Can Condominium Development Contribute to Social Sustainability? The Case of Inner Toronto

by

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Author's 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.

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Abstract

There are growing awareness and understanding of condominium boom at the city, national and international scales, but it remains unclear what role condominium development may play in social sustainability at a micro level and how it may be related to the processes of urban development and redevelopment. This study seeks to fill the gap through both qualitative and quantitative methods of the spatial distribution of condominium development and its relationship to prevailing patterns of intensification and socioeconomic polarization within the inner city of Toronto.

This thesis examines the spatial dynamics and future trends of condominium development at the neighbourhood level and explores the influential policies that fostered and regulated condominium growth in the City of Toronto, especially the inner city. A host of indicators of both condominium development and social sustainability are selected to analyze the effects of condominium development in either ameliorating or exacerbating levels of social sustainability. It is argued that, as a socioeconomic endeavour that is encouraged and regulated by local government, condominium development influences the urban form and life of local residents and thus implicates various aspects of social sustainability to some extent. The research explores these changes, and discuss the emerging nexus of urbanization, socioeconomic restructuring, and shifts of lifestyle that have coalesced around condominium development.

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1. Introduction

1.1 Background

Toronto has undergone a massive surge in condominium development and a dramatic transformation since the 1980s and especially during the last decade (Lehrer & Wieditz, 2009; Lehrer et al., 2010; Kern, 2010a; Rosen & Walks, 2013; Rosen & Walks, 2015; Rosen, 2017). Promoted by governmental policies, city plans, developers, foreign investors, and wealthy migrants, condominium development is transforming the city's physical and socioeconomic landscape (Lehrer & Wieditz, 2009; Ley, 2011; Lippert & Steckle, 2016; Moos, 2016). Turning to the 21st century, the vision for Toronto evolved to mould a city worthy of global recognition from cultural and economic perspectives (Bunce, 2004). Planning policies and legislative frameworks in Canada have adopted growth management principles to achieve the goals of sustainability from environmental, social and economic sustainability. The normative ethics of sustainability have been translated into ideals for urban form, such as the compact city, which aim to ensure sustainable places by selectively intensifying land uses and promoting the development of consolidated mixed-use nodes, thus preventing imprudent urban sprawl (Ancell & Thompson-Fawcett, 2008).

Enacted in 2005, the *Places to Grow Act* (Ontario Ministry of Municipal Affairs, 2005) created the primary legislation to ensure that the following urban growth plans and policies reflect the demands, advantages and opportunities of involved communities, and facilitate growth that balances economic development with the environment. Later in 2006, the first version of the *Growth Plan for the Greater Golden Horseshoe Area* (Ontario Ministry of Public Infrastructure

Renewal, 2006) provided a more detailed legislative framework for the intensification of Toronto's inner city through condominium development by emphasizing sustainability and the need to curb urban sprawl to maintain competitiveness internationally. These policies are intended to control urban growth away from suburban green fields and increase density in built-up areas, and consequently create a more diverse and sustainable inner city (Lehrer & Wieditz, 2009; Moos, 2016).

The City of Toronto, recognized as one of the most multicultural and cosmopolitan cities in the world, is the business, finance, arts, and cultural centre of Canada. Within the city boundary, the inner city of Toronto is unique because of its history, density, and diversity in the region (Bunce, 2004). The inner Toronto stands out by combining the administrative and financial functions (Bunce, 2004). The *TOcore: Planning Downtown-Proposed Downtown Plan* (City of Toronto, 2018a) encourages growth and intensification to provide the city with opportunities to improve resiliency and sustainability for residents and businesses.

Under the regulations of urban intensification, the future population growth is to be accommodated into existing built-up areas in the form of intensification and redevelopment, resulting in an increasing prevalence of vertical multi-unit residential housing in the form of condominiums. Residents of Toronto have concerns about the new type of development which brings new industries, businesses and affect the life of residents who are attracted to the area (Bunce 2004). Both proposed by planning policies, condominium development and social sustainability seem to complement each other, but it remains unclear what role condominium development may have in social sustainability and how they may be related to processes of urban

redevelopment. Deriving community indicators for social sustainability, including social equity, socioeconomic diversity, and quality of life. From studies assessing condominium development and social sustainability, this study examines the impact of condominium development in the inner city of Toronto in terms of selected aspects of social sustainability.

This thesis first discusses the literature linking condominium development and social sustainability, followed by an exploration of the Canadian policy context. It then analyzes the relationship between the pattern of condominium development and the characteristics concerning social sustainability at the neighbourhood level, shedding light on the degree to which condominium development exacerbates or ameliorates overall levels of social sustainability within the inner city of Toronto. The paper concludes by discussing whether condominium development can contribute to key aspects of social sustainability in the inner city and finally, provides recommendations on planning policies and practices based on the conclusions.

1.2 Research Questions and Objectives

To find out whether condominium development is a successful growth management tool to make urban areas more sustainable from a social standpoint, this study aims to answer the question of *Can condominium development contribute to social sustainability?* The motivation for asking this question is twofold. First, promoted by various governmental policies, urban intensification, as well as its consequence of condominium boom, is regarded as a healthy, sustainable and efficient urban form of managing existing and projected population growth in Toronto (Lehrer & Wieditz, 2009). Thus, it is essential to make a critically examine the implications of condominium development in order to assess the success of urban growth management policies.

Second, whereas a significant amount of research exists with respect to condominium development at the city, national, and international scales, there is little research that specifically pertains to the implications of condominiums at a micro level.

While answering the research question, this study will also address five research objectives:

1) *To understand the terms, 'condominium' and 'social sustainability', and explore the central themes and dimensions at the heart of these concepts;*

2) *To create assessment systems for condominium development and social sustainability according to empirical studies and the context of Toronto;*

3) *To understand what policies and strategies are in place to promote condominium development and how condominium development is connected with social sustainability;*

4) *To examine to what extent, and in what ways, social sustainability is incorporated with condominium development at a micro level within the inner Toronto; and*

5) *To make recommendations for the City of Toronto on future planning policies and practices under the future development trend of condominiums.*

In order to answer the research question and address the objectives, the thesis focuses on selected neighbourhoods in the inner areas of Toronto. The study examines the development of condominiums and its implications for Torontonians in regard to physical environment, socioeconomic characteristics, quality of life, and lifestyles. It identifies the indicators of condominium development and social sustainability and discuss their relationships at a micro scale.

1.3 Methodological Overview

This study employs a mixed-method approach to answer the research question, which involves the collection of both qualitative and quantitative data for analysis and interpretation. Using an exploratory sequential mixed method, this study first begins by exploring qualitative data and analysis and then uses the findings in a second quantitative phase.

The qualitative research refers to a policy review. Policies related to condominium development, intensification, urban form, housing development and social sustainability are reviewed to establish a body of knowledge pertinent to the urban transformation due to condominium development. The review and analysis of past, current and proposed planning policies and strategies in the City of Toronto is conducted to determine the evolution of condominium, to understand the goal of sustainability, and to forecast the future tendency of condominium development.

The qualitative analysis is used to yield quotes, codes, and themes, proceeding the development of an instrument by using the quotes to write items for an instrument, the codes to develop variables that group the items, and themes that group the codes into scales. By reviewing the assessments and measurements of social sustainability in past studies, evaluation criteria for social sustainability are created specifically for this case, which emphasizing social sustainability at a micro level in developed countries. Similarly, condominium development is quantified using indicators and set as the independent variables, while the dependent variables are the indicators from the evaluation criteria for social sustainability. Descriptive statistics and statistical correlation analysis are used to assess the relationships between those independent and

dependent variables, and thus explain how condominium development implicate social sustainability in inner Toronto. From the results of both qualitative and quantitative research, recommendations are made in regard to policies and regulations of condominium development in the City of Toronto with the goal of building sustainable communities.

1.4 Research Significance

This study is substantially exploratory and contributes to the body of knowledge pertaining to condominium development and related planning policy. Specifically, it helps to fill the apparent gaps in the literature concerning an analysis of condominium development in the inner city at a micro scale; create a thorough record of planning policies and strategies that contribute to condominium boom; provide an update to the current socioeconomic dynamics and reality of social sustainability. Moreover, it reveals the potential relationship between condominium development and selected factors in terms of social sustainability, thus suggests possible directions for the city government for further development direction regarding condominium development and social sustainability in the central urban area.

The importance of this study lies in its potential to inform planners, developers, and city councils of the recently salient issue of condominiums. With this information, it is possible to adjust strategies of condominium arrangements to make them more effective while building a diverse and sustainable city. This study also throws light on the key determinants that should be considered to impact the current socio-spatial segregation and the city's competitiveness.

1.5 Thesis Organization

The study adopts a mixed-method analytic method to answer the research question and achieve research objectives. Following the introductory section, where the context of condominium development in inner Toronto is reviewed, the research questions and objectives are presented, and a review of existing literatures on condominium development and social sustainability is offered. This thesis provides an empirical context for the consequences of condominium development guided by urban intensification strategies and how these consequences implicate social sustainability. The literature review is followed by a section of methodology which discusses the research methods in detail with the information on study area, data sources, data collections, quantitative variables selected, and the logic of analysis methods.

Afterwards, a review of selected planning policies from provincial to regional scales is conducted to build a background of condominium development and a vision of socially sustainable communities. A report of the preliminary and further statistical research results is subsequently be provided, along with detailed analysis of selected aspects of social sustainability. According to the findings in both qualitative and quantitative analysis, the research discussions support recommendations and policy implications in the study to improve social sustainability in central urban areas, explicitly considering condominium development as a growth management tool. Finally, the conclusion section summarizes the research findings, analysis, and recommendations by synthesizing them into the context of planning, and propose limitations and potential questions for further research.

2. Literature Review

A review of existing literature on defining condominium development, development drivers and implications in Canada and other jurisdictions is first be presented in this section. This is followed by a review of defining social sustainability and the methods to assess and quantify it from a social perspective. Then, an overview of social sustainability in relation to condominium development is conducted to provide a background on possible relationships between these two terms based on past studies. At the end of this Chapter, the gaps in current researches are summarized to provide motivations for this study. The literature review aims to address the first research objectives: *to understand the terms, 'condominium' and 'social sustainability', and explore the main themes and dimensions at the heart of these concepts.*

2.1 Defining Condominium

In order to understand condominium development and its implications, the concept of condominium must be defined by investigating its functionalities. Legally become possible in 1967, the term condominium was explained by governments from an obscure, novel concept in home ownership to a notion of owning a suite, and then paying fees to maintain common areas (Grey & Sopinski, 2017). Apparently considered a form of tenure, the condominium is multi-functioned in the mainstream North American context, indicating not only a new kind of property ownership, but also of physical design, social governance, security, and social status (Rosen & Walks, 2013).

The process of condominium development can be seen as a mechanism of urban physical transformation (Rosen & Walks, 2013). Technically, condominium units vary in sizes, features

and prices, with the building forms of high-rise, low-rise, row houses, duplexes, semi-detached or single-detached (Rosen & Walks, 2013). The functions of condominium buildings are not constrained to residential, with an extension of commercial, retail, institutional and other uses. As a building form, condominiums are not different from apartment buildings (Lehrer, Keil, & Kipfer, 2010). Usually, the most common housing typology in Canada is townhouses and semi-detached housing. However, despite the diversity of physical building styles, the prominent image of condominiums in big cities like Toronto, Vancouver, New York and Chicago, remains the high-rise apartment-style building, typically a tower-and-podium development with wall-to-wall glass windows (Walks, 2010; Rosen & Walks, 2013; Rosen & Walks, 2015).

Unlike traditional rental buildings, which are controlled by a single owner or government, condominium properties are characterized by a unique form of public-private governance (Rosen, 2017). Condominium indicates private ownership of an individual unit, a share of common facilities, and a right to collective govern the private and shared property in a multi-unit building (Harris, 2011). Common areas such as gardens and atrium are jointly owned and administered by members of a condo-corporation (Rosen, 2017). Homeowners may decide on internal rules and restrictions, which may tighten the control over common property and community life (Low, Donovan, & Gieseking, 2012; Rosen, 2017; Webster & Le Goix, 2005). As such, condominiums are legally an innovation in land tenure and home ownership, in which land can be detached from the ground and defined, purchased, and sold vertically into units that are individually owned (Kern, 2007; Lehrer, Keil, & Kipfer, 2010; Rosen &Walks, 2013; Rosen & Walks, 2015).

Condominium ownership has also been utilized to stimulate residential investment, facilitate vertical subdivision of land, and enable a massive increase in the density of private interests in urban areas (Harris, 2011; Webb &Webber, 2017). The growth and spatial location of condominiums are working to cluster people and strengthen urban class relations, mainly within the inner cities, and in turn emerging as an economic and cultural force for urban changes in social geographies, social status, and sense of place (Rosen & Walks, 2013). As such, condominium development is not only praised for reinvesting into underused urban areas, but also for providing the built environment for an urban lifestyle, which is predominantly geared toward people seeking urban lifestyle such as young professionals, "empty nesters" and immigrants (Lehrer, Keil, & Kipfer, 2010).

2.2 Drivers of Condominium Development

Several waves of condominium development in Toronto are explored by scholars from different perspectives. Despite different timelines of condominium development, the latest wave happened in Toronto started in the late 1990s and is continuously ongoing (Grey & Sopinski, 2017; Lehrer, Keil, & Kipfer, 2010; Rosen & Walks, 2015). Unlike the housing market in the United States, the 2008 financial crisis had little effect on the rate of condo construction in Toronto (Walks, 2014; Rosen & Walks, 2015). Nowadays, Toronto has the largest number of new high-rise condominium apartments under construction in the world, exceeding New York, which is famous for a large number of high-rise condominium apartments (Moos, 2016). A number of factors are summarized as drivers for condominium development in the Toronto context.

First of all, governmental policies, urban plans, and legislation fostered condominium development by encouraging urban intensification and sustainability in order to curb urban sprawl and offer additional housing (Lehrer, Keil, & Kipfer, 2010; Rosen & Walks, 2015; Webb & Webber, 2017). Enacted by the Province of Ontario in 2005, *The Greenbelt Act* created a permanently protected land area of 800,000 ha where urban development was not permitted (Ontario Ministry of Municipal Affairs & Ontario Ministry of Housing, 2005). In tandem with the *Places to Grow Act* (Ontario Ministry of Municipal Affairs, 2005), which requested intensification in already established places, *The Greenbelt Act* (Ontario Ministry of Municipal Affairs & Ontario Ministry of Housing, 2005) imposed restrictions to the boundary of urban development and thus contributed to urban intensification. Furthermore, the *Greenbelt Plan,* together with the *Oak Ridges Moraine Conservation Plan* and the *Niagara Escarpment Plan,* identifies where urbanization should not occur in order to provide permanent protection to the agricultural, ecological and hydrological land base, features, areas, and functions (Ontario Ministry of Municipal Affairs & Ontario Ministry of Housing, 2017). Fostered by these policies, gentrification drove condominium development by replacing older and cheaper housing or industrial land with density bonus or condominium apartments, especially in downtown Toronto (Rosen & Walks, 2015; Moos, 2016). In this context, the condominium development, and particularly its vertical expression of condo towers, is positively contributing to the intensification of urbanized areas (Lehrer, Keil, & Kipfer, 2010).

Also, the rise in urban condominium construction is primarily associated with demand from three submarkets, the 'empty nesters', young adults and families, and immigrants (Lehrer, Keil, & Kipfer, 2010; Rosen & Walks, 2013). With the increasing proportion of urban residents who are

approaching the retirement age, 'empty nesters', referring to those old homeowners who leave single-detached housed to avoid maintenance chores and gain greater security, have been the major buyers of Toronto's condominiums in the 1980s, and now represent an absolute number but a small percentage of all condo buyers (Lehrer, Keil, & Kipfer, 2010; Rosen & Walks, 2013).

Young adults and families, who leave their parents' suburban houses and seek to buy single-family dwellings as a step to get on the property ladder, represent a certain amount of condo consumers (Lehrer, Keil, & Kipfer, 2010; Rosen & Walks, 2013). In 2011, 20 percent of condo owners were aged under 35 years, with an evident increase from 16 percent in 2006, and 26.1 percent were 65 years old and over (Statistics Canada, 2016). Condo-living, especially condo-living in inner urban areas, offers a low maintenance burden, a range of commute options, and better attributes such as amenities, security, image, employment opportunities and cultural attractions (Lehrer, Keil, & Kipfer, 2010; Rosen & Walks, 2013). Besides the advantages of condo-living, the successful advertisement campaign by condo developers also helps to create a demand for urban lifestyle. While some have to raise their children in the high-rise and high-density setting, condo-living still attracts young adults as a good entry point into the real estate market as the first-time buyers (Lehrer, Keil, & Kipfer, 2010; Rosen & Walks, 2013).

Moreover, the combined effects of immigration and globalization foster the demand for downtown residential space in affected cities. During the last few decades, the dramatic changes in immigration and the increasing levels of socio-cultural diversity have been seen in some gateway metropolitan cities in North America (Ley and Tutchener, 2001; Rosen & Walks, 2013). Immigration projections are a good quarter of a million new arrivals per year in Canada with

almost half of them (i.e. 40 percent to 50 percent) settling in Toronto ((Lehrer, Keil, & Kipfer, 2010; Webb & Webber, 2017). The motivation for immigrants to buy a condo unit is driven by availability, relative affordability and cultural familiarity (Lehrer, Keil, & Kipfer, 2010; Rosen & Walks, 2013; Webb & Webber, 2017). Also, the international communication promoted by globalization and immigration is related to an increasing demand for security services for international professionals who live and travel between global cities (Rosen & Walks, 2013). In addition to the vast number of immigrants, there are also substantial numbers of temporary residents that settle in the urban areas with a work or study permit. These demands discussed above, combined with supportive legislations and plans, have led to condominium construction across the entire city, with particular neighbourhoods in the downtown core being largely occupied by condominiums (Webb & Webber, 2017).

2.3 Implications of Condominium Development

By promoting intensification principles and spurring mixed land use of urbanized areas, condominium development is an important component of urban densification and the reduction of automobile dependence, and is now transforming the social, physical and political geography of cities, and remaking Toronto neighbourhoods in the process (Grey & Sopinski, 2017; Rosen & Walks, 2013).

From socioeconomic perspectives, the condominium-led residential intensification strategy can be understood as a form of urban governance facilitating the neo-liberalization of urban life and policies (Kern, 2010a; Rosen & Walks, 2013). While the industrial production in decline, condominium development primes the metropolises by expanding flows of investment in real

estate sector and sustaining capital accumulation, morphing Toronto from an industrial-driven metropolis into a flourishing real estate market (Rosen & Walks, 2013; Rosen, 2017). As a new form of gentrification (Lehrer & Wieditz, 2009; Moos, 2016), the condominium development in the City of Toronto plays a significant role in the spatial trifurcation of socioeconomic landscapes (Lehrer & Wieditz, 2009; Hulchanski, 2010; Rosen & Walks, 2015). Condominium development indirectly creates an exclusionary inner core that caters to the consumption preferences of the upper-middle class, while continue to expel the working class to outlying neighbourhoods and siphon capital away from the suburbs (Hulchanski, 2010; Keil et al., 2016; Rosen & Walks, 2015). Thus, condominium development has become one of the factors driving and expressing spatial segregation and social polarization of the working class, especially blue-collars in the city (Rosen & Walks, 2015).

Physically, the high density in Toronto downtown is mostly a product of condominium boom (Harris, 2011; Kern, 2010a; Lehrer and Wieditz, 2009; Walks, 2014). Over the past decade, Toronto's skyline and cityscape have been transformed by the explosive condominium development surpassing other types of real estate sectors (CBC News, 2013; Rosen, 2017). The most evident changes characterized by condominium towers are the high-rise building appearances, tower-and-podium development, and shiny wall-to-wall glass panes (Rosen & Walks, 2015). During the process of gentrification, besides the newly-built condominium towers, there are even conversions of less conventional spaces such as churches, bars and schools (Moos, 2016).

2.4 Defining Social Sustainability

As a widely used term in the territory of urban planning, sustainability has been discovered in a typology comprising three pillars: environmental, economic and social aspects as shown in Figure 2-1 (Yiftachel & Hedgcock, 1993; McKenzie, 2004; Littig & Griessler, 2005; Choguill, 2008; Boström, 2012; Abed, 2016). While prior researches focused more on environmental and economic issues, the social dimension of sustainability has not been thoroughly studied, especially in terms of the development of neighbourhoods (Omann & Spangenberg, 2002; Choguill, 2008; Colantonio et al., 2009; Boström, 2012; Opp, 2017). There is no consensus on the definition of social sustainability because this concept is a dynamic and contested from diverse perspectives and disciplines (Colantonio, 2009). The emphasis and key aspects of social sustainability from past studies are provided in Table 2-1.

Figure 2-1: Urban Social Sustainability: A Conceptual Framework
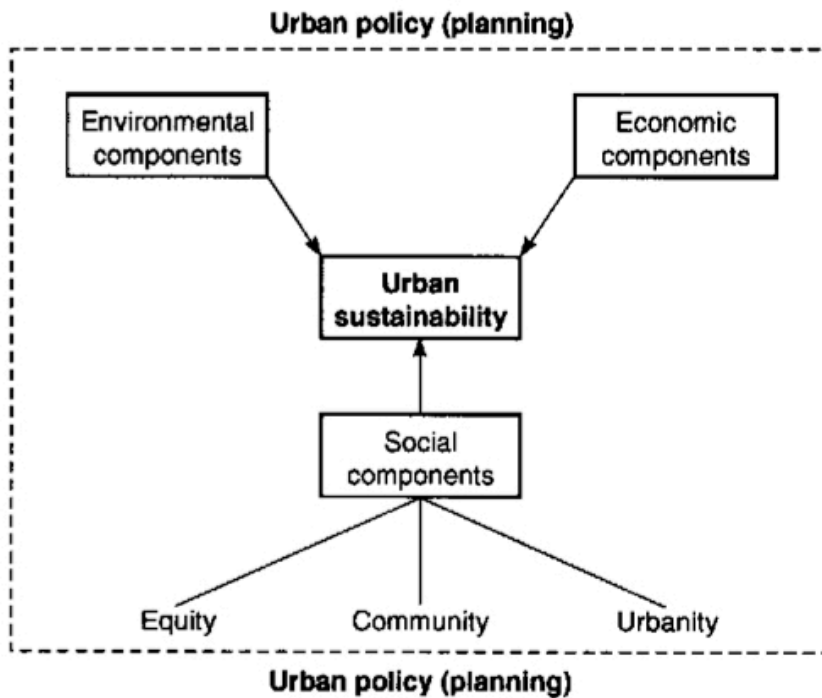
Source: Yiftachel & Hedgcock (1993)

Social sustainability is a new strand of discussion on sustainability concentrating on social issues such as inequality, displacement and poor quality of livability, which includes a broad range of economic, environmental, political and practical issues with many interpretations (Abed, 2016). By reviewing the different views on the concept of social sustainability (Table 2-1), there are three diverse interpretations. One interpretation sets social sustainability as an objective of development or a goal to be achieved. McKenzie (2004) defined social sustainability as a currently existing condition with critical aspects of social equity and sense of community. According to Bramley and colleagues (2006), social sustainability is '*development that is compatible with the harmonious evolution of civil society, fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups while at the same time encouraging social integration, with improvements in the quality of life for all segments of the population*'. Similarly, Colantonio and colleagues (2009) argued that '*Social sustainability concerns how individuals, communities and societies live with each other and set out to achieve the objectives of development models which they have chosen for themselves, also taking into account the physical boundaries of their places and planet earth as a whole*'. At a community scale, social sustainability, as a development goal, has a more detailed definition. A community is socially sustainable if all population face the equal exposure to environmental harms and are able to enjoy or access the benefits of public investment (Opp, 2017). In real urban plans, the City of Vancouver, Canada, regulated socially sustainable community with capabilities to satisfy basic needs of its residents, to maintain its resources, and to prevent or address future problems (City of Vancouver, 2005).

The second interpretation of social sustainability refers to the overall quality of society in economic, ecological, and social dimensions. Under this interpretation, social sustainability signifies the nature-society relationships, as well as the close relationships between the neighbourhood itself and the people living within it (Littig & Griessler, 2005; Dempsey et al.,2011). Social sustainability is shaped to satisfy human needs in society, and to preserve reproductive capabilities and normative claims of social justice in the nature-society relationships (Littig & Griessler, 2005). At a more operational level, social sustainability encompasses the social realm of individuals and societies, ranging from capacity building to environmental and spatial inequalities (Colantonio et al., 2009).

Moreover, the third interpretation is oriented with people, which refers to maintaining or improving the well-being of people in this and following generations (Chiu, 2004). The discussion by Bacon and colleagues (2012) focused on supporting individual and collective well-being by providing infrastructure to enhance social and cultural life and offering opportunities for people to get involved in community's development and change. Besides physical supports, Ahmed (2014) described social sustainability through social capital that can be attained by connectivity, mobility, considering the particular needs of vulnerable groups (i.e. the disabled, the elderly or the children), safety, sense of belonging, responsiveness to sociocultural values and community participation. Adopting this interpretation, in order to achieve social sustainability, both physical and non-physical settings need to be incorporated for addressing the problems that urban communities are currently facing and independently generating the capacities that communities are requiring to become sustainable (Eizenberg & Jabareen, 2017).

In a nutshell, social sustainability includes two major components: social equity and sustainability of community (Bramley et al., 2006; Bramley & Power, 2009). Social equity means equal distribution of services, facilities, and resources in a given area to ensure accessibility for all settlers, regardless of the number of job opportunities, the level of education, the access to transportation, the quality of health, or available housing within the area (Dempsey et al. 2012; Hassan & Lee, 2014). For all people living in a socially sustainable city, no matter the race, ethnicity, gender, or income level, they should have the resource to satisfy basic human needs and to enjoy equal access to public investment (Opp, 2017). Additionally, sustainability of community includes the social interaction between residents, level of trust across the community, the ability of residents to gather, discuss, and make decisions with local authorities, community stability, and a sense of the place among inhabitants (Dempsey et al. 2012; Hassan & Lee, 2014). These two main components of social sustainability internally linked or overlapped in terms such as social cohesion, social capital and social exclusion (Bramley et al., 2009). These terms altogether affect the quality of life. Thus, they have been discussed as crucial dimensions of social sustainability and have been explored widely in theory and practice in the context of developed countries (Dave, 2011).

Table 2-1: Emphasis and Key Aspects of Definitions in Social Sustainability

Author(s)	Emphasis	Key Aspects
(McKenzie, 2004)	A positive condition	Social equity; effective cultural relations; protection of cultural values; political participation; awareness of social sustainability; sense of community; empowered community; political advocacy
(Littig & Griessler, 2005)	A quality of society	Satisfaction of human needs; preservation of nature and productive capabilities; social justice; human dignity; participation
(City of Vancouver, 2005)	An objective of development	Basic needs; ability to maintain and build; resiliency to prevent problems
(Bramley et al., 2006)	An objective of development	Cultural and social diversity; social integration; quality of life
(Bramley & Power, 2009)	Social equity and sustainability of community	Equal distribution (services, facilities and resources); ability of society to sustain itself (social interaction, level of trust; ability to gather, discuss and make decisions); community stability (pride, safety, security, and sense of place)
(Colantonio et al., 2009)	An objective of development	Social realm; environmental and spatial equity; health; participation; needs; social capital; quality of life
(Dempsey et al., 2011)	Relationship between neighbourhood and people	Access to services, facilities and opportunities; social interaction; participation; sense of place; residential stability; security
(Vallance et al., 2011)	Clarification of concepts	Development of social sustainability (what people need); Maintenance social sustainability (what people want); Bridge social sustainability (what is good for the biophysical environment)
(Bacon et al., 2012)	Well-being	Social and cultural life; involvement in community
(Ahmed, 2014)	Social capital	Connectivity; mobility; special needs; safety; sense of belonging; responsiveness to sociocultural values; community participation
(Opp, 2017)	An objective of development	Economic development; environmental justice; residential segregation

Source: as indicated above, compiled by the author.

