings of this research will be presented to planners from Kitchener, Waterloo, and Cambridge who will be invited to the corresponding authors' thesis defense. They will also be published in a journal for wider accessibility. As cities grow and change, with the aim of creating complete communities (Ontario, 2020), it is important that planners consider the needs of children. These findings will help to inform planning in the cities of Kitchener, Waterloo, and Cambridge, and other planners within mid-to-large sized cities across Ontario. They will help to identify whether Ontario's mid-to-large sized cities consider children in the planning and design of greenspaces within high-rise settings and highlight the cities that may be potential examples of child-friendly planning in Ontario. Tangibly, these findings may also guide the creation or modification of existing planning policy to become more child-friendly. Finally, they will inform how planners can better plan for and design greenspaces to meet the needs, interests, and ambitions of children. These changes to planning practice will help create greenspaces around high-rise settings that better support child health and development in Ontario.

3.7.3 Contributions to Society

The places children live and go to play are important for healthy child development. As cities continue to grow and intensify, land-use change in Ontario's mid-to-large sized cities must consider the needs of children. However, children are often overlooked within the planning and design of cities, including high-rise environments (Dunn, J. R., 2020). These findings will help support the current and future families that live in high-rises by examining how they experience, access, and use neighborhood greenspace.

3.7 Summary

This chapter outlined the underlying assumptions and methods used to investigate how planning in Ontario helps or hinders the creation of child-friendly greenspaces in high-rise settings. First it described the philosophical perspectives of the postpositivist, transformative and

pragmatic paradigms used to guide this research. It then outlined the qualitative and quantitative approaches and methods used in Chapter 4.1 and Chapter 4.2. Last, the various ethical considerations and limitations of the selected study design and methods were considered. The following chapters of this thesis will discuss the findings of both Chapter 4.1 and Chapter 4.2.

Chapter 4.0: Results

4.1 Policy Analysis Findings

Figure 4.1 below provides a summary of the key research findings from the major spheres of research interest- greenspaces, high-rises, and children. This paper solely focuses on the connections between high-rises, children, and greenspace, representing 129 mentions of the total 1517 mentions identified in the first phase of the analysis. The findings of the second analysis phase are organized into four sections below based on the analysis framework described in the Methods Chapter, Section 3.4.1 - (1) Planning Context, (2) Planning Process, (3) Design and Programming, and (4) Monitoring and Evaluation (Gehl Institute, 2022).
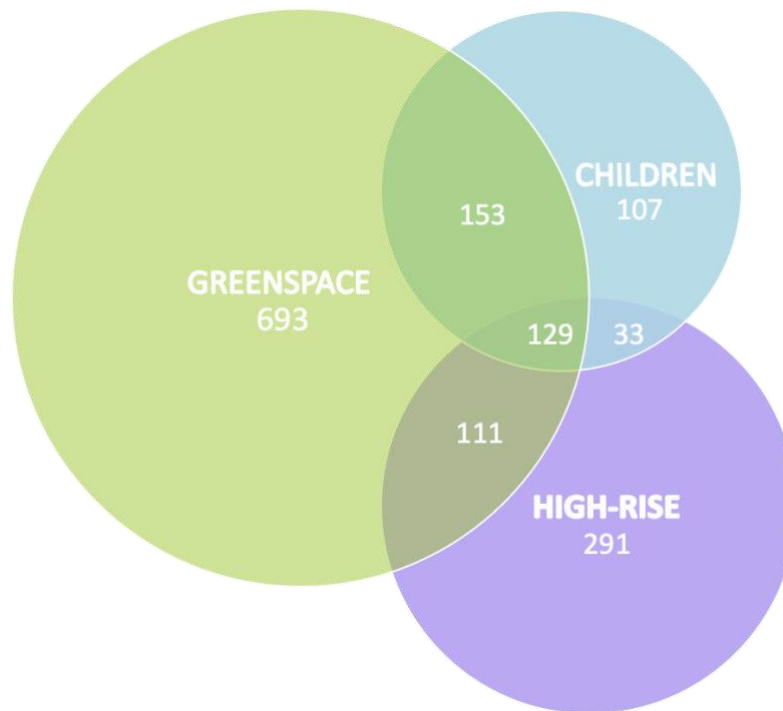
Figure 4.1 Proportional Venn diagram, representing how Frequently the Spheres of Research Interest are Mentioned within the Reviewed Municipal Planning Documents

4.1.1 Planning Context

An understanding of a community's current assets and population characteristics is foundational to promoting the ongoing creation of inclusive-healthy greenspaces for children and youth that live in high-rises. However, only four planning documents from the City of Toronto (*Privately-Owned Publicly Accessible Space*s *Guidelines (2014)* and *Parkland Strategy (2019))*, the City of Kitchener (*Urban Design Manual)*, and the City of Brampton (*The Brampton Plan*

(2022)) implicitly contextualized the greenspace needs and preferences of children who live in high-rises. Across the four planning documents, greenspaces were identified as important places that improve resident quality of life (Toronto, 2019), inequities in high-rise neighborhoods (Brampton, 2022), and promote child health through play (City of Toronto, 2014; City of Kitchener, n.d). However, all references failed to provide a clear understanding of their high-rise populations, how they planned to address inequalities within high-rise neighborhoods, and how child health should be measured. Documents additionally made no effort to identify the greenspace assets and infrastructure available to children who live in high-rises.

Although children who live in high-rises were not explicitly mentioned in any context framing planning references, most of the documents, such as *The Brampton Plan,* used phrases such as "to ensure that Neighborhoods continue to be desirable places to live for many generations" (Brampton, 2022, p. 2-83). For example, while the *Brampton Plan* did not explicitly refer to children in high-rises in its description, in application, planners could justify that children in high-rises are broadly included in Brampton's aspiration to create desirable neighbourhoods for future generations. Another approach to including children in high-rises in its planning context is reflected in the City of Toronto's *Privately-Owned Publicly Accessible Spaces Guidelines* which provided photo illustration of a small playset adjacent to a high-rise building to contextually illustrate the City's interpretation of the types of greenspaces children who live in high-rises might enjoy using (City of Toronto, 2014, p. 8).

Figure 4.2 Visual provided in the City of Toronto's Privately-Owned Publicly Accessible Guidelines of a children's play structure within an open space near a grouping of high-rise dwellings (Toronto 2014, p. 8)

All references that considered families with children in high-rises in their greenspace planning contexts were aspirational in nature, with no clear means of identifying the current conditions of high-rise living for children or their families. Table 4.1 provides a summary of the key themes discussed above, including each reference's enforceability based on the legal tests provided by the *Planning Act*.

Table 4.1 How high-rise families are considered in the greenspace planning context of planning documents.

Policy Document (Nos. = Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
Strategy: Growing Toronto Parkland (2019), (1)	Quality of Life	1	-	-	-
The Brampton Plan (2022), (1)	Housing Gaps	1	-	-	-
Toronto's Privately-Owned Publicly Accessible Spaces (2014), (2); City Kitchener Urban Design Manual, (1)	Play	2	-	-	-

4.1.2 Planning Process

The municipal planning process encompasses how a municipality consults and engages the public, the activities that guide land use, and the ambitions of that process. While 158 references across the reviewed documents included children in their planning processes, only 47 of these mentions across 16 documents, both implicitly and explicitly, considered children when discussing greenspace planning in high-rise settings. While a small number of documents included children who live in high-rises with regards to the greenspace planning process, nearly all municipalities, except for the Region of Waterloo, Township of North Dumfries, and Cambridge, provided at least one implicit or explicit mention that were inclusive of children who live in high-rises. Nonetheless, references were predominantly aspirational in nature. The following sections provide a summary of the key themes expressed across the major components of the planning process. As identified by the *Inclusive-healthy Framework,* these include: (1) developing civic trust, social capital, and participation, (2) planning activities, and (3) planning ambitions (Gehl Institute, 2023).

4.1.2.1 Developing Civic Trust, Social Capital, and Participation

How a municipality develops civic trust, social capital, and encourages public participation within the planning process influences the creation of inclusive-healthy greenspaces

for children in high-rises. However, only two municipalities, the City of Toronto, and the City of Waterloo, either implicitly or explicitly, considered children or their families in high-rises in planning efforts to develop civic trust, social capital, and participation within greenspace planning. This was expressed by five different documents ranging from Toronto's *Strong Neighbourhood Strategy 2020*, *Official Plan (2015)*, *Growing Up: Planning for Children in Vertical Communities (2020),* and *Parkland Strategy (2019),* to Waterloo's *Neighbourhood Strategy: Implementation Plan, 2019/2019 to 2023.*

While both the City of Toronto and the City of Waterloo provided opportunities for children in high-rises to participate within the greenspace planning process, each laid out a unique approach to engagement and how they intended to develop civic trust and social capital with regards to greenspace planning. On one hand, the City of Waterloo's *Neighbourhood Strategy* emphasized the creation of an inter-generational and intercultural learning program that broadly includes the engagement of youth leaders (Waterloo, 2019). In contrast, the City of Toronto's planning documents focused on the active engagement of children who live in high-rises (Toronto, 2020a;2020b; 2015) and the creation of age-friendly parks (Toronto, 2015). For example, Toronto's *Growing Up (2020)* guidelines included both families, children, and youth in the development of its guidelines, in addition to City staff and those within the development community to "uncover the lived experience of both users (families) and producers (architects and developers) of new multi-unit residential buildings" (Toronto, 2020b, p. 10). The consultation with high-rise families involved pop-up events and online surveys, kinder-workshops, walking tours, design jams with high-school students, and visits to family homes to identify how families modified their dwellings to meet their specific needs.

However, all statements relating to building civic trust, social capital, and participation were aspirational in nature and did not illustrate how such initiatives shaped future policy action. Table 4.2 provides a summary of the previously discussed themes related to how planning documents seek to develop civic trust, social capital, and participation with children in high-rises during greenspace planning efforts. This includes a summary of each reference's enforceability based on the legal tests provided by the *Planning Act*.

Table 4.2 How planning documents seek to develop civic trust, social capital, and participation with children in high-rises during greenspace planning process.

Policy Documents (Nos. = Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
City of Toronto Official Plan (2015), (1); City of Toronto Growing Up (2020), (1); City of Toronto's Strong Neighbourhood Strategy (2020), (1); City of Waterloo Neighbourhood Strategy (2019), (3)	Engagement	6	-	-	-
City of Waterloo Neighbourhood (2019), (2)	Programming	2	-	-	-
City of Toronto Growing Up (2020), (1); Strategy: Growing Toronto Parkland (2019), (1)	Age-friendly	2	-	-	-

4.1.2.2 Planning Activities

Across the reviewed documents, children who live in high-rises were rarely considered within greenspace planning activities. Only three planning documents, the City of Toronto's *Official Plan (2015)* and *Growing Up (2020)* guidelines, and the City of Mississauga's *Official Plan (2023)* used language, both implicit and explicit, that considered children in high-rises within greenspace planning activities. Children in high-rises were mentioned a total of four times with regards to Privately-Owned Publicly Accessible Spaces (POPS) in the City of Toronto's *Official Plan (2015)* and the City of Mississauga's *Official Plan (2023),* housing requirements within the *City of Toronto Official Plan (2015),* and improving high-rise children's connection to food systems by encouraging the creation of community or food gardens in high-rise settings such as in the City of Toronto's *Growing Up (2020)* guidelines.

While most references were aspirational or required municipalities to have regard for children in high-rises, the City of Mississauga's *Official Plan (2023)* stated that, "Residential developments of significant size, except for freehold developments, will be required to provide common outdoor on-site amenity areas that are suitable for the intended users" (p.9-20). While not explicitly mentioning children, Mississauga's planners may consider high-rise children as "intended users" and require developers to provide common outdoor amenities that are suitable to children's expressed needs and preferences. In contrast, other plans like the City of Toronto's *Official Plan* (2015) provided less enforceability for POPS, asking developers to have regard for attributes such as accessibility for all ages, prominence, and visibility, for example.

Table 4.3 provides a summary of the previously discussed themes, including each references enforceability based on the legal tests of *The Planning Act*. Notably, these themes also highlight where children in high-rises are and are not considered by municipal greenspace planning activities. For example, while children are considered with regards to POPS in some instances, they are not considered within the processes of acquiring land for greenspace, how that land is used and designated or how transportation networks are planned to connect families in high-rises to their neighbourhood greenspaces, among others.

Table 4.3 How planning documents consider high-rise families within planning activities.

Policy Documents (Nos. = Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
City of Toronto Growing Up (2020), (1)	Food	1	-	-	-
City of Toronto Official Plan (2015), (1); City of Mississauga Official Plan (2023), (1)	POPS	-	1	-	1
City of Toronto Official Plan (2015), (1)	Housing Requirements	-	1	-	-

4.1.2.3 Planning Ambitions

Ten municipalities discussed their greenspace ambitions for children who live in high-rises. This includes both implicit and explicit mentions of children in high-rises by the City of Ottawa, the City of Toronto, the Region of Peel, the City of Brampton, the Town of Caledon, the City of Kitchener, the City of Waterloo, the Township of Woolwich, the Township of Wilmot, and the Township of Wellesley. The themes to emerge include policies related to housing choice, the creation of public space for people of all ages, the promotion of greenspace in intensification projects, the enhancement of greenspaces, sustainability, and how greenspaces are intended to improve quality of life. When discussing housing choice, for example, the City of Kitchener's *Official Plan* (2014) and *Urban Design Manual* (n.d.) discussed the importance of creating greenspaces that accommodate the diverse needs of families and children, including those living in multi-unit dwellings. However, neither document identified what the diverse needs of children living in high-rises may look like or how they planned to create greenspaces for families with children in multi-unit dwellings.

Interestingly, only three municipalities discuss their ambition to create sustainable greenspaces in high-rise settings. This included the City of Toronto, the Region of Peel, and the Town of Caledon. While the Region of Peel *Official Plan (2022)* and the Town of Caledon

Urban Design Guidelines (n.d.) only implicitly considered children living in high-rises, the City of Toronto's *Growing Up (2020)* guidelines directly mention children in their planning ambitions by educating children and youth through the promotion of environmental values (pg. 26). However, most statements were aspirational in nature and failed to articulate how a community could realize these ambitions.

Table 4.4. provides a summary of the key themes discussed, including each references enforceability base on the *Planning Act's* legal tests.

Table 4.4 How high-rise families are considered in municipal greenspace planning ambitions.

Policy Documents (Nos. = Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
City of Kitchener Official Plan (2014), (1); City of Kitchener Urban Design Manual, (1); City of Waterloo Official Plan (2019), (2);	Housing Choice	2	1	1	-
City of Ottawa Official Plan (2022), (1); Brampton Plan (2023), (1); City of Brampton Development Guidelines (2003), (1); Caledon Comprehensive Town-wide Design Guidelines (2017), (1); Township of Woolwich Official Plan (2022), (2);	Age-friendly	6	-	-	-
City of Ottawa Official Plan (2022), (1); City of Brampton Plan (2023), (1); City of Brampton Development Guidelines (2003), (1); Caledon Design Guides (2017), (1); Township of Woolwich Official Plan (2022), (2);	Intensification	1	-	-	-
City of Kitchener Official Plan (2014), (2); City of Kitchener Urban Design Guidelines, (2); City of Waterloo Official Plan (2019), (1); Township of Wilmot Official Plan (2019), (1)	Complete Communities	4	1	1	-
Township of Wilmot Official Plan (2019), (1); Township of Wellesley Official Plan, (1);	Enhancement	-	-	-	2
Toronto Growing Up (2020), (1); Region of Peel Official Plan (2022) (1); Town of Caledon Official Plan (2018), (2);	Sustainability	4	-	-	-
City of Toronto Official Plan (2015), (2); City of Toronto Neighbourhood (2019), (1); City of Ottawa 15-minute (2021), (1); Brampton Plan (2023), (3); City of Kitchener Official Plan (2014), (2);	Quality of Life	3	2	2	2

4.1.3 Design and Programming

The design and programming of greenspace are the elements that make greenspaces unique and bring them to life. The design and programming of greenspace relates to the quality

of greenspace, its accessibility, how people can access it, what uses are available, and who are the intended users. Only 34 mentions across 14 documents considered the needs and interests of children in high-rises, with most references being implicit and aspirational in nature.

4.1.3.1 Quality of Public Space

Three major themes emerged when discussing how a municipality intended to achieve quality greenspaces for children in high-rises. These included 1) how community greenspaces are designed, 2) how the design contributes to residents' quality of life, and 3) how the design contributes to residents' health. While the City of Toronto's *Growing Up (2020)* guidelines and *Official Plan (2015)*, and the City of Brampton's, *Brampton Plan (2022)* and *Development Design Guidelines (2003)* discussed how they would create quality public spaces for children in high-rises using design tools, the City of Mississauga's *Youth Plan for Recreation (2020)* sought to create quality greenspaces through health promotion. In contrast, these approaches also differ from the City of Ottawa's *15-minute Neighbourhoods Report (2021)*, and the City of Kitchener *Urban Design Manual (n.d.)* which sought to improve greenspaces based on quality-of-life measures. For example, the City of Kitchener's *Urban Design Manual (n.d.)* denoted that design methods which "promote active lifestyles, encourage social interaction and instill sense of community pride" help improve resident quality of life (Kitchener, n.d. p. 10). However, neither Kitchener nor Ottawa specified the design methods that could achieve these quality-of-life measures.