2.5 Assessment and Indicators of Social Sustainability

Despite diversity and variety in the conceptualization of social sustainability, researchers and scholars have developed a theoretical framework and have identified quantifiable indicators for assessing social sustainability. The selection of social sustainability indicators is not articulated in theory but rather in practice (Sharifi & Murayama, 2013; Eizenberg & Jabareen, 2017). To find an appropriate method to assess social sustainability in this study and gain a deep understanding of efforts from other scholars, past studies are reviewed and analyzed (as shown in Table 2-2) based on four points: perspective, objective, scale and criteria applied.

The assessments of past researches in social sustainability showed different objectives with some of them providing conceptual frameworks in various context. Omann and Spangenberg (2002) conducted one of the early studies to assess social sustainability in a socioeconomic scenario with no specific scale applied. They carried out their work with indicators mostly in equity of employment, gender, participation and security. To recognize social sustainability as a formative and analytical concept, Litting and Griessler (2005) defined social sustainability through three cores of indicators that dealt with satisfaction, social justice and social coherence. In response to rapid urban growth, Colantonio and colleagues (2009) assessed social sustainability in Europe Union; Cuthill (2010) provided a conceptual framework in the Australian context; Dempsey and colleagues (2011) defined social sustainability in Britain; and Opp (2017) timely reviewed definitions and requirements in America. Ancell and Thompson-Fawcett (2008) developed an evaluation model of social sustainability of housing using a case study at the community level, underlining resident's housing needs. Though most scholars used socioeconomic indicators,

Murphy (2012) took the ecological indicators into account, consisting of clean water, nutrition, essential medicines, and an unpolluted environment.

Some researchers investigated the relationship between social sustainability and other issues, especially issues in housing development. Chiu (2003) investigated the relationship between housing and social dimension of sustainable development in Hong Kong. The indicators applied are clustered in two sets of livability and housing equity. Livability referred to physical sectors such as internal and external residential quality. Housing equity indicators included affordability, accessibility, inadequately housed households and adequacy of housing stock. Her findings showed that the concept of social sustainability had to be both environment- and people-centred if sustainable development was to be sought, and the housing system in Hong Kong has not reached all the requirements of residents, but it showed a tendency of improving. Furthermore, Bacon and colleagues (2012) measured social sustainability in housing development as well except that the investigation scale was the community. Compared with the criteria from Chiu (2003), this research also searched into local social networks, social inclusion, cultural heritage, sense of belonging, and well-being.

In the context of British cities, the relationship between urban form and social sustainability were carefully analyzed at the community scale (Bramley et al., 2006; Bramley et al., 2009; Bramley & Power, 2009). A number of specific inter-related measurable aspects of community sustainability are identified in five dimensions: social interaction/social networks in the community; participation in collective groups and networks in the community; community stability; pride/sense of place; and safety and security (Bramley et al., 2006). The results showed

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that the density of urban form is positively associated with satisfaction with a neighbourhood, neighbourhood problem, accessibility, and social equity, while negatively related to neighbourhood attachment, stability, and safety (Bramley et al., 2006; Bramley et al., 2009; Bramley & Power, 2009).

Dave (2008; 2011) also made inquiries about density and social sustainability, but in developing countries. The indicators he applied were not very different from those indicators described above in developed countries, covering accessibility, amount of living space, health, community spirit, social interaction, safety, and satisfaction within the neighbourhood. Social interaction and community spirit are believed to be essential for the sustainable community and social cohesion (Dave, 2011). It was found that accessibility to facilities and amenities, affordability and amount of living space had significant influences on social sustainability, and higher household density and population density had no adverse impacts on social sustainability (Dave, 2008, 2011). Significantly, the built form, layout, design and mix-uses, as well as socio-demographic variables such as family income and location, were found to make a difference in realizing social sustainability (Dave, 2011). Also, social sustainability was not only affected by physical density but policies and decisions from governments and planners (Dave, 2011).

Urban design is another issue that can affect social sustainability. Porta and Renne (2005) investigated socially sustainable street life in the context of Western Australia with two clusters of indicators: urban fabric indicators and street indicators, explainning how urban design could help to promote a socially sustainable life. Similarly, Chan and Lee (2008) analyzed the social sustainability of urban renewal projects regarding urban design considerations in Hong Kong.

Applying indicators in townscape design, social infrastructure, employment, accessibility, psychological needs, and preservation of local characteristics, Chan and Lee (2008) inspected the opinions from different stakeholders including professionals such as architects, planners, and developers. Abed (2016) investigated social sustainability in two selected residential compounds and its surroundings in Amman, Jordan by morphological analysis along with statistical analysis using the collected data from households. The results showed, however, that the physical and non-physical parameters applied had limited efforts in boosting social sustainability (Abed, 2016).

Weingaertner and Moberg (2014) identified a comprehensive set of indicators from accessibility to environmental quality, with the aim of understanding the meanings and interpretations of social sustainability from the perspectives of urban development as well as companies and products. In a more recent publication, Kim and Larsen (2017) explored social sustainability under the wave of new urbanism at a community scale. They analyzed measurement indicators only in communities, which were housing affordability and socioeconomic diversity. Shirazi and Keivani (2017) even integrated political indicators such as democracy and civil society.

Other studies did not discuss precisely the term 'social sustainability', but in context, some ideas of social sustainability were investigated. Stafford and colleagues (2003) measured social cohesion and material deprivation in English and Scottish context. As described when defining social sustainability, social cohesion and equity are vital aspects of social sustainability. The criteria applied in their research were people-oriented in family ties, friendship ties, participation, integration, trust, attachment to neighbourhoods, practical help, and tolerance or respect

(Stafford el al., 2003). Moreover, Choguill (2008) analyzed sustainability in neighbourhoods with some social criteria including proper neighbourhood structure, accessibility, social interaction, interpersonal relations, and service delivery.

In practice, the City of Vancouver (2005) created work plans to promote socially sustainable development and to build sustainable communities. To be applied in the real world, the criteria listed in the social development plan (City of Vancouver, 2005) were divided into three groups: basic needs, human capacity, and social capacity. The basic needs referred to the fundamental requirements in housing, public access, and life support services, while human capacity was expanded to higher level needs of employment, health, self-expression, training, participation, independent living and sense of place. Besides the people-oriented indicators, social capacity focused more on the built and social environment of communities themselves. In the same way, Woodcraft (2012) operationalized social sustainability as a planning practice with criteria applied in public services, accessibility, public realm, amenities, public transit, safety, social network, social inclusion, spatial integration, cultural heritage, sense of belonging, community participation and organizations.

More widely, some scholars classified the contributory factors of social sustainability by physical and non-physical, or 'hard' and 'soft' (Chan & Lee, 2008; Littig & Griessler, 2005; Bramley et al., 2009; Colantonio et al., 2009; Dempsey et al., 2009; Abed, 2016). Traditional 'hard' social sustainability themes, such as employment and poverty alleviation, are increasingly being complemented by emerging 'soft' and less measurable concepts such as happiness, well-being and sense of place in the social sustainability debate (Colantonio et al., 2009). Abed (2016)

categorized the indicators into two levels of physical and non-physical environment, which may help avoid mistakes and promote quality of life in a residential neighbourhood. Tupenaite and colleagues (2017) ranked indicators of social sustainability by interviewing experts with consideration of new residential development. Their research results showed that in terms of accessibility, the top priority indicators referred to accessing employment opportunities and public transportation. While for neighbourhoods or communities, the indicator with the highest significance is safety/crime rate (Tupenaite et al., 2017).

It should be noted that these criteria and indicators are firmly interconnected with some interdependencies (Sharifi & Murayama, 2013). As shown in Table 2-2, due to the different perspectives, objectives, and scales in past studies, their applied criteria had a variety of indicators with distinct concerns. Although the perspectives of these researches are slightly different, most of them showed clear objectives focusing on social sustainability, while some of them narrowed social sustainability in details like social cohesion (Stafford et al., 2003). Hassan and Lee (2014) reviewed measures and criteria for social sustainability from some scholars. Based on their research, some criteria achieved complete consensus in measurements for social sustainability, and these criteria are social equity; access to facilities and amenities; safety and security; and social interactions.

Table 2-2: Assessment Criteria for Social Sustainability, Summary of Selected Research

Author(s)	Perspective	Objective	Scale	Criteria Applied
(Omann & Spangenberg, 2002)	Social sustainability	Assessment of social sustainability in a socioeconomic scenario	N/A	Flexibilities of working time; gender equity; employment; informal work; social innovations and participation; social security
(Chiu, 2003)	Social sustainability of housing	Relationship between housing and social dimension of sustainable development in Hong Kong	City	Internal housing conditions; external residential quality; affordability; accessibility to housing market; inadequately housed household; accessibility to public housing; adequacy of government subsidy in housing
(Stafford et al., 2003)	Social cohesion	Measuring the social cohesion and material deprivation in English and Scottish context	Neighbourhood	Family ties and friendship ties; participation in organized associations; Integration into the wider community; trust; attachment to neighbourhood; practical help; tolerance or respect
(City of Vancouver, 2005)	Social sustainability	Work plans for the City of Vancouver in order to promote socially sustainable development	Community	Basic needs (public access, social housing, affordable housing, life support services); human capacity (employment, health, self-expression, skill training, participation, independent living of disabilities, sense of place); social capacity (cleanliness of urban centre, pedestrian-friendly environment, transportation, mobility, social interaction, safety, social mix, marginalization, access to public facilities)
(Littig & Griessler, 2005)	Social sustainability	Recognizing social sustainability as a formative and analytical concept	City	Satisfaction of basic needs and quality of life (individual income, poverty, income distribution, unemployment, education, housing conditions, health, security); social justice (equal opportunities, gender equity, migrants); social coherence (social networks, involvement in activities, tolerant attitudes towards migrants, unemployed, gays and queers)
(Porta &Renne, 2005)	Social urban sustainability	Investigating socially sustainable street life in terms of urban design in Western Australia	City	Urban fabric indicators (accessibility, land use diversity, public/private realm, natural surveillance, street connectivity, number of buildings and number of lots); street indicators (sky exposure, façade continuity, softness, social width, visual complexity, sedibility, deractors)
(Bramley et al., 2006)	Social sustainability	Relationship between urban form and social sustainability in UK context	Community	Interaction in social networks; community participation; sense of place; community stability; security

(Ancell & Thompson-Fawcett, 2008)	Social sustainability of housing	Design a model of general applicability in terms of housing alternatives and social sustainability	Community	Fundamental needs: affordability, housing quality; Intermediate needs: transport, facilities; Ultimate needs: neighbourhood quality, relationships in the community
(Chan & Lee, 2008)	Social Sustainability	Analysis of social sustainability of urban renewal projects in terms of urban design considerations	Urban renewal projects	Townscape design; provision of social infrastructure; availability of job opportunities; accessibility; ability to fulfill psychological needs; preservation of local characteristics
(Choguill, 2008)	Neighbourhood sustainability	Analysis of sustainability in neighbourhood consideration	Neighbourhood	Proper neighbourhood population size to ensure citizen participation; access to facilities and services; social interaction; interpersonal relations among the neighbourhood residents; service delivery; neighbourhood structure
(Bramley et al., 2006; Bramley et al., 2009)	Social sustainability	Relationship between urban form and aspects of social sustainability of communities in British cities	Neighbourhood	Social equity; local services; public transportation; job opportunities; affordable housing; attachment to neighbourhood; social interaction; safety; quality of local environment; satisfaction with home; stability; participation in collective group activities
(Bramley & Power, 2009)	Social sustainability	Relationship between residential density and social sustainability	Neighbourhood	Access to local services, facilities and opportunities; social interaction; social networks; participation in collective community activities; pride or sense of place; residential stability, security
(Colantonio et al., 2009)	Social sustainability	A framework to assess social sustainability in EU context	City	Social mixing/cohesion; empowerment/participation; identity/image/heritage; social capital; well-being; housing; education; employment; demography; health and safety
(Cuthill, 2010)	Social sustainability	A conceptual framework for social sustainability in Australian context in response to rapid urban growth	Urban region	Social capital; social infrastructure; social justice and equity; engaged governance
(Dave, 2008; Dave, 2011)	Social sustainability	Relationship between density and social sustainability in developing countries	Neighbourhood	access to facilities and amenities; amount of living space; health of the inhabitants; community spirit and social interaction; sense of safety; satisfaction with the neighbourhood
(Dempsey et al., 2011)	Social sustainability	Concepts of social sustainability in the British context	Neighbourhood	Social interactions; participation; community stability; pride and sense of place; social equity; safety and security

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(Bacon et al., 2012)	Social sustainability	A framework to measure social sustainability in housing developments	Community	Decent and affordable housing; access to opportunities; high-quality public service; good quality and sustainable public real; transportation connections; safety; local social networks; social inclusion; spatial integration; cultural heritage; sense of belonging and identity; well-being
(Murphy, 2012)	Social pillar of sustainable development	A conceptual framework that identifies social concepts of sustainable development and links them to environmental imperatives	Community	Equity of clean water, nutrition, employment, education, shelter, essential medicines and an unpolluted environment; access to social networking; freedom of gender, religion, and races; awareness of sustainability; participation in decision-making; social cohesion
(Woodcraft, 2012)	Social sustainability	Emergence of social sustainability as a conceptual field, and challenges of operationalizing social sustainability as a planning practice	Community	Public services; access to opportunities; public realm; good quality of amenities; public transit system with a friendly pedestrian system; safety; local social network; social inclusion; spatial integration; cultural heritage; sense of belonging and identity; community participation and organizations
(Weingaertner & Moberg, 2014)	Social sustainability	Understanding the meanings and interpretations of social sustainability from the perspectives of urban development as well as companies and products	Urban region	Accessibility; social capital and networks; health and well-being; social cohesion and inclusion; safety and security; fair distribution (income, employment); local democracy, participation and empowerment; cultural heritage; education and training; equal opportunities; housing and community stability; connectivity and movement; social justice; sense of place; mixed use and tenure; attractive public realm; local environmental quality and amenity
(Abed, 2016)	Social sustainability	Analysis of social sustainability in Amman, Jordan	Residential compounds and its surroundings	Public facilities; accessibility; design; safety; social network; belonging; participation and satisfaction of community
(Kim & Larsen, 2017)	Social sustainability	Assessing new urbanism as an infill development tool by exploring social sustainability	Community	Housing affordability (low-income housing, location affordability index, and assisted housing availability); socioeconomic (income, race, and age) diversity
(Opp, 2017)	Social sustainability	A timely review of definitions and measurements of social	Neighbourhood	Access to open spaces, parks, recreation, jobs, and local services; connectivity and transportation; education; procedural fairness; local environmental quality and disamenity location; health and well-being; social capital;

				social segregation; affordable housing; safety; fair distribution of income
(Shirazi & Keivani, 2017)	Social sustainability	A critical reflection on the theory and practice of social sustainability in the built environment	N/A	Equity; democracy, participation, and civil society; social inclusion and mix; social networking and interaction; livelihood and sense of place; safety and security; human well-being and quality of life
(Tupenaite et al., 2017)	Social sustainability of housing	A ranking of sustainability indicators for assessment of new housing	Housing projects	Accessibilities (city centre, public transportation, employment opportunities, educational institutions, shops, health care services, child care, leisure facilities, green public space, and parking); Neighbourhood/Community considerations (safety, neighbourhood reputation, population density, community cohesion, and privacy)

Source: as indicated above, compiled by the author.

2.6 Social Sustainability in Relation to Condominium Development

There is no past study which specifically work on social sustainability in relation to condominium development, while it is clear from the literature that there are competing claims about the extent to which housing development influences social sustainability. Housing, as an essential component of the built environment, definitely has some implications of social sustainability of a place (Chiu, 2003). Housing is about providing shelter to people, and sustainable housing development should not only cater to the housing needs of this generation but also of those to come (Chiu, 2004).

Collecting data from the household survey of two cities, Bristol and Swansea, in Britain, Bromley and colleagues (2005) explored the contribution of residential development to aspects of sustainability in terms of the age structure of residents, day and night activities in the city centre, and modes of travel. Their analysis showed that sustainability in the city centre context was best served by a majority of young adult residents, and was ameliorated by a sizable proportion of older adults and an absence of households with children. Under the pursuit of sustainable communities, Turkington and Sangster (2006) considered what is achievable concerning housing mix. Three recommendations were made to encourage social sustainability in social-mix housing in terms of meeting the current and future housing needs, extending the housing choices to residents from all groups, and developing attractive housing to draw the attention of people who live elsewhere. Abed (2016) applied a mixed method in two selected residential compounds and their surroundings to understand the physical and non-physical aspects of social sustainability and to assess social sustainability in different topologies of housing development. The results showed that the neighbourhood should have well-designed

public facilities and social nodes, along with the flexibility to adopt the new needs and possibilities over time (Abed, 2016).

Another feature of condominium development is that it significantly affects the urban form given the fact that condominiums are usually high-rise buildings with a polished exterior and thus increase urban density and change urban image. In the Canadian context, urban planning favours a more compact, high-density, and mixed-use urban form. Therefore, it is essential to review how social sustainability is related to urban form. Density, as a key aspect of urban form, has the capability to influence all dimensions of social sustainability (Bramley & Power, 2009). For example, higher densities may improve the accessibility to services and facilities. Higher densities also mean higher population, and in a result, people are more likely to have spontaneous interaction on the streets or in the residential buildings than in lower density areas where people always travel by car. The research outcomes suggested that neighbourhood attachment, stability, safety, environmental quality, and home satisfaction all had a negative relationship with density (Bramley & Power, 2009). The literature suggested reasons to expect better sustainability in denser communities, while the quality of neighbourhood environment and social interaction were less satisfactory in denser communities (Bramley & Power, 2009).

Moreover, development could affect the appearance and aesthetics of places, and hence implicate people's sense of community (Bramley et al., 2006; Bramley & Power, 2009). The concept of social sustainability should be taken into account when designing projects in order to create sustainable communities for the citizens (Chan & Lee, 2008). Porta and Renne (2005) investigated sustainable community from the aspects of street life using urban fabric indicators,

and they concluded ten rules for designing sustainable streets in terms of scale and design of street characteristics. Chan and Lee (2008) examined social sustainability regarding urban design with data collected in Hong Kong. According to their research, ''Satisfaction of Welfare Requirements'', ''Conservation of Resources & the Surroundings'', ''Creation of Harmonious Living Environment'', ''Provisions Facilitating Daily Life Operations'', ''Form of Development'' and ''Availability of Open Spaces'' were believed to be the significant factors for amplifying social sustainability of local urban renewal projects (Chan & Lee, 2008).

2.7 Gaps in Current Research

Competitive and creative-led urban policies in global cities such as Toronto, London and New York often encourage high-density condominium developments. Condominium development may have been successful in facilitating inner-city renewal and boosting economic activity, while exacerbating urban problems stemming from large-scale gentrification and deepening spatial inequalities, displacement and social exclusion (Rosen & Walks, 2013). After reviewing previous studies referring to condominium development and social sustainability, this section points out some missing pieces in the overall picture.

First of all, the current researches of condominium development are mostly at the city level, only a few studies discuss the implications at a micro level and they are not comprehensive. Bramley and Power (2009) mentioned that there was a dearth of analysis of social sustainability and their relationship to urban form at a small-scale local level. In parallel, Dredge and Coiacetto (2011) argued that there was a need for studies to examine condominiums at the neighbourhood scale and assess their broader socioeconomic implications. Furthermore, the prediction of

socioeconomic implications of condominiums should be conducted to guide future city planning, while the current studies did not dabble more in future development. Care is needed when planning new urban developments or redevelopments if they are to be socially acceptable and successful (Bramley et al., 2009). Last but not least, for studies of social sustainability, there are plenty of researches on social sustainability in response to urban growth, housing development, and urban form, while few of them identified how specifically condominium development affect social sustainability. Given the fact that condominium has developed and will develop substantially in the City of Toronto, it is important to conduct a study of condominium development and how this development affects social sustainability at a micro level. To address these gaps, this study intends to examine evidence on some aspects of social sustainability under the trend of condominium development.

3. Methodology

This chapter establishes the methodological framework of this study and justifies the application of such research methods. The methodology presented here is intended to assess condominium development, social sustainability and the relationship between these two terms at a micro level. The study employs a mixed-method to answer the research question, which involves the collection of both qualitative and quantitative data for analysis and interpretation. The second research objective, *to create assessment systems for condominium development and social sustainability according to empirical studies and the context of Toronto*, is addressed in the discussion of research methods.

3.1 Unit of Analysis – Neighbourhood

One objective of this study is to fill the information gap regarding condominium development and its implications in terms of social sustainability at a micro level; thus, it is important to unity the spatial scale of the implications. In this thesis, the neighbourhood is chosen as the spatial scale for the following reasons.

First, the neighbourhoods in the City of Toronto were developed to help governments and community organizations with their local planning by providing socioeconomic data in a meaningful geographic area. Many official data sources are available at the neighbourhood level, thus, neighbourhood is an appropriate spatial scale to reduce the limitation of data sources and to protect confidentiality of urban residents. Second, compared with other spatial scales, the boundaries of social planning neighbourhoods are stable, allowing researchers to examine changes in neighbourhoods over time (City of Toronto, 2018). Moreover, in order to ensure the

high quality of social data, the neighbourhoods were defined based on Statistics Canada census tract boundaries. Census tracts are small, relatively stable geographic areas that usually have a population of fewer than 10,000 persons, based on data from the previous census program (Statistics Canada, 2017a). Usually, neighbourhoods in Toronto are comprised of from 2 to 5 Census Tracts, therefore, the data for neighbourhoods could be calculated using the data for correspondent census tracts from Statistics Canada, which is beneficial to build the quantitative dataset in this study. Last but not least, most service agencies and their programs define their service areas by main streets, former municipal boundaries, or natural boundaries such as rivers (City of Toronto, 2018). These service areas usually include several census tracts. For this reason, using neighbourhood as the spatial scale rather than census tract is more appropriate because the area of a census tract is not large enough to sustain some public services and analyze social sustainability.

3.2 Study Area

The City of Toronto, the capital of the Canadian province of Ontario, is located within the Golden Horseshoe in Southern Ontario. With 2,731,571 residents in 2016, it is the largest city in Canada and the fourth-largest city in North America by population. As a global city, Toronto is a centre of business, finance, arts, and culture with recognition and reputation of a multicultural and cosmopolitan city in the world. According to the Growth Plan for the Greater Golden Horseshoe (Ontario Ministry of Municipal Affairs, 2017) and census data from Statistics Canada, the population of the City of Toronto will increase from 2,731,571 in 2016 to 3,190,000 in 2031, and by 2041 the population is expected to exceed 3,400,000. In other words, a 17 percent increase for a 15-year population forecast and a 24 percent increase for a 25-year population

forecast are expected (Table 3-1). The employment-population is expected to increase from

1,578,750 in 2011 to 1660,000 in 2031, and by 2041 the employed population is expected to

exceed 1,720,000. The employed population is expected to increase by 5 percent according to a

15-year forecast and by 9 percent according to a 25-year forecast. With this potential population

and employment increase, the city government needs to plan the city within the context of urban

intensification appropriately.

Table 3-1: Population and Employment Growth Targets, the City of Toronto

	2016	2031	2036	2041	% Growth 2016-2031	% Growth 2016-2036	% Growth 2016-2041
Population	2,731,571	3,190,000	3,300,000	3,400,000	17%	21%	24%
Employment	1,578,750	1,660,000	1,680,000	1,720,000	5%	6%	9%

Source: Growth Plan for the Greater Golden Horseshoe (2017), 2016 Census Profile from Statistics Canada

Since the turn of the century, Toronto has seen a massive reinvestment into its built environment.

The Canadian global city's cultural and educational facilities have witnessed the new

construction of signature buildings and spectacular additions designed by world-renown

architects, especially in the downtown core (Lehrer, Keil, & Kipfer, 2010). The inner city, which

is defined using the 1996 boundary of former City of Toronto (as shown in Figure 3-1), has a

concentration of universities and hospitals with its cultural, entertainment, housing and social

services. Through its importance to economy and skyline, the inner city is also Toronto's visiting

card showing the comfortable, cosmopolitan, civil, urbane and diverse image (City of Toronto,

2018). Population growth in Toronto fosters the growth of condominium market and the city's

ongoing development. There are 20.9 percent of households living in condominiums in the

Toronto census metropolitan area, which is substantially greater than the share of 13.3 percent in

Canada (Statistics Canada, 2017b). Most of the new condominiums can be found in former industrial areas, along railway corridors, subway lines and major arteries throughout the city, with its highest concentration in the downtown core (Lehrer, Keil, & Kipfer, 2010). From 2006 to 2011, 27.1 percent of the city's population growth took place in central urban neighbourhoods (Webb & Webber, 2017). New data from the City of Toronto estimate that about 475,000 people will live in the city core by 2041 (Fox, 2016). From a development perspective, the city core areas have been the major winners in this process. Spatially, condominium development has raised the city core's supremacy by thoroughly transforming it from an office-dominated CBD to a mixed residential area (Rosen & Walks, 2015).

Figure 3-1: Boundaries of the Inner City, Inner Suburbs, Outer Suburbs in Toronto Census Metropolitan Area
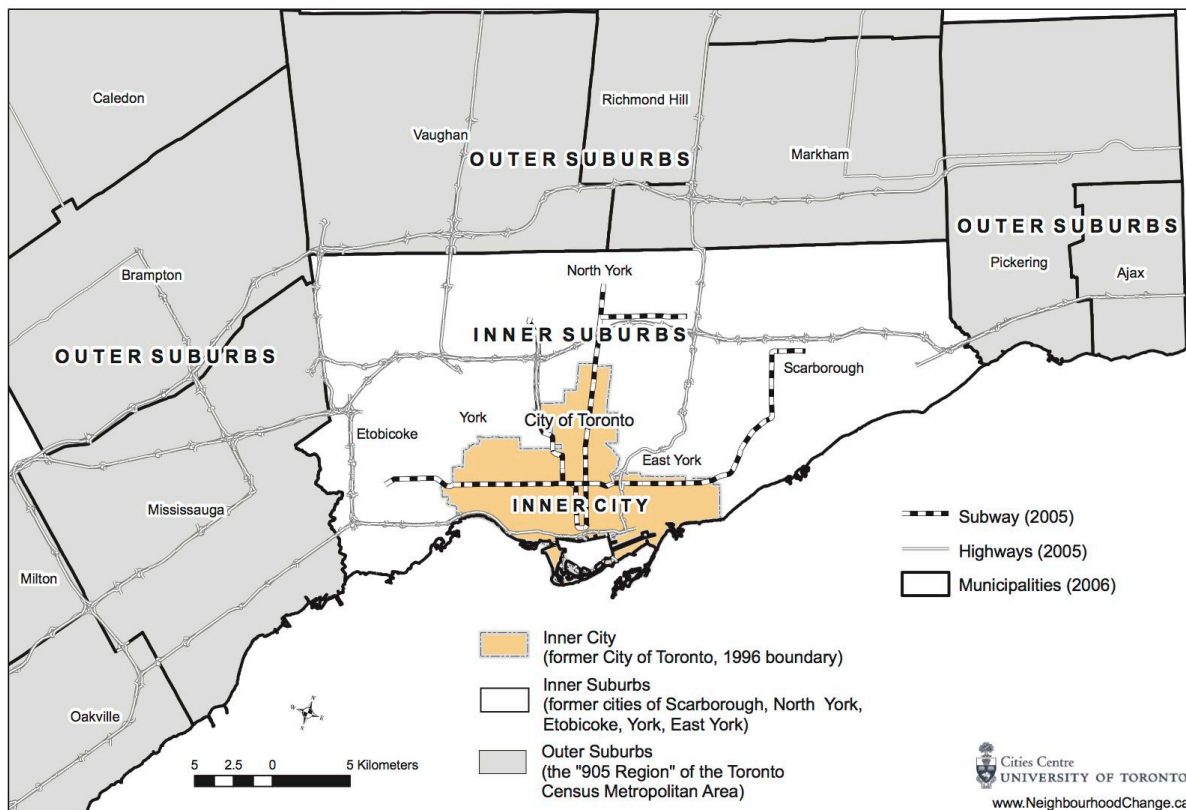
Source: Cities Centre, University of Toronto

Given the fact that the research aims to understand the relationships between condominium development and social sustainability at the neighbourhood scale, two requirements are applied when determining the study area. First, the selected neighbourhoods should be located in inner Toronto; and second, the selected neighbourhoods should have existing condominium dwellings inside. Based on these two requirements, 20 neighbourhoods are selected among the entire 140 neighbourhoods in the City of Toronto as the study area. The IDs, names and locations of selected neighbourhoods are shown in Figure 3-2 and Table 3-2.

Figure 3-2: Map of Study Area
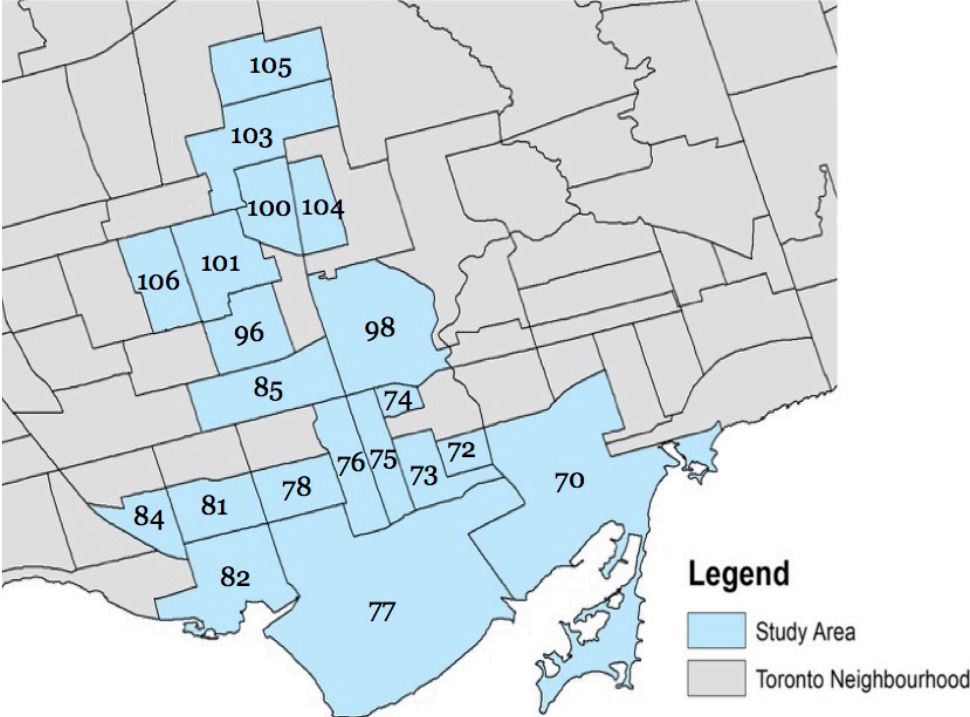
Note: The map is created by the author through ArcGIS

Table 3-2: Numerical Listing of Selected Neighbourhoods as the Study Area

Neighbourhood ID	Neighbourhood	Community Planning Area
70	South Riverdale	South Riverdale Greenwood
72	Regent Park	East Downtown
73	Moss Park	East Downtown
74	North St. James Town	East Downtown
75	Church-Yonge Corridor	East Downtown
76	Bay Street Corridor	Downtown Centre
77	Waterfront Communities-The Island	Downtown Centre
78	Kensington-Chinatown	West Downtown
81	Trinity-Bellwoods	West Downtown
82	Niagara	West Downtown
84	Little Portugal	West Downtown
95	Annex	Midtown South
96	Casa Loma	Midtown South
98	Rosedale-Moore Park	Midtown South
100	Yonge-Eglinton	Eglinton Centre
101	Forest Hill South	Eglinton Centre
103	Lawrence Park South	Yonge Lawrence
104	Mount Pleasant West	Eglinton Centre
105	Lawrence Park North	Yonge Lawrence
106	Humewood-Cedarvale	Eglinton Centre

3.3 Research Design and Framework

This study employs a mixed-method in order to address the research questions and objectives ultimately. As established in Chapter 1, the research question is: *Can condominium development contribute to social sustainability?* In preparing answers to these questions, five specific research objectives are identified as:

1) *To understand the terms, 'condominium' and 'social sustainability', and explore the central themes and dimensions at the heart of these concepts;*

2) *To create assessment systems for condominium development and social sustainability according to empirical studies and the context of Toronto;*

3) *To understand what policies and strategies are in place to promote condominium development and how condominium development is connected with social sustainability;*

4) *To examine to what extent, and in what ways, social sustainability is incorporated with condominium development at a micro level within the inner Toronto; and*

5) *To make recommendations for the City of Toronto on future planning policies and practices under the future development trend of condominiums.*

Some studies state that mixed methods could provide better inferences and the opportunity for presenting a greater diversity of divergent views, and offset the disadvantages that certain of the methods have by themselves (Johnson & Turner, 2003; Tashakkori & Teddlie, 2003). Also, the examination of complex social phenomena requires various methods so as to best understand and make inferences about theses complexities, which cannot be fully understood using either solely qualitative or solely quantitative techniques (Greene &Caracelli, 1997; Tashakkori & Teddlie, 2003). In this study, an assortment of data sources and analyses is needed to completely understand complex multifaceted situations or realities in terms of condominium development and social sustainability. Since the nature of this research is to explore the relationships between condominium development and social sustainability in selected Toronto neighbourhoods and to summarize experiences for future planning policy and practices, a mixed-method is suitably effective.

As shown in Figure 3-2, the mixed-method approach involves the collection of both qualitative and quantitative data for analysis and interpretation. The qualitative research refers to a review of selected governmental policies. The policy review enables the researcher to obtain the language of relevant documents and provides an unobtrusive source of information (Creswell & Creswell, 2017). Along with the literature review of journal articles, the qualitative analysis is used to yield

quotes, codes, and themes (Creswell & Creswell, 2017) to develop variables of both

condominium development and social sustainability. The indicators of condominium

development are considered as independent variables while the dependent variables are

determined as the indicators of social sustainability.

Figure 3-3: Research Framework
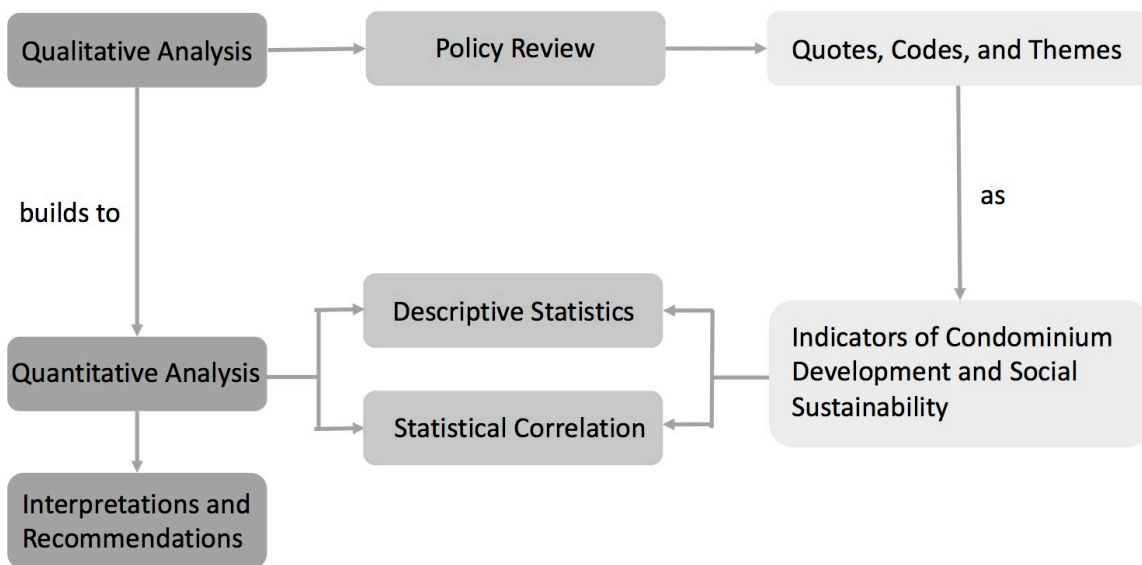
For quantitative analysis, descriptive statistics and statistical correlation analysis are applied to

achieve the research objectives. A descriptive statistical analysis could collect and summarize

vast amounts of data and information in a manageable and organized manner and it is a

straightforward process that can easily translate collected data into a distribution of frequency,

percents and overall averages. Furthermore, a statistical correlation analysis can be conducted on

variables that can be measured and not manipulated, demonstrating the presence or absence of a

relationship between two factors. Thus, it is suitable for assessing the relationship between

critical aspects of condominium development and selected social sustainability outcomes in

detail. Another benefit of correlational analysis is that it creates considerable opportunities for further research. It allows future researchers to determine the strength and direction of a relationship so that they can narrow the findings down and, if possible, determine causation experimentally (Jackson, 2015). From the results of both qualitative and quantitative research, recommendations are made in regard to policies and regulations of condominium development in the City of Toronto.

3.4 Policy Review

Policy review, in essence, is a document review focusing on planning policy. Creswell and colleagues (2003) considers document review as a convenient and efficient method in qualitative research since it refers to the analysis of text and context provided by official institutions or knowledgeable authors. By conducting a policy review, the planning policies and strategies can be used to build a policy framework and thus reflecting current implications and future changes.

The policy review portion of this study is presented in three phases. The first phase is in Chapter 4, Section 4.2 and 4.3. In order to address the third research objective, *to understand what policies and strategies are in place to promote condominium development and how condominium development is connected with social sustainability*, a review and analysis of the Growth Plan for the Greater Golden Horseshoe (Ontario Ministry of Municipal Affairs, 2017) and the current Toronto Official Plan (City of Toronto, 2018d) are done. The focus of the policy review is housing and community development, with the criteria of analyzing social sustainability mentioned by such policies. By establishing the value that current planning policies place on condominium development and sustainability in the City of Toronto, suggestions are made for

future policies. The result of policy review is a comprehensive record of relevant planning policies in the City of Toronto.

The second portion of the policy review is presented in Chapter 4, Section 4.4, involving a review and analysis of the proposed Downtown Plan. The proposed policy changes could have a substantial impact of the concept of condominium development in the city core, and as such is the basis of discussion in the following analysis. The purpose of this review is to establish an understanding of the issue: how the condominium development is regulated and what is the goal of community development defined by the City in central urban areas.

The final segment of policy review is also at the city scale but focuses on the issues occurred in the condominium communities, which is, the review of Condominium Consultation Recommendations Report. The Condominium Consultation Recommendations Report was provided to reflect the health of Toronto's condominium communities with the trend of increasing new condominiums. The key objective of this report is to develop policy recommendations that will improve the quality of life for condo residents. By conducting the policy review of this portion, a general understanding of issues in condominium communities is provided, contributing to answer the research question.

3.5 Identifying Indicators of Condominium Development and Social Sustainability

In order to investigate the quantitative relationship between condominium development and social sustainability, some indicators are drawn and summarized from past studies at a micro

level in developed countries to represent both condominium development and social

sustainability. The indicators of condominium development are considered as independent

variables, and the indicators of social sustainability are used as dependent variables to conduct

statistical analysis. By exploring the differences between neighbourhoods in the study area, these

indicators allow some generalization about the contributions of condominium development to the

selected dimensions of social sustainability in the city centre context and offer some comments

on the sustainable advantages of social diversification. In effect, the view that policies

encompassing residentialization for regeneration and sustainability which are unaware of the

social variations among residents, is likely to be less than optimal and at worst might generate

additional problems. The paper contributes much-needed empirical evidences to a work of

literature which is dominated by arguments from hypotheses and assertions.

3.5.1 Indicators of Condominium Development

The differences in condominium developments between selected neighbourhoods reflect their

different local contexts. One indicator for measuring condominium development at the

neighbourhood level is the condominium unit density because it is a general summary measure

which many other features is partly correlated with (Bramley & Power, 2009). In common sense,

the term 'condominium development' implies relatively high density and building height. The

number of unit in each condo building can vary from tens to thousands, thus, compared with

building density and room density, the unit density is better as a representative measure to reflect

variations between selected neighbourhoods (Bramley & Power, 2009). The unit density can not

only represent the increasing of condominiums but also reflect the height of the condominium

building as most condominiums are high-rise constructions in the City of Toronto. Another

reason for using the number of units rather than the number of buildings is that the number of

buildings is relatively smaller, which cannot show much about the differences among all selected

neighbourhoods. The other indicator of condominium development is the condominium dwelling

prevalence in each neighbourhood calculated as a percentage of condominium dwellings to all

dwellings. The condominium dwelling prevalence denotes the local context and environment to

determine whether a neighbourhood is condominium-dominated or not. Both the indicators of

condominium development are presented and explained in Table 3-3.

3.5.2 Indicators of Social Sustainability

There is no specific past study on assessing social sustainability in terms of condominium

development, while some researches are denoting the measurement of social sustainability under

the context of residential development or urban form. The measurement of social sustainability is

reviewed in Chapter 2.5, and the past studies on assessing social sustainability applied different

perspectives, objectives, scales, and criteria. According to Chapter 2.4 and Chapter 2.5, some

components of social sustainability are consistently analyzed in past studies as accessibility,

social equity, social interaction and safety. Considering the research context, objectives and

research scale, these components will also be examined in this study. Accessibility is examined

by the accessibility to daily-use facilities and amenities and commute; social equity is analyzed

by dwelling and housing, education and knowledge, employment, gender equity, occupation and

industry, and poverty; Social interaction is measured by social mix and urban fabric indicators,

and safety is probed by crime variables. The detailed descriptions and explanations of selected

indicators are illustrated in Table 3-4.

3.5.2.1 Accessibility to Services and Facilities

Accessibility is an essential part of social equity according to the literature review. Providing accessible public facilities and social nodes could improve participation among community members (Abed, 2016). The form of high-density apartment accommodation with little provision of social nodes is less likely to produce sustainable communities in every dimension. It has been claimed that high-density urban development may make social services and facilities both more accessible and economically viable (Dave, 2011). The built-up areas with intensified urban development support more facilities and a broader range of services per capita than most suburban areas with low level of development (Dave, 2011). The intensified urban form under condominium development is expected to create good accessibility to services and facilities within walking distances, contributing to the mixed use patterns of development and the achievement of social sustainability.

In this research, as shown in Table 3-4 below, access was measured concerning the accessibility of some daily-use facilities and amenities: English Public school, English Separate school, French Public school, French Separate school, Private school, bicycle parking, bus stop, grocery store, pharmacy and drug store, bank and restaurant. The accessibility to various types of school could threaten the educational opportunity and satisfaction for the school age and their families. The accessibility to these daily facilities such as grocery store could affect every resident in a neighbourhood in terms of the convenience of living and shopping.

3.5.2.2 Commute

Commute is an important component of Torontonians' daily life. To understand the contribution of condominium development to commute in the inner city, this research presented here does not attempt to analyze commute costs. While ignoring the study of efficiency and construction methods, this project focuses on how residents in the study area commute, including their commute methods, commute destinations and commute time. This approach by no means reflects the differences in people's behaviours and mirrors social equity in a neighbourhood.

3.5.2.3 Crime

The crime incidents within the neighbourhoods are also notable, affecting the neighbourhoods' reputation, residents' quality of life, community cohesion and sustainability (Dempsey, 2006; Dave, 2011). A socially sustainable community shall be a place free from the fear of crime, where a feeling of security underpins a wider sense of place attachment and place attractiveness (Ceccato & Lukyte, 2011). Although the City of Toronto is always considered a safe city, it has crime issues like any other big city. In this study, the safety of a neighbourhood is analyzed by the ratio of major crime incidents (assault, auto theft, break and enter, robbery, theft over, and homicide).

3.5.2.4 Dwelling and Housing

Housing is one the most basic human needs. From a social perspective, housing not only offers accommodation but also gives a sense of a secure future and strengthens local communities (Tupenaite et al., 2017). Equitable provision of adequate dwellings that meet the needs of all

sectors of the population should be high on the agenda of urban planning theorists and practitioners who support to make cities 'good' places (Ancell & Thompson-Fawcett, 2008).

The dwelling related variables include dwelling vacancy, dwelling diversity by the number of rooms and bedrooms, and the number of rooms per dwelling. The variable of dwelling vacancy is selected to test the stock and occupancy of dwelling market. The other dwelling variables are selected based on the condominium characteristics of smaller units and fewer unit types compared with other housing forms, reflecting how condominium development implicates the dwelling choices of residents.

According to the 2016 census data, Toronto outpaced Vancouver as the Canadian city where residents struggled the most to afford their housing costs. There were 33.4 percent of Toronto households who spent more than 30 percent of their income on housing costs in 2016, increasing from 31.8 percent in 2011. The increasing cost of housing substantially impacted home ownership, with home ownership levels fell to 66.5 percent in 2016 from 68.3 percent in 2011 in Toronto (Mcfarland, 2017). The city is in danger of becoming increasingly polarized by income. Many households are being forced to live in city fringe suburbs and satellite towns with limited and costly access to public transit, services, and employment opportunities (Lawson, 2012). Furthermore, traditional housing forms, such as single- or semi-detached houses with more than three bedrooms, no longer satisfy the needs of a significant number of households due to changing demographics such as very small or large households and the growth of the aged population (Lawson, 2012). Housing affordability is central to the objectives of spatial and land use planning in supporting, maintaining, and building socially sustainable communities that are

well designed, located and serviced with diversity. In such circumstances, housing affordability is measured by the indicators of housing affordability index and housing appreciation. Besides, shelter costs, mortgage status, average monthly shelter costs, average dwelling price, and subsidized housing status contribute to the assessment of housing affordability from an economic perspective.

Other variables reflect housing decency, housing tenure, number of persons per room, housing suitability and housing condition. Housing tenure refers to whether the household owns or rents their private dwelling (Statistics Canada, 2018c). A household is considered to own their dwelling if some member of the household owns the dwelling even if it is not fully paid for (Statistics Canada, 2018c). A household is considered to rent their dwelling if no member of the household owns the dwelling. Housing tenure is presented by the proportion of owners to reflect the will of becoming homeowners. Housing suitability refers to whether a private household is living in suitable accommodations according to the National Occupancy Standard (NOS), which is whether the dwelling has enough bedrooms for the size and composition of the household. A household is deemed to be living in suitable accommodations if its dwelling has enough bedrooms as calculated using the NOS. Housing condition refers to whether the dwelling is in need of repairs except desirable re-modelling or additions. The dwellings with only regular or minor maintenance are considered as in a good condition.

3.5.2.5 Education and Knowledge

Socially sustainable development should be able to enhance both the current and future potentials to meet human needs and aspirations (Chiu, 2002). Generally, education indicates any

act or experience that has a mouldable effect on an individual's mind, character, or physical ability as the basis of human civilization (Eurostat, 2013). Besides its social benefits, education is also an underlying factor of quality of life of individuals (Eurostat, 2013). People with limited capabilities and competencies are eliminated from good jobs and have fewer chances for economic prosperity.

The education and knowledge variables are selected as knowledge of official languages, level of education diversity, higher education, and major field of study diversity. The knowledge of official languages variable represents the proportion of the population who knows at least one official language considering the context of Canada. The limited knowledge of official language affects the efficiency of daily communication and work, which impact the quality of life to a large extent. Broadly speaking, higher levels of educational attainment are linked to better occupational opportunities and higher income for individuals, therefore positively affect their quality of life (Eurostat, 2013). The level of education diversity and major field of study diversity denote the variety of backgrounds and information of residents in the study area, consequently, mirror the occupational and industrial composition.

3.5.2.6 Employment

Like education, employment also plays a vital role in residents' quality of life. Owing to the aging of the workforce, building a sustainable labor market for the working age has become increasingly important. The participation rate, employment rate, and unemployment rate are selected as indicators to present employment. The unemployment rate evaluates the quantity or lack of employment, indicating access to employment opportunities. It should be noted that the

employment rate is complementary, therefore, it cannot be substituted by unemployment rates. Besides that, the difference in terms of participation rate reflects social sustainability of a neighbourhood from the perspective of people's aspirations in work.

3.5.2.7 Gender Equity

Past studies showed that women made up a high percentage of condominium purchasers and condominiums area extensively marketed to young, professional urban women (Kern, 2010a, 2010b). To examine gender equity in selected neighbourhoods in terms of condominium development, five variables are chosen to illustrate the gendered dimensions of neighbourhoods in the context of social sustainability, containing female population, female level of education, female in low-income status, female participation rate, and female employment rate. These indicators are not only used to identity correlations with condominium development but also to express gender equity issues by comparing the same indicators of female and total population.

3.5.2.8 Occupation and Industry

The economic restructuring, marked by deindustrialization and the rise of specific industries, has influenced the crystallization of urban development in terms of condominiums (Rosen, 2014). Many jobs in finance, insurance, and real estate, and other opportunities in culture, education, and recreation are located in the inner city, with a considerable proportion of condominium development and gentrification of the older housing stock (Scott, 2011; Rosen, 2014). Urban economic structure is transformed by the occupational and industrial shifts from manufacturing-oriented to service-oriented sectors, using indicators of occupation diversity; occupations in Business, Finance and Administration; occupations in Sales and Service; occupations in

Manufacturing and Utilities; industry diversity; and industries in Finance, Insurance, and Real Estate.

3.5.2.9 Poverty

In a basic sense, 'social sustainability' indicates a system of social organization that mitigates poverty. While in a more fundamental sense, 'social sustainability' establishes the nexus between social circumstances and environmental corrosion (Basiago, 1998). The poverty variables are selected as the average total income of individuals, the average after-tax income of individuals, the average total income of households, the average after-tax income of households, and low-income status. The value of average incomes of individuals and households, whether before or after tax, are examined to explicitly reflect the income level of residents in the study area, denoting social inequity and human wellbeing. Then, the indicator of low-income status shows how many people suffer in poverty, and how condominium development affects poverty status.

3.5.2.10 Social mix

Conventional planning wisdom has consistently argued that urban planning could enhance the function of urban communities, mainly due to its ability to influence the concept of social balance and social mix and their roles in the development of community structures (Yiftachel & Hedgcock, 1993). Polèse and Stren (2000) described a city as a locus of human diversity where varying people share an association within a particular boundary. Increasing socioeconomic diversity in a neighbourhood could be beneficial to the disadvantaged by providing social networking opportunities and support systems (Talen, 2006). Therefore, the analysis of social mix is a crucial component when analyzing social sustainability. In order to understand how

condominium development affects socioeconomic diversity, this study will take a look at diversity in terms of income, age and ethnicity covering individual income diversity (before and after-tax), household income diversity (before and after-tax), age diversity, and ethnic diversity.

3.5.2.11 Urban fabric

If a new community is to be successful and socially sustainable, the physical space, the housing stock and amenities, the social infrastructure need to be able to adapt over time to new needs and new possibilities (Woodcraft et al., 2011). Poor townscape design practices destruct uniqueness of places and hinder the development of a sense of belonging among the residents. Oktay (2004) stated that pedestrian-oriented streetscapes could encourage informal interaction among the citizens. According to Porta and Renne (2005), visual images of street furniture and pavement, and interconnectivity of street layouts have impacts on the social sustainability of places. In addition, the citizens are more satisfied when the visual appearance is beautiful, and building configurations in terms of density, height, mass and layout are appropriately designed (Chan & Lee, 2008). The face of Toronto has changed, and the new concrete and glass facades of the ubiquitous condominium towers can be seen throughout the entire city, altering the urban morphology as well as the streetscapes of Toronto, especially downtown Toronto (Lehrer, Keil, & Kipfer, 2010).

Moreover, there are high competitions between uses on the scarce available land in high-density areas, and most of these areas are lack of greening. Some scholars highlighted the importance of urban greenery in designing high-density cities, especially in hot regions, to alleviate the adverse effects of high density (Ng, 2009). Flexible uses of land and building are essential to the

acceptability of a community when facing changes such as demographic shift and new patterns of work and social life. As such, the urban design principles of communities and cities should be considered as a part of social sustainability. In this case, the urban fabric indicators of social sustainability are selected as land use diversity, building structure diversity and green space ratio.

3.5.3 Intervening Variables

The literature review has also shown that intervening variables in terms of demographic characteristics of a neighbourhood are all known to interact with condominium development. Table 3-5 summarizes the selected intervening variables, including population density, population percent change, citizenship status, immigration status, visible minority status, household diversity, average household size, census family diversity, average family size, and census families with children to explain demographic shifts and compositions in the study area. The intervening variables will be used to explain casual links between the selected explanatory and outcome variables.

3.6 Statistical Analysis

First, descriptive statistics are presented to describe the basic features of collected data and to form the virtual basis of quantitative analysis, including the maximum, minimum, mean, and standard deviation. Then, a Pearson correlation analysis is used to identify whether the independent and dependent variables are correlated or not and the degree of correlations. Based on the identified relationships, the future implications of the condominium development on social sustainability can be forecasted and shed lights on the amendment of planning policies and practices. Since this research has many variables, it is important to control the process and ensure

transparency in the results. Directly, the statistical correlation analysis uses Pearson's correlation to examine the fundamental relations among different variables.

Pearson correlation is the most widely used statistical correlation method to measure the degree of the relationship between linearly related variables. In this case, the Pearson correlation method is selected according to the following merits: 1) this method not only indicates the presence or absence of correlation between two variables but also determine the direction and degree to which they are related by a Pearson correlation coefficient, denoted as r; and 2) this method allows researcher to estimate the value of a dependent variable with reference to a particular value of an independent variable through regression equations. This point-biserial correlation is conducted with the Pearson correlation formula except that one of the variables is dichotomous. The following formula is used to calculate the Pearson r correlation:

$$r = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{[N \sum x^2 - (\sum x)^2][N \sum y^2 - (\sum y)^2]}}$$

where:

r = Pearson r correlation coefficient;

N = number of observations;

$\sum xy$ = sum of the products of paired scores;

$\sum x$ = sum of x scores;

$\sum y$ = sum of y scores;

$\sum x^2$ = sum of squared x scores; and

$\sum y^2$ = sum of squared y scores (McCallister, n.d.).

For the Pearson's correlation, both variables should be normally distributed while other assumptions include linearity and homoscedasticity. Linearity assumes a straight line relationship between each of the two variables, and homoscedasticity assumes that data is equally distributed about the regression line (Statistics Solutions, n.d.). Pearson's coefficient values can range from +1 to -1, where +1 indicates a perfect positive relationship, -1 indicates a perfect negative relationship, and 0 indicates no relationship exists. Cohen's standard (1998) was used to evaluate the correlation coefficient to determine the strength of the relationship or the effect size. Correlation coefficients between 0.10 and 0.29 represent a small association, coefficients between 0.30 and 0.49 represent a medium association, and coefficients of 0.50 and above represent a large association or relationship. For those dependent variables with coefficients lower than 0.10, the relationships are considered as no impact in this case.

To determine whether the Pearson correlations between variables are significant or not, the p-values of correlations are calculated to compare with a level of statistical significance. Usually, a significance level (denoted as α or alpha) of 0.05 works well (Fisher & Yates, 1938; Fisher, 2006). An α of 0.05 indicates that the risk of concluding that a correlation exists is 5 percent. If the p-value is less than or equal to the conventional 5 percent level, then the correlation is different from 0, meaning that the coefficient is called statistically significant. If the p-value is greater than the significance level, the correlation between variables cannot be concluded, denoting as inconclusive in this study. The results and discussion of Pearson's correlation analysis are illustrated in Chapter 6.