In contrast, the City of Toronto's *Growing up (2020)* guidelines provided a robust example of how quality of design can be achieved by creating opportunities for shade in the summer, improving greenspace access for families in high-rises, the use of durable landscaping for flexible outdoor play, and locating amenity spaces in a visible circulation space to encourage socialization and passive supervision (Pg 32). Table 4.5 provides a summary of the key themes discussed, including each references enforceability based on the legal tests provided by *The Planning Act*. These themes may highlight some of the areas where children living in high-rises are included or excluded from greenspaces design and programming.

Table 4.5 How children in high-rises are included in the design and programming of greenspace.

Policy Documents (Nos. = Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
City of Toronto Official Plan (2015), (1); City of Toronto Growing Up (2020), (1); Brampton Plan (2022), (1); City of Brampton Development Design Guidelines (2003), (1);	Urban Design Tools	3	-	-	1
City of Ottawa 15 Minute Neighbourhoods Report (2021), (1); City of Kitchener Urban Design Manual, (1);	Quality of Life	2	-	-	-
City of Mississauga Youth Plan for Recreation (2020), (1);	Health	1	-	-	-

4.1.3.2 Access and Accessibility

Only five municipalities discussed how they intended to make community greenspaces accessible for high-rise families. This includes both implicit and explicit references to children in high-rises from the City of Toronto, the City of Ottawa, the City of Kitchener, the City of Waterloo, and the Town of Caledon. This was mentioned 12 times across six planning documents. The common themes to arise include improving access and accessibility through design. In the case of Ottawa's *Official Plan (2022)*, accessibility can be improved by promoting connectivity (pg 41-42). All other mentions of greenspace access and accessibility were aspirational in nature.

Furthermore, while all other policy documents imply high-rise families inclusion in greenspace planning, the City of Toronto's *Growing Up (2020)* guidelines provided specific guideless for improving connectivity to greenspace and promoting accessibility within greenspace for families in high-rise. For example, the *Growing Up (2020)* guidelines encouraged accessibility within greenspace through the provision of play equipment that includes experiential, sensory, seasonal, imaginative, and challenging play options. The guideline also identifies how to improve greenspace access by identifying child-oriented destinations on existing routes (p. 17). Table 4.6 provides a summary of the identified key themes, and the enforceability of each reference based on the legal tests of *The Planning Act.*

Table 4.6 How planning documents consider greenspace access and accessibility for children in high-rises.

Policy Documents (Nos. = Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
Town of Caledon Comprehensive Town-wide Design Guidelines (2017), (1); City of Kitchener Urban Design Manual, (1);	Accessibility	2	-	-	-
City of Toronto Growing Up (2020), (2); City of Ottawa Official Plan (2022), (1); City of Kitchener Official Plan (2014), (1);	Design	2	2	-	-
City of Toronto Growing Up, (2); City of Ottawa Official Plan (2022), (3); City of Waterloo Official Plan (2019), (1);	Connectivity	4	-	2	-

4.1.3.3 Use and Users

Five municipalities, including the City of Toronto, the City of Ottawa, the City of Cambridge, the City of Waterloo, the City of Kitchener, and the City of Brampton outlined how their infrastructure is specifically designed for children, including both implicit and explicit references to how children in high-rises are acknowledged as important users of community greenspace. Children who live in high-rises were both implicitly and explicitly mentioned as important greenspace users fifteen times across nine different planning documents. The City of Toronto made the most frequent mentions across its *Growing Up (2020), Official Plan (2015)*, and *Complete Streets Guidelines (2017)*. However, the most predominant theme across policy documents was how the municipality planned their infrastructure for various age groups, including that of children and older adults.

While most of these mentions were aspirational in nature, the City of Kitchener's *Urban Design Guidelines (n.d.)* provided examples of how families could use greenspaces more effectively through the design of housing units. For example, "consider ways to make units, storage, bicycle parking and private amenity areas more convenient and accessible to families and persons using mobility aides" (Kitchener UDG, page 68, Age & Family Friendly Design). While not enforceable, such policies help encourage developers to consider the "use" needs of families with children in high-rises. Other commonly mentioned themes related to family high-rise dwellers and greenspace design and programming include seasonality, safety, social connections of community greenspaces. While themes were mostly aspirational in nature, they

highlight how the basic needs, protection, comfort, and social interactions of children living in high-rises are of interest and potentially a priority to municipalities like Kitchener.

Addressing the barriers to greenspace usability across various seasons was additionally mentioned by the City of Toronto's *Growing Up (2020)* guideline and the *Brampton Plan (2022)*. While the City of Brampton focused on merely supporting the needs of all ages throughout the seasons, the City of Toronto focused on the whimsicality, joy and inclusivity of people of all ages throughout the seasons. For example, the *Growing Up* (2020) guidelines encouraged the. provision of "maintenance for transit stops and park routes… year-round washrooms… flexible design for year-round uses and events... transformable… trails…create micro-climates" among others (Toronto, 2020, p. 25). Refer to Table 4.7 for a summary of the key themes, including the enforceability of each reference based on the legal tests of *The Planning Act.*

Table 4.7 How children in high-rises are considered important greenspace users in the design of programming of community greenspace.

Policy Documents (Nos.= Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
City of Ottawa Official Plan (2022), (1); Brampton Plan (2023), (1); City of Waterloo Official Plan (2015), (1); City of Kitchener Urban Design Manual, (2); City of Cambridge Parks Master Plan (2023), (1); City of Cambridge Trails Master Plan (2010), (1);	Age-friendly	7	-	-	-
Toronto Growing Up (2022), (1); Brampton Plan (2023), (1);	Seasonality	1	-	-	1
City of Waterloo Official Plan (2015), (1);	Social Connection	-	-	1	-
City of Toronto Official Plan (2015), (2); Brampton Plan (2023), (1);	Safety	1	1	1	-
Toronto Complete Streets Guidelines (2017), (1); City of Kitchener Urban Design Manual, (1);	Play	2	-	-	-

4.1.4 Monitoring and Evaluation

It is critical for municipalities to establish how they will monitor and evaluate their greenspace planning activities to adapt to the changing needs and preferences of children in high-rises and ensure they are meeting their community goals. Of the reviewed documents, only 17 documents from nine municipalities implicitly or explicitly mentioned children in high-rises with regards to the monitoring and evaluation of greenspace planning activities. The sections below

highlight how this is expressed across key monitoring and evaluation practices. This includes the ongoing representation of families living in high-rises, the preservation or enhancement of community stability amidst change, achieve a collective efficacy or desired outcome, how municipalities ensure the ongoing investment in greenspace, and the municipalities preparedness for change.

4.1.4.1 Ongoing Representation

Only the City of Toronto and the City of Ottawa provided a description of how they intended to maintain the ongoing representation of children living in high-rises in the monitoring and evaluation of their community greenspaces. This was expressed four times across the City of Toronto's *Growing up (2020)* guidelines, *Official Plan (2015),* and *Strong Neighbourhood Strategy (2020),* and the City of Ottawa's *Official Plan (2022)*. While the City of Toronto's planning documents predominantly focused on the ongoing representation of families in high-rises through the engagement process, the City of Ottawa's *Official Plan (2022)* had one mention related to the importance of equitable, inclusive, gender and age-friendly planning decisions that consider a diversity of experiences, including children (Ottawa, OP, 2022, pp. 30).

While the City of Toronto *Official Plan (2015)* and *Strong Neighborhood Strategy (2020)* vaguely included children in high-rises with language such as "encouraging the participation of all segments of the population (Toronto, 2015, p. 5-22) and/or "create partnerships" (Toronto, 2020, p. 13), the *Growing Up (2020)* guidelines provided very specific recommendations. For example, the guideline stated: "A city that embraces all its citizens will involve children and youth in the planning and design process" (Toronto, 2020, p. 27). Another example from the guidelines stated that initiatives should "ensure city initiatives and consultation processes incorporate the perspectives and smaller scale of children" or be "fun" (Toronto, 2020, p. 27). Refer to Table 4.8 for a summary of the discussed key themes, including a summary of each reference's enforceability based on the legal tests of *The Planning Act.*

Table 4.8 How planning documents intend to maintain the ongoing representation of children in high-rises within the monitoring and evaluation activities of greenspace planning.

Policy Documents (Nos.= Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
Toronto Official Plan (2015), (1); Growing Up (2020), (1); City of Toronto Strong Neighbourhood Strategy (2019), (1);	Engagement	2	-	-	1
Ottawa Official Plan (2022), (1);	Age-friendly	-	-	1	-

4.1.4.2 Community Stability

Nine municipalities discussed how they intended to maintain future community stability by providing accessible greenspaces to families in high-rises. This included both implicit and explicit mention to high-rise families from the City of Toronto's *Growing Up (2020)* guideline, the *City of Ottawa Official Plan (2022),* the *Region of Peel Official Plan (2022),* the *Town of Caledon Official Plan (2018)* and *Development Standards Manual (2019)*, the *Region of Waterloo Official Plan (2019), City of Waterloo Official Plan (2019), City of Cambridge Official Plan (2018), the City of Kitchener Urban Design Manual,* and *Township of Woolwich Official Plan (2022)*. While not all these documents made specific reference to children in high-rises and may not be a relevant context for high-rise development such as the Township of Woolwich due to its rural character, these documents used language that was inclusive of high-rise families in its vision to maintaining community stability through greenspace planning.

When identifying their vision for community greenspaces, municipalities discussed three primary themes: how greenspaces are designed, how greenspace promotes health, and how greenspace will help to create more complete communities. While municipalities in Waterloo Region such as the City of Kitchener, Waterloo, Cambridge, and Township of Woolwich largely focused on the importance of creating complete communities to establish community stability, the Region of Waterloo, City of Waterloo, and City of Kitchener focused on creating community stability through health promotion in greenspace.

In contrast, the City of Ottawa *Official Plan (2022)* and the City of Toronto's *Growing Up (2020)* guidelines provide direction with regards to the design of greenspace. While the City of Ottawa's language does not specifically address high-rise families, the City of Toronto's *Growing Up (2020)* guidelines provide specific direction for how greenspaces can be designed in high-rise environments for families with children. For example, the guidelines provide specific

direction for how park spaces are to be designed to meet the year-round needs and interests of high-rise families, including various activities such as resting, and play for all ages and abilities.

The policy goes on to specify the types of activities that may appeal to a broad range of age groups including sandboxes, water features, play/sports courts, and skateboard facilities; and highlights other important park elements such as climbing features. The policy goes on to provide specifications for playgrounds including creating barriers to prevent children from running onto the street, for example, "providing group seating for informal forms of supervision, providing shade from trees or structures to protect users from the elements..." (Toronto, 2020, p. 19), among others. While these guidelines are valuable, all may not be fully enforceable in nature. Refer to Table 4.9 below for a summary of the discussed key themes, including the enforceability of each reference based on *The Planning Act's* legal tests.

Table 4.9 How planning documents intend to maintain community stability for high-rise families through continued greenspace planning.

Policy Documents (Nos.= Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
City of Waterloo Official Plan (2019), (3); City of Kitchener Urban Design Manual, (2); Woolwich Official Plan (2022), (1);	Complete Community	5	-	1	-
Region of Peel Official Plan (2022), (1); Town of Caledon Official Plan (2018), (1); Town of Caledon Design Guideline (2019), (1); Region of Waterloo Official Plan (2019), (1); City of Cambridge Official Plan (2018), (2); City of Waterloo Official Plan (2019), (2);	Health	6	1	1	-
Toronto Growing Up (2020), (1); City of Ottawa Official Plan (2022), (2);	Design	3	-	-	-

4.1.4.3 Collective Efficacy

Only five municipalities generally highlighted how they intended to achieve collective efficacy with regards to maintaining greenspace. This included the *City of Toronto's Growing Up (2020), Strong Neighborhood Strategy (2020), Official Plan (2015)*, and the City of Ottawa's *Official Plan,* the City of Kitchener in its *Love My Hood (2017)* initiative, the City of Brampton in the *Brampton Plan (2022), City of Brampton Development Design Guidelines (2003),* and the *Town of Caledon Official Plan (2018).* Municipalities discussed how they intended to achieve collective efficacy through public engagement, improving the quality of life for citizens, with the City of Toronto's Official Plan (2015) specifically referencing how they intend to evaluate their

plan to achieve their intended outcome. As stated by the plan, "well-being is measured by how well we provide for our children and the most disadvantaged among us" (Toronto, 2020, p. 1-4).

In contrast, Toronto's "Growing Up" Guidelines and Official Plan, and the City of Kitchener's Love My Hood (2017), discussed how they were going to achieve their intended result through engagement. For example, the City of Kitchener's Love My Hood Plan states:

> An essential way to make great places is changing the way we engage with you when developing or redeveloping neighbourhood parks, playgrounds and trails. We heard that we need to ensure these vital spaces serve the specific needs of area residents in terms of ages, interests, abilities and cultural backgrounds. We will: • Work with residents from the very beginning of a project to explore a number of options for multi-use spaces that respond to the needs of the local neighbourhood (examples could include a playground, sports field, picnic shelter, exercise equipment, natural areas, public art, etc.). • Be up-front with residents about constraints such as funding and maintenance, so the community understands what's possible and what's not for each specific project. (Kitchener, 2017, p. 17)

However, the documents which discussed achieving their goal by improving citizen quality of life were vague and did not specify how they intended to achieve quality of life. For example, the City of Brampton's Development Design Guidelines (2003) shared: "Brampton will realize its vision, that is 'to be a vibrant, safe and attractive city of opportunity, where efficient services make it possible for families, individuals and the business community to grow, prosper and enjoy a high quality of life" (Brampton Development Guidelines, p.2). Refer to Table 4.10 for a summary of the discussed key themes, including each references enforceability based on the legal tests provided by *The Planning Act*.

Table 4.10 How municipalities intend to move towards the collective welling of families in high-rises through greenspace planning.

Policy Documents (Nos.= Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
City of Kitchener Love My Hood (2017), (1);	Engagement	1	-	-	-
City of Toronto Neighbourhood (2020), (1); City of Ottawa Official Plan (2015), (1); Town of Caledon Official Plan (2018), (2); Brampton Plan (2023), (1); City of Brampton Development Guidelines (2003), (1);	Quality of Life	5	-	1	-
Toronto Official Plan (2015), (1);	Evaluation	1	-	-	-

4.1.4.4 Ongoing Investment in Space

None of the municipalities included in this study discussed how they intended to encourage the ongoing investment in greenspace for high-rise families or children.

4.1.4.5 Preparedness for Change

A total of eight out of the 14 municipalities discussed how they planned to adapt their greenspace planning to accommodate the changing needs of high-rise families. While eight implicitly mentioned children who live in high-rises across thirteen references, these were mostly aspirational in nature, emphasizing the importance of maintaining greenspaces for future generations, the health of their communities or for sustainability purposes. For example, the Town of Caledon's Urban Design Guidelines provide a definition for how the municipality interprets the concept of sustainability, being "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Pg 10). While this aspirational definition provides the city with a structure for how they are to interpret matters of sustainability, it gives no indication as to how they intend to achieve it.

In contrast, the City of Waterloo's Official Plan (2012) provides a very clear sense of direction, guided by the Region of Waterloo's Official Plan. For example, on pages 33-34 of the plan the city has an urban Greenland's strategy to "a) identify a system of natural areas and open spaces… c) promoting green roofs, community gardens and tree planning in urban areas". Policies such as these helps explain how the City of Waterloo is prepared for change. This is similar to all the other municipalities within the Waterloo region who are also guided by the direction of the Region. Across the eight municipalities including the City of Toronto's, City of Ottawa, Region of Peel, Town of Caledon, City of Brampton, City of Waterloo Township of

Wilmot these were expressed by their Official plans, except for the Town of Caledon who additionally discussed their preparedness for change in their Comprehensive Town-wide Design Guidelines (2017). Refer to Table 4.11 for a summary of the discussed key themes, including each references enforceability based on *The Planning Acts* legal tests.

Table 4.11 How a municipality is prepared for the changing greenspace needs and preferences of families in high-rises.

Policy Documents (Nos.= Mentions)	Themes Mentioned	Enforceability (Nos.= Mentions)			
		Aspirational	Shall Have Regard For	Shall Be Consistent With	Shall Conform With
Toronto Official Plan (2015), (1); City of Ottawa Official Plan (2022), (2); Region of Peel Official Plan (2019), (1); Town of Caledon Official Plan (2018), (1); Caledon Town-wide Design Guidelines (2017), (1);	Future Generations	6	-	-	-
Town of Caledon UDG, (1);	Sustainability	1	-	-	-
City of Brampton Official Plan, (1); Region of Waterloo, (1); City of Waterloo, (2); Township of Wilmot Official Plan (2019), (2);	Health	3	1	1	1

4.2 Interview Findings

4.2.1 General Overview

4.2.1.1 Sociodemographic Characteristics of Participants

Interviews took place over online meeting platforms based on the participant's preference, including Zoom and Microsoft Teams between October 2022 and April 2023. A total of 15 child-parent dyads living in high-rise buildings across the cities of Cambridge, Kitchener and Waterloo, Ontario participated in the study. While a fairly even number of participants were from Kitchener and Waterloo, only one household from the City of Cambridge participated in this study. Figure 4.3 provides a visual representation of the study participants' locational

characteristics. The figures within each coloured region denote the number of participating households from each city.
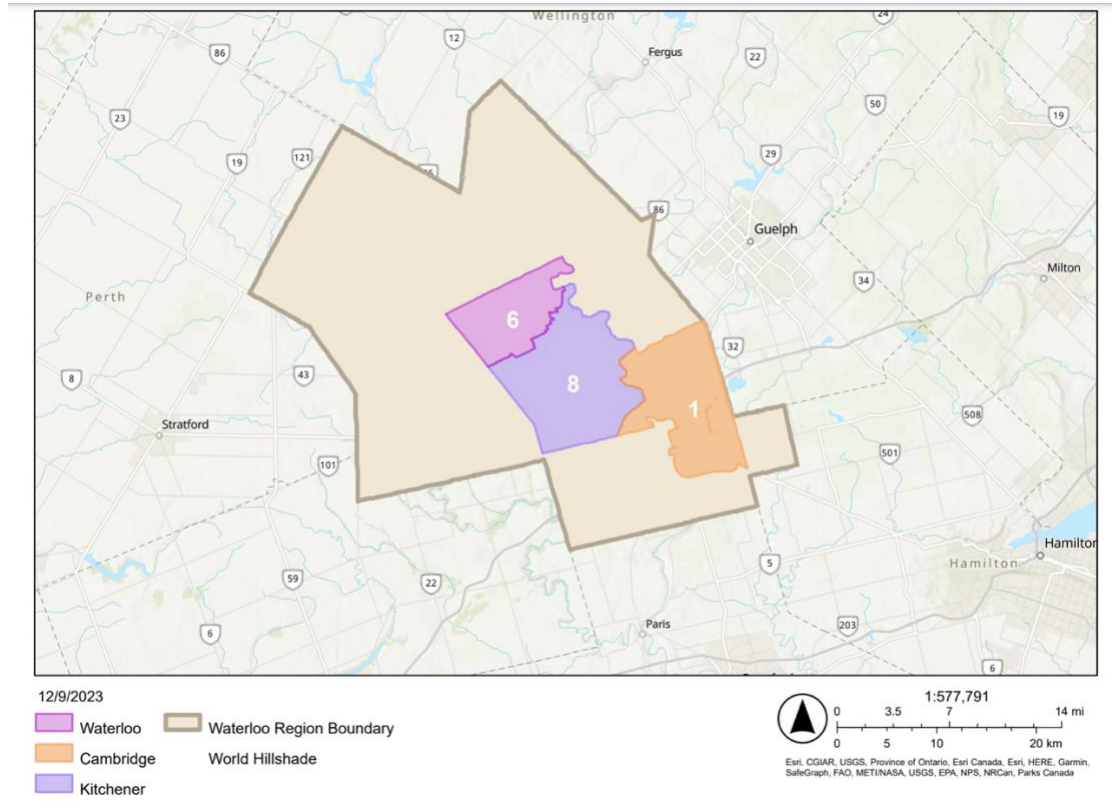
Figure 4.3 Map of Study Participants Locational Characteristics.

The study population represents a diverse sample with varying sociodemographic characteristics within the tri-cities. While the average number of children per household was two, there were significant differences in participant variables, including income. While two households had an after-tax income that was greater than $150,000, 60% lived below the low-income cut-off after tax. Furthermore, 70% of those who participated identified as a visible minority, and 60% did not commonly speak either national language (English or French) at home. The common languages of participants included Urdu, Arabic, and Albanian. Furthermore, 60% of participants had lived in a high-rise for more than 5 years. Table 5.1 highlights the sociographic characteristics of the study participants that represent a meaningful study sample. Notably some of the statistics will use a denominator of 30 as opposed to 15 this is because there are unique attributes between parents and their children. For example, a child may identify a visible minority whereas their parent may not.

Table 4.12 Sociodemographic Characteristics of Study Participants

	(n (%))
Children's Age (n=15)	
5-9	7 (46.7)
10-14	6 (40.0)
15-17	2 (13.3)
Children's Gender (n=15)	
Boy	10 (66.7)
Girl	5 (33.3)
Parent's Gender (n=15)	
Man	4 (26.7)
Woman	10 (66.7)
Non-binary	1 (6.7)
Parental Marital Status (n=15)	
Married	13 (87)
Never Married	2 (13)
Visible Minority Status (n=30)	
Visible Minority	21(70)
Not a visible minority	9 (30)
Most Commonly Spoken Language at Home (n=30)	
English	12 (40)
French	0 (0)
Other, including 2 Albanian, 7 Arabic, 8 Urdu, and 1 Malayalam	18 (60)
Length of Tenancy	
1-3 Years	3 (20)
4-6 Years	3 (20)
7-9 Years	6 (40)
10+ Years	3 (20)

4.2.1.2 Participants' Descriptions of their Dwelling and Neighbourhood

Most participants across the tri-cities lived in an apartment high-rise building between 4-8 stories in height. While one high-rise family shared that they knew of other children within their building, three stated that their building was largely composed of elderly residents. As stated by one father from Waterloo when asked if there are kids for his daughter to play with, "It is very peaceful here. I should mention that she [daughter, age 10] has some friends in the building, one of her friends, she just became 84, and another one, she became 90". While some families felt connected with their neighbours, others said they were merely acquainted or did not know them well due to transient nature of high-rise living in addition to the social barriers

created by social distancing during the COVID-19 pandemic. Refer to Table 4.13 for a summary of the building characteristics.

Table 4.13 Building Characteristics of Households

Building Height	N (%)
4-8	7 (46.66)
9-13	5 (33.33)
14-18	3 (20)
Tenancy Type	
Apartment	13 (87)
Condominium	2 (13)

4.2.1.3 High-rise Families Motivation to Live in High-rise

Participants shared diverse motivations for high-rise living. For some households, living in a high-rise made them feel a greater sense of security, more connected to nature, and more connected to the city. Others chose to live in a high-rise building due to its proximity to work and one, higher-income family from Kitchener chose to live in a high-rise building due to their growing concerns for the environment and desire to reduce their family's carbon footprint. Interestingly, cost was not a factor mentioned by any participants despite the common assumption in research that high-rise living is associated with lower incomes (Easthope & Tice, 2011; Evans, 2021).

4.2.2 How Do Families Living in High-rises Access, Experience, and Use their Neighborhood Greenspaces?

4.2.2.1 How High-rise Families Access their Community Greenspaces

The Ease of Access: Around half of both child and parent participants (53% of children, 46% of parents) discussed their experiences accessing community greenspaces including parks, ravines, forests, and other natural place, and most participants expressed a sense of ease accessing such spaces. Several reasons participants attributed this ease to the proximity and/or the sense of comfort and safety they experienced along their journey to neighbourhood greenspaces, particularly in relation to the municipal trail network as reported by 40% children comparison to 26% parents. While both parents and children emphasized the value of the trail's separation from motorized traffic, many children believed the presence of wildlife for example squirrel or geese

and nature such as mushrooms, or beautiful flora and fauna along the trail improved their sense of comfort along their journey and encouraged greenspace access.

In contrast, parents attributed their sense of comfort accessing greenspace to the trail's proximity to home, lighting fixtures, terrain, and maintenance. One parent praised the trail for being "better maintained than the roads" (non-binary parent of a 13-year-old boy from Kitchener), including in the winter months, which encouraged year-round use. This same participant expressed:

> We take [the trail] for the first three quarters of a walk to anywhere. So, it's super easy to get to, [it's] right [in] our backyard… so it is really easy to access any of the spaces we need. (non-binary parent of a 13-year-old boy from Kitchener)

This ease was echoed by several other parents who also expressed an appreciation for the trail's connectivity to various destinations across the city. The presence of a well-connected trail system appeared to be particularly important for participants as they most often relied on walking to access greenspaces (86% kids; 60% parents). This was followed by biking, driving, and public transport to access both the closest and preferred greenspaces in their neighbourhoods. Figure 5.3 and Figure 5.4 illustrate two of trails that contributed to participants ease of access.
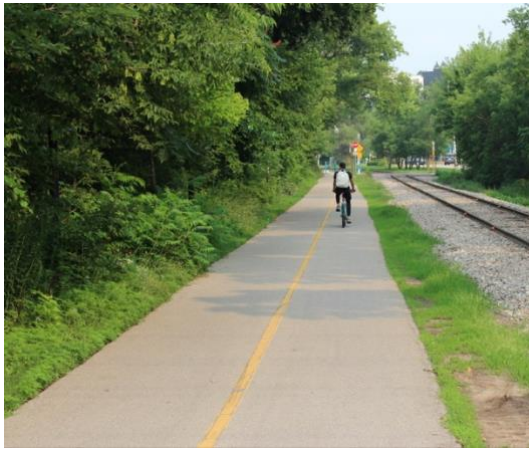
Figure 4.4 Iron Horse Trail

Figure 4.5 Laurel Trail

Despite participants' contentment towards neighbourhood greenspace accessibility, one fifth of participants highlighted several barriers to access. While child participants expressed a lower sense of comfort along pathways with an inconsistent terrain, surfacing, and shading, parents emphasized the difficulties they experienced crossing busy roads and the limitations using a stroller or mobility device along narrow and unevenly surfaced sidewalks. Parents also felt a sense of discomfort towards tent communities and walking at night, even when the path

was lit. Construction projects and fees-for-entry were also factors that limited access to greenspace.

In response, high-rise families recommended the city modify the maintenance, lighting and surfacing along pathways to ensure greenspace accessibility throughout the year. Parents also wished to see an evaluation of sidewalk crossings near greenspaces which they believed would improve the safety of their journey. For one mother of a 5-year-old boy highlighted the importance of having clear sightlines of the park from home would make them more confident letting their child go out independently. Participants additionally highlighted the importance of creating more parks within their neighbourhood. One mother from downtown Kitchener suggested the integration of "pocket parks", smaller places for play and relaxation, throughout the downtown to create more opportunities for play. She stated:

> We don't see a ton of kids in our neighborhood, which is unfortunate... but I would say[,] I always see kids walking along the benches and stuff[.] Kids will find any space to play....thinking about my neighborhood, [I] like to think about the idea of taking an urban environment, even just a small space [and] make a space that a kid is going to enjoy as well as other people. We can't necessarily, in a dense urban environment, take a huge swath[s] of land and turn it into a park, but [we] can find little pockets. (mother of a 5-year-old girl from Kitchener)

Social Determinants of Access: Most children and their parents who live in high-rises talked about the distance of their neighbourhood greenspaces and who they often traveled with. While most kids said that there was a park either across the street or within a 15-minute walk of home, only three (all of whom were boys, and older than 12 years of age) shared that they would be comfortable going to their neighbourhood greenspaces without a parent, two of whom stated that they went out independently. Two children shared their differing experiences. While one 15-year-old boy from Kitchener, felt encouraged by his parents to "explore and know the neighbourhood", another, 17-year-old boy from Waterloo, shared his parent's hesitancy letting him to go out alone, especially when he was younger:

> ...When I was younger, I barely walked to the park. I didn't go alone. The only time I really went was with my parents. But now, I go to all the green spaces, usually by myself or with someone else...I think it was because they were scared, especially my dad. My dad says that the roads are dangerous and stuff. He used to always go out with me. I think he was being overly protective, but I can see where he's coming from... (17-year-old boy from Waterloo)

While a few parents talked about the distance they would travel with their children to greenspaces, many parents shared similar sentiments to the 17-year-old boy's parents, emphasizing their feelings of discomfort allowing their children to go out independently. For many, this fear was related to their child's age or the fear that something would happen to their child if left alone. As stated by one parent of a young child:

> Oh, gosh, not far. I feel like... I don't know if it's just him being a boy or what. I feel like he can just [get] distracted and he's … in his own world. He would get too far before he may clue in that he's gone too far. He doesn't know where he is, then. Yeah, not far at all. (mother of 5-year-old boy, Waterloo)

Similarly, other parents distrusted their neighborhood or their child's ability to assess the presence of a threat or danger. Such feelings limited the distance parents would let their children go out independently. To improve their comfort levels and encourage independent mobility, two parents suggested the creation of clear crossings and sightlines of greenspaces.

4.2.3 How do Families Use their Neighbourhood Greenspaces

Families living in high-rises used their community greenspaces for a diversity of passive and active forms of recreation and leisure. The most common activities included going for walks, and using the sandpit, slides, and swings at the playground. Some other commonly mentioned activities included: passive forms of recreation such as family BBQs, camping, and geocaching and active forms of recreation such as skateboarding, badminton, frisbee and biking. In the winter months, participants additionally mentioned making snowmen and tobogganing. Some of the unique activities mentioned by children included reading, socializing, picnics and using the splashpad.

Frequency of Visits and Time Spent in Neighbourhood Greenspace: While only one-third of participants frequently visited greenspace, ranging from daily to an average of one time a week. The 2020-2023 COVID-19 pandemic and seasonality were mentioned by nearly all high-rise participants as factors that altered their patronage and time spent in greenspace. While the COVID-19 pandemic and winter decreased participants' time and frequency in greenspace, two parents went as far as to say they did not go outside at all during the winter. Instead, children spent more time indoors watching TV, playing video games or reading in the winter. Regardless of the season, some children still preferred several indoor activities such as going to a library, the movies, gym, or participating in school clubs to going outside. Furthermore, while the majority of children spent the most time outside at school or home, one 13-year-old boy from Kitchener

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shared that they did not spend much time outside generally. This boy's perspective contrasts with the narrative told by his parent, who highlighted several activities they enjoyed doing outside with their son.

However, several factors encouraged participants to visit their neighbourhood greenspaces more frequently and spend more time when they were there. Irrespective of age, having friends to play or socialize with was the most frequently mentioned factor that motivated child participants to go and spend time in greenspace. As stated by one child participant:

> I definitely use more green space now. This is because in the area that we live in now, there's a lot of greenspace. I started going out with my friends more. Whenever we go outside, it's like, "meet me at the park". (11-year-old girl from Kitchener)

While friends were the most important factor for child participants, washroom accessibility and larger park sizes also encouraged high-rise participants to stay at the park for longer periods of time. For parents, access to clean drink water, particularly in summer months when it is hot, and heated sheltered places to sit in the winter were features they believed would increase the amount of time they spent in greenspace throughout the year.

4.2.4 How do Families Experience their Community Greenspaces

Social Experiences: When spending time in greenspace, high-rise participants discussed the importance of their social interactions and whom they interacted with most. While three parents mentioned that their children sometimes played independently, the same parents highlighted the valuable role of social interactions in greenspace. The three primary forms of social interaction mentioned by participants included time with family, friends, and those they met in greenspace. Irrespective of age, gender and income, these interactions were important to both child and parent participants. As expressed by one parent, community greenspace played a particularly important role in facilitating interactions with family and friends due to the spatial limitations of their dwelling:

> I always enjoy being in a park. It is a very good place because we cannot invite a lot of people to our house. So, there is a very good opportunity [to] invite our friends and family and chit chat... I am a social person. I like to meet people and talk. (mother of 13-year-old daughter)

Another highlighted:

> Even if you have the nicest outdoor place, if you don't have good friends or people that like to be there with you, you wouldn't go by

yourself, right? You always need friends. I think friends is what
makes the place nicest … (father of 12-year-old boy, Waterloo)

Many child participants echoed this sentiment by sharing how greenspaces acted as a place to meet-up with existing friends or meet new people. For some it was due to the spatial limitations of their dwellings and the greenspace amenities provided there. For children, friends gave them a reason to spend time in greenspace and brought them much enjoyment chatting with friends, playing sports or games such as basketball and soccer, and using the playground.

Participants also expressed the importance of family interactions in greenspace, including time with parents, siblings and extended family (refer to Figure 5.5). However, these interactions varied by household size and composition. For families with one child, interactions largely happened between the child and their parent or guardian. In contrast, children with siblings depended less on their parents and had more interactions with siblings in greenspace. This is a significant observation as one third of participant dyads were from households with one child. While most of these children expressed feelings of joy playing, sight-seeing, and having BBQs with family, dependency on parental interactions appeared to have its limitations, with one child stating, "sometimes I asked my mom to play baseball and she says no." (5-year-old boy, Waterloo).

Figure 4.6 Image of a family sitting under a tree at the splashpad and playground in Riverside Park in Cambridge. Upon the researchers visit, the site was filled with diverse family and social gatherings at every turn.

The Sentiments Toward Neighbourhood Greenspace: Nearly all high-rise participants expressed a positive sentiment towards their community greenspaces. This sentiment was expressed 84 times. For participants, greenspaces were places of connection, engagement and relaxation that brought feelings of joy, safety, and comfort. As one parent described,

> The first thing is me-time. It's like, oh my goodness, like, I love my
> family, I love everything. But then I just go there and... it's just me
> and nature. It is the time I connect with myself more. So I would say
> me-time, calmness, and peaceful (mother of 13-year-old daughter)

While most participants did not fully articulate why these spaces created feelings of connection and relaxation, some explained what features made greenspaces more engaging. For example, greenspaces with interesting amenities and activities within and surrounding them were reported to be more engaging than those without. Some of the amenities specifically mentioned by child participants included the presence of a nearby library for reading in the park, opportunities to learn within the park, or having nearby food stands. Parents also shared how wildlife in park settings created opportunities for unstructured play that expanded their child's imagination. As illustrated by Figure 5.6, Figure 5.7, and Figure 5.8 which were photographed by the corresponding author, Waterloo Park was a commonly cited greenspace with several of these amenities that made participants feel more connected, engaged, and relaxed.