Table 3-3: Indicators of Condominium Development

Aspects of Condominium Development	List of Indicators	Explanation of Indicators
condominium development	condominium unit density	number of condominium units per square kilometre
	condominium dwelling prevalence	% of condominium dwellings to total dwellings

Table 3-4: Indicators of Social Sustainability

Aspects of Social Sustainability	List of Indicators	Explanation of Indicators	Target
Accessibility to services and facilities	accessibility to English Public school	shortest distance from neighbourhood centroid to English public school	low
	accessibility to English Separate school	shortest distance from neighbourhood centroid to English separate school	low
	accessibility to French Public school	shortest distance from neighbourhood centroid to French public school	low
	accessibility to French Separate school	shortest distance from neighbourhood centroid to French Separate school	low
	accessibility to Private school	shortest distance from neighbourhood centroid to Private school	low
	accessibility to bicycle parking (both indoor and outdoor)	shortest distance from neighbourhood centroid to bicycle parking stations (both indoor and outdoor)	low
	accessibility to bus stops	number of bus stops per square kilometre	high
	accessibility to grocery stores	number of grocery stores per square kilometre	high
	accessibility to pharmacies and drug stores	number of pharmacies and drug stores per square kilometre	high
	accessibility to commercial banking	number of commercial banks per square kilometre	high
	accessibility to restaurants	number of restaurants per square kilometre	high
Commute	commute destination	% of employed labour force commuting within census subdivision (CSD) of residence	n/a
	commute by car, truck or van as a driver	% of employed labour force who commute by car, truck or van as a driver	low
	commute by car, truck or van as a passenger	% of employed labour force who commute by car, truck or van as a passenger	low
	commute by public transit	% of employed labour force who commute by public transit	high
	commute by walk	% of employed labour force who commute by walk	high
	commute by bicycle	% of employed labour force who commute by bicycle	high
	commute time	% of employed labour force commuting less than 30 minutes	n/a
Crime	major crime rate	number of major crime incidents (assault, auto theft, break and enter, robbery, theft over, and homicide) per square kilometre	low
Dwelling and Housing	vacancy rate	% of vacant dwellings in all dwellings	low
	dwelling diversity by number of bedrooms	Entropy index of dwellings based on 5 groups outlined as: No bedrooms; 1 bedroom; 2 bedrooms; 3 bedrooms; and 4 or more bedrooms.	towards 1
	dwelling diversity by number of rooms	Entropy index of dwellings based on 5 groups outlined as: 1 to 4 rooms; 5 rooms; 6 rooms; 7 rooms; and 8 or more rooms.	towards 1
	number of rooms per dwelling	average number of rooms per dwelling	n/a
	housing affordability index	ratio of average household income to average dwelling price	high
	housing appreciation	Multiple Listing Service Home Price Index (or MLS® HPI for short)	low

	one or fewer person per room	% of households which one person or fewer per room	high
	housing suitability	% of suitable housing	high
	housing condition	% of dwellings with only regular maintenance or minor repairs	high
	shelter costs (owner and tenant households)	% of owner and tenant households spending 30% or more of income on shelter costs	low
	mortgage	% of owner households with a mortgage	low
	shelter costs (owner)	% of owner households spending 30% or more of its income on shelter costs	low
	average monthly shelter costs (owned dwelling)	average monthly shelter costs for owned housing	low
	average dwelling price	average value of dwellings	low
	subsidized housing	% of tenant households in subsidized housing	low
	shelter costs (tenant)	% of tenant households spending 30% or more of its income on shelter costs	low
	average monthly shelter costs (rented dwelling)	average monthly shelter costs for rented dwellings	low
	housing tenure: owner	% of owners	high
Education and knowledge	knowledge of official languages	percent of knowledge of at least one official language	high
	level of education diversity	Entropy index of highest education based on 6 groups outlined as: No certificate, diploma and degree; Secondary (high) school diploma or equivalency certificate; Apprenticeship or trades certificate or diploma; College, CEGEP or other non-university certificate or diploma; University certificate or diploma below bachelor level; and University certificate, diploma or degree at bachelor level or above.	towards 1
	higher education	% of population with certificate, diploma or degree higher than secondary school	high
	major field of study diversity	Entropy index of major field of study based on 11 groups outlined as: Education; Visual and performing arts, and communications technologies; Humanities; Social and behavioural sciences and law; Business, management and public administration; Physical and life sciences and technologies; Mathematics, computer and information sciences; Architecture, engineering and related technologies; Agriculture, natural resources and conservation; Health and related fields; and Personal, protective and transportation services.	towards 1
Employment	participation rate	% of labour force to the total population aged 15 years and over	high
	employment rate	% of employed population to the total population aged 15 years and over	high
	unemployment rate	% of unemployed population to the total population aged 15 years and over	low
Gender equity	female population	& of female population	towards 0.5
	female with higher education	% of female with higher educational level (higher than secondary school)	high
	female in low income status	% of female population in low income based on the low-income measure; after tax (LIM-AT)	low
	female participation rate	% of female labour force to female population aged 15 years and over	high
	female employment rate	% of female employed population to female total population aged 15 years and over	high

Occupation and Industry	occupation diversity	Entropy index of occupation based on 10 groups outlined as: Management occupations; Business, finance and administration occupations; Natural and applied sciences and related occupations; Health occupations; Occupations in education, law and social, community and government services; Occupations in art, cultural, recreation and sport; Sales and service occupations; Trades, transport and equipment operators and related occupations; Natural resources, agricultural and related production occupations; and Occupations in manufacturing and utilities.	towards 1
	occupations in Business, Finance and Administration	% of occupations in Business, Finance and Administration	high
	occupations in Sales and Service	% of occupations in Sales and Service occupations	high
	occupations in Manufacturing and Utilities	% of occupations in Manufacturing and Utilities	low
	industry diversity	Entropy index of industry based on 20 groups outlined as: Agricultural, forestry, fishing and hunting; Mining, quarrying, and oil and gas extraction; Utilities; Construction; Manufacturing; Wholesale trade; Retail trade; Transportation and warehousing; Information and cultural industries; Finance and insurance; Real estate and rental and leasing; Professional, scientific and technical services; Management of companies and enterprises; Administrative and support, waste management and remediation services; Educational services; Health care and social assistance; Arts, entertainment and recreation; Accommodation and food services; Other services (except public administration); and Public administration.	towards 1
	industries in Finance, Insurance, and Real Estate	% of population working in Finance, Insurance, Real Estate, and Professional services	high
	industries in Construction and Manufacturing	% of population working in Construction and Manufacturing	low
Poverty	average total income of individuals	average total income of individuals	high
	average after-tax income of individuals	average after-tax income of individuals	high
	average total income of households	average total income of households	high
	average after-tax income of households	average after-tax income of households	high
	low-income status	% of population in low income based on the low-income measure; after tax (LIM-AT)	low
Social mix	individual income diversity, before tax	Entropy index of individual income based on 11 groups outlined as: Under $10,000 (including loss); $10,000 to $19,999; $20,000 to $29,999; $30,000 to $39,999; $40,000 to $49,999; $50,000 to $59,999; $60,000 to $69,999; $70,000 to $79,999; $80,000 to $89,999; $90,000 to $99,999; and $100,000 and over.	towards 1
	individual income diversity, after tax	Entropy index of after tax individual income based on 9 groups outlined as: Under $10,000 (including loss); $10,000 to $19,999; $20,000 to $29,999; $30,000 to $39,999; $40,000 to $49,999; $50,000 to $59,999; $60,000 to $69,999; $70,000 to $79,999; and $80,000 and over.	towards 1
	household income diversity, before tax	Entropy index of household income based on 14 groups outlined as: Under $5,000; $5,000 to $9,999; $10,000 to $14,999; $15,000 to $19,999; $20,000 to $29,999; $30,000 to $39,999; $40,000 to $49,999; $50,000 to $59,999; $60,000 to $79,999; $80,000 to $99,999; $100,000 to $124,999; $125,000 to $149,999; $150,000 to $199,999; and $200,000 and over.	towards 1

	household income diversity, after tax	Entropy index of after tax household income based on 18 groups outlined as: Under $5,000; $5,000 to $9,999; $10,000 to $14,999; $15,000 to $19,999; $20,000 to $24,999; $25,000 to $29,999; $30,000 to $34,999; $35,000 to $39,999; $40,000 to $44,999; $45,000 to $49,999; $50,000 to $59,999; $60,000 to $69,999; $70,000 to $79,999; $80,000 to $89,999; $90,000 to $99,999; $100,000 to $124,999; $125,000 to $149,999; and $150,000 and over.	towards 1
	age diversity	Entropy index of age based on 5 age groups outlined as: Children (0-14); Youth (15-24); Working Age (25-54); Pre-retirement (55-64); and Senior (65+).	towards 1
	ethnic diversity	Entropy index of ethnicity based on 8 groups outlined as: North American Aboriginal origins; Other North American origins; European origins; Caribbean origins; Latin, Central and South American origins; African origins; Asian origins; and Oceania origins.	towards 1
Urban fabric	land-use diversity	Entropy index of land uses based on 5 groups outlined as: Commercial; Employment Industrial; Institutional; Open Space; and Residential.	towards 1
	building structure diversity	Entropy index of building structure based on 6 groups outlined as: Single-detached house; Semi-detached house; Row house; Duplex; Apartment < 5 storeys; and Apartment 5+ storeys.	towards 1
	green space	ratio of green space to total land area	high

Table 3-5: Intervening Variables

Intervening characteristics	List of Indicators	Explanation
	population density	number of population per square kilometre
	population percent change	population percent change from 2011 to 2016
	children (0-14 years old)	% of children in total population
	Youth (15-24 years old)	% of youth in total population
	Working Age (25-54 years old)	% of working age in total population
	Pre-Retirement (55-64 years old)	% of pre-retirement in total population
	Senior (65+ years old)	% of seniors in total population
	citizenship	% of Canadian citizens
	immigration status	% of immigrants
	visible minority	% of visible minority population
	household diversity by household size	Entropy index of households based on 5 groups outlined as: 1 person; 2 persons; 3 persons; 4 persons; and 5 or more persons.
	average household size	average number of person per household
	census family diversity by family size	Entropy index of census families based on 4 groups outlined as: 2 persons; 3 persons; 4 persons; and 5 or more persons.
	average size of census families	average number of person per census family
	census families with children	% of census families with children
	household diversity by household type	Entropy index of households based on 3 groups outlined as: one-census family households; multiple-census-family households; and non-census-family households.

4. Provincial and Urban Planning Policy Review

4.1 Introduction

In order to provide a thorough understanding of the context of planning in terms of condominium development and social sustainability in the City of Toronto, a review of the policies and regulations is needed. This chapter is composed of the review of 4 reports concerning the development of the City, aiming to achieve the third research objective: *to understand what policies and strategies are in place to promote condominium development and how condominium development is connected with social sustainability.*

The policy review moves from policies at the regional scale, Growth Plan for the Greater Golden Horseshoe (Ontario Ministry of Municipal Affairs, 2017), to policies at the city scale, Toronto Official Plan (City of Toronto, 2018d). As discussed in Chapter 3, the study aims to find out whether condominium development is a successful growth management tool to make urban areas socially sustainable in the inner areas of Toronto. The review of governmental plans can provide a comprehensive background with specific attention to condominium development in the City of Toronto.

Furthermore, the proposed Downtown Plan is explored considering that most of the study area is within the boundary of Downtown Toronto. The proposed Downtown Plan sets a 25-year vision with direction for the city centre as the cultural, civic, retail and economic heart of Toronto and as a great place to live, providing detailed direction on the appropriate scale and location of

future growth. A summary of the Recommendation Report of Condominium Consultation is conducted to understand the impacts of condominium development.

4.2 Growth Plan for the Greater Golden Horseshoe (2017)

4.2.1 Review of Growth Plan for the Greater Golden Horseshoe

The *Greater Golden Horseshoe (GGH)* is one of the most dynamic and fast-growing regions in North America (the boundary of *GGH* is shown in Figure 4-1). Many people and businesses choose to settle in this area for its high quality of life and the economic opportunities. The *GGH* has vibrant and diverse economies, significant ecological and hydrologic natural environments and scenic landscapes, and productive farmland. As the *GGH* grows and changes, the *GGH* is facing challenges in terms of infrastructure demand, traffic congestion, urban sprawl, employment, health, ageing population, supply of agricultural lands, and climate change. Thus, the Growth Plan for the Greater Golden Horseshoe, together with other municipal plans and acts, is created to support the success of *GGH*. Enacted on May 18, 2017, The Growth Plan for the Greater Golden Horseshoe came into effect on July 1, 2017, replacing the Growth Plan for the Greater Golden Horseshoe, 2006.

Chapter 1, Introduction, provides the background, visions, principles, and legislative framework of the Growth Plan. The main objective of this Plan is to support communities by promoting a healthy economy, a clean and healthy environment, and social equity. In summary, the vision for the *GGH* will be achieved with:

- modern, well-maintained, sustainable, and resilient infrastructure;

- easily accessible food, shelter, education, healthcare, arts and creation, information technology and other public services;

- an integrated transportation network;

- a healthy environment with clean air, land, and water;

- a sense of place provided by cultural heritage resources and open spaces;

- high-quality agricultural lands;

- vibrant and characterized urban centres with compact development; and

- mature regional economy.

Figure 4-1: Greater Golden Horseshoe Growth Plan Area

Source: Growth Plan for the Greater Golden Horseshoe, Ontario Ministry of Municipal Affairs, 2017

Since the introduction of the Growth Plan for the Greater Golden Horseshoe was in 2006, there are some early successes in the region such as more compact development patterns, more various housing options, more mixed-use development and greater integration of transit and land use. The new 2017 Plan continues to establish *complete communities* with compact development, supportive transit, and effectively used investments in infrastructure and public facilities. Under the long-term goal of building net-zero communities in Ontario, the Growth Plan also ensures the protection of agricultural and natural areas. To realize these visions mentioned above, the following principles are applied to guide the development of land, management of resources, and investments. The principles are:

- Support the achievement of complete communities that are designed to support healthy and active living and meet people's needs for daily living throughout an entire lifetime.

- Prioritize intensification and higher densities to make efficient use of land and infrastructure and support transit viability.

- Provide flexibility to capitalize on new economic and employment opportunities as they emerge, while providing certainty for traditional industries, including resource-based sectors.

- Support a range and mix of housing options, including second units and affordable housing, to serve all sizes, incomes, and ages of households.

- Improve the integration of land use planning with planning and investment in infrastructure and public service facilities, including integrated service delivery through community hubs, by all levels of government.

- Provide for different approaches to manage growth that recognizes the diversity of communities in the *GGH*.

- Protect and enhance natural heritage, hydrologic, and landform systems, features, and functions.

- Support and enhance the long-term viability and productivity of agriculture by protecting prime agricultural areas and the agri-food network.

- Conserve and promote cultural heritage resources to support the social, economic, and cultural well-being of all communities, including First Nations and Métis communities.

- Integrate climate change considerations into planning and managing growth such as planning for more resilient communities and infrastructure – that are adaptive to the impacts of a changing climate – and moving towards low-carbon communities, with the long-term goal of net-zero communities, by incorporating approaches to reduce greenhouse gas emissions.

Chapter 2, Where and How to Grow, contains context and policies for growth in different areas and subjects. Policies are made to guide future planning and growth under the forecasted population and employment in terms of allocating growth in different settlement areas supporting *complete communities*, assessing land needs, and identifying the responsibility of municipalities. The Growth Plan aims to manage regional growth by featuring areas in the *GGH* as *delineated built-up areas*, *urban growth centres*, *transit corridors and station areas*, and *designated greenfield areas* (as shown in Figure 4-2). For the priority of intensification, the Growth Plan requires a minimum of 60 per cent of all residential development occurring annually within each municipality will be within the delineated built-up area by the year 2031 and for each year thereafter, while for each year until 2031, a minimum of 50 per cent of all residential development occurring annually within municipality will be within the delineated built-up area.

All municipalities will develop a strategy to encourage and achieve the minimum intensification target by identifying the appropriate type and scale of development. According to Figure 4-2, the City of Toronto belongs to the delineated built-up areas, denoting the increase of residential development and intensification rate in the City. The Growth Plan identifies a Downtown Toronto Urban Growth Centre. Policy 2 in Section 2.2.3, Urban Growth Centres, points out that the minimum density target for each of the *urban growth centres* in the City of Toronto will be 400 residents and jobs combined per hectare, which is the highest among all the *urban growth centres*. As focal areas for investment, urban growth centres will be planned to contain commercial, recreational, cultural and entertainment uses with convenient inter- and intra-regional transit, high-density employment, and significant population growth. Literally, all the developments in *GGH* have a precondition of achieving the minimum intensification and density targets.

Chapter 3, Infrastructure to Support Growth, provides the framework for infrastructure to support growth, requiring land use planning, infrastructure investments, and environmental protection. As estimated, over 30 percent of infrastructure costs and 15 percent of operation costs could be saved by moving from lower density development to a more compact built form. To plan for new or expanded infrastructure, infrastructure planning, land use planning, and infrastructure investment will be coordinated to assess the feasibility and suitability. The new development and renovation of infrastructure, transit system, and public services facilities should stand in an integrated manner to support achievement of the minimum intensification and density targets while controlling investment.

Chapter 4, Protecting What is Valuable, highlights the protection of natural, agricultural, mineral, and cultural resources. By conducting policies in terms of water resource systems, natural heritage system, hydrologic features, open space, agricultural system, cultural heritage resources, mineral resources and climate change, the Growth Plan recognizes and supports the role of municipalities in protecting the sustainability of all communities. Development can be permitted in areas with essential natural resources only when it is proved that those resources will be protected and there are no negative impacts on natural features.

Chapter 5, Implementation and Interpretation, makes policies for implementation and interpretation in terms of direction, coordination, growth forecasts, targets, monitoring, and schedules. To implement the minimum intensification and density targets, Policy 3 in Section 5.2.5 suggests that municipalities will identity *delineated built-up areas*, *urban growth centres*, *major transit station areas*, *strategic growth areas*, *designated greenfield areas*, and *excess lands* in their official plans where applicable. Urban design and site design policies and other supporting documents should also be implemented to enforce a high-quality public realm and compact built form (Policy 6, Section 5.2.5).

Chapter 7, Definitions, defines the terms used in the Plan. Several terms related to housing development and social sustainability are listed below to further explain the objectives of this Plan and to guide policies at other levels. The Growth Plan requires the region to provide a mix of housing options including affordable housing. In order to measure affordability, the term 'affordable' is defined as:

a) in the case of ownership housing, the least expensive of:

- housing for which the purchase price results in annual accommodation costs which do not exceed 30 percent of gross annual household income for low and moderate income households; or

- housing for which the purchase price is at least 10 percent below the average purchase price of a resale unit in the regional market area;

b) in the case of rental housing, the least expensive of:

- a unit for which the rent does not exceed 30 percent of gross annual household income for low and moderate income households; or

- a unit for which the rent is at or below the average market rent of a unit in the regional market area.

In terms of the compact built form and intensification, a compact built form is a land use pattern that encourages the efficient use of land, walkable neighbourhoods, mixed land use (residential, retail, workplace, and institutional) all within one neighbourhood, proximity to transit and reduced need for infrastructure. Specifically, walkable neighbourhoods can be characterized by roads laid out in a well-connected network, destinations that are easily accessible by transit and active transportation, sidewalks with minimal interruptions for vehicle access, and a pedestrian-friendly environment along roads to encourage active transportation. Intensification refers to the development of a property, site or area at a higher density than currently exists through redevelopment; the development of vacant or underutilized lots within previously developed areas; infill development; and the expansion or conversion of existing buildings.

The term 'complete communities' occurs many times when it comes to building communities. Complete communities should offer and support opportunities for people of all age and abilities to access an appropriate mix of jobs, local stores, services, a range of housing, transportation options and public service facilities. Furthermore, public service facilities are characterized as lands, buildings and structures such as social assistance, recreation, police and fire protection, health and educational programs, and cultural services. Notably, public service facilities do not include infrastructure.

Figure 4-2: Places to Grow Concept
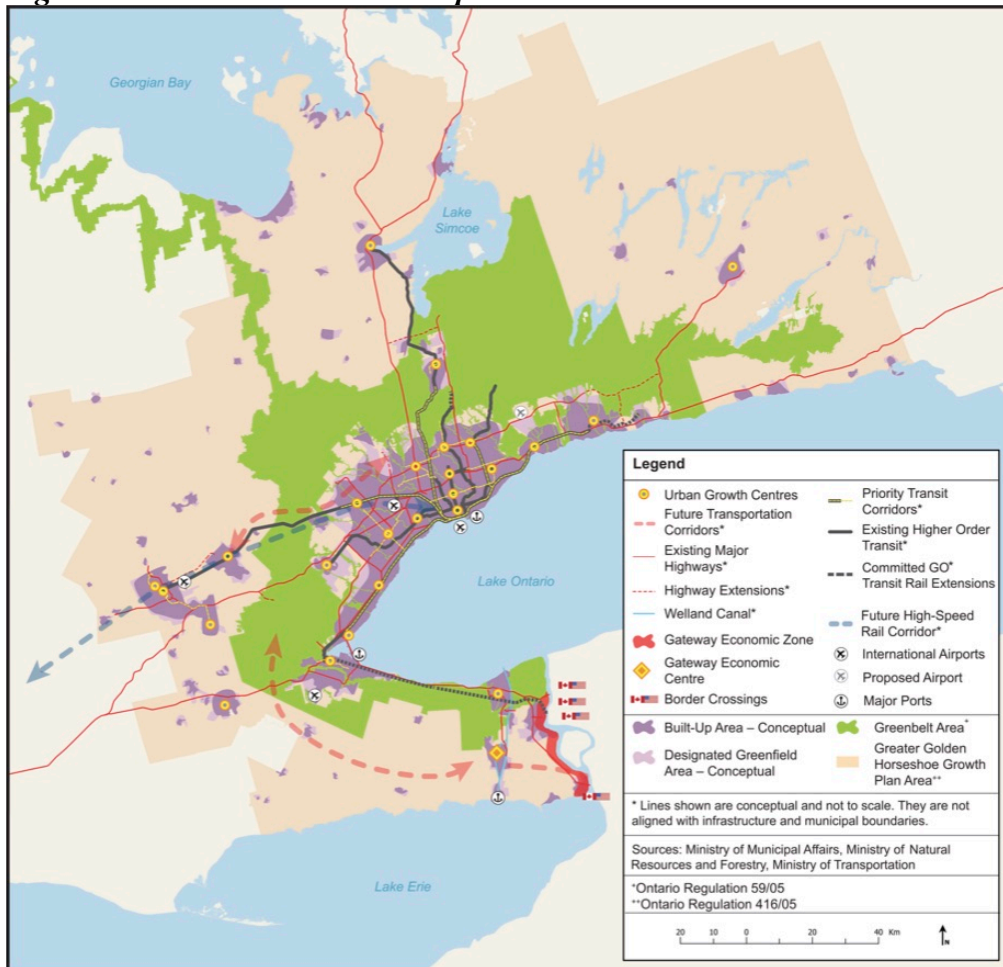
Source: Growth Plan for the Greater Golden Horseshoe, Ontario Ministry of Municipal Affairs, 2017

4.2.2 Summary

The Growth Plan can be regarded as an integrated policy framework to other plans and policies

at the municipal level. In this Plan, all developments are under a premise of achieving the

minimum intensification and density targets. Thus, the Plan explains terms such as

intensification and compact built form to guide and instruct the direction of municipal plans.

Given the fact that the *GGH* is a dynamic and diverse area, a principal objective for this Plan is

to accommodate the forecasted growth in *complete communities*, which are well designed to

meet people's need for daily living throughout an entire lifetime by providing convenient access

to an appropriated mix of jobs, local services, public service facilities, and a full range of

housing to accommodate a range of incomes and household sizes. According to the Growth Plan,

the City of Toronto will have a population of 3,190,000 with 1,660,000 employments in 2031,

accounting for over one-fourth of the entire *GGH*. Therefore, the requirements and policies from

the Growth Plan should be comprehensively applied in the city plans, which makes the review of

Toronto Official Plan necessary.

4.3 Toronto Official Plan

4.3.1 Review of Toronto Official Plan

The Ontario Municipal Board approved the policies in the most recent Toronto Official Plan up

to the conclusion of the June 22, 2015, prehearing conference. Chapter 1, Making Choices,

provides the principles and organization of the plan, with instructions for the readers. Facing a

complex and challenging future, the Official Plan aims to build a successful Toronto with

sustainable choices about how to grow. Sustainability is based on social equity and inclusion,

environmental protection, good governance and city-building, which reflecting economic, environmental and social implications together, rather than using a single perspective.

In order to build a vibrant and modern city, the Official Plan is grounded based on four principles of diversity and opportunity; beauty; connectivity; and leadership and stewardship. The vision of this plan is to create an attractive and safe city with:

- vibrant neighbourhoods that are part of complete communities;

- affordable housing choices that meet the needs of everyone throughout their life;

- attractive, tree-lined streets with shops and housing that are made for walking;

- a comprehensive and high-quality affordable transit system that lets people move around the City quickly and conveniently;

- a competitive and robust economy with a vital downtown that creates and sustains well-paid, stable, safe and fulfilling employment opportunities for all Torontonians;

- clean air, land and water;

- green spaces of all sizes and public squares that bring people together;

- a wealth of recreational opportunities that promote health and wellness;

- a spectacular waterfront that is healthy, diverse, public and beautiful;

- cultural facilities that celebrate the best of city living; and

- beautiful architecture and excellent urban design that astonish and inspire.

Chapter 2, Shaping the City, tells a story about grow, rebuild, re-urbanize, and regenerate the City. The success of this growth management strategy will be determined not only by the amount and location of population and employment growth but also by the degree to which the Council's

sustainability principles in shaping growth. This chapter gives emphasis on living and development in downtown Toronto, described as 'the heart of Toronto'. Policy 1.c, Section 2.2.1, proposes that downtown should 'provide a full range of housing opportunities for Downtown workers and reduces the demand for inbound commuting' (p.2-9).

Increasingly, Downtown Toronto is seen as an attractive place to live. New housing in Downtown makes an important contribution to the economic health of the City. There is a high degree of social and economic diversity among the Downtown population, accompanied by a diversity of housing types, tenures and affordability. Policy 4, Section 2.2.1, suggests that a full range of housing opportunities will be encouraged through residential intensification and sensitive infill within Downtown Neighbourhoods.

The accessibility and mobility are also vital for building a sustainable Downtown considering the population and traffic density. The critical strength of Downtown is that many transportation routes converge here and most notably, it is the focus of both the regional (GO Transit) and local (TTC) transit systems. The large increase in Downtown activity and development over the past three decades has not been accompanied by any significant increase in road capacity. Instead, the growth in trips has been successfully handled by improvements to transit services and by an increase in Downtown housing that has put more people within walking and cycling distance of their place of work and other activities.

Chapter 3, Building a Successful City, emphasize making choices that improve the quality of life of Torontonians. Section 3.1 explains how to build a thriving city in terms of the public realm,

built form, public art, heritage conservation, while section 3.2 provided guidelines for the human environment in housing, community services and facilities, parks and open spaces. Over the next several decades the majority of the new growth will take place in the areas of the City where intensification is appropriate – in the Downtown, the Centres, and along the Avenues, which is an extraordinary opportunity to build the next generation of buildings and to create an image of Toronto that matches its status as one of the great cities of North America. Policy 6 in Section 3.1.2 regulates that every significant new multi-unit residential development will provide indoor and outdoor amenity space for residents of the new development. Each resident of such development will have access to outdoor amenity spaces such as balconies, terraces, courtyards, rooftop gardens and other types of outdoor spaces. Section 3.1.3, Built Form-Tall Buildings, admits the functions of tall buildings in supporting city structure and reinforcing civic centres, while describes the disadvantages of poorly located and designed tall buildings in blocking sunlight, views of the sky and creating uncomfortable wind conditions and traffic congestion. Policy 1 and 2 in Section 3.1.3 regulate that tall buildings should be designed to consist of base building, middle, and top while simultaneously address urban design considerations.