Figure 4.7 Adventure-style playground in Waterloo Park

Figure 4.8 Skateboard Park Waterloo Park
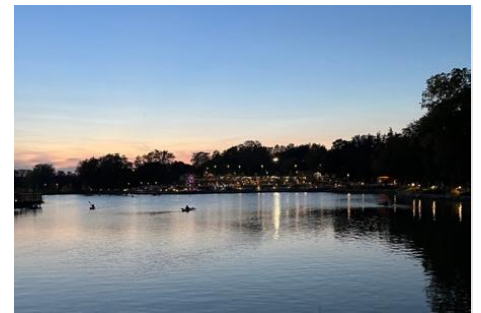
Figure 4.9 Lumen Light Festival in Waterloo Park

However, participants also highlighted some instances that made them feel unengaged, unsafe, or unsettled in urban greenspace. For some child participants, greenspaces with limited activities, such as a park with a single seesaw and bench were less engaging than greenspaces with more potential activities such as an open field for sports, a playground with various features or places to sit for socialization. In contrast, parents focused on the things that made them feel unsettled or uncomfortable in their neighbourhood greenspaces. For example, greenspaces that had more people decreased parents' sense of enjoyment. As stated by one parent: "...we want some peace [,] we want to enjoy nature [,] but Victoria Park is very crowded (Parent of 11-year-old girl, Waterloo)". This parents' sentiment is well captured by Figure 5.9 that illustrates an

image of a peaceful river at Victoria Park in juxtaposition with the adjacent Rib Fest in Figure 5.10.

Figure 4.10 A river the flows through Victoria Park, Kitchener

Figure 4.11 Rib Fest at Victoria Park, Kitchener

Participants also shared some of the incidents that made them feel unsafe due to the presence of unleashed dogs or unfriendly-looking people. One shocking incident is shared by one child in Greenfield (refer to Figure 5.12), a smaller neighbourhood park in Kitchener. This child shares:

> Um, so let me think. There was an incident right next to Greenfield. My brother was actually robbed in front of Greenfield. So like, for a bit of time, we were kind of scared to go around that area alone. We'd always had someone with us. This was like four years ago. So now we are not as worried. However, there is always the worry... (15-year-old boy from Kitchener)

Interestingly, while Victoria Park, a large community park in Kitchener, was the most frequently cited by participants as the favorite greenspace for its large size, expansive vegetation, and interesting amenities, it was also cited by the most participants as the park that made them feel the least comfortable and safe. Some of the reasons for participants' lack of comfort were due to waste such as glass, garbage and needles, stressful parking situations, tent communities, and limited places to seek shelter from the natural elements (refer to Figure 5.11). As stated by one parent:

> Right now, there's a lot of homeless people with encampments in [Victoria] park near the playground. I don't think they need to make encampments near where the children are. They're openly doing drugs... I don't really like that there isn't policing in regards to that. Even before the encampments, you could see drug deals go on..., you could tell who the sex workers [were], You can tell who the perverts are. And they [are] regulars...Since living here, I lived here

seven years, there have been three [attempted] kidnappings, in broad daylight. (mother of a 9-year-old boy from Kitchener)

Figure 4.12 Signs of a tent community within Victoria Park

Figure 4.13 Greenfield Park, located in a mixed-density residential neighbourhood.

In response to their feelings of discomfort, several participants highlighted how greenspaces could feel more comfortable. While children talked about increasing the presence of police or security guards, parents primarily discussed the importance of creating distinct places for children to play, clean and safe washrooms, creating clear sightlines of children's play areas, and implementing buffers to protect children from vehicular traffic. Parents also talked about the importance of an adequate waste disposal system to keep parks clean. Highlighting the diverse factors that influence individuals' experiences in greenspace.

Park Features and Amenities: Participants additionally highlighted the park amenities and features they particularly enjoyed when going to the park. Among others, this included forests, trails, wildlife and protective tree coverage. A large park size, appropriate covered seating and benches, and water features such as the lake or beach, waterfalls, river, and community swimming pools, were the most frequently mentioned park features participants enjoyed.

There were also a number of playground features that were mentioned by participants such as climbing equipment, sides and swings. Parents also mentioned their appreciation for parks with seesaws and sandpits. While parents emphasized the importance of usability for different age groups and various surfacing that would encourage safe, risky play such as sand pits and rubber surfacing such as at McLennen Park in Kitchener (refer to Figure 5.4), children focused on the features they found interesting such as playgrounds that mimicked amusement rides and games, obstacle courses, fireman polls, spinning equipment and workout equipment (refer to Figure 5.13).

Figure 4.14 Civic Centre Park, highlighted by one child-parent dyad as their favourite park in Kitchener because of its Fireman theme.

There are several activities that participants believed made greenspaces more meaningful. This included basketball, biking, geocaching, soccer, walking and picnics. However, there were also unique activities within neighbourhood greenspaces that were mentioned by children or their parents. While children preferred playing organized games like tag, tic-tac-toe, hide and seek, and grounders or organized activities such as reading, scootering, sledding and snowmen and the winter lights festival at Waterloo Park. In contrast, parents highlighted activities such as badminton, berry picking, catch, Frisbees, roller-skating, people-watching and parks with programming.

> When we take the kids, Victoria Park has a lot of events through the year. We don't miss any because we live so close that we love to just go and again watch people. They can be pretty expensive events, like Rib Fest. You're paying pretty good money for food, but we'll eat at home or bring a little picnic and go sit and just enjoy the events, the music and everything. (non-binary parent of a 13-year-old boy)

In contrast, the biggest park feature or amenity that made them less attractive for high-rise families were small greenspaces. For parents, the conditions and accessibility of public washrooms, no water features, especially in the summer months to cool off, and limited park maintenance such as garbage and pet litter limited their positive experiences in their neighbourhood greenspaces. Furthermore, some expressed challenges with parking. Parks with an access fee also minimized accessibility such as Shadesmills and Laurel Creek in Figure 5.14.

Figure 4.15 Shadesmills, Cambridge; Laurel Creek, Waterloo; Mclennan Park, Kitchener

To adapt to the needs and interests of children who live in high-rises, children recommend that greenspaces provide cleaner places to swim. Other children also noted the importance of improving the tree cover at different parks that provided shade on warm days. Children additionally highlighted some of the infrastructure within greenspaces that they believed met their best interests including spinning equipment, monkey bars, slides and swings. However, children noted that parks did not always have these amenities, nor were there enough of them. Children also noted the importance of having play equipment that suited their interests. Some children feeling like their neighbourhood playgrounds were "for babies" [8-year-old boy from Kitchener], or "boring" [9-year-old by from Kitchener] because there was not enough activities/programming to engage with or it did not meet their age-related interests.

Two children highlighted that these park spaces could be better if they were consulted during the planning process (9-year-old boy from Kitchener; 11-year-old girl from Kitchener). The parents of these children echoed similar concerns, highlighting the importance of creating more age-friendly programing and infrastructure, encouraging independent mobility, and skill development, particularly with regards to sports. One parent notes:

> When I was a kid, I lived in the Middle East. I used to play soccer seven days a week. Even in the winter, we still can play because we had access to the outdoors. Even in a poor country, we had more access to things. I played soccer, good organization development, soccer, it cost zero money...When I came to Canada [I] expected there to be a better scale. But no, it's the opposite. Here, if you can't afford things for your kids, they just stay at home and do nothing. (father of 12-year-old boy from Waterloo)

Parents also highlighted the importance of infrastructure that stimulates the imagination, creates opportunities for risky forms of play, and provides unique structures for different age groups. One parent commented on how they felt like some parks were almost "too safe" and discourage child-imagination (mother of 9-year-old boy from Kitchener). Children and parents additionally

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felt like their municipalities could more effectively respond to their needs by improving washroom accessibility, creating more places to sit, planting more flora and fauna and improving the cleanliness of parks by cleaning the washrooms, providing more options for waste disposal and cleaning up litter such as goose poop and wrappers which would improve their experiences in neighbourhood greenspaces.

The Influence of Changing Seasons: The changing of seasons was mentioned by nearly all high-rise parents and their children as a factor that influenced their experience of greenspace. While most families spent more time outside during the warmer months, the heat of the summer often made play equipment too hot, with some parks having few sheltered sitting areas to retreat from the heat. However, nearly all participants expressed how winter was the biggest deterrent from spending time outside. A third of the children expressed that they did not enjoy spending time outside because it was too cold, others shared how there were more steps to bundling up, and the ice and snow limited the usability of many greenspaces. Parent shared a similar sentiment with over a third of parents expressing that they did not enjoy the cold whereas others said the outdoors was gloomy, dark, they feared their children would incur an injury from icy and slippery play equipment and was a hassle bundling up their children. For example, one parent shared perceived impacts of staying indoors during the winter on his son:

> At this age, I know that he is growing, he we has a lot of energy, he wants to do things. But the only thing he can do is watch TV or play video games and honestly speaking, I feel like that affects his mentality during the winter. I feel like kids are angry, because they don't have enough sun or the outdoors? He was just stuck. He always complains, "what do you need me to do? It has nothing to do here. I'm really bored". (father of 12-year-old boy, Waterloo)

To encourage the year-round use of greenspaces both children and parents provided their recommendations, particularly related to how parks could adapt to encourage their use throughout the year. While both parents and children discussed the importance of having open washrooms throughout the year, some participants who recently immigrated to Canada, additionally noted how programs that teach you to skate would be beneficial to their integration into the Canadian winter culture. Participants additionally highlighted their interest in seeing more programming in park spaces during the winter months. Children highlighted that better snow removal of amenities within greenspaces such as the skatepark or playground were important for greenspace use. Parents additionally highlighted that their personal experience

outside would be improved in the winters by creating heated places for them to sit or the creation of indoor parks that simulated outside for their kids to still be active.

Chapter 5.0: Discussion and Conclusion

5.1 Introduction

Through a pragmatic lens, applying both the postpositivist and transformative worldviews, this thesis investigated how Ontario municipalities plan for the greenspace needs and interests of children who live in high-rises through a content analysis of existing planning policy, documents, and guidelines. It also sought to explore family access to, use of, and experience with greenspace via interviews with families living in high-rises. This concluding chapter provides a synthesis of the key findings from Chapter 4 to provide recommendations to both researchers and practitioners. These recommendations are guided by the experiences of children and their parents who live in high-rises, in addition to the gaps identified through an analysis of relevant planning documents. This was the first study in Canada to actively engage high-rise families to understand their greenspace needs and interests and review related planning policies. Thus, it gives policymakers and researchers a temperature of high-rise families' experiences accessing and using greenspace and an understanding of how several Ontario municipalities currently plan for families in high-rises.

In this chapter, I will first outline the study research questions and integrated results. I will then highlight the connections between the study findings and the biophilic theory, that acted as the theoretical underpinning of this study. I will then highlight the key themes identified throughout the study. This includes the importance for municipalities to understand their high-rise populations by engaging high-rise dwellers, particularly that of children. It also includes the importance of developing strong active transportation corridors, designing greenspaces that encourage daily and year-round use, and implementing robust monitoring and evaluation systems within community plans. I will then provide a summary of this study's strengths and limitations and conclude with a set of directions for future research and practice to create more child-friendly cities.

5.2 Research Questions and Integrated Results

This is the first study in Canada to actively engage high-rise families and was inspired by the need to better understand their experiences and inform planning practice, particularly the planning of greenspaces. This need informed the following research questions and subsequent results:

Table 5.1 Research Questions and Integrated Results

Research Question	Results
How does municipal planning policy within Ontario support the planning, design, and management of child-friendly greenspaces in high-rise setting?	Children who live in high-rises were not explicitly referenced within the context framing or "planning context" of any municipal planning document. While several planning documents recognize children who live in high-rises in their planning process, very few require explicit engagement efforts or planning activities that considered the needs and preferences of children who live in high-rises. Nor do they identify what these preferences represent. While largely unenforceable, only the City of Toronto's *Growing Up (2020)* policy provided interventions and examples of how greenspaces can be more child-friendly, accessible, and consider children who live in high-rises as important greenspace users. While there were some initiatives that indirectly included children who live in high-rises in the monitoring and evaluation of municipal plans, the City of Toronto's *Growing Up (2020)* guideline was the only plan to specifically mention the importance of children who live in high-rises.
How do children and their parents who live in high-rises access, use, and experience their neighbourhood greenspaces?	Strong active transportation corridors, such as protected trail systems are important for child independent mobility. Neighbourhood greenspaces are vital for play and socialization for families with children living in high-rises largely due to the spatial limitations of high-rise living. Not all neighbourhood greenspaces support the needs and preferences of children of various ages who live in high-rises. Very few children and their parents living in high-rises felt that their neighbourhood greenspaces support their use at all times of the day or calendar year. Many attributed this to their sense of safety at night and during the winter months, with some families saying they don't go outside during these times.
Does the current planning context in Ontario help or hinder the creation of child-friendly greenspaces based on the experiences of families with children living in high-rises?	While many families in high-rises enjoyed and appreciated the greenspaces within their neighbourhood not all spaces met their age-appropriate needs or preferences. Greenspaces are not always designed for use throughout the entire day and/or year highlighting the need to support research that investigates the greenspace preferences of high-rise families and the creation of planning policies that support these preferences. While *Toronto's Growing Up (2020)* guidelines and *The Brampton Plan (2023)* identify some seasonal planning strategies to support the year-round use of greenspace, it is important for communities to create their own locally specific strategies. Only *Toronto's Growing Up (2020) Guidelines* provided a strategy for how they plan to monitor and evaluate how they plan for families living in high-rises highlighting the importance of future policy that identifies the interventions and tools that municipalities will use to monitor and evaluate their greenspaces for families living in high-rises.

5.3 Supporting Children and Parents Biophilia through Biophilic Design in High-rise Settings

The promotion of healthy child development is a key facet of the *Biophilic Theory* that is the theoretical underpinning of this thesis and emphasizes the importance of frequent and daily greenspace exposure for the health of people, including children (Beatley, 2016; Kellert et al., 2011). However, as illustrated by the policy analysis, only the City of Toronto's *Growing Up (2020)* policy provided interventions and examples of how greenspaces can be more child-friendly, accessible and consider children who live in high-rises as important greenspace users. Although the *Growing Up (2020) guidelines* recognize children and their families that live in high-rises in several ways, these interventions are largely unenforceable or measurable. When planning for children and their parents *biophilia,* it is important for local planning documents to identify children and their families in high-rises as important greenspace users, outline interventions for how they intend to make greenspaces more accessible and enjoyable, and how they will measure and monitor change (Seasons 2021). One intervention relates to the implementation of biophilic design principles such as creating greenspaces that represent organic shapes or that optimize natural light (Kellert, Stephen R. et al., 2011, p.6).

The incorporation of children and their parents who live in high-rises will particularly be important for greenspace planning in urbanizing communities. While the City of Toronto has a head start in greenspace planning for high-rise families in comparison to other municipalities, this may be due to the degree of urbanization, cost of living, intensification, and resources in the City of Toronto to develop such plans. This is in comparison to less populace municipalities in the province. However, it will be important for urbanizing municipalities to also consider the populations that live in their communities existing and future high-rise buildings. It will also be important for urbanizing communities to identify how they can ensure that these environments are supportive of these populations as they continue to grow to strength biophilic relationships in urban areas.

Through the interview chapter, the importance of peoples *biophilia* was prevalent due to the emphasis placed on neighbourhood greenspaces by families living in a high-rises as important places to play and socialize. This appeared to be largely due to the spatial limitations of high-rise dwellings. The limited space in high-rise units is a common experience of families living in a high-rise in the literature that leaves little space or flexibility for children to play or

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socialize. Furthermore, high-rises are often not developed with children in mind, providing few-to-no outdoor places on the property premises to freely play (Andrews et al., 2019; Andrews & Warner, 2020; Easthope & Tice, 2011; Evans, 2021). This was a similar experience for those within this study. Through this investigation, neighbourhood greenspaces appeared to be very significant places for social interactions and wellbeing. For example, participants referenced the importance of socializing, picnics, or playing recreational sports such as basketball or soccer with family and friends. It will be important for future initiatives to support human *biophilia* through biophilic design.

5.4 The Value of Understanding a Community's High-rise Populations

The findings from both Chapters 4.1 and 4.2 identify the importance of identifying and understanding a community's high-rise populations. As identified in Chapter 4.2, high-rise families in this study represent a diverse group of individuals, spanning an array of ages (5-17) from various socio-economic contexts and backgrounds, including differing lengths of tenancy (2-10 years) in their high-rise dwellings. However, as highlighted by Chapter 4, children who live in high-rises were not explicitly referenced within the context framing "Planning Context" of any municipal planning document. While some documents such as the City of Toronto's *Growing Up (2020)* policy can act as an example to municipalities for providing indicators and examples of how greenspaces can be more child-friendly, accessible, and consider children who live in high-rises as important greenspace users, municipalities should develop an understanding of their locally specific high-rise populations, including the geographic distribution, density, and number of high-rise families with children in their communities. An understanding of high-rise families' socio-economic backgrounds will also be critical for developing community engagement strategies and policies or guidelines.

To better represent children living inn high-rises within planning documents, future planning must first provide a more robust picture of their high-rise infrastructure, neighborhoods, and populations, including the number of families with children living in these settings. Municipalities can make these community profiles enforceable by connecting them to specific goals and objectives and key indicators to monitor and evaluate change within the built and natural (Seasons, 2021). As cities continue to grow, families with children will be a growing population that live in high-rise environments. To better plan for children who live in high-rises, a robust understanding of high-rise populations is critical.

5.5 Encourage Efforts that Actively Engage Children Living in High-rises

Second, Chapter 4.1 and Chapter 4.2 highlight the importance of engaging children who live in high-rises in both policy and research initiatives. While Chapter 4 identified that several planning documents recognize children who live in high-rises in their greenspace planning process, very few enforce or even encourage engagement efforts that considered the needs and interests of children who live in high-rises. The planning process relates to how a municipality goes about their planning practices, seeks to live out their ambitions, and develops civic trust, social capital, and participation. This study was particularly interested in how children who live in high-rises were included in greenspace planning processes.

To better represent the greenspace needs and interests of families who live in high-rises, particularly that of children who live in high-rises, future planning policy should use strategies to directly include children who live in high-rises within the public participation process, including stronger language to encourage direct engagement within greenspace planning. Furthermore, engagement methods should respect the autonomy and perspectives of children such as in the case of the City of Toronto's *Growing Up (2020)* guidelines. By encouraging participation, municipalities can in turn create more specific planning actions and ambitions that support children who live in high-rises needs and interests, and ultimately support healthy child development by promoting children's connection with nature.

5.6 Study Strengths and Limitations

To date, no known published Canadian research has examined whether planning policy facilitates the creation of child-friendly outdoor greenspaces surrounding high-rise developments. Additionally, while greenspace access and use are critical for healthy child development (Feng et al., 2022; Feng, Xiaoqi & Astell-Burt, 2017), no known Canadian research has examined how children living in high-rises access, use, and experience neighborhood greenspace. While one study by Andrews et al. (2019) points to Canadian cities as an example of child-friendly urban design, they do not indicate the specific cities that implement these policies/guidelines.

This study filled these gaps by examining whether and how the current planning context in Ontario supports the development of child-friendly outdoor greenspaces surrounding high-rises in a number of Ontario municipalities. This study area is important as it looks at a variety of unresearched communities of different sizes, population densities and demographics. While these

findings may not be generalizable, they provide a small picture of what high-rise living is like for families in Ontario and how we plan the greenspace amenities around high-rise environments. As an underdeveloped research area in Canada, these findings intend to spur future research related to child-friendly cities, specifically related to high-rise settings. Future studies may use similar research methods but apply them to different sized communities in Ontario or investigate the experiences of children in high-rises in other provinces or territories to understand how children's experiences may differ across various community sizes and planning context.

The findings of this research will be presented to planners from Kitchener, Waterloo, and Cambridge who were invited to the corresponding authors' thesis defense. They will also be published in a journal for wider accessibility. As cities grow and change, with the aim of creating complete communities (Ontario, 2020), it is important that planners consider the needs of children. These findings will help to inform planning in the cities of Kitchener, Waterloo, and Cambridge, and other planners within mid-to-large sized cities across Ontario. They help to identify whether Ontario's mid-to-large sized cities consider children in the planning and design of greenspaces within high-rise settings and highlight the cities that may be potential examples of child-friendly planning in Ontario. Tangibly, these findings also guide the creation or modification of existing planning policy to become more child-friendly and inform how planners can better plan for and design greenspaces. These changes to planning practice will help create greenspaces around high-rise settings that better support child health and development in Ontario.

5.6.1 Recommendation to Planning Scholarship

There are several limitations of the current research that help inform future research. First, while several of the municipalities reviewed represent smaller or rural populations and character such as the Townships of Woolwich, Wilmot, and North Dumfries, these communities may enable incremental growth and smaller developments that are still important structures to consider for families with children. Second, while the structure of regional governments has dramatically changed due to recent policy changes (Bill 23), this paper recognizes the critical role that regional governments play when it comes to the planning of communities. It is important for regional governments to include statements within their official plans that require lower-tier municipalities to consider high-rise populations, including families that live in high-rises in the planning of community greenspaces. Due to the limitations of this study, it is

important for future research to continue to explore and expand upon how communities within Ontario, Canada, and globally plan for families living in high-rise settings.

This study was also limited to non-statutory Master Plans and Strategic Plans including municipal transportation plans, pedestrian and cycling plans, infrastructure plans related to greenspace or high-rises, greenspace and recreation master plans, master neighborhood plans or age or disability related planning documents were also included in this study. Furthermore, secondary planning documents were also included in this study including transit-oriented development plans, urban design guides or reviews. However, secondary plans, community plans, and zoning by-laws were excluded from this study as they were far too granular in geographic scale for the scope of this study. Future research should consider expanding this analysis by looking at these missing documents to understand how policy, including the recent provincial planning shifts, influence high-rise living at a zoning or site plan level. It is also important for future researchers to consult key informants such as urban planners, recreation staff, and landscape architects who influence the greenspace planning process. This will help future researchers understand how key policy documents play out in the real-time.

Further, to support the *biophilia* of children and their parents, future research should also investigate ways of engaging children who live in high-rises to respect their dignity within the process and appropriately identify children's best interests, two major principles within the child-friendly planning framework (UNICEF, 2022). Go along research, surveys or interviews in new Canadian geographies may be useful for further exploring and identifying children's various experiences and perceptions towards their community's greenspace. This includes their journey to greenspaces or other community spaces, and how well the existing system supports their mobility throughout the city. Future studies may also wish to create deeper connections between a child's experiences and their various socio-economic characteristics such as income, gender or ethnicity. Findings of future research will help to deepen our understanding of the *Biophilic Theory* by developing a more robust understanding of children who live in high-rises connection with nature. *Biophilic Theory* by developing a more robust understanding of children who live in high-rises connection with nature.

5.6.2 Recommendations to Planning Practice

This study is limited to the regional municipalities of Waterloo and Peel and their subsequent low-tier municipalities, in addition to the cities of Ottawa and Toronto. These four

urbanizing regions represent a diverse range of population sizes, densities, and landscapes in Ontario. While this study is narrow in scope it provides an exploratory basis to spur future qualitative and quantitative study related to the experiences of families living in high-rises in Ontario that can be conducted by local municipalities. Second, this study highlights the importance of strong active transportation corridors and greenspaces for families in high-rises. While this was the case for the participants in this study, it is important to not generalize these findings until other studies validate them across multiple different geographies (Apparicio et al., 2013; Conway & Bourne, 2013; Gerrish & Watkins, 2018). This is also because children's perceptions toward greenspace accessibility and greenspace quality may differ in various communities and different socio-economic characteristics (Bjerke et al., 2006; Gobster, 2002). When planning high-rises, planners should learn their high-rise communities and seek out efforts to actively engage them in greenspace planning to better understand their needs and preferences.

To operationalize the findings of this work, practitioners may wish to look to the City of Toronto, and its various planning documents such as its *Official Plan (2015), Growing Up (2020) guidelines, Parkland Strategy (2019),* or *Privately-owned Publicly Accessible (2014) guidelines* to better understand how they can plan for the high-rise communities within their own municipalities. For example, the *Growing Up (2020) guidelines* may be helpful for municipalities who may wish to find interventions that will allow them to actively engage high-rise children in more meaningful ways. On the other hand the *Privately-owned Publicly Accessible (2014) guidelines* may help municipalities specify the design and programming efforts they can make within high-rise settings to make greenspaces friendly to children of various ages. While many of Toronto's guidelines remain aspirational in nature, their planning documents may still act as inspiration for many communities that wish to plan for their own high-rise communities. Engagement with a communities existing high-rise population is additionally critical to ensure locally-specific planning outcomes. Furthermore, further reflection should be made on the part of practitioners to better understand how their monitoring and evaluation efforts of their plans will be measured and monitored to ensure accountability for their ambitious goals for high-rise living and greenspace planning.

For those in the education field, teaching students in planning, it will be important to emphasize the importance of how the design and development of a community can have a profound influence on child health and wellbeing. This includes how high-rise living may

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influence child health within the Canadian context. It is also important for those in education to clearly explain the role of various elements within the planning hierarchy for students to understand how various elements of planning, for example, greenspace planning and the development of high-rises, are interrelated and influence one another. This will be valuable for students as they enter into the field of planning and to have a more robust understand of the Canadian planning system.

5.8 Conclusion: Pursuing the Creation of Child-friendly High-rise Environments

The purpose of this study was to explore how municipal planning in Ontario supports the creation of child-friendly greenspaces in high-rise settings. The goal of this exploration was to gage if and how we consider the needs of families living in a high-rise, particularly that of children in the planning of greenspaces. Through the policy analysis four key findings emerged. First, children who live in high-rises were not explicitly referenced within the context framing or "planning context" of any municipal planning document. Second, while several planning documents recognize children who live in high-rises in their planning process, very few enforce engagement efforts or planning activities and ambitions that considered the needs and interests of children who live in high-rises. Third, while largely unenforceable, only the City of Toronto's *Growing Up (2020)* policy provided interventions and examples of how greenspaces can be more child-friendly, accessible, and consider children who live in high-rises as important greenspace users. Fourth, while there were some initiatives that indirectly included children who live in high-rises in the monitoring and evaluation of municipal plans, the City of Toronto's *Growing Up (2020)* guideline was the only plan to specifically mention the importance of children who live in high-rises.

In contrast, the interviews with child-parent dyads offer a more in-depth and local analysis of high-rise resident's experiences accessing and interacting with their neighbourhood greenspaces in the three midwestern cities of Cambridge, Kitchener, and Waterloo, during a time of significant population growth and intensification. This is the first study in Canada to investigate the perspectives of children who live in high-rises and contributes to the literature by glancing into the experiences of children who live in high-rises and their parents interacting with the community spaces in their neighbourhoods. The four key findings to emerge include the importance of strong active transportation corridors to support child independent mobility, the vitality of neighbourhood greenspace for play and socialization largely associated with the spatial limitations of high-rise

living, and the importance of planning neighbourhood greenspaces that encourage children who live in high-rises of all ages to use their neighbourhood greenspaces at all times of the day and calendar year.

The experiences of families in high-rises within greenspaces is an important facet for understanding how to create more complete and child-friendly greenspaces that encourage well-being and healthy development. However, experiences are also diverse and varied (Milligan & Bingley, 2007). As identified by the child-friendly cities framework, child-friendly cities are those that encourage the best interests of children, and support their life, survival, and development, dignity, equity, and inclusion, and promote governance system that are accountable, transparent, effective, responsive and adaptive to change. One important element within the city is children's connection with nature also known as *biophilia*. This study highlights that while children are often overlooked within the planning and design of cities, including high-rise environments (Dunn, 2020), it is important to intentionally design greenspaces for children who live in high-rises due to their biophilic nature that influences health.

While high-rise buildings are often associated with low-income families (Andrews et al., 2019;2020; Anastasiou et al., 2020), there is a diverse set of reasons for living in a high-rise. For the participants included in this study, this ranged from connection to nature and the city, a sense of security and feeling close to work, or a concern for the natural environment. Families who live in high-rises additionally represent a diverse set of people from various socioeconomic backgrounds. As cities continue to grow and intensify, land-use change in Ontario's mid-to-large sized cities must consider the needs of children. However, children are often overlooked within the planning and design of cities, including high-rise environments (Dunn, J. R., 2020). These findings will help support the current and future families that live in these environments.

A Brief Reflection from the Corresponding Author

As the corresponding author, I am very grateful for the opportunity to explore the planning policies that help guide the creation of greenspaces within Ontario cities and the experiences of families living in high-rises accessing and using their neighbourhood greenspaces. As someone who has never lived in a high-rise or multi-unit dwelling myself, this body of work expanded my understandings and appreciation for the types of places people chose to live in my country. This work has also compelled me to think deeper about how we, as both aspiring and

professional planners, plan for people who live in high-rise settings and the unfair assumptions we may have engaging in such efforts, particularly within the North American or Canadian context.

Among a multitude of lessons, this research process has revealed to me the importance of assessing my own potential bias and assumptions with regards to high-rise living, including the reasons someone may choose to live within a high-rise building (as there were many, even within this study). I also learned the importance of using several sampling strategies to seek this study's population of interest and obtain a diversity of perspectives and experiences. I wish to give a thank you to those who encouraged me to think deeper about my potential assumptions and provided me with resources to navigate this study's research process. I am also grateful for the individuals who graciously participated in this study and shared their greenspace experiences with me. As I move into the professional realm of planning, the findings and key learnings of this work will forever reshape my approach to planning, to which I am forever grateful.

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Appendix A: Summary of Municipal Socio-demographic Characteristics in Chapter 4

Municipality	Population	Population Change 2016-2021 (%)	Population Density(per square km)	Apartments 5 or more Storeys as a (%) of all Housing Stock	Core Need	Spending more that 30% of Income on Shelter Costs	Average Household Income2020	Prevalence of Low-Income Households (%) (LICO-AT)	Immigrants2016-2021	Visible Minority Population (%)	Largest Industries
Toronto	2,794,356	2.3	4,427.8	46.7	19.6	32.5	121,200	8.7	198,040	55.7	Professional, Scientific, and Technical Services Retail Trade Health Care and Social Assistance (Statistics Canada, 2023g)
Ottawa	1,017,449	8.9	364.9	18.9	11.2	20.1	126,700	6.0	47,415	32.5	Public Administration Health Care and Social Assistance Professional, Scientific, and Technical Services (Statistics Canada, 2023n)
Region of Peel	1,451,022	5.0	1,163.2	19.0	13.7	28.9	127,200	5.4	104,125	68.8	Retail Trade Transportation and warehousing Manufacturing (Statistics Canada, 2023f)
City of Mississauga	717,961	-0.5	2452.5	27.3	14.9	28.0	126,500	5.9	52,500	61.9	Professional, Scientific and Technical Services Retail Trade Health Care and Social Assisstance (Statistics Canada, 2023d)
City of Brampton	656,480	10.6	2,469.0	10.2	12.9	31	124,500	5.3	50,095	80.6	Transportation and Warehousing Manufacturing Retail Trade (Statistics Canada, 2023m)
City of Caledon	76,581	15.2	111.1	1.1	7.6	19.8	155,400	2.0	1535	32.9	Construction Retail Trade Manufacturing (Statistics Canada, 2023a)
Region of Waterloo	587,165	9.7	428.6	12.9	9.0	21.8	112,500	6.2	27,840	27.5	Manufacturing Retail Trade Health Care and Social Assisstance (Statistics Canada, 2023i)

Municipality											Key Industries
City of Kitchener	256,885	10.1	1877.6	15.4	10.2	23.3	104,300	6.2	16,345	31.7	Manufacturing. Health Care and Social AssistanceRetail Trade (Statistics Canada, 2023c)
City of Waterloo	121,436	15.7	1895.8	22	8.0	24.0	122,400	10.3	6,610	35	Professional, Scientific, and Technical Services Educational Services Manufacturing (Statistics Canada, 2023h)
City of Cambridge	138,479	6.6	1,225.5	5.9	9.3	21.2	108,200	4.7	4,255	23.9	Manufacturing Construction Retail and Trade. (Statistics Canada, 2023b)
Township of Woolwich	26,999	8.0	82.7	0.1	6.0	13.7	134,600	2.3	390	9.4	Manufacturing Retail Trade Health Care and social assistance (Statistics Canada, 2023l)
Township of North Dumfries	10,619	4.0	56.5	0.0	3.5	11.5	147,600	1.4	50	6.7	Manufacturing Retail Trade Construction (Statistics Canada, 2023e)
Township of Wilmot	21,429	4.3	81.2	0.1	4.8	11.7	131,800	1.2	125	4.3	Construction Manufacturing Health Care and Social Assisstance (Statistics Canada, 2023k)
Township of Wellesley	11,318	0.5	40.8	0	3.0	11.0	141,000	2.4	55	2.2	Agriculture, forestry, fishing and hunting Manufacturing Construction (Statistics Canada, 2023j)

Appendix B: Reviewed Planning Documents

Municipality	Official Plans	Urban Design Guidelines	Tall Building Guidelines	Neighbourhood Strategies	Parks Planning	Age-friendly	Other
City of Toronto	City of Toronto Official Plan (2015).	Privately-Owned Publicly Accessible Spaces (2014) Complete Streets Guidelines (2017) Guidelines for the Design and Management of Bicycle Parking Facilities (2008) Best Practices for Effective Lighting (2017)	Tall Building Guide (2013)	Toronto Strong Neighbourhoods Strategy. (2020) HousingTO 2020-2030 Action Plan. (2019)	Strategy: Growing Toronto Parkland (2019)	Growing Up: Planning for Children in New Vertical Communities. (2020)	Toronto Accessibility Design Guidelines (2021)
City of Ottawa	City of Ottawa Official Plan (2023)	Complete Streets Ottawa Report (2015) Designing Neighbourhood Collector Streets (2019) Downtown Moves: Transforming Ottawa's Streets (2013) Environmental Noise Control Guidelines (2016) Local Residential Streets 30 km/h Design Toolbox (2019) Transit-oriented Development Guidelines. (n.d.) Urban Design Guidelines for Development Along Arterial Mainstreet. (n.d.) Urban Design Guidelines for Development Along Traditional Mainstreets. (n.d.) Urban Design Guidelines for Greenfield Neighbourhoods (n.d.)	Urban Design Guidelines for High-rise Buildings (2018)	Building Better Revitalized Neighbourhoods (2015) 15-Minute Neighbourhoods Baseline Report (2021**)**	Parkland Development Manual 2nd Edition (2017) Parks and Recreation Facilities Master Plan (2021)		Accessibility Design Standards (2015)
Region of Peel	Regin of Pel Official Plan (2022)				Active Parks Design Guide (2019)	Planning for an Aging Population. (2017)	2015-2035 Strategic Plan; Our 20-year vision for Peel is "community for Life". (2015)
Town of Caledon	Town of Caledon Official Plan (2018)	Comprehensive Town-wide Design Guidelines (2017)		Sustainable Neighbourhood Retrofit Action Plan (SNAP) for the neighbourhood of West Bolton (2019)	Recreation and Parks Masterplan (2010)	Age-Friendly Caledon (AFC) Action Plan (2021-2031) (2021)	