As for housing, Policy 1, Section 3.2.1, recommends that a full range of housing, in terms of form, tenure and affordability, across the City and within neighbourhoods, will be provided and maintained to meet the current and future needs of residents. In terms of large residential developments, Policy 9 in Section 3.2.1 stipulates that a minimum of 30 percent of the new housing units will be in forms other than single-detached and semi-detached houses to achieve a mix of housing, thus help to promote multi-unit residential condominiums.

Section 3.3, Building New Neighbourhoods, delineates a comprehensive planning framework to build new neighbourhoods on the basis of new infrastructure, streets, parks and local services. According to Policy 1, 2 and 3 in Section 3.1, the planning framework for building new neighbourhoods will include the pattern of urban form, mixed land uses, protection for natural heritage, community services and local institutions, and affordable housing, with the instruction of viability and integration on the basis of the surrounding fabric of the City.

Chapter 4, Land Use Designations, discusses the land use designation to illustrate where housing can be built, where stores, offices and industry can locate and where a mix of land-use is desired. The Official Plan identifies four land use designations to protect and reinforce the existing physical character, which are *Neighbourhoods*, *Apartment Neighbourhoods*, *Parks and Open Space Areas*, and *Utility Corridors*. *Neighbourhoods* are designated as areas that contain a full range of low scale residential buildings, as well as parks, schools, local institutions and small-scale stores and shops serving the needs of area residents. Contrarily, *Apartment Neighbourhoods* are distinguished from low-rise *Neighbourhoods* by permitted buildings of grander scale and different scale-related criteria. Rental apartment and condominium buildings already contain almost half of the dwelling units in Toronto at the millennium. Many of these buildings are clustered in areas already developed as apartment neighbourhoods. Residents in *Apartment Neighbourhoods* should have a high-quality urban environment, safety, quality services and residential amenities. *Apartment Neighbourhoods* are made up of apartment buildings and parks, local institutions, cultural and recreational facilities, and small-scale retail, service and office use that serve the needs of area residents (Policy 1, Section 4.2). For new development in *Apartment Neighbourhoods*, it must be conducive to the quality of life by

reducing the negative impacts of high-rise buildings to surroundings and providing all sorts of services.

Four land use designations distribute most of the increased jobs and population anticipated by the Plan's growth strategy: *Mixed Use Areas*, *Employment Areas*, *Regeneration Areas* and *Institutional Areas*. The study area for this research will be the selected neighbourhoods in the inner city of Toronto, and most of the inner city belongs to the *Mixed Use Areas*, which defined as areas combining a broad array of residential uses, offices, retail and services, institutions, entertainment, recreation and cultural activities, and parks and open spaces. *Mixed Use Areas* will absorb most of the anticipated increase in retail, office and service employment in Toronto in the coming decades, as well as much of the new housing. The proportion of commercial and residential uses will vary widely among *Mixed Use Areas*. For example, office and retail uses will continue to be paramount in the Financial District, but much of the new development along the Avenues will have a residential emphasis. The Policy 2 in Section 4.5 sets a criterion in *Mixed Use Areas* in creating a high-quality commercial, residential, institutional and open space uses that produces automobile dependency and meets the needs of the local community. Policy 3, Section 4.5, regulates that large-scale, stand-alone retail stores and/or "power centres" are not permitted in *Mixed Use Areas* within the Central Waterfront, and Downtown, and are permitted only through a zoning by-law amendment in other *Mixed Use Areas*, which means that small and accessible businesses are more welcome in *Mixed Use Areas*.

Another type of land use designations that need to pay attention to are *Regeneration Areas*. The *Regeneration Areas* are some areas that have been developed before but need to be regenerated

to attract investment, re-use buildings, encourage new construction and bring life to the streets, which frequently happen in Old Toronto such as Central Waterfront. *Regeneration Areas* allow commercial, residential, live-work, institutional and light industrial uses to be mixed within even the same building, leading to pretty mixed land uses and functions in these areas. Like the *Mixed Use Area*s, large-scale retail stores and 'power centres' are not permitted to ensure the diversity in these areas.

Chapter 5, Implementation: Making Things Happen, outlines policy tools to achieve the vision that discussed before, including plans of subdivision, zoning by-laws, minor variances, consents and demolition control, and a framework to ensure the effectiveness of the Plan. Section 5.1 describes the tools provided by the *Planning Act* especially the Section 37 of the *Planning Act*. Section 37 of the Planning Act allows for development, which does not comply with zoning regulations if the owner provides community benefits in cash or amenities. In terms of height and density of new development, Policy 1 from Section 5.1.1 rules that Zoning by-laws may be enacted to permit more height and/or density for the provision of community benefits in the form of capital facilities under Section 37 of the Planning Act, which could benefit condominium development in the City of Toronto.

Section 5.2, Planning and Acting Locally, classifies the City into three categories into Secondary Planning Areas, Community Improvement Project Areas, and Development Permit Areas. These tools are critical to controlling development in the context of local challenges. Section 5.3.5, Great City Campaigns, emphasizes that leadership be needed to improve key areas of quality of life such as creating beautify public spaces, providing transportation options, building housing to

meet the needs of all residents, greening the City, and supporting a dynamic downtown. In accordance with the Planning Act, the Official Plan, as well as Secondary Plans, implementation plans, strategies, and guidelines, will be applied to achieve the established visions and objectives.

4.3.2 Summary

The vision of the City substantially underlines diversity and opportunity to create an attractive and safe city. In the review of the Official Plan for the City of Toronto, the term 'mix' appears many times, reflecting the goal from the city government for building a sustainable and mixed city in many aspects. In terms of Downtown, which contains most of the study area of this research, the Official Plan also illuminates the vital role of Downtown in the growth management strategy. Along with the Official Plan, the proposed Downtown Plan will guide the growth and development of Downtown Toronto in detail and will be reviewed in the next section.

When it comes to housing, the Official Plan emphasizes a lot in meeting the needs of all residents, while it is not clearly illustrated the needs of different cohorts of residents. With the aims of growth management and downtown development, condominiums are and will continue to grow in the future, especially in the inner areas. As for social sustainability, the Official Plan mentions many times about sustainable development or sustainability, but not specifically social sustainability. As one of the three pillars of sustainable development, the achievement of social sustainability is an issue that could pose a threat to the long-term vision of building a successful Toronto.

4.4 TOcore: Planning Downtown, Proposed Downtown Plan

4.4.1 Review of Proposed Downtown Plan

TOcore is an initiative to prepare a new plan for Toronto's Downtown. The Proposed Downtown Plan is a 25-year vision that sets the direction for the city centre as the cultural, civic, retail and economic heart of Toronto and as a great place to live. The proposed Downtown Plan provides detailed direction on the appropriate scale and location of future growth. The following review will focus on the housing development and sustainable objectives of Downtown Toronto.

In Chapter 2, Vision, Downtown Toronto is designed to become a 'thriving and connected heart of a successful and prosperous city region'. All Torontonians, despite ages, incomes and abilities, should be able to live, work, learn and play in their communities. Chapter 3 illustrates several goals to realize the established vision by building complete communities, connectivity, prosperity, resiliency, and responsibility. Downtown is the most prominent location for residential and non-residential development activity in the city with the extinct vertical communities. This intensity of development must be balanced with an equivalent investment in the physical and social infrastructure required to keep the heart of our city robust, liveable and healthy. In terms of connectivity, Downtown will support sustainable transportation to reduce dependence on the private automobile. Policy 3.7 regulates that More space within the street network will be allocated to sustainable modes of transportation, prioritizing high-quality, accessible and safe networks for pedestrians, cycling and surface transit. Resiliency is another essential factor to ensure the prosperity of Downtown. Growth and intensification provide the city with opportunities to improve resilience and sustainability for residents and businesses. Policy 3.13 mentions that Downtown will be more resilient to changing weather patterns, with

improved backup power systems in tall residential buildings helping residents withstand extreme weather events and area-wide power outages. With the higher intensity, Developments that generate significant populations of residents and workers will provide the required infrastructure to ensure that they contribute to the improved livability of their neighbourhood (Policy 3.18).

Chapter 4, Directing Growth, identifies areas within the Urban Growth Centre determined by the Province's Growth Plan for the Greater Golden Horseshoe to become the focus for future growth, which are Mixed Use Areas 1, Mixed Use Areas 2, Mixed Use Areas 3, Regeneration Areas and Institutional Areas (Policy 4.2, as shown in Figure 4-3). Also, Policy 4.3 emphasizes the different levels of intensification within Downtown. The intensity of growth will be determined by the policies of the Official Plan, this Downtown Plan and other applicable Secondary Plans and Site and Area Specific Policies.

In order to achieve liveability, policies will respond to 5 principles of comfort, vibrancy, diversity, safety, and beauty. As discussed in Chapter 6, Shaping Built Form, diversity will be sustained through the design of buildings that have a series of scales and forms. Growth Downtown will continue to be accommodated in a variety of building types and scales while maintaining and enhancing livability and contextual fit. Considering that mid-rise and tall buildings will be the dominant form of growth Downtown, these buildings must be recognized as vertical communities that are part of a larger existing and planned context. The built form policies will be applied on an area-wide basis to address potential adverse impacts associated with intensification, including shadowing and reduced access to sky-views, light and privacy.

Moreover, Downtown's built form is diverse in height, scale, massing, age and typology and varies street by street, block by block and neighbourhood by neighbourhood. This diversity is one of the defining features of Downtown's landscape. In Mixed Use Areas 1 and Mixed Use Areas 2, Institutional and Regeneration Areas, where growth is anticipated and directed, development has been primarily in the form of mid-rise and tall buildings. These vertical communities can make a positive contribution to the built environment and the public realm when they are appropriately sited, massed and designed to suit their unique site characteristics. Downtown has seen many tall buildings constructed over the last several decades, and with increasing numbers of tall buildings, there is a greater need to ensure that these buildings provide a transition to each other and other scales and forms of development. Besides policies in buildings, amenity spaces support the liveability of Downtown's vertical communities and ensure that the needs of residents and workers are addressed. Indoor amenity spaces must provide facilities suitable for a diversity of residents, including seniors and families with children or pets, providing extended living spaces for gathering and community building.

Chapter 7, Expanding, Enhancing and Connecting Parks and Public Realm, describes the objectives of developing parks and public realm. Downtown's proximity to natural features, such as Lake Ontario and the shoreline, the Toronto Islands, the Don River and Rosedale Valley, offers a unique experience to residents and visitors within the urban core. Along with Downtown's parks, squares and streets, these public spaces set the stage for daily social interaction and act as the canvas on which public life occurs. The social bonds created in these spaces are fundamental to the city's identity and the liveability of Downtown. Policy 7.1 emphasizes the importance of parkland as an element of complete communities, while Policy 7.2

further highlight the accessibility of public realm. The Downtown Parks and Public Realm Plan (the 'PPR Plan') will serve as the framework to improve the quality, quantity and connectivity of parks, open spaces and the public realm.

Figure 4-3: Areas of Focus for Growth

Source: Proposed Downtown Plan, City of Toronto, 2017

Chapter 8, Land Use and Economy, defines the appropriate built form scale and mixed uses to reflect the characteristics of the diverse neighbourhoods and districts. Different districts are

regulated differently according to their objectives. The Financial District (as shown in Figure 4-2) is Canada's premier business office centre, clustered within walking distance of Union Station. In future, the Financial District will continue to accommodate future job growth and protect the city's and the province's economic competitiveness, ensuring that future development capacity within walking distance of Union Station is prioritized for non-residential development. Policy 8.1, 8.2, and 8.3 set the future development of the Financial District by expanding non-residential uses and creating a public realm for prosperity. The Bloor-Bay Office Corridor (as shown in Figure 4-2) is an important secondary employment location outside the Financial District. Development within the Bloor-Bay Office Corridor will provide a net gain of office space and non-residential gross floor area (Policy 8.5). The proximity of the King-Spadina and King-Parliament neighbourhoods to the Financial District, their heritage significance, and their adaptable stock of brick and beam and nineteenth-century commercial buildings have made them central to the creative and cultural industry boom in the city, making Downtown unique, competitive and compelling. The development in King-Spadina and King-Parliament will preserve a balance between non-residential and residential uses and the existing cultural sector.

The demand for institutional services is expected to continue to expand and evolve. To increase levels of service, additional space will be required to accommodate the needs of future growth. To protect institutional uses, land designed Institutional Areas will only be used for institutional and ancillary uses, and the re-designation of land from Institutional Areas to any other designation will be discouraged (Policy 8.10). The Institutional Uses are comprised of Health Science District (as shown in Figure 4-4) and Post-Secondary Institutions. The Health Sciences District refers to an area centred on University Avenue containing a significant number of

hospitals, treatment, education, research and related commercial functions (as shown in Figure 4-4). Within the Health Sciences District, these non-residential uses will be protected, and the public realm will be expanded and improved to meet the needs of workers, patients, and visitors. The Post-Secondary Institutions includes four major institutions: University of Toronto, Ryerson University, OCAD University and George Brown College). These post-secondary institutional uses and proximal institutional uses are encouraged to expand in the Plan.

The *Mixed Use Areas* (Figure 4-5) embrace the majority of new housing in Downtown over the coming decades. *Mixed Use Areas* will contain varying scales and intensities of development (Policy 8.17). Building heights, massing and scale of development will transition between each of the *Mixed Use Areas*, with the tallest buildings located in *Mixed Use Areas 1* stepping down through *Mixed Use Areas 2* and *Mixed Use Areas 3* to low-scale buildings in *Mixed Use Areas 4* (Policy 8.18). *Mixed Use Areas 1* contains areas with the greatest heights and most significant proportion of non-residential uses. Development within *Mixed Use Areas 1* will include a diverse range of buildings typologies, including tall buildings, with height, scale and massing dependent on the site characteristics. Development within *Mixed Use Areas 1* will achieve a high proportion and a diverse range of non-residential uses. Development within *Mixed Use Areas 2* will include a diverse range of building typologies including low-rise, mid-rise and tall buildings. *Mixed Use Areas 2* are the areas of transition between the low to the mid-rise scale of *Mixed Use Areas 3* and higher intensity development anticipated within the *Mixed Use Areas 1*. Development in *Mixed Use Areas 3* will generally be in the form of low-rise and mid-rise buildings. Development within *Mixed Use Areas 3* will include retail uses and commercial services at grade with residential, office and institutional uses. *Mixed Use Areas 4* contains a mix of uses with a

prevailing character of house form and other types of low-rise buildings. Development in *Mixed Use Areas 4* will be of a low-rise scale respecting and reinforcing the existing physical character of the neighbourhood, including the prevailing heights, massing, scale, density and building type.

Figure 4-4: Map of Financial District, Health Sciences Districts, and Bay-Bloor Office Corridor

Source: Proposed Downtown Plan, City of Toronto, 2017

Figure 4-5: Map of Mixed Use Area
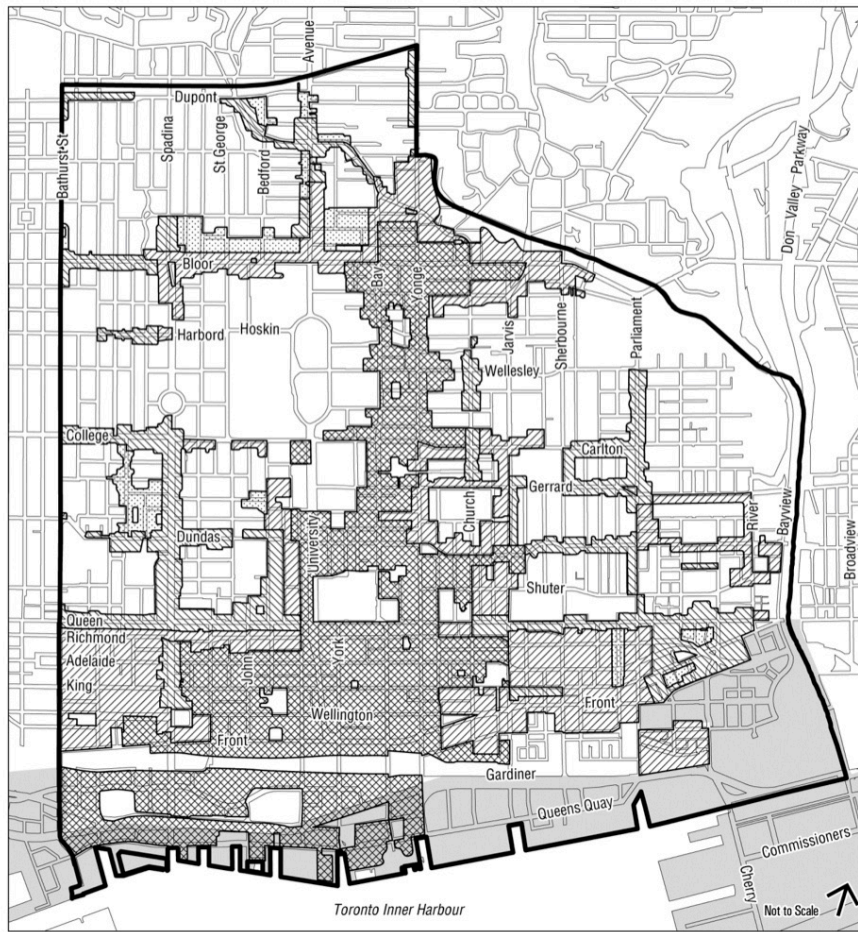
Source: Proposed Downtown Plan, City of Toronto, 2017

Community Services and Facilities (CS&F) support a diverse range of programs and services to support communities, contribute to the quality of life and act as neighbourhood focal points where people gather, learn, socialize and access services. Chapter 9, Enhancing Community Services and Facilities, provides policies to foster complete communities in terms of community

services and facilities. Policy 9.4 prioritizes a large number of residents and workers for the on-site provision of community services and facilities infrastructure to address the increased needs for these services and facilities.

Chapter 10 aims to address the problems of mobility. The Downtown transportation system consists of networks for pedestrians, cyclists, transit users and drivers. In order to build a safe, comfortable, functional, and accessible downtown, Policy 10.1 requests a well-connected and integrated transportation system while providing safe and sustainable travel choices for all people. Policy 10.2 prioritizes pedestrians, cyclists and public transit, rather than private automobiles.

The diversity of housing means meeting the requirements of a varying population. Downtown's neighbourhoods offer various built form housing options including grade-related, mid-rise and tall buildings with a variety of ownership and tenancy models. Downtown is home to vertical communities, and new multi-unit residential buildings must accommodate a wide range of households including those with children, youth and seniors. Providing housing to a wide range of residents that is affordable, secure, of an appropriate size, and located to meet the needs of people throughout their life cycle is the goal of an inclusive Downtown and essential to the creation of complete communities. Chapter 11, Diversity of Housing, focuses on the liveability and prosperity in the aspect of housing. Development containing more than 50 residential units should include a minimum of 30 percent of the total number of units as 2-bedroom units and a minimum of 20 percent as 3-bedroom units. For affordable housing, development containing more than 60 residential units will provide a minimum amount of affordable housing as 10

percent of the total residential gross floor area as Affordable Rental Housing; or 15 percent as Affordable Ownership Housing; or a combination of both. Even though small residential units occupy most of the residential units in Downtown, Policy 11.6 discourages possible loss of units with 6 or more dwelling rooms.

4.4.2 Summary

By reviewing the proposed Downtown Plan, several points are concluded in terms of the regulations and objectives concerning condominium development and social sustainability. Conforming to the Growth Plan for the Golden Horseshoe and the Official Plan, the term 'complete communities' are mentioned many times in the Plan. As a vital goal for the success of Downtown, complete communities provide opportunities for people of all ages and abilities to conveniently access most of the necessities for daily living, supporting quality of life and human health. Complete communities include access to an appropriate mix of jobs, local stores and services, a full range of housing choices, transportation options and infrastructure. The objectives of complete communities have many similarities with socially sustainable communities, with indicators of accessibility to jobs, stores, services, housing choices, transportation options and infrastructure.

Considering the particularity of Downtown, the proposed Downtown Plan reiterates the positive contributions of vertical communities to the built environment and the public realm. While to control the growth of high-rise buildings, policies are made to guide new developments in the local existing and planned context. The heights of buildings, especially residential buildings, are regulated in 4 *Mixed Uses Areas* to protect the local environment and to build the Downtown

skyline. However, the current wording of policies is from a qualitative perspective, which means that there are no rigid guidelines on the height and density.

4.5 City of Toronto, Condominium Consultation Recommendations Report

4.5.1 Review of Condominium Consultation Recommendations Report

With the number of new condos quickly changing the face of Toronto, there's a lively and high profile discussion underway regarding what impact these condos will have and are having on the people living in the condos as well as on the broader city. In January 2013, the City of Toronto launched a two-phase public consultation process to engage people on a range of issues related to city planning and condo living. The City of Toronto conducted two phases of consultation to identify the critical issues faced by residents living in condos. In result, the Condominium Consultation Recommendations Report (City of Toronto, 2014) provides 36 recommendations relating to planning process, height and density, congestion, green space and public realm, pets and dogs, parking, condo board governance, flexible space, family-sized units and affordable housing, community engagement, construction quality and building permits, amenities and voting stations.

Throughout the consultations, the most substantial issue recognized is the cooperation among the Planning Division and other City Divisions. Recommendation 1 requires the City of Toronto to develop a long-range decision-making model to support closer coordination between all Divisions. Recommendation 2 offers to make legal amendments to abolish the Ontario Municipal Board's jurisdiction on plans, guidelines and amendments referring to condominium development. Concerning the Section 37 Agreement, Recommendation 3 requests the City of

Toronto to create mechanisms to manage the Section 37 funds to effectively and transparently engage the community in the decision-making process.

When it comes to height and density, Recommendation 4 emphasizes to expand the qualitative wording of the Official Plan and add more prescriptive standards to the zoning by-law. By providing specific and quantitative regulations, the City of Toronto could effectively manage the development and implications of new condominiums. Furthermore, Recommendation 5 requires the City Planning Division to outline the implementations of the development permit system to control the height, density, land use, building form and design.

Along with the building of condominiums, the increase of population leads to the demanding services on public transit. Recommendation 6 requests a study of transit services before new development. Besides adding more options on public transit, a reduction in road closures needs to be achieved by refining the current guidelines and standards.

Green spaces and public realm are significantly important in communities, especially for vertical communities comprised of condo buildings where spaces are limited. Recommendation 8 discusses park levies and aims to make information more accessible to all stakeholders. In addition, green spaces should be made priorities during the review of new development applications (Recommendation 9). Recommendation 10 recommends to include opportunities to provide public space benefits to develop Complete Streets. Recommendation 11 emphasizes on learning from best practices from other jurisdictions to inform the existing parkland.

How to appropriately dealing with pets is another problem that concerns condo residents since all the condo residents have the right to use and the responsibility to protect public spaces. Recommendation 12 regulates to develop policies or guidelines for the provision of amenities for pets in new developments. To improve the management of pets, Recommendation 13 requires an action plan to identify spaces for pet amenities.

In terms of parking, participants discussed a range of issues such as lacking parking space and visitor parking. Recommendation 14 convenes a meeting to explore opportunities for managing all parking needs of condo owners and visitors. To ensure the area of parking spaces, Recommendation 15 claims to enforce accessible parking in new development during the process of construction. As for delivery and drop-off, city-wide policies should be created to formulate drop-off and delivery zones. Given the limited space in condominium communities to offer accessible parking, Recommendation 17 suggests the City build public transit in the direction to reduce parking needs, especially in Downtown and North York.

Recommendation 18 is about the Condo Board governance. The City of Toronto should formally monitor the progress of the Provincial Condo Act reform to identify items that the Province declines to implement and that the City can take a policy lead on. The City monitor progress on licensing of managers, development of educational material for condo owners and a dispute resolution office/officer that the City might consider adopting, independent of the Province, if the Province decides not to move ahead with these concepts.

As discussed above, the Official Plan promotes a mix of unit types, housing forms, tenure and affordability. Following the objectives of the Official Plan, four recommendations are made. Recommendation 19 suggests that policies from the Official Plan can be expanded or modifies to apply to condos. Recommendation 20 highlights the support to households with children regarding the number of bedrooms and flexibility. Given the fact that more and more families with children choose to live in condo buildings, the traditional small condo units should evolve to accommodate changes in households. Recommendation 21 suggests refining the definition of affordable ownership in order to address the housing needs of all people. The increasing rental fees and maintenance costs need to be taken into account these issues force the condominium residents to move or sell as they cannot afford. For the purpose of the provision of affordable housing units, Recommendation 22 continues to advocate at the Provincial level for additional mechanisms, such as inclusionary housing legislation or conditional zoning regulations.

During the consultations, participants showed clear interests in acting a more significant role when planning their neighbourhoods and communities. Three recommendations are listed to promote community engagement. Recommendation 23 suggests making planning more accessible to the public, such as posting the information on Toronto's Open Data. In addition to online resources, Recommendation 24 also advises sharing the condo-related information in a physical office. To make sure this information is understandable to all residents, Recommendation 25 proposes to make all materials available in many languages and formats.

The construction quality is another issue that was frequently raised during the consultation. Tarion plays an important role in new home warranty protection. Recommendation 26

encourages Tarion to publish and communicate common construction defects being claimed under warranty. As well, Recommendation 27 commends Tarion for improving Bulletin 19 report and supporting the ongoing enforcement to maintain and continually increase construction quality. Bulletin 19 lays out the requirements for reports and information that must be provided to the Ontario New Home Warranty Program (ONHWP) by Field Review Consultants and the builders/vendors of 'Designated Condominiums' enrolled under the Ontario New Home Warranties Plan Act. The improvements should be encouraged while ensuring that the requirements are being enforced by Tarion to help improve the quality of the buildings being constructed. For building permits, Recommendation 28 regulates that the review for builders must be higher than the current standard and include new checkpoints that ensure the design-intent has been achieved. Recommendation encourages the building industry to build smoke-free building or zones.

In view of the increasing maintenance fee, the condo residents hope to fully use the relevant amenities and thus better enjoy condo living. Recommendation 31 develops guidelines and policies on how to provide amenity spaces. Specifically, Recommendation 32 suggests to increase the amount of bicycle parking and consider adding bicycle parking in retail zones. As an option of sustainable transportation that promoted by the City's Official Plan and proposed Downtown Plan, the number of bicycles will increase in the inner city. Also, private bicycle parking is popular for condo residents because traditional public bicycle parking cannot protect from the weather and theft. In regard to storage space, Recommendation 33 advises increasing the amount of storage space based on a unit-size formula. No matter how many bedrooms in a unit, adequate storage space will be provided. Additionally, Recommendation 34 asks for a study

to develop a strategy to improve retail space in condo buildings. Usually, the condo developers seek to lease the retail spaces to long-term tenants. While Recommendation 35 proposes to study the feasibility of short-term lease or other groups, this recommendation is made based on the strong support from the participants. The vacant storefronts could provide space for local groups, which will help build community image and improve community engagement.

The last recommendation is for voting stations. If requested by election officials, the Condo Act could require condo boards to provide space for voting stations in municipal, provincial, and federal elections. The election staff could have an opportunity to contact condo boards and use public spaces for voting as the amenity spaces in some condo communities are deficient.

4.5.2 Summary

The recommendations in this report aim to address issues faced by the condominium residents. Currently, the issues happened in condominium communities typically refer to assorted public facilities and services such as transit options, parking spaces for motor and non-motor vehicles, and accessible public realm. As for the condominium building itself, unit types, building forms and affordability are recommended to be mixed to satisfy all people's need. These issues and recommendations shed lights on further considerations to deal with limited space and to ensure life quality under the governmental goal of intensification and compact built form. As these matters stand today, there is no recent study on whether these recommendations have been adopted and applied by the city government. Thus these issues occurred in condominium communities should still be under consideration.

4.6 Conclusion

First enacted in 2006, the Growth Plan for the Greater Golden Horseshoe has shifted the region to a more compact area. Cooperate with Toronto Official Plan and proposed Downtown Plan, condominium dwelling has become a popular method to curb the suburban sprawl and increase the competitiveness of built-up areas under the target of intensification. According to the Housing Trends report from the City of Toronto, 78 percent of housing completions were condominium units from 1996 to 2011 in the City of Toronto.