Municipality	Official Plan	Urban Design Guidelines		Neighbourhood Program	Parks/Recreation Plan	Age-Friendly/Youth	Strategic Plan
City of Mississauga	Mississauga Official Plan (2023)	Crime Prevention Through Environmental Design (CPTED) (2013) Green Development Standards: Going Green in Mississauga (2012) Urban Design Study (2019)			Parks Plan (2022)	Youth Plan for Recreation (2020)	Strategic plan Our Future Mississauga, move belong connect prosper green. (2009)
City of Brampton	The Brampton Plan (2022)	Development Design Guidelines (2003)		Nurturing Neighbourhoods Program (2022)	Parks and Recreation Master Plan (2017)	Age-Friendly Strategy and Action Plan (2019)	Living the Mosaic: Brampton 2040 Vision (2018)
Region of Waterloo	Regional Official Plan (2015)						
City of Cambridge	Cambridge Official Plan (2018)	Mainstreet Urban Design Guidelines (2013) Downtown Urban Design Guidelines (2013)			Trails Master Plan (2010)		Cambridge Connected Strategic Plan 2020-2023 (2020) Bike Your City - Cycling Master Plan (2020) Master Plan for Leisure Services/Facilities 2002-2022 (2010) Moving Cambridge - Transportation Master Plan (2019)
City of Kitchener	City of Kitchener Official Plan, a Complete and Healthy Kitchener (2014)	Urban Design Manual (n.d.)		Love My Hood Strategy (2017)	Parks Strategic Plan (2010)		
City of Waterloo	Official Plan (2022)	Urban Design Manual. (2009)		Waterloo's Neighbourhood Strategy: Supporting Resident-Led Neighbourhood Community Building (2018)	Waterloo Park Master Plan (2009)	Age-Friendly Waterloo - Evaluation Report (2018)	
Township of Wilmot	Township of Wilmot Official Plan (2019)				Parks, Facilities, and Recreation Services Master Plan (2017)		Township of Wilmot Strategic Plan (2013)
Township of Wellesley	Official Plan (2013)				Community Parks, Recreation & Culture Strategic Master Plan (2014)		Wellesley Strategic Plan for 2019-2023 (2020)
Township of Woolwich	Official Plan (2022)	Breslau Settlement Plan - Urban Design + Architectural Control Guidelines (2019)					Wellesley Strategic Plan for 2019-2023 (2014)
Township of North Dumfries	Township of North Dumfries Official Plan (2018)	Township of North Dumfries Urban Design Guide			The Township of North Dumfries Leisure Services Master Plan (2022)		

Appendix C: Thematic Codes, Decision-making framework

Theme	Definition	Sub-themes	Key Concepts	Application
Planning Context	The planning context relates to if a municipality identifies its community's assets, community health and equity context, and the characteristics of its people in their plans.	Community Assets	Green Space Definition	Policies that define what green space is and looks like, including its various typologies (ex. Community Park vs Parkette vs POPS)
			Ecological Context	Policies that describe the municipalities existing natural environments, ecology, and green space context, including its various attributes (ex. Community Garden, play environments, forests, rivers etc.)
			Green space Designation	Policies that designate green spaces within a particular category within its Official Plan.
			Housing Definition	Policies that define various housing typologies or housing forms
			Housing Typologies	Policies that discuss and identify various housing typologies. (ex. Single-detached, townhouse, apartment etc.)
			Role of High-rises	Policies that discuss how a municipality perceives high-rises and their role within the urban/local fabric.
		Community Health and Equity	Health	Policies that identify the existing health of the population.
			Equity	Policies that highlight the existing equity context and potential gaps.
			Quality of life	Policies that highlight the existing quality of life for residents and potential gaps.
			Housing Gaps	Policies that identify the housing gaps and key areas of focus for future planning and development of housing in the municipality
			Food	Policies that discuss how food, such as community gardens can be integrated in greenspace or the urban fabric.
			Transportation	Policies that refer to the existing integration of transportation transit systems or active transportation networks between housing/high-rises and green space/open space.
			Accessibility	Policies that highlight how existing community assets/green space are accessible for various users.
			Age Friendly	Policies that consider the current needs of its inhabitants, based on age.
			Play	Policies that highlight the existing or missing opportunities for play in a community.
		Demographics	Child Definition	Applies to policies that define what it means to be a child/youth.
Planning Process	The planning process relates to how a municipality goes about their planning practices and includes the	Civic Trust, Social Capital, and Participation	Engagement	How a municipality engages its citizens and encourages participation. OR Reported trust, attendance and investment in the participatory process.
			Equity	Policies that recognize the diverse cultural identities and needs of its inhabitants within the planning process.

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		Citizen Responsibility	Policies that allocate the responsibility of a particular task/burden/activity onto the community or particular citizen groups.
facets of social capital participation and civic trust.		Programming	Events or programming that encourage citizen engagement and participation.
		Intermunicipal Collaboration	Policies that identify efforts to work with other municipalities or organizations for a common interest.
		Accessibility	closeness and ease of access
		Age-friendly	Policies that consider age as an important factor of consideration in its participation process.
	Planning Activities	Land Use	Policies that refer explain how particular land is to be used.
		Acquisition	The process/method of acquiring new land.
		Green Space Designation	Policies that explain how designated green spaces should be planned for.
		Green Space Requirements	Policies that outline the planning requirements of green spaces.
		POPS	Policies that discuss the role privately owned amenity/green space and how they should be planned for.
		Housing Requirements	Polices that outline the requirements for a housing development.
		High-rise Requirements	Policies or specifications for high-rises across a municipality, within a particular designation or geographic area within the city.
		Inclusionary Zoning	Inclusionary Zoning being used as a tool for providing housing.
		Transportation	Policies that refer to the integration of transportation transit systems or active transportation networks between housing/high-rises and green space/open space.
		Food	Policies that discuss how food will/should be incorporated within public space.
		Holding By-law	Used by a policy as a tool to protect green spaces or public space.
		Site Plan Control	Policies that are used to control the design and creation of green spaces and/or high-rise developments.
		Other Plans	Policies that refer/direct the reader to other plans related to housing/high-rises/children or greenspace
	Planning Ambitions	Complete Community	Policies that emphasize a goal of creating complete communities.
		Housing Choice	Policies that refer to providing a range of housing options for residents to choose from, including affordable housing options.
		Human Scale	Policies that emphasize human scale as priority of development.

			Age-friendly	Policies that consider age as an important factor of consideration in the planning process.
			Intensification	Policies that identify Intensification as a tool for development or a goal of the planning process.
			Enhancement	Includes policies that encourage the enhancement of housing or green spaces or assess/evaluate the quality of green spaces or housing.
			Protection	Policies that seek to protect various green space features or housing forms within the planning process.
			Sustainability	Policies that identify sustainability as an important focus in the planning of green space/ecological preservation, creation, rehabilitation, and maintenance.
			Quality of life	Policies that emphasize human wellness as an important element within the planning process.
Design and Programming	The design of a green space relates to the quality of public greenspace, accessibility, access, use and users and safety and security.	Quality of Public Space	Design	Guidelines or policies that provide guidance on how specific spaces should be designed. The physical elements of public space that have intended function and may include welcoming edges and entrances, the presence of nature, for example.
			Green Space Requirements	Policies that outline the physical/functional requirements of green spaces.
			Enhancement	Presence of nature ,Maintenance ,Welcoming edges and entrances ,Invitation to linger, invitation for active use, quality of experience, sense of place, objective assessment, capital investment
			Human Scale	Design and infrastructure that is created with the pedestrian (human) experience in mind (i.e., sidewalk features, setback/height of buildings, etc.).
			Quality of life	Policies that indicate how features of the built and human environment (greenspace, high-rise requirements, housing, play) contribute to or hinder well-being.
			Independent Mobility	Policies that emphasize opportunities that invite people to linger.
			Health	Invitation for Active Use
		Access & Accessibility	Equity	Recognition of diverse cultural identities and needs within the design or programing of green space.

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			Accessibility	Independent Mobility. Policies that promote accessibility for users of Green Space. Policies that promote accessibility for users of Green Space. How does the municipality define closeness and ease of access
			Design	AODA, universal design, walkability and the quality of sidewalks and infrastructure for diverse needs.
			Connectivity	Connectivity within green spaces and between green spaces and housing, per capita level of service measure, or description of street network
			Transportation	Polices that refer to the integration of transportation, transit, and active transportation network within or to green space at a measurable scale.
		Use and Users	Age-friendly	Policies that consider age as a factor of accessibility; including or excluding specific features/policies/amenities to make more spaces age appropriate.
			Programming	Intent of space or description of how a. space can be used.
			Seasonality	Flexible use of space throughout the seasons
			Social Connection	Evidence of social mixing and opportunities for interaction and connection
			Health	Policies that encourage the implementation of physical infrastructure or amenities that promote health.
			Safety	A sense of security and level of perceived safety and comfort.
			Play	Policies that highlight the ways infrastructure can be used for play.
Monitoring and Evaluation	The monitoring and evaluation relate to how a municipality intends to maintain ongoing representation, community stability, collective efficacy, ongoing investment in green space and the municipalities preparedness for change.	Ongoing Representation	Engagement	How a municipality seeks to maintain ongoing representation, trust, program attendance and investment in the participatory process.
			Age friendly	How a municipality seeks to maintain the representation of citizens across various age groups in the design and programming of green space and or high-rises.
			Equity	Recognition of diverse cultural identities and needs within the design or programing of green space.
			Evaluation	How the quality of the engagement process is is measured/ assessed.
		Community Stability	Complete Community	Policies that discuss the ongoing creation and preservation complete community principles.
			Equity	Policies, goals, or guidelines that intend to improve the processes/outcomes for equity-seeking groups.

			Housing Choice	Policies that highlight a municipalities commitment to maintaining or providing a range of housing options for residents to choose from, including affordable housing.
			Health	Policies that seek to promote the ongoing health of citizens.
			Accessibility	Policies that encourage the protection and creation of accessible spaces into the future.
			Evaluation	How a policy, program or asset is measured/ assessed to achieve stability
			Design	Municipalities that have guidelines that regulate or "guide" the design of public and private space. The policy may have accountability measures how this will be achieved in the future.
		Collective Efficacy	Engagement	Legitimacy of stakeholder Input and participation. If local knowledge is included within the monitoring and evaluation process.
			Quality of life	Policies that promote the well-being of citizens into the future.
			Citizen Responsibility	Policies that allocate the responsibility of a particular task/burden/activity onto the community or of citizens to ensure the future quality and viability of green spaces.
			Green Space Maintenance	Policies that discuss the maintenance demands/needs/anticipated needs or improvements within a municipality.
			Inter-municipal collaboration	Policies that identify efforts to work with other municipalities or organizations for a common interest into the future.
			Design	Guidelines that regulate or "guide" how the design and quality of amenities or infrastructure will be maintained into the future.
			Evaluation	How a policy, program or asset is measured/ assessed through collective action

		Social Connection	How a municipality seeks to maintain social connection with and among citizens.
	Ongoing Investment in Space	Quality of life	Investment into initiatives that improve citizen quality of life
		Evaluation	Investment into the evaluation process
		Enhancement	Includes policies that encourage the future enhancement of housing or green spaces or assess/evaluate the quality of green spaces or housing.
		Design	Policies that highlight a municipalities future commitment to the design of high-rises or green space.
		Protection	Policies that highlight how a municipality intends to maintain the future protection of a community asset.
	Preparedness for Change	Future Generations	Policies that encourage or ensure a positive outcome for future generations.
		Sustainability	Policies that identify sustainability as an important focus in the long-term planning of green space or communities.
		COVID-19	Policies related to changes/considerations made due to the COVID-19 pandemic or referring to adaptations that need to be mad in light of the new normal.
		Other Plans	Policies that delegate to other plans for the implantation or review/success of various initiatives
		Evaluation	Polices that evaluate the future preparedness of a municipality to remain resilient to anticipated or unexpected change.
		Protection	Policies that discuss how the muncipality intend to plan for protection of various green spaces and prepare for change.
		Health	Policies that indicate a municipalities preparedness to planning for the health of its existing and future inhabitants.

Appendix D: Summary of Key Research Findings, Chapter 4

Planning Context

Community Assets — Enforcebility

Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Green Space Definition	17		16	1					City of Ottawa, (	City of Ottawa Of	14	2	1	0
Ecological Context	37		37						City of Toronto, (	City of Toronto Of	21	9	7	0
Green Space Designation	27		27						City of Ottawa, (	City of Ottawa Of	27			
Housing Definition	17 (11 Housing)			17 (6 HR)					City of Toronto, (	City of Toronto Of	16	0	1	0
Housing Typologies	31 (30 Housing)			31 (1 HR)					City of Ottawa, (	City of Ottawa Of	16	10	4	1
Role of High-Rises	2			2					City of Toronto, (	City of Toronto OF	1	1		

Community Health and Equity — Enforcebility

Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Health	19	4	12	1	1	1			City of Toronto, (	City of Toronto Of	19			
Equity	5 (2 Housing)	1	2	2			1		City of Brampton	Brampton Official	4	2		
Quality of life	18	0	17					1	City of Toronto, (	City of Toronto OF	14	4		
Housing Gaps	5			4				1	City of Toronto, (	City of Toronto OF	5			
Food	1		1						City of Cambridg	City of Cambridge	1			
Transportation	1 (1 Housing)			1					City of Kitchener,	City of Kitchener C	1			
Accessibilty	1 -		1 -	-	-	-	-	-	City of Toronto, (	City of Toronto Pa	1 -	-		-
Age-Friendly	2	1 -	-	-	-	-	1 -	-	Township of Nor	Township of North	2 -	-		-
Play	10 -	-	4 -	-	-	-	4 -	-	2 City of Toronto, (	City of Toronto Gr	10 -	-		-

Demographics — Enforcebility

Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Children Definition	4	4							City of Cambridg	City of Cambridge	4			

Planning Process

Civic Trust, Social Capital and Participation — Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Enforcebility — Aspirational/Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Engagement	64	15	28	2	2	11		6	City of Toronto, (	City of Toronto OF	57	2		5
Equity	2	1	1	-	-	-	-	-	City of Kitchener,	City of Kitchener C	2	-	-	-
Citizen Responsibility	1	-	1	-	-	-	-	-	Township of Wel	Township of Well	1	-	-	-
Programming	40	10	9	1	-	17	1	2	City of Toronto, (	City of Toronto Pa	40	-	-	-
Intermunicipal Collaboration	10		7	2		1			City of Toronto, (	The City of Toront	3		7	
Accessibility	33	1	17	3	4	9			City of Toronto, (	City of Toronto OF	33	1		
Age-friendly	7	2	-	-	-	3	-	2	City of Toronto, (	City of Toronto Gr	7	-	-	-

Planning Activities

Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Enforcebility — Aspirational/Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Land Use	15		10	2	3				Region of Water	Region of Waterl	2	1	10	2
Acquisition	32		31		1				City of Toronto, (	City of Toronto OF	5	3	13	11
Green Space Designation	13		13						City of Ottawa, (	City of Ottawa Of	8	4	1	
Green Space Requirements	13		11		3				City of Toronto, (	City of Toronto OF	4	1	3	5
POPS	34		18		10	4		2	City of Toronto, (	City of Toronto OF	28	1	2	3
Housing Requirements	4			1	2			1	City of Toronto, (	City of Toronto OP, (1); City of Ot	4			
High-rise Requirements	41			31	10				City of Toronto (1	City of Toronto OF	14	7	8	12
Inclusionary Zoning	6			6					City of Toronto, (	City of Toronto OF	4	1	1	
Holding By-law	1		1						City of Toronto, (	City of Toronto OP, (1);				1
Site Plan Control	4		1	3					City of Toronto, (	City of Toronto OF	1			3
Transportation	9 (2 Housing)		2	7					City of Kitchener,	City of Kitchener C	3	5	1	
Food	6		4		1			1	City of Toronto, (	City of Toronto OF	6			
Other Plans	10	1	6	3					City of Toronto, (	City of Toronto OF	2	5	1	2

Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Enforcebility			
											Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Complete Community	21		6	1	8			6	City of Toronto, (	City of Toronto Pa	13	2	6	
Housing Choice	71			52	1		14	4	City of Toronto, (	City of Toronto OF	51	7	7	6
Human Scale	3 -	-		3 -	-	-	-	-	City of Toronto, (	City of Toronto Ta	3 -	-	-	-
Age friendly	27	10	3	2		4	2	6	City of Toronto, (	City of Toronto Co	23	2	2	0
Intensification	52		2	39	9		1	1	City of Toronto, (	City of Toronto OF	15	15	16	6
Enhancement	57	3	47	2	2	1		2	City of Toronto, (	City of Toronto OF	27	6	10	14
Protection	28		27	1					City of Toronto, (	City of Toronto OF	7	4	4	13
Sustainability	26		18	3	1			4	City of Toronto, (	City of Toronto OF	13	8	1	4
Quality of life	29		18		1	1		9	City of Toronto, (	City of Toronto OF	12	7	7	3

Quality of Public Space — Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Enforcebility			
											Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Green Space Requirement	16		12		4				City of Toronto, (	City of Toronto OF	12		3	1
Design	68		26	22	13	3		4	City of Toronto, (	City of Toronto OF	44	5	7	12
Enhancement	22		16	2	3	1			City of Toronto, (	City of Toronto OF	14	4	2	2
Human Scale	5 -		1	3	1 -	-	-	-	City of Toronto, (	City of Toronto Ta	5 -	-	-	-
Quality of life	8		3	2	1			2	City of Toronto, (	City of Toronto OF	4	2	1	1
Independent Mobility	2		2 -	-	-	-	-	-	City of Kitchener,	City of Kitchener U	2 -	-	-	-
Health	6 -		3	1 -		1 -	-		City of Toronto, (	City of Toronto Ho	6 -	-	-	-

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Access and Accessibility

Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Enforcebility			
											Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Equity	18	8	9			1			City of Ottawa, (	City of Ottawa Of	6	10	1	1
Accessibility	38		14	2	2	15	3	2	City of Toronto, (	City of Toronto OF	33	2	2	1
Design	16		4	1	3	4		4	City of Toronto, (	City of Toronto OF	11	4	1	
Connectivity	72		53	2	10	1		6	City of Toronto, (	City of Toronto OF	53	4	11	4
Transportation	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Use and Users

Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Enforcebility			
											Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Age-friendly	35	2	1			25		7	City of Toronto, (	City of Toronto Pri	34			1
Programming	11		2	-	1	8	-	-	City of Toronto, (	City of Toronto PC	11	-	-	-
Seasonality	13		8		2	1		2	City of Toronto, (	City of Toronto, (1	10		2	1
Social Connection	13	3	6	1		1	1	1	The City of Missi	The City of Missis	9	1	3	
Health	3		3						Region of Peel, (	Region of Peel Aff	3			
Safety	43	3	19	7	3	6	2	3	City of Toronto, (	City of Toronto OF	31	4	5	3
Play	28	1	5			20		2	City of Toronto, (	City of Toronto Gr	28			1

Monitoring and Evaluation														
Ongoing Representation											**Enforcebility**			
Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Engagement	18	8	3	1	3			3	City of Toronto, (	City of Toronto OF	13	2	1	2
Age friendly	5	2				1	1	1	City of Toronto, (	City of Toronto Gr	4		1	
Equity	4	2	1			1			City of Toronto, (	City of Toronto Pa	3	1		
Evaluation	4	1	1	2					City of Toronto, (	City of Toronto OF	1	2	1	
Community Stability											**Enforcebility**			
Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Complete Community	8			1	1			6	City of Waterloo	City of Waterloo C	6		2	
Equity	3	1	2						City of Brampton	Brampton Official	2		1	
Housing Choice	9			5	1		3		City of Toronto, (	City of Toronto OF	6	1	2	
Health	51	7	17	7	6	5	1	8	City of Toronto (:	City of Toronto Of	27	13	3	8
Accessibility	5		4			1			City of Toronto, (	City of Toronto OF	3			2
Evaluation	3		2	1					Township of We	Township of Well	2			1
Design	7		1	2			1	3	City of Toronto, (	City of Toronto Gr	7			
Collective Efficacy											**Enforcebility**			
Key Concept	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Aspirational/ Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Engagement	7	3	3					1	City of Toronto, (	City of Toronto OF	6		1	
Quality of life	11		2	1	1		1	6	City of Toronto, (	City of Toronto OF	7	2	2	
Citizen Responsibility	3		1		1	1			City of Toronto, (	City of Toronto OF	2	1		
Green Space Maintenance	10	1	8			1			City of Toronto, (	City of Toronto OF	7	2	1	
Inter-municipal collaboration	7		6	1					City of Toronto, (	The City of Toronto OP, (2); Region of Peel OP,			7	
Design	1	-	-	1	-	-	-	-	City of Toronto, (	City of Toronto Ta	1	-	-	-
Evaluation	5							1	City of Toronto, (	City of Toronto OF	4	1		
Social Connection	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Ongoing Investment in Space	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Enforcebility			
Key Concept											Aspirational/Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Protection	9		9						City of Toronto, (	City of Toronto OF	1	1		7
Quality of life	4	1		2				1	City of Ottawa, (	City of Ottawa 15	1	2		1
Evaluation	5		5						City of Toronto, (	City of Toronto Ne	4	1		
Enhancement	12		12						City of Toronto, (	City of Toronto Ne	10	1	1	
Design	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Preparedness for Change	Total Mentions	Children	Green Space	High-rises	Green Space and High-Rises	Green Space and Children/Youth	High-rise and Children	Green Space, High-rise, and Children	Municipalities	Documents and mentions per document	Enforcebility			
Key Concept											Aspirational/Non-Enforceable	Shall Have Regard For	Shall be Consistent With	Shall Conform With/Shall Not Conflict With
Future Generations	23	10	5			1	1	6	City of Toronto, (	City of Toronto Of	20	2	1	
Sustainability	8		6		1			1	City of Toronto, (	City of Toronto Pa	7			1
COVID-19	5		4			1			Township of Nor	Township of North	5	-	-	-
Other Plans	8	1	7						City of Brampton	City of Brampton (	3	2	3	
Evaluation	2	1	1	1					City of Brampton	City of Brampton (	1	1		
Protection	3		3						Region of Peel, (	Region of Peel OP	2			1
Health	18		5			6	1	6	City of Ottawa, (	City of Ottawa Of	7	5	3	3

Appendix E: TCPS 2: CORE Certificate of Completion

PANEL ON RESEARCH ETHICS
Navigating the ethics of human research

TCPS 2: CORE

Certificate of Completion

This document certifies that

Joy Tigchelaar

has completed the Tri-Council Policy Statement:
Ethical Conduct for Research Involving Humans
Course on Research Ethics (TCPS 2: CORE)

Date of Issue: **11 May, 2020**

Appendix F: Summary of the Major Themes and Categories

(A) A CONTEXTUALIZATION OF HIGH-RISE LIVING

(A1) Geographic context
- City – geographic location of high-rise dwelling in either Cambridge, Kitchener or Waterloo.
- Neighborhood–residents' assessment of their neighbourhood, including a description of their neighborhoods' geography and demographic composition, amenities, and density.
- Building –residents' assessment of their building, including a description of their tenancy type, building height, length of tenancy, and interactions with neighbours
- Unit– residents' assessment of their unit, including its size, functionality and presence of outdoor amenities such as a balcony, terrace or patio.

(A2) Socio-demographic composition of high-rise dwellers
- HH Size, number of children per hh
- Children's age and gender, parents gender
- Parental Marital Status
- Visible minorty status
- Income status
- Primary Lannguage at home

(A3) Motivation of families to live in a high-rise

(B) ACCESS TO PUBLIC GREENSPACE

(B1) Journey to public greenspace
- Difficulty – the perceived ease or difficulty experienced by children and their families accessing neighbourhood greenspace.
- Distance – the distance participants will travel to access greenspace
- Frequency – the frequency participants go to greenspace

(B2) Primary Means of Transportation - the modes of transportation most often used by participants including walking, biking, public transportation and driving.

(C) USE OF PUBLIC GREENSPACE

C1) Uses

(C2) Frequency of Use
- General
- Other (Covid and Seasonality)

(C3) Time in Greenspace
- General
- Other (Seasonality and COVID)

(D) EXPERIENCES PUBLIC GREENSPACE

(D1) Social Experience

(D2) Sentiment Towards
- Positive Sentiment
- - General
- --> Parks that make participants feel
- --> Greenspace features and amenities
- --> activities
- - Favorite
- Negative Sentiment
- - General
- --> Greenspaces that make participants feel
- --> Greenspce fetures and amenities
- --> Seasons
- - Least Favourite

(E) RECOMMENDATIONS (RECOMMENDATIONS THAT SPEAK TO THE CHILD-FRIENDLY PRINCIPLES)

(E1) Accountability and sustainability

(E2) Best Interests

(E3) Effectiveness and Responsiveness

(E4) Equity and Inclusion

(E5) Life, Survival, and Development

(E6) Public Participation

(E7) Other principles not discussed
- Non-discrimination
- Dignity and respect
- Accountability and transparency

Appendix G: Assent and Consent Forms

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School of Planning

Child/Youth Assent for Participation in Research Study Exploring How High-rise Families Experience, Access and Use Neighbourhood Green Spaces

What is being studied? Our team is interested in connecting with **kids and youth like you** to understand your unique experiences and stories related to how you use and access your neighbourhood green spaces (parks, rivers, trails, and paths etc.). More specifically, **we want to hear directly from you** about how you use these spaces, what use like about these environments and what you think could make them better.

What will happen in this study? Data collection for this study will require you and your parent/guardian to complete an interview over Teams/Zoom that will take approximately one hour to complete. To be eligible you must be between the ages of 5-15, live with your parent/guardian in a high-rise building (5+ stories), and participate in an interview with your parent/guardian. The interview will take place over Teams or Zoom (based on your parents/guardian's preference outlined in their consent form). At the end of the interview, you (and you're your parent) will be asked to answer a series of demographic questions to help contextualize the data you provided within the interview. **Interviews will be audio recorded, with your assent and the consent of your parent/guardian, for the purposes of transcription and analysis afterwards**. All the data collected will be stored in a location that is password protected and encrypted. Once the interview is complete (location: online), the graduate student researcher will send a follow-up email to your parents with a certificate thanking you for your participation in the study. In appreciation for your time, we will send a $50 prepaid Mastercard to your parent/guardian.

By participating in this study, your identity will remain confidential. In other words, no one, except for the researchers, will see or know who answered the questions asked in this study. Having said that, please be as honest as you can. If there is a question that you do not know how to answer, please ask the researcher for clarity, or if you do not want to answer any question, that's okay, please just tell researcher and the interview will proceed. If you wish to stop participating in the study, please let the researcher know. In appreciation for your time provided for this study, we will send your parent/guardian a $50 prepaid Mastercard.

What are the benefits and risks if I participate? On an individual level, you may become more aware of the emotions, feelings, and mood states directly related to the green spaces within your neighborhood. Your participation in this study will contribute to helping inform professional planners and designers on how to plan and design urban green spaces near high-rise buildings. Finally, as a token of our appreciation, we are also happy to share the findings of our study with you when they are available. If interested, your parent/guardian will receive an email.

This study was designed to minimize any potential risks for our participants. While we do not anticipate any potential risks and/or harms to our participants because of your/their inclusion in this study, you should be advised that this study will require answering questions that may raise uncontrolled or unexpected emotions. For example, you will be asked questions related to the safety of your neighbourhood green spaces. Please let the researcher know if you wish to skip a question, answer these later in the interview, or cancel/end/reschedule the interview at any point in time.

Your rights as a participant in this study. Your participation in this study is completely voluntary. As a participant, you have the right to skip any question raised during the interview and may remove yourself from the study at any point, without penalty. If you choose to remove yourself from the study, your data will be deleted. If you have completed the interview, but wish to

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be removed from the study, all of your data will be discarded from future analysis. As noted, there are no limitations on your withdrawal from this study, and consequently your right to determine if the data you provided is discarded. However, while your identity will remain confidential at all times, if or once results of the study are published the research team will not be able to withdraw the data you have provided to the analysis. You may also choose to end the interview at any point with no further commitments to the research.

Privacy, Data Retention, and Storage: By participating in this study, your identity will remain confidential. Collected data will be securely stored on encrypted and password protected computers for a minimum of 7 years. While your identity will always remain confidential, it will not be possible to remove your data from the study once results of the study are published the research team. Sharing the research findings is integral to the research process as it allows other researchers to verify results and avoid duplicating research.

The interview will be conducted over an online platform, [Microsoft Teams/ Zoom]. [Microsoft Teams/Zoom] has implemented technical, administrative, and physical safeguards to protect the information provided via the Services from loss, misuse, and unauthorized access, disclosure, alteration, or destruction. However, no Internet transmission is ever fully secure or error free.

Who do I contact if I have any other questions? Should you have any further questions or concerns regarding participation in the study, please contact either the graduate student researcher, Joy Tigchelaar (jatigche@uwaterloo.ca), or the co-investigator Dr. Leia Minaker (lminaker@uwaterloo.ca) at the University of Waterloo.

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board (REB #44335). If you have questions for the Board contact the Office of Research Ethics, at 1-519-888-4567 ext. 36005 or reb@uwaterloo.ca.

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School of Planning

Child/Youth Assent Form

Acknowledgement of Eligibility: I confirm that I am eligible to participate in the study.

☐ Yes   ☐ No

Do you agree to participate in this study?
(Please keep a copy for your own record and return a copy to the research team).

_____ Yes _____ No

Name (printed): _____

Date: _____

Witness: _____

Assent for Voice Recording: As a participant in this study, I agree to being audio recorded for the purpose of collecting my data during the interview regarding my experiences within neighbourhood green space. I am aware that I may withdraw this assent at any time without penalty, at which point, the voice recording will be erased.

☐ Yes   ☐ No

Assent to use Quotations: As a study participant, I agree to being quoted for the purpose of sharing study findings. By agreeing to being quoted, my Identity will remain confidential.

☐ Yes   ☐ No

By signing this assent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

Form for Research Team
(please keep a copy for your own record and return a copy to the research team).

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Individual Consent and Parental Consent for Child's Participation in Research Study Exploring How High-rise Families Experience, Access and Use Neighbourhood Green Spaces

Dear Parent/Guardian,

Dr. Leia Minaker, PhD, and her team from the University of Waterloo are looking for children/youth volunteers (5-15 years old) to participate in a study aimed at understanding how children/youth and their families who live in high-rises access and use outdoor green spaces for play and socialization. The study involves parents and their children/youth (ages 5-15) living in high-rises within the cities of Kitchener and Waterloo, Ontario.

What is being studied? Our team is interested in connecting with families and their children who live in high-rises to share their unique understandings and stories relating to how they use and access the green spaces within their neighbourhood (parks, rivers, trails, and paths etc.). More specifically, these findings will help to develop an understanding of how/weather the current planning context supports the development of child-friendly green spaces. These findings may additionally provide insights into how green spaces within, and surrounding high-rises can be planned and designed to better support children/youth and their families.

What will happen in this study? Data collection for this study will require you and your child to complete an interview over Teams/Zoom that will take approximately one hour to complete. To be eligible you must live with your child in a high-rise building (5+ stories), and participate in an interview with your child (ages of 5-15). The interview will take place over Teams or Zoom (based on your outlined preference below). At the end of the interview, you (and your child) will be asked to answer a series of demographic questions to help contextualize the data you provided within the interview. **Interviews will be audio recorded, with the consent of both you and your child, for the purposes of transcription and analysis afterwards**. All data will be stored in a location that is password protected and encrypted. Once the interview is complete (location: online), the graduate student researcher will send a follow-up email thanking you for your participation in the study. In appreciation for your time and your child's time provided for this study, you will receive a $50 prepaid Mastercard. This will be sent to the home address provided to us within the Parental Consent form below. The Mastercard will be sent to your home via Canada Post. We will ensure that the Mastercard is delivered to your home through the package tracking number. The amount received is taxable. It is your responsibility to report this for tax purposes.

By participating in this study, your identity will remain confidential. In other words, no one, except for the researchers, will see or know who answered the questions asked in this study. Having said that, please be as honest as you can. If there is a question that you (or your child) do not know how to answer, please ask the researcher for clarity, or if you (or your child) do not want to answer any question, that's okay, please just tell researcher and the interview will proceed. If you (or your child) wish to stop participating in the study, please let the researcher know; you will still receive the $50 prepaid Mastercard."

What are the benefits and risks if I participate, and my child participates? On an individual level, you may become more aware of the emotions, feelings, and mood states directly related to the green spaces within your neighborhood. Your participation and the participation of your child in this study will contribute to helping inform professional planners and designers on how to plan and design urban green spaces near high-rise buildings. Finally, as a token of our appreciation, we are also happy to share the findings of our study with you when they are available. If interested, please include your email below.

We have designed our research protocol to mitigate as many risks as possible for our participants. While we do not anticipate any potential risks and/or harms to our participants in the study, some questions may trigger may uncontrolled or unexpected emotions. For example, you will be asked questions related to the safety of your neighbourhood green spaces. Please let the researcher know if you wish to skip a question, answer these later in the interview, or cancel/end/reschedule the interview at any point in time.

Your rights as a participant in this study: Your participation in this study is completely voluntary. As a participant, you have the right to skip any question raised during the interview and may remove yourself from the study at any point, without penalty. If you choose to remove yourself from the study, your data will be deleted. If you have completed the interview, but wish to be removed from the study, all of your data will be discarded from future analysis. As noted, there are no limitations on your withdrawal from this study, and consequently your right to determine if the data you provided is discarded. However, while your identity will remain confidential at all times, if or once results of the study are published the research team will not be able to withdraw the data you have provided to the analysis. You may also choose to end the interview at any point with no further commitments to the research.