In terms of communities, the term 'complete communities', as a consecutive objective, is explained, highlighted, and applied in policies mentioned above. The Growth Plan for the Greater Golden Horseshoe, Toronto Official Plan, proposed Downtown Plan, and the Condominium Consultation Recommendation Report all encourage building diverse and vibrant communities. The mix of land use, housing, employment and transit will entirely contribute to the success of complete communities.

In a nutshell, this chapter has offered a comprehensive review of the planning policies from provincial to citywide scale regarding growth and development in Toronto, and has also presented a growth direction to enhance urban intensification and to build sustainable communities. Under a thorough understanding of the above-mentioned plans and reports, it is important to keep these ideas in mind and test the implications of condominium development on communities. Along with the later research findings in Chapter 6, amendments and recommendations for future development could be made to complement the current policy framework.

5. Building the Dataset

5.1 Data Source

Considering that judgements made about condominium development and social sustainability can differ from person to person (Dempsey, 2006), the dataset is composed of official data in order to avoid subjectivity. The various data sources include Urban Toronto, Statistics Canada, Open Data Toronto, Toronto Neighbourhood Profile, DMTI's Enhanced Points of Interest (EPOI) database, Toronto Real Estate Board, and Toronto Police Service Public Safety Data.

Urban Toronto is Toronto's premier website focusing on condos, architecture, urban development and real estate. The website has the largest and most active community populated by the tastemakers, condo aficionados, buyers, builders and realtors. Urban Toronto provides a fully searchable, comprehensive database of over 800 projects across the Greater Toronto Area (GTA) with buying info, amenities, floor plans, maps and more.

The Open Data Catalogue is developed by the City of Toronto to make the digital data with the technical and legal characteristics to be freely used, reused and redistributed by anyone, anytime and anywhere. The Toronto Open Data and the 2016 Toronto Neighbourhood Profile are all accessed in the City of Toronto website.

Statistics Canada provides census information for various levels of geography, including provinces and territories, census metropolitan areas, communities and census tracts. The Census Profile for each geographical unit includes characteristics for aboriginal peoples, age and sex, education, families, households and marital status, housing, immigration and ethnocultural

diversity, income, journey to work, labour, language, language of work, mobility and migration, population and dwelling counts, and type of dwelling. In this case, the 2016 census profiles at the census tract level are collected and calculated into the neighbourhood level as described later in Chapter 3.1.

DMTI's Enhanced Points of Interest (EPOI) is a vector GIS database of over 1 million business and recreational points of interest for all provinces/ territories of Canada. The attribute information contains multiple feature types and categories to provide easy data extraction and feature type management, including the Standard Industrial Classification (SIC) codes, (NAICS) codes, Name of Business, Phone Numbers, and so on. The EPOI data are provided by the Geospatial Centre in Dana Porter Library in the University of Waterloo. A data release agreement was agreed before these licensed data were released.

The Toronto Real Estate Board (TREB) is Canada's largest real estate board serving licensed real estate Brokers and Salespersons in and about the Greater Toronto Area. This corporation provides a variety of residential and commercial market-related reports including Resale Market Report, Commercial Market Report, Rental Market Report, and Commercial Quarterly Report. In this study, the monthly Market Watch reports are reviewed to access housing price data.

The Toronto Police Service developed a Public Safety Data Portal, intending to improve the understanding of policing, improve transparency and enhance confidence through the creation and use of open data for public safety in Toronto. The Public Safety Data Portal provides official

data related to reported crime, traffic and boundaries. In this research, the data of major crime incidents gained from the Toronto Public Safety Data Portal to represent neighbourhood safety.

5.2 Gathering and Calculating Condominium Data

According to Chapter 3.4.1, the density of condominium units and condominium dwelling prevalence are selected to represent condominium development (as shown in Table 5-2). The data of condominium buildings are collected from Urban Toronto, then checked, complemented, and reorganized by the author. First, the condominium data directly extracted from Urban Toronto include condominium project names, status, storeys, heights, addresses and numbers of unit. By geocoding the addresses of condominium projects using ArcGIS, the buildings in the study area are correlated with certain neighbourhoods in the study area based on their spatial locations, while the other buildings outside the study area are excluded. Furthermore, the condominium data in the study area are categorized by the building status (i.e. complete, under construction, and pre-construction). The complete condominium data are used to analyze the current relationships between condominium development and social sustainability, and condominiums that are under or pre-construction are used to forecast the future condition of social sustainability based on the development trend of condominium. For some condominium buildings from Urban Toronto dataset, there is no information on the number of units. Thus, only the condominiums with available unit data are used in this study. From all the 149 rows of complete condominium building profiles, 109 rows are applicable. From 512 rows of under-constructed and pre-constructed condominiums, 446 condominium buildings have available unit data. The condominium unit density data are calculated through dividing all condominium units in a neighbourhood by the area of the neighbourhood.

Table 5-1: Study Area Census Tract Conversion Table

Neighbourhood Name	Neighbourhood ID	Census Tract Unique Identifier
South Riverdale	70	5350001.00; 5350020.00; 5350018.00; 5350019.00; 5350026.00; 5350027.00; 5350028.01; 5350028.02; 5350029.00; 5350073.00
Regent Park	72	5350030.00; 5350031.00
Moss Park	73	5350016.00; 5350032.00; 5350033.00
North St. James Town	74	5350064.00; 5350065.01; 5350065.02
Church-Yonge Corridor	75	5350015.00; 5350034.01; 5350034.02; 5350063.03; 5350063.04; 5350063.05; 5350063.06
Bay Street Corridor	76	5350014.00; 5350035.00; 5350062.01; 5350062.02
Waterfront Communities-The Island	77	5350002.00; 5350011.00; 5350012.01; 5350012.03; 5350012.04; 5350013.01; 5350013.02; 5350017.00
Kensington-Chinatown	78	5350036.00; 5350037.00; 5350038.00; 5350039.00
Trinity-Bellwoods	81	5350040.00; 5350041.00; 5350042.00; 5350043.00
Niagara	82	5350008.01; 5350008.02; 5350009.00; 5350010.01; 5350010.02
Little Portugal	84	5350044.00; 5350045.00; 5350046.00
Annex	95	5350089.00; 5350090.00; 5350091.01; 5350091.02; 5350092.00; 5350093.00
Casa Loma	96	5350117.00; 5350118.00; 5350119.00
Rosedale-Moore Park	98	5350086.00; 5350087.00; 5350088.00; 5350124.00; 5350125.00
Yonge-Eglinton	100	5350129.00; 5350135.00
Forest Hill South	101	5350130.00; 5350131.00; 5350167.01
Lawrence Park South	103	5350134.00; 5350138.00; 5350139.01; 5350139.02; 5350140.00
Mount Pleasant West	104	5350128.02; 5350128.04; 5350128.05; 5350128.06; 5350136.01; 5350136.02
Lawrence Park North	105	5350141.01; 5350141.02; 5350142.00
Humewood-Cedarvale	106	5350165.00; 5350166.00; 5350167.02

Source: Toronto Neighbourhood Boundary from Open Data Toronto, Toronto Census Tracts Boundary from Statistics Canada. Identified by the author

As illustrated in Chapter 3.1, most official data, especially data from Statistics Canada, are not

categorized by neighbourhood. Luckily, the boundaries of Toronto neighbourhoods are created

based on census tracts boundaries for the purpose of the statistical report. Thus, the data of

Toronto neighbourhoods can be calculated from data of census tracts in accordance with their

spatial boundaries. Table 5-1 shows the conversion information from census tract to selected

neighbourhood. Condominium dwelling prevalence indicator is calculated by the proportion of

condominium dwellings to all dwellings, with data extracted from Census Profile on Statistics

Canada. The descriptive statistics in Table 5-2 shows that the condominium unit density and the

condominium dwelling prevalence all have substantial differences with a relatively high value of

standard deviation.

Table 5-2: Descriptive Statistics for Condominium Development Indicators

Condominium Development Indicators	Description	Min.	Max.	Mean	Std. Dev.
Condominium unit density	Number of condominium units per km^2	23.34	2577.72	710.98	750.82
Condominium dwelling prevalence	% of condominium dwellings to total dwellings	1.75	87.67	32.66	26.25

Source: Condominium Database from Urban Toronto; 2016 Census Profile from Statistics Canada. Calculated by the author.

5.3 Gathering and Calculating Social Sustainability Data

5.3.1 Accessibility

Accessibility is summarized as a key components of social sustainability since it impacts the

daily life of neighbourhood residents, and better accessibility means that a neighbourhood is

more socially sustainable. On a methodological level, in order to evaluate the accessibility of a

series of services and facilities, one must select the measure or measures of accessibility. The

four measures most commonly used in accessibility studies are gravity potential, the average

distance between each origin and all facilities, the minimum distance (the distance from an origin

to the nearest facility) and, finally, the density of facilities (Apparicio & Séguin, 2006). In this

case, the accessibility of English public school, English separate school, French public school,

French separate school, private school, and bicycle parking in a neighbourhood are measured by
the shortest distance from the neighbourhood centroid to a facility due to their relatively low
amounts. The accessibility to bus stop, grocery store, pharmacy and drug store, bank and
restaurant are measured by their density. All the shortest distances and densities are calculated by
the author based on the spatial locations of services and facilities through ArcGIS. Table 5-3
shows the descriptive statistics for these accessibility variables.

Table 5-3: Descriptive Statistics for Accessibility Indicators

Accessibility Indicators	Description	Min.	Max.	Mean	Std. Dev.
Accessibility to English Public school	shortest distance (km) from neighbourhood centroid to English public school	0.10	1.63	0.50	0.38
accessibility to English Separate school	shortest distance (km) from neighbourhood centroid to English separate school	0.12	1.86	0.78	0.44
accessibility to French Public school	shortest distance (km) from neighbourhood centroid to French public school	0.23	5.12	2.37	1.62
accessibility to French Separate school	shortest distance (km) from neighbourhood centroid to French Separate school	1.03	7.10	3.61	1.46
accessibility to Private school	shortest distance (km) from neighbourhood centroid to Private school	0.07	2.36	0.82	0.71
accessibility to bicycle parking (both indoor and outdoor)	shortest distance (km) from neighbourhood centroid to bicycle parking stations (both indoor and outdoor)	0.35	5.22	1.56	1.29
accessibility to bus stops	number of bus stops per km^2	8.03	64.48	28.81	14.70
accessibility to grocery stores	number of grocery stores per km^2	0	38.58	7.03	9.26
accessibility to pharmacies and drug stores	number of pharmacies and drug stores per km^2	3.08	259.59	47.65	65.78
accessibility to commercial banking	number of commercial banks per km^2	0	16.53	4.11	4.75
accessibility to restaurants	number of restaurants per km^2	0	36.93	4.42	8.45

*Source: School Shapefile and Bicycle Parking Shapefile from Open Data Toronto; DMTI's
Enhanced Points of Interest (EPOI) Database. Calculated by the author*

5.3.2 Commute

The development of condominiums and the consequential emergence of vertical communities are changing traditional Torontonians' lifestyle. An important aspect needs to be taken into consideration in urban planning is commute. This study selects commute destination, commute methods, and commute time to represent commute style of residents in the inner city. Table 5-4 represents explanations and descriptive statistics for commute variables, which are extracted from Census Profile and calculated by the author. The commute destination variable is explained by the percentage of the employed labour force who commute within the census subdivision (i.e. City of Toronto in this case) of residence. The statistics of commute destination variable indicates that most employed labour force in study area commute within the City of Toronto. In addition, the percentage of the employed labour force who commute by different methods are selected to reflect the commute pattern in the study area. Commute time is another indicator of commute, which is represented by the proportion of employed labour force who commute in less than 30 minutes.

Table 5-4: Descriptive Statistics for Commute Indicators

Commute Indicators	Description	Min.	Max.	Mean	Std. Dev.
commute destination	% of employed labour force commuting within census subdivision (CSD) of residence	85.48	92.57	90.15	1.90
commute by car, truck or van as a driver	% of employed labour force who commute by car, truck or van as a driver	13.09	52.61	29.61	11.94
commute by car, truck or van as a passenger	% of employed labour force who commute by car, truck or van as a passenger	1.40	4.76	2.66	0.99
commute by public transit	% of employed labour force using public transit	24.93	56.72	38.85	9.24

commute by walk	% of employed labour force who walk to commute	5.26	49.43	21.56	15.55
commute by bicycle	% of employed labour force who commute by bicycle	1.31	16.72	5.82	4.35
commute time	% of employed labour force commuting less than 30 minutes	35.93	68.35	50.89	10.01

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

5.3.3 Crime

The indicator of social sustainability in terms of crime is assessed by the major crime rate while the major crime incidents include assault, auto theft, break and enter, robbery, theft over, and homicide. The crime data are retrieved from the Major Crime Incident Dataset on Toronto Police Service Public Safety Data Portal and are converted into major crime rates for analysis. Table 5-5 shows the descriptive statistics for major crime variable.

Table 5-5: Descriptive Statistics for Crime Indicator

Crime Indicator	Description	Min.	Max.	Mean	Std. Dev.
major crime rate	number of major crime incidents (assault, auto theft, break and enter, robbery, theft over, and homicide) per km^2	18.10	836.74	208.55	236.51

Source: Major Crime Incidents Dataset from Toronto Police Service Public Safety Data Portal. Calculated by the author.

5.3.4 Dwelling and Housing

The descriptive statistics for dwelling and housing variables are shown in Table 5-6. The dwelling indicators include dwelling vacancy rate, dwelling diversity by the number of bedrooms and rooms, and the number of rooms per dwelling. The dwelling diversity and other diversity variables in this study are calculated by entropy indexes. An entropy index, also known as the multi-group entropy index, is the multi-group version of Theil's index or the multi-group information theory index, measuring the distribution of multiple groups simultaneously (Iceland,

2004). The entropy index can also be seen as a diversity score, which measures the extent to which several groups are present in the study area, regardless of their distribution across neighbourhoods. The entropy index is defined as:

$$Entropy\ index = \sum_{j} P_j * \frac{\ln(p_j)}{\ln(j)}$$

where,

P_j = the proportion of a particular group j found in the study area being analyzed; and

J = total number of groups considered in the study area. All logarithmic calculations use the natural log[1].

Note: When the proportion of a particular group in a given neighbourhood is 0, then the log is set to 0. This is the preferred procedure here, as the absence of a group (or multiple groups) should result in 0 increase in the diversity score (where a higher score indicates more diversity).

The entropy index varies between 0, where all areas have the same composition as the entire study area (i.e., maximum integration), to a high of 1, when all areas contain one group only (i.e., maximum segregation) (Iceland, 2004). Since the entropy index measures how evenly groups are distributed across a large area regardless of the size of each group, the value of entropy index is not influenced by the relative size of the various groups.

In terms of housing affordability, housing affordability index is the ratio of average income to average housing price calculated by the author using data from Toronto Real Estate Board and Statistics Canada. Housing appreciation is calculated based on MLS® Home Price Index (MLS® HPI) from Toronto Real Estate Board. Developed using data from the Multiple Listing Service, the MLS® HPI measures price trends in a given region, municipality or neighbourhood. The

MLS® HPI tracks changes in home prices by comparing price levels at a point in time with price levels in a base period, the value of which is always 100. The MLS® HPI value in a particular time is 149.1 means the value of homes is up 49.1 percent compared with the base period (The Canadian Real Estate Association). In this case, the housing appreciation is calculated by the average MLS® HPI value in 2016. Moreover, the proportion of households, no matter owners or tenants, who spent 30 percent or more of income on shelter costs, and the average monthly shelter costs express the expenditure of residents on shelter in the study area.

Table 5-6: Descriptive Statistics for Dwelling and Housing Indicators

Dwelling and Housing Indicators	Description	Min.	Max.	Mean	Std. Dev.
vacancy rate	% of vacant dwellings in all dwellings	3.63	18.24	7.89	3.90
dwelling diversity by number of bedrooms	Entropy index of dwellings based on 5 groups outlined as: No bedrooms; 1 bedroom; 2 bedrooms; 3 bedrooms; and 4 or more bedrooms.	0.60	0.92	0.80	0.11
dwelling diversity by number of rooms	Entropy index of dwellings based on 5 groups outlined as: 1 to 4 rooms; 5 rooms; 6 rooms; 7 rooms; and 8 or more rooms.	0.22	0.92	0.65	0.22
number of rooms per dwelling	average number of rooms per dwelling	1.90	7.30	4.43	1.45
housing affordability index	ratio of average household income to average dwelling price	0.10	0.21	0.15	0.04
housing appreciation	Multiple Listing Service Home Price Index (or MLS® HPI for short)	157.50	249.75	209.96	19.11
shelter costs (owner and tenant households)	% of owner and tenant households spending 30% or more of income on shelter costs	22.44	57.22	37.86	7.96

mortgage	% of owner households with a mortgage	33.24	84.96	58.70	14.46
shelter costs (owner)	% of owner households spending 30% or more of its income on shelter costs	13.41	50.59	28.42	10.10
average monthly shelter costs (owned dwelling)	average monthly shelter costs ($) for owned housing	1704	2550	2046.85	279.75
average dwelling price	average value of dwellings ($)	490761	2046715	991464.70	502728.55
subsidized housing	% of tenant households in subsidized housing	1.80	48.98	13.70	12.64
shelter costs (tenant)	% of tenant households spending 30% or more of its income on shelter costs	38.15	60.32	46.23	4.49
average monthly shelter costs (rented dwelling)	average monthly shelter costs ($) for rented dwellings	993	1813	1417.50	251.56
housing tenure: owner	% of owners	9.99	75.99	42.13	15.52
one or fewer person per room	% of households which one person or fewer per room	88.76	99.54	97.20	2.81
housing suitability	% of suitable housing	77.24	97.14	92.06	4.75
housing condition	% of dwellings with only regular maintenance or minor repairs	90.16	98.03	93.57	2.46

Source: Market Watch Report from Toronto Real Estate Board; 2016 Census Profile from Statistics Canada. Calculated by the author.

Housing decency covers housing tenure, number of persons per room, housing suitability and housing condition. The housing tenure variable is calculated as the percent of owners, reflecting housing ownership status. Housing which allows one person or fewer per room is considered as relatively commodious. The housing suitability variable indicates the percentage of suitable housing, which is categorized by Statistics Canada. Housing with only regular maintenance or minor repairs is seen as in good condition. All these four variables are expected to be high

because a socially sustainable neighbourhood should has the ability to provide good housing for its residents.

5.3.5 Education and Knowledge

Education and knowledge variables include knowledge of official languages, level of education diversity, higher education, and major field of study diversity. The knowledge of official languages variable is indicated by the percentage of the population who knows at least one official language. The proportion of the population with certificate, diploma or degree higher than secondary school is used to represent the educational level of residents in the study area. The level of education diversity and major field of study diversity is calculated based on the formula of entropy index as discussed in Chapter 5.3.2. Table 5-7 shows the descriptive statistics for education and knowledge variables.

Table 5-7: Descriptive Statistics for Education and Knowledge Indicators

Education and Knowledge Indicators	Description	Min.	Max.	Mean	Std. Dev.
knowledge of official languages	percentage of population who knows at least one official language	86.58	99.57	96.68	3.86
level of education diversity	Entropy index of highest education based on 6 groups outlined as: No certificate, diploma and degree; Secondary (high) school diploma or equivalency certificate; Apprenticeship or trades certificate or diploma; College, CEGEP or other non-university certificate or diploma; University certificate or diploma below bachelor level; and University certificate, diploma or degree at bachelor level or above.	0.59	0.85	0.71	0.09
higher education	% of population with certificate, diploma or degree higher than secondary school	53.51	83.48	71.63	9.22
major field of study diversity	Entropy index of major field of study based on 11 groups outlined as:	0.80	0.88	0.85	0.02

Education; Visual and performing arts, and communications technologies; Humanities; Social and behavioural sciences and law; Business, management and public administration; Physical and life sciences and technologies; Mathematics, computer and information sciences; Architecture, engineering and related technologies; Agriculture, natural resources and conservation; Health and related fields; and Personal, protective and transportation services.

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

5.3.6 Employment

Employment is represented by variables of participation rate, employment rate, and unemployment rate. The descriptive statistics are provided in Table 5-8. All the employment indicators show a substantial variation between selected neighbourhoods.

Table 5-8: Descriptive Statistics for Employment Indicators

Employment Indicators	Description	Min.	Max.	Mean	Std. Dev.
participation rate	% of labour force to the total population aged 15 years and over	62.58	86.63	70.83	6.43
employment rate	% of employed population to the total population aged 15 years and over	56.20	82.74	65.88	6.74
unemployment rate	% of unemployed population to the total population aged 15 years and over	3.66	7.00	4.95	0.88

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

5.3.7 Gender Equity

Gender equity variables mostly focus on selected equity variables in the female group, covering female population proportion, female with higher education, female in low-income status, female participation rate, and female employment rate. Table 5-9 shows the descriptive statistics of gender equity variables. According to the 2016 census profile of the City of Toronto, the

percentage of female population in the City of Toronto is 52 percent. While as illustrated in

Table 5-9, the proportion of female population varies substantially from 43 percent to 55 percent

in the study area. Compared with the total population, the female population have a relatively

lower participation rate and employment rate and consequently a relatively higher percentage in

low-income status. The gender equity indicators are considered as part of the dependent variables

rather than intervening variables because unlike other demographic intervening variables, these

gender equity indicators demonstrate not only the changes in demography but also the living

conditions of female population, thus exemplifying social equity. More detailed discussion of

gender equity is presented in Chapter 6.

Table 5-9: Descriptive Statistics for Gender Equity Indicators

Gender Equity Indicators	Description	Min.	Max.	Mean	Std. Dev.
female population	& of female population	43	55	51.15	3.17
female with higher education	% of female with higher educational level (higher than secondary school)	52.82	84.41	72.35	9.34
female in low-income status	% of female population in low income based on the low-income measure; after tax (LIM-AT)	6.98	43.26	20.64	11.00
female participation rate	% of female labour force to female population aged 15 years and over	57.50	84.66	67.17	7.33
female employment rate	% of employed female population to female total population aged 15 years and over	51.71	80.53	62.30	7.49

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

5.3.8 Occupation and Industry

The occupation and industry variables include occupation diversity, occupations in Business,

Finance and Administration, occupations in sales and service, occupations in manufacturing and

utilities, industry diversity, industries in Finance, Insurance and Real Estate (FIRE), and

industries in Construction and Manufacturing. Table 5-10 shows the descriptive statistics and

description of occupation and industry variables. The occupation and industry categories used here are produced according to the NOC 2016 as determined by the kind of work and the description of the main activities at work. Specific occupations and industries are selected based on past studies to analyze the implications of condominium development in certain aspects of occupation and industry.

Table 5-10: Descriptive Statistics for Occupation and Industry Indicators

Occupation and Industry Indicators	Description	Min.	Max.	Mean	Std. Dev.
occupation diversity	Entropy index of occupation based on 10 groups outlined as: Management occupations; Business, finance and administration occupations; Natural and applied sciences and related occupations; Health occupations; Occupations in education, law and social, community and government services; Occupations in art, cultural, recreation and sport; Sales and service occupations; Trades, transport and equipment operators and related occupations; Natural resources, agricultural and related production occupations; and Occupations in manufacturing and utilities.	0.83	0.89	0.86	0.02
occupations in Business, Finance and Administration	% of occupations in Business, Finance and Administration	13.72	26.89	18.96	3.49
occupations in Sales and Service	% of occupations in Sales and Service occupations	13.67	35.17	20.43	5.92
occupations in Manufacturing and Utilities	% of occupations in Manufacturing and Utilities	0.31	2.37	1.13	0.81
industry diversity	Entropy index of industry based on 20 groups outlined as: Agricultural, forestry, fishing and hunting; Mining, quarrying, and oil and gas extraction; Utilities; Construction; Manufacturing; Wholesale trade; Retail trade; Transportation and	0.82	0.90	0.86	0.02

	warehousing; Information and cultural industries; Finance and insurance; Real estate and rental and leasing; Professional, scientific and technical services; Management of companies and enterprises; Administrative and support, waste management and remediation services; Educational services; Health care and social assistance; Arts, entertainment and recreation; Accommodation and food services; Other services (except public administration); and Public administration.				
industries in Finance, Insurance, and Real Estate	% of population working in Finance, Insurance, and Real Estate	20.26	46.78	32.32	7.47
industries in Construction and Manufacturing	% of population working in Construction and Manufacturing	3.66	10.46	6.14	1.67

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

5.3.9 Poverty

Poverty variables are comprised of average income of individuals, the average after-tax income

of individuals, the average income of households and percent of the population in low-income.

The low-income measure (LIM) is the most commonly used low-income measure. In this case,

the Low-income measure after tax(LIM-AT) is used to identify low-income status among all the

population who are applicable. In simple terms, the LIM-AT is a fixed percentage (50 percent) of

median adjusted after-tax income of households observed at the person level, where 'adjusted'

indicates that a household's needs increase as the number of members increase, although not

necessarily by the same proportion per additional member (Statistics Canada, 2016).When the

unadjusted after-tax income of household pertaining to a person falls below the threshold

applicable to the person based on household size, the person is considered to be in low income

according to LIM-AT. Since the LIM-AT threshold and household income are unique within each household, low-income status based on LIM-AT can also be reported for households.

Table 5-11: Descriptive Statistics for Poverty Indicators

Poverty Indicators	Description	Min.	Max.	Mean	Std. Dev.
average total income of individuals	average total income ($) of individuals	35943	225566	89123.44	55689.53
average after-tax income of individuals	average after-tax income ($) of individuals	30454	145647	64752.18	34663.81
average total income of households	average total income ($) of households	52353	373885	153165.25	105044.12
average after-tax income of households	average after-tax income ($) of households	45721	261094	111441.75	66797.47
low-income status	% of population in low income based on the low-income measure; after tax (LIM-AT)	6.73	42.30	19.96	10.72

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

5.3.10 Social Mix

In this case, the indicators of social sustainability in terms of socioeconomic diversity are measured by entropy index of income, age, marital status, education, households, census family type and census family size, which are showed in detail in Table 5-12. According to the values of standard deviations, the age diversity and ethnic diversity show the most significant variations, indicating the potential demographic shift in the study area.

Table 5-12: Descriptive Statistics for Social Mix Indicators

Social Mix Indicators	Description	Min.	Max.	Mean	Std. Dev.
individual income diversity, before tax	Entropy index of individual income based on 11 groups outlined as: Under $10,000 (including loss); $10,000 to $19,999; $20,000 to $29,999; $30,000 to $39,999; $40,000 to $49,999; $50,000 to $59,999; $60,000 to $69,999; $70,000 to	0.84	0.97	0.91	0.04

	$79,999; \$80,000 to \$89,999; \$90,000 to \$99,999; and \$100,000 and over.				
individual income diversity, after tax	Entropy index of after tax individual income based on 9 groups outlined as: Under \$10,000 (including loss); \$10,000 to \$19,999; \$20,000 to \$29,999; \$30,000 to \$39,999; \$40,000 to \$49,999; \$50,000 to \$59,999; \$60,000 to \$69,999; \$70,000 to \$79,999; and \$80,000 and over.	0.86	0.98	0.93	0.04
household income diversity, before tax	Entropy index of household income based on 14 groups outlined as: Under \$5,000; \$5,000 to \$9,999; \$10,000 to \$14,999; \$15,000 to \$19,999; \$20,000 to \$29,999; \$30,000 to \$39,999; \$40,000 to \$49,999; \$50,000 to \$59,999; \$60,000 to \$79,999; \$80,000 to \$99,999; \$100,000 to \$124,999; \$125,000 to \$149,999; \$150,000 to \$199,999; and \$200,000 and over.	0.80	1.00	0.94	0.06
household income diversity, after tax	Entropy index of after tax household income based on 18 groups outlined as: Under \$5,000; \$5,000 to \$9,999; \$10,000 to \$14,999; \$15,000 to \$19,999; \$20,000 to \$24,999; \$25,000 to \$29,999; \$30,000 to \$34,999; \$35,000 to \$39,999; \$40,000 to \$44,999; \$45,000 to \$49,999; \$50,000 to \$59,999; \$60,000 to \$69,999; \$70,000 to \$79,999; \$80,000 to \$89,999; \$90,000 to \$99,999; \$100,000 to \$124,999; \$125,000 to \$149,999; and \$150,000 and over.	0.78	0.99	0.94	0.06
age diversity	Entropy index of age based on 5 age groups outlined as: Children (0-14); Youth (15-24); Working Age (25-54); Pre-retirement (55-64); and Senior (65+).	0.57	0.94	0.82	0.09
ethnic diversity	Entropy index of ethnicity based on 8 groups outlined as: North American Aboriginal origins; Other North American origins; European origins; Caribbean origins; Latin, Central and South American origins; African origins; Asian origins; and Oceania origins.	0.55	0.78	0.65	0.07

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

5.3.11 Urban Fabric

The indicators of social sustainability in terms of urban design are established as land use

diversity, building structure diversity and green space ratio according to the literature review in

Chapter 2. Besides socioeconomic groups, entropy index can also be applied to measure land use

diversity (Bordoloi et al., 2013). Entropy index is able to quantify the land use mix and is

consistently having a significant effect on land use parameters, same as the building structure.