Privacy, Data Retention, and Storage: By participating in this study, your identity will remain confidential. Collected data will be securely stored on encrypted and password protected computers for a minimum of 7 years. While your identity will always remain confidential, it will not be possible to remove your data from the study once results of the study are published the research team. The findings will be submitted to an open access database. Sharing the research findings is integral to the research process as it allows other researchers to verify results and avoid duplicating research.

The interview will be conducted over an online platform, [Microsoft Teams/ Zoom]. [Microsoft Teams/Zoom] has implemented technical, administrative, and physical safeguards to protect the information provided via the Services from loss, misuse, and unauthorized access, disclosure, alteration, or destruction. However, no Internet transmission is ever fully secure or error free.

As the child's parent/guardian, you will be asked to: Provide your consent to participate in the study AND your child's consent to participate in the study, as well as discuss with your child their assent to participate in this study.

Who do I contact if I have any other questions? Should you have any further questions or concerns regarding participation in the study, please contact either the graduate student researcher, Joy Tigchelaar (jatigche@uwaterloo.ca) or the co-investigator Dr. Leia Minaker (lminaker@uwaterloo.ca) at the University of Waterloo.

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board (REB # 44335). If you have questions for the Board contact the Office of Research Ethics at 1-519-888-4567 ext. 36005 or reb@uwaterloo.ca.

I have read the information presented in the information letter about a study being conducted by Dr. Leia Minaker, PhD, in the School of Planning at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted. I am aware that my I may withdraw, or my child may withdraw from the study without penalty at any time by advising the researchers of this decision.

Individual Consent Form

Acknowledgement of Eligibility: I confirm that I am eligible to participate in the study.

☐ Yes   ☐ No

Format: I would like the interview to take place over:

☐ Zoom   ☐ Teams

Do you agree to participate in this study?
(Please keep a copy for your own record and return a copy to the research team).

_____ Yes _____ No

Name (printed): _____

_____
Signature of Participant

Date: _____

Consent for Voice Recording: As a study participant, I agree to being audio recorded for the purpose of collecting data during interview regarding the development of child-friendly green spaces in high-rise neighbourhoods.

☐ Yes   ☐ No

Consent to use Quotations: As a study participant, I agree to being quoted for the purpose of sharing study findings. By agreeing to being quoted, my Identity will remain confidential.

☐ Yes   ☐ No

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

Parental Consent Form

Acknowledgement of Eligibility: I confirm that my child is eligible to participate in the study.

☐ Yes   ☐ No

_____   _____
Print Name   Email (to receive study findings)

_____
Signature of Participant

_____
Dated at Kitchener-Waterloo, Ontario
(Home address that Mastercard will be sent)

Consent for Voice Recording: As the parent/guardian of a participant in this study, I agree to my child being audio recorded for the purpose of collecting data during interview regarding the development of child-friendly green spaces in high-rise neighbourhoods.

☐ Yes   ☐ No

Consent to use Quotations: As a study participant, I agree to my child being quoted for the purpose of sharing study findings. By agreeing to being quoted, my child's Identity will remain confidential.

☐ Yes   ☐ No

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

Form for Research Team
(please keep a copy for your own record and return a copy to the research team).

Appendix H: Interview Guides and Demographic Questionnaire

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Parent/Child Dyad Interview Guide

Introduction

Thanks for agreeing to participate in this study! My name is Joy. I'm working on my Master's degree at the University of Waterloo, and I will be asking you questions today. The interview should take about an hour. I will be asking you and your child questions about your experiences accessing and using green spaces in your neighborhood (such as parks, trails, and play spaces).

To start the interview, I'll ask **[name of child participant]** to share their experiences and feelings about using greenspaces. Part of what I'm interested in is how kids' perspectives might be different than their parent's perspectives, so while I'm asking **[name of child participant]** questions, I'd ask that you don't help them or prompt them. After they've answered their questions, I'll ask **[name of adult participant]** to answer a series of questions about your own perspectives.

As a reminder, these interviews will be recorded, with both of your consent. The reason for the recording is so I can transcribe what you say. This way, when I analyze the transcripts later, I'll be sure to accurately represent both of your perspectives. If at any time you do not want to or don't know how to answer a question, we can skip it. If you want to end the interview before I'm done asking questions, please let me know and we can end the interview. Remember, there are no right or wrong answers.

When we write up the results of this study, we may eventually use one of your quotations and we need to protect your identity. Before we begin the interview, could please confirm the pseudonym (i.e., fake name) you would like to be referred to if we use one of your quotations in the final write-up?

Answer (Child): _____   Answer (Parent/Guardian): _____

Interview Questions

Child Interview Questions

Concept	Question	Probes
Neighborhood context	Can you tell me about your neighborhood? Where does it begin and end?	(Ask about landmarks, street names, other physical features that define the boundaries of their neighborhood)
	Are there any greenspaces like parks or trails or fields or forests in your neighborhood?	➤ (if yes) Can you tell me about them? (where are they? what type of green space are they? What do you usually do in each of these places?) ➤ Which one is closest to you?
	[If they have a balcony] What about your balcony? Do you have any plants there or elsewhere in your home or in the building that feels like greenspace?	➤ Do you enjoy your balcony? How do you use it?
	Can you tell me a little bit about your favorite neighborhood green space(s)?	➤ What do you like about it/them? ➤ Are there special spaces, features or structures you especially like about that green space(s)? Why?

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	What about your least favorite neighborhood green space(s)?	➢ ➢	What don't you like about that green space(s)? Are there special spaces, features or structures you especially don't like about that green space(s)? Why?
Green space access	How do you get to your neighborhood green space(s)?	➢ ➢ ➢	E.g. walk? bike? other? Do you go by yourself or do you go with someone else? If with someone else, who? How do you decide which route to take? Do you take the most direct route?
	How easy or hard is it to get to your neighborhood green space(s)?	➢ ➢ ➢ ➢	How long does it usually take you to get there? How safe do you feel getting to your neighborhood greenspace? (on your own, with a parent, with a friend?) What things stop/(prevent) you from going to your neighborhood green spaces (i.e. the weather, season, time, doesn't meet my interests, COVID-19, are there enough green spaces, parent's rules etc.)? (if favorite greenspace(s) identified) You mentioned that you had (a) favorite neighborhood greenspace(s). Is that one/are those easier or harder to get to?
	What the maximum distance you'd feel comfortable travelling to a greenspace?	➢	Does it matter how you're getting there (walking, biking, etc.)?
Frequency of visits	How often do you visit or use your neighborhood green spaces?	➢ ➢ ➢	When you visit or use your neighborhood green spaces, how much time do you usually spend there? What neighborhood green spaces do you spend the most time in? Why? What green spaces do you spend the least amount of time in? Why?
	Would you say you visit the green spaces in your neighborhood or outside of your neighborhood more often?	➢ ➢ ➢	(if outside greenspaces more) What makes you use the greenspaces outside of your neighborhood more? (if neighborhood greenspaces more) What makes you use the greenspaces in your neighborhood more?
	Did the COVID-19 pandemic change how often you use your neighborhood green spaces?	➢ ➢	(if yes) How did it change for you? Do you think you will continue to visit your neighborhood green spaces more or less in the future?
Time in Greenspace	How do you feel when you get to spend time in your favorite greenspace?	➢	Positive, negative, healthy, peaceful, energized, etc
	What do you usually do when you go to your favorite neighborhood greenspace?	➢ ➢	Do you use the whole park, or just certain parts of it? (e.g., swings, slides, greenspace, trails, basketball courts, other amenities) Do ever see any animals or cool plants in your neighborhood green spaces? Please explain.

		➢	Do you learn new things in your neighborhood green spaces? Like what?
		➢	Are there ever any cultural or social events within your neighborhood green spaces? Are the events for kids like you?
		➢	Are you ever bored in your neighborhood green spaces? If so, please describe a time when you were bored.
		➢	Do you feel safe playing or spending time in your neighborhood green space? Are there hazards such as broken glass, other litter, pollution, water, people who make you feel unsafe, or germs?
	When you are at the park (or in a green space), who do you normally play with?	➢ ➢	Are there ever times when you play on your own? Is there anything about the play space that makes it hard to play with other kids (the design, disability, physical comfort, fitness, cultural differences)?
	When you're in a private greenspace (i.e., one in/around the building), how do your neighbors feel about that?	➢ ➢ ➢ ➢	Do you ever feel like neighbors are watching you? How does that make you feel? Do neighbors ever get frustrated that you're being too noisy? Are people happy to watch you play? How do neighbor's responses make you feel about playing or spending time in the private greenspace? What do you do in response to their reactions/feelings about you playing or spending time close by?
Making Neighborhood Green Space more Child-friendly	What would you say is the best green space, park, or outdoor play space that you have ever been to or seen?	➢ ➢	What do you like about it? Is there anything else you like about it? Imagine you're in a green space or park that you've never been to before, what is the first thing you would want to do while you are there?
	What would you say is the worst green space you have ever been to or seen? Thinking back to the green	➢ ➢	What don't you like about it? Is there anything else you don't like about it?
	Thinking back to the green spaces in your own neighborhood, how would you change them to make them better?	➢ ➢	Without thinking about it too hard, what words, pictures, or feelings come to mind when you think about this green space? If you could, would you want to personally share your ideas with the people that design and plan for these spaces? How would you like to share your ideas with them?

Parent interview questions

Concept	Question	Probes
Neighborhood context	Can you tell me about your neighborhood? Where does it begin and end?	(Ask about landmarks, street names, other physical features that define the boundaries of their neighborhood)

	[Name of child participant] mentioned [greenspace 1, 2... etc.]. Are there any other greenspaces like parks or trails or fields or forests in your neighborhood?	➢ (if yes) Can you tell me about them? (where are they? what type of green space are they? What does your child usually do in these places?) (if there is outdoor green space(s) right around their building) Do you know if the building owns that greenspace? Do they have any rules about who can go there or how it can be used?
	[If they have a balcony] What about your balcony? Do you have any plants there or elsewhere in your home or in the building that feels like greenspace?	➢ Do you enjoy your balcony? How do you use it?
	Can you tell me a little bit about your favorite neighborhood green space(s)?	➢ What do you like about it/them? ➢ Are there special spaces, features or structures you especially like about that green space(s)? Why?
	What about your least favorite neighborhood green space(s)?	➢ What do you like about it/them? ➢ Are there special spaces, features or structures you especially don't like about that green space(s)? Why?
Green space access	How does your child get to the green space(s) in your neighborhood?	➢ E.g. walk? bike? other? ➢ Do you often go with your child when going to neighborhood green spaces? If not, does someone else normally goes with your child? ➢ How do you decide which route to take? Do you normally take the most direct route? ➢ Do you feel comfortable and safe traveling to the green spaces in your neighborhood with your child? What makes you feel comfortable/safe or uncomfortable/unsafe?
	How easy or hard is it to get to your neighborhood green space(s)?	➢ How long does it take your child/you to get to the greenspaces in your neighborhood? ➢ Does it take longer to get to your/your child's favorite neighborhood green spaces? ➢ What things prevent you from going to the green spaces in your neighborhood with your child (i.e. child's age, the weather, season, safety, time, doesn't meet my interests, COVID-19, are there enough green spaces etc.)?
	What the maximum distance you'd feel comfortable letting your child travel to a greenspace?	➢ Does it matter how they're getting there (walking, biking, etc.)?
Frequency of visits	How often does your child visit or use the green spaces in your neighborhood?	➢ When you visit or use your neighborhood green spaces, how much time do you spend at each per visit? ➢ What green spaces do you spend the most time in? And why? ➢ What green spaces would you spend the least amount of time in? And why?

	Would you say your child visits the green spaces in your neighborhood or outside of your neighborhood more often?	➢ (if outside greenspaces more) What do you think makes them use the greenspaces outside of your neighborhood more? ➢ (if neighborhood greenspaces more) What do you think makes them use the greenspaces in your neighborhood more?
	How did the COVID-19 pandemic change how often your child uses neighborhood green spaces?	➢ Do you think they will continue to visit your neighborhoods green spaces more or less into the future? What makes you say that?
Time in Greenspace	How do you think your child feels when they get to spend time in their favorite greenspace?	➢ Positive, negative, healthy, peaceful, energized, etc
	What do you think your child usually does when they go to neighborhood greenspaces?	➢ Do they use the whole park, or just certain parts of it? (e.g., swings, slides, greenspace, trails, basketball courts, other amenities) ➢ Do you feel safe letting your child play or spending time in your neighborhood green space? If not, what makes you feel unsafe? If yes, what makes you feel safe?
	When you are at the park (or in a green space), who does your child normally play with?	➢ Does your child ever play independently when you go to your neighborhood greens space? What do they normally do when they're on their own? With others? ➢ Is there anything about the play space that makes it hard for them to play with other kids? (e.g., the design, disability, physical comfort, fitness, cultural differences) or your ability to play with your child?
	When your child is in a private greenspace (i.e., one in/around the building), how do your neighbors feel about that?	➢ Have they ever mentioned feeling like neighbors are watching you? How does that make them/you feel? ➢ Do neighbors ever get frustrated that they're being too noisy? Are people happy to watch them play? ➢ How do neighbor's responses make you feel about them playing or spending time in the private greenspace? ➢ What do you do in response to their reactions/feelings about them playing or spending time close by?
Making Neighborhood Green Space more Child-friendly	As a parent, what would you say is the best green space, park, or outdoor play space that you have ever been to or seen?	➢ What do you like about it? Is there anything else you like about it?
	As a parent, what would you say is the worst green space you have ever been to or seen?	➢ What don't you like about it? Is there anything else you don't like about it?

	Thinking back to the green spaces within your own neighborhood, how would you change them to make them better?	➢ Without thinking about it too hard, what words, pictures, or feelings come to mind when you think about this green space?
		➢ If you could, would you want to personally share your ideas with the people that design and plan for these spaces? How would you like to share your ideas with them?

[Transition to demographic questionnaire]

Thank you so much for your time – I really appreciate your insights. Before we end, I have a few more demographic questions for you to complete. [move to demographic questionnaire]

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Child Demographic Questionnaire (complete at the end of the interview)

I'm going to end with some questions about who you are. This information is used to help us understand and interpret the findings of the study. Please answer as honestly as possible. If you need help answering any questions, please feel free to ask your parents/guardians or myself for help. Your responses are completely confidential (i.e., no one but the research team will see the responses). If you do not want to answer any question, that's okay, please just let me (the researcher) know and we can proceed.

Participant ID (will be filled out by research team): _____

Pseudonym (e.g., real name: Steven, pseudonym: Sven): _____

1. **Your current age:**

[ ] 5   [ ] 12
[ ] 6   [ ] 13
[ ] 7   [ ] 14
[ ] 8   [ ] 15
[ ] 9
[ ] 10
[ ] 11

2. **How would you describe yourself?**

[ ] Indigenous/Aboriginal   [ ] South Asian (Indian, Pakistani, …)
[ ] White   [ ] East/Southeast Asian (Chinese, …)
[ ] Black   [ ] Latin American/Hispanic
[ ] West Asian/Arab   [ ] Mixed: _____
[ ] Other: _____

3. **Your gender:**

[ ] Boy
[ ] Girl
[ ] Other (e.g., non-binary, transgender, two-spirit)

4. **Do you have a physical or mental disability that influences your ability to access green space (YES/NO) _____?**

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5. **What Language is most spoken at home _____?**

6. **Would you consider yourself fluent in English _____?**

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Parent/Guardian Demographic Questionnaire (complete following the interview and after the child's questions)

I'm going to end with some questions about who you are. This information is used to help us understand and interpret the findings of the study. Please answer as honestly as possible. If you need help answering any questions, please feel free to ask your parents/guardians or myself for help. Your responses are completely confidential (i.e., no one but the research team will see the responses). If you do not want to answer any question, that's okay, please just let me (the researcher) know and we can proceed.

Participant ID (will be filled out by research team): _____

Pseudonym (e.g., real name: Steven, pseudonym: Sven): _____

1. **How would you describe yourself?**

[　] Indigenous/Aboriginal   [　] South Asian (Indian, Pakistani, …)

[　] White   [　] East/Southeast Asian (Chinese, …)

[　] Black   [　] Latin American/Hispanic

[　] West Asian/Arab   [　] Mixed: _____

[　] Other: _____

2. **Your gender:**

[　] Man

[　] Woman

[　] Other (e.g., non-binary, transgender, two-spirit)

3. **Do you have a physical or mental disability that influences your ability to access green space (YES/NO) _____?**

4. **What Language is most spoken at home _____?**

5. **Would you consider yourself fluent in English _____?**

6. **Parents/Guardians Marital Status**

[　] Married

[　] Living common law

[　] Never married

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[ ] Separated

[ ] Divorced

[ ] Widowed

7. **Household Income (after-tax)**

[ ] Under $10,000 (including loss)

[ ] $10,000 to $29,999

[ ] $30,000 to $49,999

[ ] $50,000 to $69.000

[ ] $70,000 to $89,000

[ ] $90,000 to $109,000

[ ] $110,000 to $129,000

[ ] $130,000 to $149,000

[ ] $150,000 and over

8. **How many stories is the building you live in_____?**

9. **How many years have you lived at this address _____?**

10. **Tenancy type**

[ ] Apartment

[ ] Condominium

11. **Household size**

[ ] 1 person

[ ] 2 persons

[ ] 3 persons

[ ] 4 persons

[ ] 5 or more persons

12. **How many children/youths (ages 18 years or younger) live in your dwelling unit _____?**