The green space ratio is used to measure the mix of the urban environment regarding 'hard'

building and 'soft' landscape. Table 5-13 illustrates the descriptive statistics for urban fabric

variables.

Table 5-13: Descriptive Statistics for Urban Fabric Indicators

Urban Fabric Indicators	Description	Min.	Max.	Mean	Std. Dev.
land-use diversity	Entropy index of land uses based on 5 groups outlined as: Commercial; Employment Industrial; Institutional; Open Space; and Residential.	0.05	0.91	0.54	0.26
building structure diversity	Entropy index of building structure based on 6 groups outlined as: Single-detached house; Semi-detached house; Row house; Duplex; Apartment < 5 storeys; and Apartment 5+ storeys.	0.23	0.72	0.50	0.15
green space ratio	ratio of green space to total land area	0.02	0.64	0.15	0.14

Source: Land-use Shapefile and Parks Shapefile from Open Data Toronto; 2016 Census Profile
from Statistics Canada. Calculated by the author.

5.4 Intervening Variables

Past studies showed that condominiums are especially attractive to specific groups, such as

young professional, new immigrants and migrants, and empty nesters (Lehrer & Wieditz, 2009).

Also, the growth of condominium units provides relatively affordable housing options compared

with single- or semi-detached housing in the same area. Thus, it is conceivable that the rapid

condominium development is changing demographic volumes and compositions in inner

Toronto. Descriptive statistics of demographic variables are provided in Table 5-14 as

intervening variables to explain variations in social sustainability. All variables are extracted

from 2016 Census Profile in Statistics Canada and calculated by the author.

Table 5-14: Descriptive Statistics for Intervening Indicators

Demographic Indicators	Description	Min.	Max.	Mean	Std. Dev.
population density	number of population per km^2	3530.45	44321.43	11837.21	9099.06
population percent change	population % change from 2011 to 2016	-2.97	52.01	11.53	16.51
children (0-14 years old)	% of children in total population	4	23	11.20	4.72
Youth (15-24 years old)	% of youth in total population	8	27	12.40	4.44
Working Age (25-54 years old)	% of working age in total population	38	75	52.35	9.87
Pre-Retirement (55-64 years old)	% of pre-retirement in total population	6	14	10.65	2.25
Senior (65+ years old)	% of seniors in total population	5	25	13.40	5.48
citizenship	% of Canadian citizens	67.13	95.30	86.86	6.54
immigration status	% of immigrants	21.05	51.68	33.51	8.10
visible minority	% of visible minority population	16.75	69.98	36.39	17.09
household diversity by household size	Entropy index of households based on 5 groups outlined as: 1 person; 2 persons; 3 persons; 4 persons; and 5 or more persons.	0.63	0.96	0.80	0.11
household diversity by household type	Entropy index of households based on 3 groups outlined as: one-census family households; multiple-census-family households; and non-census-family households.	0.55	0.73	0.64	0.05
average household size	average number of person per household	1.20	2.70	1.97	0.37

census family diversity by family size	Entropy index of census families based on 4 groups outlined as: 2 persons; 3 persons; 4 persons; and 5 or more persons.	0.50	0.94	0.74	0.14
average size of census families	average number of person per census family	2.36	3.18	2.68	0.25
census families with children	% of census families with children	31.74	71.67	50.94	11.71

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

5.5 Data Limitations

The major data limitation of this study is the restrictions of data resource. Although this study aims to analyze the impacts of condominium development in terms of social sustainability using data in the 2016 census year, some data are not available in the year 2016. The school data are in year 2014, and the bus stop data and EPOI data are in year 2017. The data of schools, bus stops, and some services from EPOI usually do not show many differences year by year, still, the time differences could affect the data analysis and results.

Furthermore, the built dataset only includes some selected indicators to display social sustainability. Due to the data availability and some concerns of confidentiality, some significant indicators are not included in the dataset. For example, some variables of gender equity are not analyzed such as income differences and the proportion of female lone-parents. Likewise, the indicators of places of worship are not covered in the dataset since the data source are hard to access, even if places of worship are indispensable to people with religious belief and are able to implicate social interactions.

In regard to whether the housing choices of urban residents differ from place to place, the findings of this study will make distinctions between different social groups, referring to a question of whether one can generalize the motivation of inner-city dwellers to move into condominiums. An assumption or limitation of this study is that it is hard to make assertions in terms of the housing preferences of various social groups because the dataset is built using only secondary data with no personal interviews to probe people's preference regarding housing and specifically condominium housing. Therefore, the findings derived from this study can only reliably speak about the objective fact of the study area, while the discussion of motivations and lifestyles of Torontonians should be cautious.

6. Findings and Discussions

This chapter will look at the results of statistical analysis and answer some questions in terms of socially sustainable neighbourhood. The findings will address the fourth research objective: *to examine to what extent, and in what ways, social sustainability is incorporated with condominium development at a micro level within the inner Toronto.*

6.1 Patterns of Condominium Development

The distribution of condominium units shows a particular kind of geography. Figure 6-1 and 6-2 provide two snapshots of the spatial distributions of complete condominium units and future condominium units. Classified into four groups by quantile method, the darker areas in these two figures represent greater number of condominium units. It is evident that the current condominium development focus on the central and southern Toronto, especially the lakeside. Although the inner-city area demarcated by the old City of Toronto boundaries now contains the largest condo cluster (Rosen &Walks, 2015), this is not always the case. In the future, this compact residential development will expand from the inner city to suburban areas, specifically the north and west side.

Figure 6-1: Spatial Distribution of Complete Condominium Units in the City of Toronto

Legend

Complete Condo Units

Sum_Number

- 0
- 1 - 218
- 219 - 464
- 465 - 1174
- 1175 - 11981
- study area
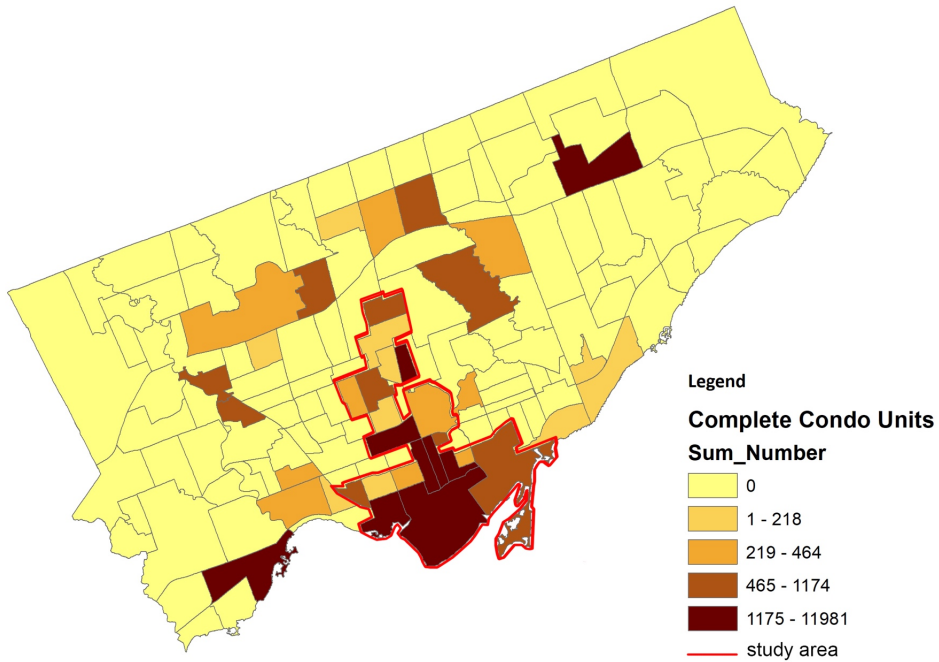
Source: Condominium Database from Urban Toronto, created by the author through ArcGIS

Figure 6-2: Spatial Distribution of Under- and Pre-Construction Condominium Units in the City of Toronto

Legend

Under- and Pre-Construction Condo Units

Sum_Number

- 0
- 1 - 244
- 245 - 610
- 611 - 1503
- 1504 - 43261
- study area
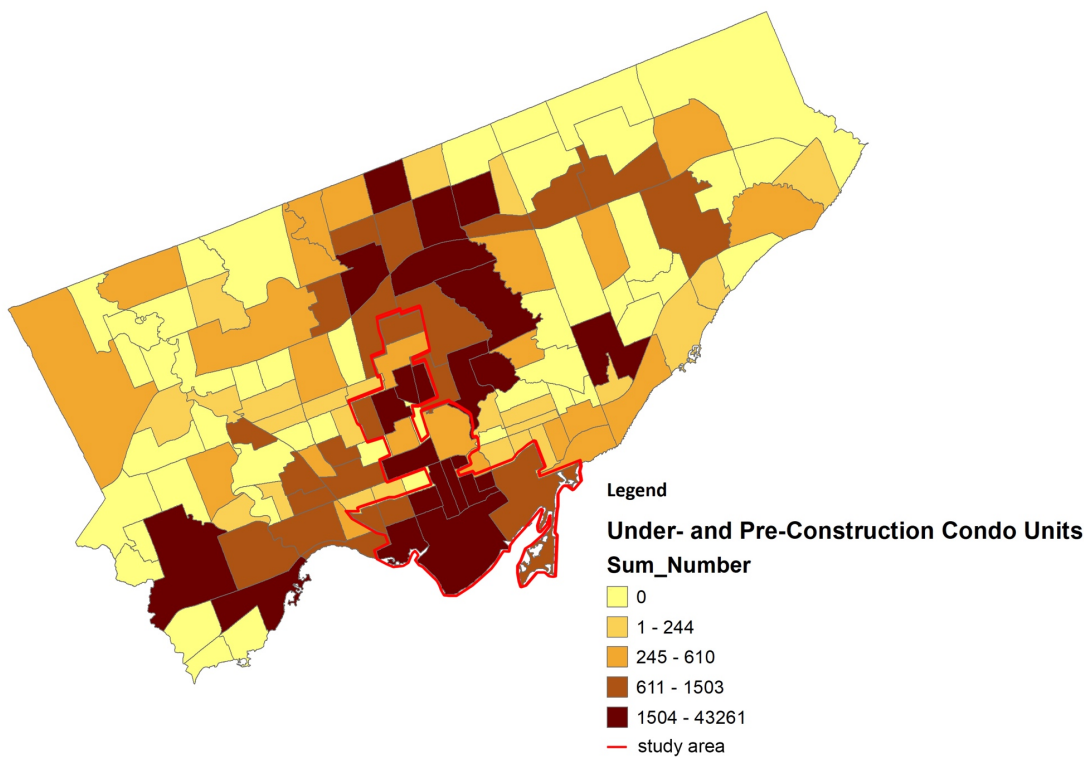
Source: Condominium Database from Urban Toronto, created by the author through ArcGIS

In the study area, Waterfront Communities-The Island, Niagara, Bay Street Corridor, Church-Yonge Corridor, Moss Park, Annex, and Mount Pleasant West have experienced the most significant condominium development. The neighbourhoods along the lakeside will still be dominated by condominiums in the future, especially downtown Toronto. Table 6-1 elucidates the variations of condominium development and the condominium unit density percent changes in the study area. According to Table 6-1, Church-Yonge Corridor, Trinity-Bellwoods, Casa Loma, Yonge-Eglinton, and Forest Hill South will experience a huge increase of condominium development with over 500 percent changes. Development continues to accrue along Yonge Street (a major arterial route connecting the shores of Lake Ontario) and Queen Street West (a major east-west thoroughfare) and along its stretch to the North York.

Table 6-1: Condominium Unit Change in the Study Area

Neighbourhood	Condominium Units per Square Kilometre	Future Condominium Units per Square Kilometre	Condominium Unit Density Percent Change
South Riverdale	73.94	110.13	48.95%
Regent Park	702.34	4158.85	492.14%
Moss Park	1489.75	5247.65	252.25%
North St. James Town	1497.53	4504.34	200.78%
Church-Yonge Corridor	1603.33	11616.47	624.52%
Bay Street Corridor	2577.72	5900.60	128.91%
Waterfront Communities-the Island	890.44	3215.21	261.08%
Kensington-Chinatown	267.06	1441.87	439.90%
Trinity-Bellwoods	62.26	866.49	1291.67%
Niagara	1787.01	1913.75	7.09%
Little Portugal	628.77	1071.45	70.40%
Annex	461.39	2498.84	441.60%
Casa Loma	23.34	160.29	586.67%
Rosedale-Moore Park	68.78	108.29	57.45%
Yonge-Eglinton	131.73	1041.78	690.83%
Forest Hill South	191.02	1628.68	752.63%

Lawrence Park South	52.29	89.20	70.59%
Mount Pleasant West	1359.48	7910.37	481.87%
Lawrence Park North	215.60	286.60	32.93%
Humewood-Cedarvale	135.90	377.34	177.65%

Source: Condominium Database from Urban Toronto, calculated by the author

6.2 Correlation Analysis

As discussed in Chapter 3.5, the dependencies identified by the Pearson correlation approach are statistically significant only when they have a p-value no larger than the significant level of 0.05. Therefore, the correlations identified with insignificant p-values are categorized as inconclusive, which means the existing dataset cannot offer enough evident for a statistically significant relationship between variables. The other correlations with a significant p-value are classified according to the Cohen's standard (1998). Returning to the original question introduced at the beginning of this study, which sought to understand how condominium development may affect social sustainability at the neighbourhood level, the results of Pearson's correlation test are categorized into 8 groups (i.e. no impact, positive small association, positive medium association, positive large association, negative small association, negative medium association, negative large association and inconclusive). It is evident from the findings that condominium development is significantly related to each aspect of social sustainability. The Pearson coefficient between the two indicators of condominium development, condominium unit density and dwelling prevalence, is 0.72, denoting a strong positive relationship between them. However, the results are slightly different when respectively identify the relationship between these two indicators and social sustainability. Based on correlation analysis results shown in Table 6-2, the following sections are conducted to achieve the fourth objective: *to examine to*

what extent, and in what ways, social sustainability is incorporated with condominium

development within the inner Toronto.

6.2.1 Is condominium development a good way to offer housing to all urban residents?

As discussed in Chapter 4, providing a mix of housing to serve all households with different

sizes, incomes, and ages is recognized by all growth plans. According to Chapter 2.1, a

'condominium' refers to a form of legal ownerships, and usually is regarded as a type of real

estate with separately-owned units and jointly-owned common areas. Although condominiums

can theoretically be any building form, they are often thought as units in high-rise residential

buildings in the inner city of Toronto. Throughout the statistical analysis, small households,

families with children, immigrants and visible minorities, labour force, low-income population

and females seem to stand out among all Torontonians. The features of these six groups are

discussed and summarized below, covering their housing demands and the inner characteristics

of condominium dwelling.

6.2.1.1 Condominium Housing for Small Households

According to Statistics Canada (2018b), the average household size in the City of Toronto is 2.4

persons, which is markedly greater than the average household size in the study area (i.e. 1.97) as

illustrated in Table 5-14. Since the size of private households in the study area are relatively

small, the relationship between household size and condominium development needs to be

assessed. As stated in Table 6-2, the coefficients between number of rooms per dwelling and

condominium unit density, and between number of rooms per dwelling and condominium

dwelling prevalence are respectively -0.70 and -0.67, denoting that condominium units always

have fewer rooms compared with units in other residential forms. The analysis of dwelling diversity also corroborates this statement. The coefficients between the dwelling diversity, whether by the number of bedrooms or rooms, and condominium unit density are all -0.89, indicating that condominium development in the study significantly reduces the dwelling diversity and thus can only satisfy the housing needs of small households. Furthermore, for housing suitability, which is defined by whether a dwelling has enough bedrooms for the size and composition of the household, neighbourhoods with greater condominium unit density show an obvious low level of suitable housing. Similarly, condominium indicators are negatively associated with average household size, household diversity, average size of census families, and census family diversity, which means that the uniformity of condominium dwellings imposes restrictions on the capability of condominiums to house mixed households and families. The above discussions also support the literature and theories, which suggest that areas with higher residential unit densities are likely to have a lower amount of living space per person, and thus damage social sustainability in a community (Dave, 2011; Woodcraft et al., 2011).

6.2.1.2 Condominium Housing for Families with Children

As reported by Table 6-3, the average size of census families appreciably decreased with the increase of condominium unit density and condominium dwelling prevalence. In consequence, the census family diversity by family size holds a negative large correlation with condominium indicators. A notable point in terms of families is the negative relationships between the proportion of census families with children and condominium indicators (with coefficient values of -0.56 and -0.79), denoting the percentage of families in a neighbourhood decreases with

condominium development. This finding conforms to the literature review on the absence of families with children in a condominium-dominated neighbourhood (Bromley et al., 2005).

The family-unfriendliness of condominium dwelling is probably due to the lack of open space and the relatively small size of condominium unit. According to Short (2017), a family in the child-bearing period prefers ownership of relatively new suburban home and would like to move to larger residences as children grow. Couples with children generally prefer residences which cannot only satisfy their needs but also meet the demands of their children, therefore, their ideal housing are ground-related housing with yards or green space. The total fertility rate in Canada was 1.54 births per woman in 2016 with a general decline from 1.68 births per woman in 2008 (Statistics Canada, 2018a), denoting a continuous tendency toward smaller families with only one or two children. In spite of the current absence of families with children residing in the inner city, the condominium housing appears to be able to accommodate more small families in the future.

6.2.1.3 Condominium Housing for Immigrants and Visible Minorities

Although the condominium dwellings seem unfriendly to families with children, it shows an apparent fascination for immigrants and visible minorities. In spite of the various housing needs and preferences of immigrant groups due to their backgrounds, this study discusses condominium housing for immigrants and visible minorities in general circumstances without considering the specific characteristics of certain cultural or ethnical groups. The Canadian citizen indicator and condominium unit density possess a Pearson coefficient of -0.75, representing that the proportion of Canadian citizens in a neighbourhood substantially declines

with the increase of condominium units. There are, however, a higher proportion of immigrants and visible minorities reported in neighbourhoods with higher condominium units. This observation is consistent with the understanding that the new immigrants' preferences for condominium housing is partly a driver of 'condo boom' (Rosen & Walks, 2013). The mix of various ethnicities and the integration of immigrants and non-immigrants help to achieve the social integration in the inner city and hence promote social sustainability.

In 2016, Canada has 1,212,075 new immigrants who had permanently settled in Canada from 2011 to 2016, representing 3.5 percent of Canada's total population in 2016 (Statistics Canada, 2017c). Immigrants represent about 70 percent of Canada's population growth and half of those who come to Canada are in the prime home-buying age range of between 20 and 45 (Evans, 2014). As the top destination for immigrants, the Toronto area has attracted a large amount of immigrants. Along with non-permanent residents, such as students, temporary workers and humanitarian refugees, it is hard to say that there is more than enough demand for new housing. Therefore, the condominium market will continue to expand despite some concerns about overbuilding.

Researchers have proved a time-series correlation between housing prices and immigration from the Canadian perspective (Akbari & Aydede, 2012; Carter, 2005; Ley & Tutchener, 1999, 2001). Particularly, under the current immigration policy, many of those new immigrants are considerably wealthy. The home-buying demands of new immigrants will continue to escalate housing prices, especially in condominium-dominated neighbourhoods, which makes housing affordability more difficult to achieve. However, not all immigrants are wealthy enough to live in

a prosperous neighbourhood, the destitute may live in poor-quality housing or even end up homeless on the street. Thus, housing policies need to take the role of immigrants in housing markets into account in order to fulfill the governmental goal of building complete communities and a socially sustainable city.

6.2.1.4 Condominium Housing for the Working Age

As reported in Table 6-3, the population density indicator and the population percent change indicator all greatly increase with the growing of condominiums in the selected neighbourhoods. Digging deeper with the age compositions as intervening variables, condominium indicators are negatively correlated with children (0 to 14 years old), pre-retirement (55 to 64 years old) and senior (over 65 years old) population, while positively correlated with the working age (25 to 54 years old). The relationship between the youth (15 to 24 years old) and condominium indicators are identified as inconclusive because of the statistically insignificant p-values as shown in Table 6-3. This view partly fits the past studies on 'youthification' (Moos, 2016), while rebuts the acknowledged situation by past studies that the empty nesters are a vital part of condominium residents (Lehrer &Wieditz, 2009; Lehrer, Keil, & Kipfer, 2010; Rosen & Walks, 2013). It seems that the labour force has occupied these condominium-dominated neighbourhoods while other age groups are progressively stigmatized and marginalized. The cluster of the working age in the inner city complements the shortage of labour force and reinvests the city with vitality and energy, resulting in improving the competitiveness of the city centre. Chapter 6.2.3.2 and 6.2.3.3 discuss further how the aggregation of labour force economically and socially restructures the inner city.

6.2.1.5 Condominium Housing for Low-income Population

Condominium living can be an appealing housing option. It is often affordable and someone else handles much of the maintenance and repairs, such as shovelling snow and replacing the roof. Many condominium buildings enhance security features over those found in single-family houses and offer a wide range of social, entertainment and recreational activities. It is conceivable that housing decency and affordability significantly implicate residents' living condition and wellbeing. The average dwelling price holds negative large associations with condominium unit density and condominium dwelling prevalence with coefficient values respectively of -0.66 and -0.57, proving that the condominium dwellings are usually cheaper than ground-related housing and thus lower the average dwelling price in a neighbourhood. If one wants to become a homeowner, the emergence and expansion of condominiums are in favour of providing relatively affordable housing to satisfy people's need to become a homeowner.

However, shelter costs are still an incubus for Torontonians. New residential development in terms of condominiums invigorates economic activities and local real estate market, resulting in a general trend of increase of shelter costs. Shelter costs for owner households include mortgage payments, property taxes and condominium fees along with the costs of electricity, heat, water and other municipal services. For renter households, shelter costs include the rent and the costs of electricity, heat, water and other municipal services. In neighbourhoods with more condominiums, the percentage of households (both owners and tenants) who spend over 30 percent of its income on shelter costs are greater than it in other neighbourhoods. The shelter costs for owned dwellings are expected to become higher with the growing of condominium dwellings considering the increasing number of households with mortgage and the correspondent

condominium fees. Nevertheless, the average monthly shelter costs for owned dwelling has a negative large relationship with condominium unit density with a Pearson coefficient of -0.51, conforming the above statement that condominium dwelling is a relatively affordable housing choice for those who can afford to be homeowners. It is also found that condominium development only implicates the shelter costs for owners, while the impacts on tenants remain unclear.

The positive large association between population in low-income status and condominium unit density (with a coefficient of 0.59) indicates that condominium dwellings accommodate a significant number of low-income population, which is not in compliance with the past study showing that the housing market segment in the inner city is formed by the high-income families (Skaburskis, 1988). Due to limitations of data source, the housing tenure choices of the low-income population remain unclear, but combining the findings of low-income population and shelter costs, it is conceivable that the low-income population face enormous economic pressure. In summary, the affordability of condominium dwelling is relative. The lower prices of condominium dwellings compared with the prices of ground-related housing attract city dwellers who have some wealth and the desire to become property owners, while for low-income population, more efforts need to be made to promote housing affordability.

6.2.1.6 Condominium Housing for Females

Gender equity is believed as a symbol of social sustainability (Littig & Griessler, 2005; Murphy, 2012; Omann & Spangenberg, 2002). Some economic and educational indicators for the female are analyzed to test the correlation between condominium development and gender equity. Many

studies have elaborated a gendered social geography of gentrification that females are vital

purchasers and renters for condominiums, still for some issues such as taking care of children

and safety concerns, some females are not willing to live in a condominium-dominated

neighbourhood (Kern, 2007, 2010a, 2010b). According to Table 6-2, most selected gender equity

indicators are not statistically related with condominium development at the 5 percent

significance level. However, the proportion of females in low-income status has a positive large

association (with a coefficient of 0.60) with condominium unit density, indicating that it is easier

for females to house themselves in condominium units. Condominiums provide a path to gain the

social and economic advantages of homeownership, particularly for single women.

Condominiums seem to function as a method to decompose the difficulties of being a woman

during the period of seeing autonomy and independence. Females can become homeowners

through a condominium purchase rather than relying on marriage (Kern, 2010b). In most cases,

women's and men's needs and interests differ, and therefore, will have different motivations in

pursuing specific roles (Gandelsonas, 2010). To promote gender equity, works need to be done to

define the urban vision under neoliberal urbanism in terms of gender roles, women's needs,

desires and proper places.

Considering the current growing pace of condominiums, condominium apartments in the

Toronto's development pipeline will account for an increasing share of Toronto's housing stock.

Conforming to the above discussions, condominiums can offer housing to certain groups who are

small households, families without children, immigrants and visible minorities, the working age,

the low-income and the female who seek to become homeowners. Thus, the rapid growing

condominiums contribute to the city's goal of building complete communities by promoting

compact development and offering more housing opportunities. On the contrary, considering the

internal characteristics of condominium communities such as the shortage of large units and

open spaces, condominiums cannot offer a mix of housing to all kinds to urban residents,

especially families with children. Moreover, both condominium unit density and dwelling

prevalence positively affect dwelling vacancy rate (with coefficients of 0.47 and 0.58), indicating

the increase of vacant units in the inner city with condominium development. The higher

dwelling vacancy rate in condominium-dominated neighbourhood implies that the current

condominium stock cannot fully meet the housing demands of all city dwellers. Some new

condominium projects post luxury lifestyle as a selling point are not targeting the ordinary

people, and therefore cannot help to serve different kinds of households.

6.2.2 Does condominium development improve accessibility to services and facilities and

transform commute mode?

6.2.2.1 Accessibility to Schools

In order to assess the accessibility to schools, the schools are categorized into five groups:

English Separate school, English Public school, French Separate school, French Public school,

and private school. The Pearson correlation analysis indicates negative medium associations

(with coefficients of -0.47 and -0.44) between the accessibility to French public school and

condominium indicators and a positive medium association (with coefficient of 0.46) between

the accessibility to private school and condominium dwelling prevalence. The accessibilities to

other types of school are identified to have inconclusive relationships with condominium

development at the 5 percent significance level. These research findings partly refute the past

study which suggests a positive effect of compact urban form to accessibility to schools (Dave, 2011).

As the condominium dwellings grow, the consequent changes in terms of French public school and private school will threaten the residents' educational satisfaction. The adverse effect of condominiums to French public schools may deteriorate the possibility of French-speaking families living in the inner city, thus pushing them to other districts with accessible French public schools. In addition, the better accessibility to private school in condominium-dominated neighbourhoods could influence the residential choices of low-income families since private schools are usually more expensive because they are privately funded. Except for those selected by their prowess in academics or other fields, most students attend private schools because of wealth or financial sacrifices of their parents. For those families with children, the accessibility of good-quality education is an important factor when choosing the place to live. High-income families with children may move to the condominium dwellings in the inner city for better education, and further threaten the affordability of condominiums. The uneven accessibility of schools could also be one of the reasons that condominium-dominated neighbourhoods are not popular for families with children.

6.2.2.2 Accessibility to Daily Facilities

The accessibility of residents here is discussed in terms of physical access (proximity) to selected service and facilities: school, bicycle parking, bus stops, grocery store, pharmacies and drug stores, commercial banking, and restaurants. The contention is that areas with more condominium dwellings provide more facilities locally which are within the reach of those who

do not have access to a car, and therefore improve accessibility. According to Table 6-2, condominium unit density has greatly positive impacts on the accessibility to local services in terms of bus stops, grocery stores, pharmacies and drug stores, commercial banking, and restaurants at the neighbourhood level, which supports the literature review in Chapter 2. However, there is no statistical relationships identified between condominium dwelling prevalence and accessibility to daily facilities. These research findings are imaginable considering the increasing population density with condominium development. To sum up, higher condominium density has the potential to improve accessibility to local services and facilities in the inner city.

6.2.2.3 Commute Mode Transformation

In terms of transportation, a socially sustainable neighbourhood should be well-connected, with excellent transport services and communication linking people to jobs, schools, and other services. It places an emphasis on good public transit connectivity, safe walking and cycling facilities and traffic demand management, so as to reduce reliance on cars (Lucas et al., 2010). The relationships between condominium development indicators and commute pattern are analyzed by assessing the use of various commute methods. Both the condominium unit density and condominium dwelling prevalence negatively affect the proportion of employed labour force who commute by car, truck or van, whether as a driver or passenger. Additionally, the condominium dwelling prevalence maintains a large negative relationship with the use of public transit with a coefficient of -0.53. It is clear that the intention of spatially and functionally compacting the inner city to reduce car dependency has been achieved to a great extent while increasing the use of public transit has not yet materialized. Although this compact residential

development improves people's accessibility to bus stops, the employed labour force who commute by automobiles and public transit decreased in condominium-dominated neighbourhoods, with more people choose to commute by walk. Connecting with the above discussion on accessibility, condominium development has reduced people's need to travel to a certain degree. With spaces of work and recreation close to home, condominium residents enjoy the convenience of living in the inner city more by walking.

Even though the condominium dwelling prevalence maintains a large negative relationship with the use of public transit, the condominium unit density is found to have no impact on the employed who commute by public transit. It can be concluded that the increasing of condominium will not affect people's choices of commute as long as the condominium dwellings only occupy a certain proportion of all dwellings. The condominium dwelling prevalence also positively affects the percentage of employed labour force whose commute time is less than 30 minutes with coefficients of 0.61, meaning that the employed living in condominium-dominated neighbourhoods experience a more efficient life with less time wasting in commuting. Considering that the commute variables analyzed only focus on the employed labour force, the communication liking people to schools and other services are not examined in this research. Condominium development transformed the urban transportation in a more socially sustainability way to some extent by reducing the use of automobiles, but there are more efforts need to be made in terms of promote public transit connectivity and quality.

6.2.3 How does condominium development restructure the inner city?

Past studies showed that condominium development contributes to the city centre's supremacy, diversification of housing stock, land-use intensification, newly-built gentrification and the resettlement of the inner city. The following discussions explain how condominium development has restructured the inner Toronto from physical, economic and social perspectives and forecast the future trend of urban development.

6.2.3.1 Physical Restructuring

As condominiums are changing urban physical form and skyline, urban fabric is influenced by condominium development. The sustainable uses of land also affect residents' satisfaction with neighbourhoods. It has often been cited in the literature that good design can filter out the ill effects of higher density and affect perceptions (Llewelyn-Davies, 2000; Dave, 2011). A positive medium association is found between condominium dwelling prevalence and building structure diversity with the coefficient value of 0.37, indicating that condominium development physically and spatially restructures the inner city by offering various building forms and contributes to the flexibility of urban landscape. The land-use diversity and green space ratio are found to have no obvious relationship with condominium development, contradicting the common knowledge that the crowed inner city is in lack of green spaces. Although the high-rise condominium dwellings transform the urban form to be more compact, there is no evidence showing that dwellers living in the inner city lose the opportunity to contact green spaces. Nevertheless, the insufficiency of land in condominium-dominated neighbourhoods may not be able to provide enough social nodes at different levels for social networking, from a playground for children to shaded seating area for informal networking. To ease this issue, improving the utilization ratio of public services is another method to relieve the limited space in condominium communities, for example,

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encouraging the use of the school facilities after working hours or enriching the role of places of worship (Bramley et al., 2009; Abed, 2016).

6.2.3.2 Economic Restructuring

The inner city, where retail and employment activities have been concentrated, offered more cultural and entertainment facilities and were used more intensively during the daytime and in the evenings (Williams, 2000). As Toronto has evolved from a Fordist industrial city to a post-Fordist city, the economic restructuring is also accompanied with the changing of Toronto's demography, characterized by the socio-spatial polarization of the inner city (Hulchanski, 2010; Kipfer & Keil, 2002; Rosen &Walks, 2013, 2015). The relatively larger number of immigrants in condominium-dominated neighbourhoods fostered the city's economy since the current immigration policies have favoured educated and wealthy people willing to invest, stimulating the concentration of both economic activity and new housing development in the inner city. Condominium dwellings are more suitable to house young childless singles or couples whose consumption habits are more aggressive, implying economic restructuring in terms of recreation and nightlife.

Several key factors have influenced the crystallization of condominium development in the inner Toronto including the occupational and industrial evolution. The occupational and industrial indicators are selected according to past studies which elaborated the close relationship between condominium development and urban deindustrialization (Rosen & Walks, 2013, 2015). However, this research did not find strong implications of condominium development on industries of Manufacturing or Finance, Insurance and Real Estate (FIRE). The condominium

dwelling prevalence is negatively associated with industry diversity with a Pearson coefficient of -0.46. Although it is not analyzed in this research, the declining industry diversity in condominium-dominated neighbourhoods is possibly due to the increase of service-oriented industries such as Professional, Scientific and Technical services or Educational services. In terms of occupational shifts, the occupations in Business, Finance and Administration is significantly increased with the growing condominium dwelling prevalence with a coefficient of 0.47.

By 2016, most of Toronto's baby boomers became senior citizens and reached their retirement age. At that time, the baby boomers rethink their housing needs, possibly move to smaller dwelling, retirement communities or relocate, paving the way for their children the echo boomers to enter the housing market (City of Toronto, 2016). Future housing demand will be greatly affected by the housing decisions of this cohort due to their large size and general affluence. Furthermore, the economic growth will be restrained as the baby boomers pass their working age, resulting in a shortage of labour force and slow prolonged economic growth. Thus, unlike the baby boomers who entered the house-buying market in the 1970s or 1980s, the echo boomers will face a different economic climate.

Considering the rapidly growing housing prices in the city of Toronto, especially in the city centre, it is probable that the echo boomers cannot afford the ground-related housing and therefore increase the demand of affordable condominiums. The correlation analysis of condominium development and housing tenure has proved this statement. Although condominiums provide relatively affordable choices to Torontonians, the negative medium

association between condominium unit density and percentage of owners (with a coefficient of -0.45) indicates that residents in neighbourhoods with greater condominium unit density are more willing to become renters rather than homeowners. Condominium development fails to promote homeownership as expected and adversely expands the rental housing market, demonstrating constantly increasing demand in the absence of purpose-built rental housing stock. Recent studies have shown a modest but distinctive decline in the number of 30-year-old Canadian homeowners, with 22.5 percent more renters in 2016 than in 2006 but 16.7 percent more homeowners in the Toronto census metropolitan area, possibly due to living flexibility, financial stress, generational divide, fear of a hot market, and the intent to accumulate wealth outside the traditional home ownership model (Young, 2015; Carrick, 2017; Kalinowski, 2017; Tencer, 2017; Fletcher, 2018;). Since the working age have occupied the inner city as explained in Chapter 6.2.1.4, the disappearing desire of becoming a property owner among the echo boomers helps to explain the declining percentage of homeowners.

To sum up, the condominium development is shifting the city centre's economy by transforming occupational and industrial structure, housing market, and the position of a neighbourhood. It is clear that the social concepts of sustainability have significant implications for an overhaul of current economic strategies (Gibbs, 1997). At present, policies for sustainable development and economic development at the urban scale appears to be incompatible. Thus, the current economic development policies need to be adjusted according to the trend of economic restructuring and the social perspective of sustainability.

6.2.3.3 Social Restructuring

Under the city's development goal of achieving social diversity, the realization of social mix is examined in terms of income diversity, age diversity, and ethnic diversity under the trend of condominium development. The individual income diversity has no statistically significant associations with condominium indicators while the household income diversity are found to be positively connected with condominium development, suggesting a better integration of different income groups. The Pearson coefficients between ethnic diversity and condominium indicators are respectively 0.52 and 0.45, meaning that people from different ethnic groups are more integrated and mixed in condominium clusters. While for age diversity, it decreases with the increase of condominium unit density and condominium dwelling prevalence (with the coefficients respectively of -0.66 and -0.79). Conforming to the discussion of age composition in Chapter 6.2.1.4, the decreasing age diversity in condominium-dominated neighbourhoods denotes that the cohorts of pre-retirement and seniors are expelled from the city centre. Thus, their opportunities to enjoy convenient lives are restricted. Social mix is always considered as an effective way to integrate all kinds of residents and therefore achieve gentrification. In some ways, condominium development assists the city's development goal of achieving social mix by supporting income amalgamation and ethnic integration.

Additionally, condominium development could have a negative effect on the sense of community and local identity. A positive sense of community is considered as a dimension of social sustainability because it is an integral component of people's pleasure of their communities (Dempsey et al., 2009). Residents always want to retain the social profiles of their neighbourhoods, rather than diversify them, meaning that they want more home-owning families

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(Williams, 2000). As the condominium dwellings are more likely to house small households, sharers or single-person households, the residents in condominium-dominated neighbourhoods might have a relatively weak sense of community. Moreover, the residents' local identity is related to the physical environment of the neighbourhood they live. The lack of open space would reduce the opportunities to interact with others and thus cut down the shared emotional contact among the community, and negative impact the community spirit of urban dwellers.

6.2.4 Does condominium development help to build safe neighbourhoods?

Safety is an essential aspect of social sustainability which affect regional stabilization and residents' satisfaction, especially in the city centre. The higher density of residential development could contribute to residents' perception of safety because more people mean better surveillance and therefore, less crime and less fear. Past studies also demonstrated that condominium residents are satisfied with the security features in condominium dwellings such as passcode controls access, surveillance cameras, doormen and 24-hour concierges ((Kern, 2007, 2010a, 2010b). However, the correlation analysis shows that condominium unit density positively affects the major crime rate with a coefficient of 0.61, which means that major crimes (identified as assault, auto theft, break and enter, robbery, theft over, and homicide) are more likely to happen in a neighbourhood with more condominiums. Recent news demonstrated that Toronto's homicide rate is now higher than New York's with at least 48 homicides before the halfway point of 2018 (O'Neil, 2018). Building walled condominiums is a matter of prevention not catching criminals and sometimes the walled condominium buildings also leave some areas not under security control like the parking garage. To sum up, the condominium development in

the inner city cannot lead to a safer environment for urban dwellers and more attentions need to be paid to build a socially sustainable neighbourhood with good sense of safety.

6.2.5 Is urban gentrification regarding condominium development in the inner city beneficial to the Torontonians' quality of life?

Measurementa of quality of life are notoriously contentious and become even more politically sensitive when combined with the issue of condominium development (Williams, 2000). According to the literature review, the quality of life is considered as an important sector of social sustainability, covering income, poverty, income distribution, unemployment, education, housing conditions, and security (Littig & Griessler, 2005; Bramley et al., 2006; Colantonio et al., 2009; Abed, 2016; Shirazi & Keivani, 2017). The task here is to look for evidences of how condominium development has affected the quality of life of urban residents, to see whether it makes urban living better or worse for those who lived in the study area.

6.2.5.1 Income and Poverty

As illustrated in Table 6-2, condominium development has negatively affected the quality of life in terms of poverty. The average incomes, whether before or after-tax, for private households, are lower in neighbourhoods with higher condominium unit density. The positive relationship between condominium unit density and population in low-income status (with coefficients respectively of 0.59) also supports this finding. Combining the above description of more diverse income mix in the study area, more people in low-income live in condominium clusters, probably due to the relatively affordable price of condominium units compared with single- or semi-detached houses. However, the income distribution projected by Hulchanski (2010)

forecasted that the inner city would become increasingly attractive for higher-income residents pursuing good access to downtown area and the amenities of a central location. The concentration of high-income households will escalate the living expense in the inner city, while peripheral working-class neighbourhoods wait for better transit and more services. Compared with the low-income households in other neighbourhoods, the low-income in the inner city suffers more in poverty.

6.2.5.2 Education and Employment

The education and knowledge indicators employed in this research are found to have no specific relationship with condominium development, indicating that the preference of condominium dwellings is not a feature of certain groups in terms of educational level and field of study. Chapter 6.2.2.1 discusses the accessibility to school, denoting an uneven distribution of fundamental education resources. The employment status is examined by participation rate, employment rate, and unemployment rate. The only association identified in terms of employment is the positive small association between employment rate and condominium unit density, which could be explained by the concentration of labour force and employment opportunities in the inner city. Despite the greater employment rate in neighbourhoods with more condominium units, there is not enough evidence showing that condominium development improves the quality of life of urban dwellers in terms of education and employment.

6.2.5.3 Housing Conditions and Security

Usually maintained and managed by professional real estate firms, condominium buildings have reasonable construction quality, confirmed by the positive relationships between condominium

indicators and housing that only need regular maintenance or minor repairs (with coefficients respectively of 0.48 and 0.68). Maintenance of buildings in the neighbourhood and similar factors are also related to the management and financial position of the neighbourhood (Dave, 2011). In consequence, the well-maintained housing conditions in condominium dwellings advance the urban dwellers' quality of life by proving good residences and strengthening the image of living in an elite neighbourhood. As demonstrated in Chapter 6.2.4, although the crime rate cannot be ignored in condominium communities, the walled condominium dwellings with security amenities indeed promote the sense of security of urban residents.

Condominium development in the study area has a complicated effect on the quality of life. People who live in the inner city enjoy the convenience to a variety of facilities, the benefits of clustering destinations, and high-grade housing conditions. Nevertheless, there are exceptions to these general findings, such as noise and traffic, then this kind of compact housing form is seen to have a negative effect on quality of life. Furthermore, the reduction in living space, smaller units and greater major crime rate could also impact the quality of life passively.

Table 6-2: Impacts of Condominium Unit Density and Condominium Dwelling Prevalence on Selected Indicators of Social Sustainability

Social Sustainability	List of Indicators	Pearson Coefficient Value between Condominium Unit Density and Social Sustainability	Level of Statistical Significance (p-value)*	Impact of Condominium Unit Density	Pearson Coefficient Value between Condominium Dwelling Prevalence and Social Sustainability	Level of Statistical Significance (p-value)*	Impact of Condominium Dwelling Prevalence
Accessibility to services and facilities	accessibility to English Public school	0.04	0.86	inconclusive	0.43	0.06	inconclusive
	accessibility to English Separate school	-0.21	0.38	inconclusive	0.25	0.28	inconclusive
	accessibility to French Public school	-0.47	0.03	negative medium association	-0.44	0.05	negative medium association
	accessibility to French Separate school	0.06	0.81	inconclusive	0.00	0.98	inconclusive
	accessibility to Private school	0.09	0.70	inconclusive	0.46	0.04	positive medium association
	accessibility to bicycle parking (both indoor and outdoor)	-0.35	0.13	inconclusive	-0.41	0.07	inconclusive
	accessibility to bus stops	0.70	0.00	positive large association	0.30	0.20	inconclusive
	accessibility to grocery stores	0.56	0.01	positive large association	0.33	0.16	inconclusive
	accessibility to pharmacies and drug stores	0.62	0.00	positive large association	0.43	0.06	inconclusive
	accessibility to commercial banking	0.63	0.00	positive large association	0.19	0.42	inconclusive
	accessibility to restaurants	0.51	0.02	positive large association	0.33	0.15	inconclusive
Commute	commute destination	-0.03	0.90	inconclusive	-0.06	0.79	inconclusive
	commute by car, truck or van as a driver	-0.60	0.00	negative large association	-0.49	0.03	negative medium association
	commute by car, truck or van as a passenger	-0.60	0.00	negative large association	-0.47	0.04	negative medium association
	commute by public transit	-0.10	0.68	inconclusive	-0.53	0.02	negative large association
	commute by walk	0.63	0.00	positive large association	0.75	0.00	positive large association
	commute by bicycle	-0.20	0.40	inconclusive	-0.08	0.73	inconclusive
	commute time	0.37	0.11	inconclusive	0.61	0.00	positive large association

Crime	major crime rate	0.61	0.00	positive large association	0.31	0.18	inconclusive
Dwelling and Housing	vacancy rate	0.47	0.04	positive medium association	0.58	0.01	positive large association
	dwelling diversity by number of bedrooms	-0.89	0.00	negative large association	-0.41	0.07	inconclusive
	dwelling diversity by number of rooms	-0.89	0.00	negative large association	-0.59	0.01	negative large association
	number of rooms per dwelling	-0.70	0.00	negative large association	-0.67	0.00	negative large association
	housing affordability index	0.01	0.97	inconclusive	0.40	0.08	inconclusive
	housing appreciation	-0.32	0.17	inconclusive	-0.28	0.23	inconclusive
	one or fewer person per room	-0.35	0.13	inconclusive	-0.02	0.93	inconclusive
	housing suitability	-0.51	0.02	negative large association	-0.12	0.61	inconclusive
	housing condition	0.48	0.03	positive medium association	0.68	0.00	positive large association
	shelter costs (owner and tenant households)	0.69	0.00	positive large association	0.54	0.01	positive large association
	mortgage	0.53	0.02	positive large association	0.50	0.02	positive large association
	shelter costs (owner)	0.69	0.00	positive large association	0.66	0.00	positive large association
	average monthly shelter costs (owner)	-0.51	0.02	negative large association	-0.43	0.06	inconclusive
	average dwelling price	-0.66	0.00	negative large association	-0.57	0.01	negative large association
	subsidized housing	0.20	0.39	inconclusive	0.14	0.56	inconclusive
	shelter costs (tenant)	0.43	0.06	inconclusive	0.23	0.33	inconclusive
	average monthly shelter costs (tenant)	0.07	0.77	inconclusive	0.36	0.12	inconclusive
	housing tenure: owner	-0.45	0.04	negative medium association	-0.20	0.41	inconclusive
Education and knowledge	knowledge of official languages	0.17	0.47	inconclusive	0.11	0.65	inconclusive
	level of education diversity	-0.14	0.57	inconclusive	-0.34	0.14	inconclusive
	higher education	0.13	0.58	inconclusive	0.27	0.25	inconclusive
	major field of study diversity	0.03	0.89	inconclusive	-0.34	0.14	inconclusive
Employment	participation rate	0.22	0.56	inconclusive	0.43	0.06	inconclusive

	employment rate	0.14	0.02	positive small association	0.40	0.08	inconclusive
	unemployment rate	0.52	0.07	inconclusive	0.07	0.76	inconclusive
Gender equity	female population	-0.41	0.07	inconclusive	-0.35	0.13	inconclusive
	female with higher education	0.09	0.71	inconclusive	0.23	0.32	inconclusive
	female in low-income status	0.60	0.01	positive large association	0.34	0.14	inconclusive
	female participation rate	0.20	0.40	inconclusive	0.41	0.07	inconclusive
	female employment rate	0.11	0.66	inconclusive	0.37	0.11	inconclusive
Occupation and Industry	occupation diversity	-0.14	0.57	inconclusive	-0.23	0.34	inconclusive
	occupations in Business, Finance and Administration	0.06	0.81	inconclusive	0.47	0.04	positive medium association
	occupations in Sales and Service	0.07	0.77	inconclusive	-0.16	0.49	inconclusive
	occupations in Manufacturing and Utilities	-0.13	0.59	inconclusive	-0.32	0.16	inconclusive
	industry diversity	-0.22	0.36	inconclusive	-0.46	0.04	negative medium association
	industries in Finance, Insurance, and Real Estate (FIRE)	0.04	0.85	inconclusive	0.37	0.11	inconclusive
	industries in Construction and Manufacturing	-0.27	0.25	inconclusive	-0.39	0.09	inconclusive
Poverty	average total income of individuals	-0.43	0.06	inconclusive	-0.25	0.28	inconclusive
	average after-tax income of individuals	-0.43	0.06	inconclusive	-0.25	0.28	inconclusive
	average total income of households	-0.53	0.02	negative large association	-0.35	0.13	inconclusive
	average after-tax income of households	-0.54	0.01	negative large association	-0.36	0.12	inconclusive
	low-income status	0.59	0.01	positive large association	0.33	0.16	inconclusive
Social mix	individual income diversity, before tax	0.14	0.56	inconclusive	0.31	0.09	inconclusive
	individual income diversity, after tax	0.15	0.52	inconclusive	0.39	0.09	inconclusive
	household income diversity, before tax	0.38	0.10	inconclusive	0.45	0.04	positive medium association

	household income diversity, after tax	0.45	0.05	positive medium association	0.41	0.07	inconclusive
	age diversity	-0.66	0.00	negative large association	-0.79	0.00	negative large association
	ethnic diversity	0.51	0.02	positive large association	0.45	0.04	positive medium association
Urban fabric	land-use diversity	-0.86	0.94	inconclusive	-0.72	0.11	inconclusive
	building structure diversity	0.02	0.00	no impact	0.37	0.00	positive medium association
	green space ratio	-0.29	0.22	inconclusive	-0.05	0.84	inconclusive

*In this case, the level of statistical significance (p-value) of the correlation coefficient is 0.05. If this probability is lower than the conventional 5% (P≤0.05), the correlation coefficient is called statistically significant.

Table 6-3: Impacts of Condominium Unit Density and Condominium Dwelling Prevalence on Selected Intervening Variables

Demographic characteristics	List of Indicators	Pearson Coefficient Value between Condominium Unit Density and Social Sustainability	Level of Statistical Significance (p-value)*	Impact of Condominium Unit Density	Pearson Coefficient Value between Condominium Dwelling Prevalence and Social Sustainability	Level of Statistical Significance (p-value)*	Impact of Condominium Dwelling Prevalence
	population density	0.56	0.01	positive large association	0.08	0.73	no impact
	population percent change	0.56	0.01	positive large association	0.79	0.00	positive large association
	children (0-14 years old)	-0.58	0.01	negative large association	-0.72	0.00	negative large association
	Youth (15-24 years old)	0.42	0.07	inconclusive	0.31	0.18	inconclusive
	Working Age (25-54 years old)	0.60	0.01	positive large association	0.68	0.00	positive large association
	Pre-Retirement (55-64 years old)	-0.63	0.00	negative large association	-0.72	0.00	negative large association
	Senior (65+ years old)	-0.62	0.00	negative large association	-0.54	0.01	negative large association
	citizenship	-0.75	0.00	negative large association	-0.41	0.08	inconclusive
	immigration status	0.53	0.02	positive large association	0.28	0.24	inconclusive
	visible minority	0.59	0.01	positive large association	0.41	0.07	inconclusive
	household diversity by household size	-0.77	0.00	negative large association	-0.82	0.00	negative large association
	average household size	-0.66	0.00	negative large association	-0.62	0.00	negative large association
	census family diversity by family size	-0.70	0.00	negative large association	-0.84	0.00	negative large association
	average size of census families	-0.66	0.00	negative large association	-0.70	0.00	negative large association
	census families with children	-0.56	0.01	negative large association	-0.79	0.00	negative large association
	household diversity by household type	-0.37	0.10	inconclusive	-0.27	0.24	inconclusive

*In this case, the level of statistical significance (p-value) of the correlation coefficient is 0.05. If this probability is lower than the conventional 5% ($P \leq 0.05$), the correlation coefficient is called statistically significant.

7. Conclusions

7.1 Summary

This thesis conducts analyses on social sustainability under the influences of condominiums at the neighbourhood scale using data of the year 2016. The analysis uses a mixed-methods approach to estimate the relationships between identified indicators of condominium development and social sustainability, which is the standard method undertaken in past studies of social sustainability assessment. At the moment, there are limited social sustainability studies which explicitly analyze the implications of condominium development and even less in a Canadian context. This study fills the research gap and finds some congruent results as past social sustainability studies, but also some emerging distinctions specific to condominium development.

Condominium development in the inner Toronto, supported by governmental policies, has been occurring in response to the growing population and housing needs created by deindustrialization, reurbanization, and neighbourhood regeneration. Condominium development is a trend which helps to satisfy the growing demand for small urban dwellings and contributes to the city's social sustainability goals. Research in the study area suggests various conclusions on the impacts on social sustainability through condominium development and the implications for policy. In the study area, the population density and population percent change from 2011 to 2016 substantially increased with the growing condominium development. Condominium development can contribute to social sustainability through the recycling of derelict lands and buildings, which can reduce demand for peripheral development and assist the development of more compact cities. Moreover, since condominium development in the inner city is reducing pressures in the suburbs and rural areas, the benefits could extend far beyond the inner

city in environmental and sustainability terms. Within the social aspect of the sustainability agenda, therefore, condominium development works in different ways on different aspects of the agenda.

Condominium development, which usually emerges as a dense urban residential form, tends to be associated with dissatisfaction with the neighbourhood and perhaps more strongly with the incidence of neighbourhood problems. Housing plays a crucial role in the sustainable urban development, and past studies have proven urban sustainability will be hard to attain without more interventions in housing policies (Tosics, 2004). The research demonstrates the strong support that condominium development offers to the city centre's sustainability, revealing the residents' greater reliance on walking. Moreover, condominium development in the inner city inevitably reduces some pressure for new housing in the entire city. All these points emphasize the contributions of condominium development in the inner city to social sustainability. The research presented here confirms many of the perceived advantages of condominium development for social sustainability, concerning accessibility to services and facilities, commute, housing affordability, employment, gender equity, occupational and industrial shifts and social mix. Under the specific characteristics of condominium development such as housing tenure and scale of the unit, some disadvantages of condominium development are identified in terms of demographic diversity, dwelling diversity, education, poverty, and urban fabrics.

At the same time, it is clear that the demographic composition of neighbourhoods has a tremendous impact on these outcomes in terms of social sustainability. Age, however, is of more critical importance as an intervening variable. The distinctions between the age-groups are so pronounced that they are unlikely to be countered. The expanding condominium development in the inner city keeps the selected neighbourhoods attractive and suitable to the youth and working-age population, while other age groups

are expelled from the city centre. The working-age clusters in the city centre vibrant the city's economy, especially in recreational amenities. However, youth dominance in the city centre may be a deterrent to other social groups, so that the contribution of young adults to the development of inner centre is not entirely positive.

An additional element of the contribution to social sustainability derives from the short commute time in condominium-dominated neighbourhoods. The concentration of shops, places of leisure and work in the inner city improves the sustainability of people's way of life by reducing the reliance on private cars. Surprisingly, the condominium dwelling prevalence negatively affects the percentage of the employed labour force who use public transit to commute, which may be caused by the variation in modes of travel by social groups, such as age groups. This study also confirms other works which show that neighbourhood concentrations of poverty and suitable housing are often strongly associated with condominium development.

The research results show a complex relationship between condominium development and social sustainability, answering the research question: *Can condominium development contribute to social sustainability?* The inner Toronto case indicates that condominium development has affected and are expected to have long-term implications for social sustainability at the neighbourhood level. Therefore, the current policies need to be revised to regulate developers' practices and condominium owners' behaviours. As the city's condominium neighbourhoods grow and intensify, addressing the issues generated by the proliferation of condominiums should be a high priority objective and research endeavour in order to manage urban growth in a long range.

7.2 Policy Implications

This research on Toronto inner city has focused on urban areas with condominium development where the scope for influencing policy and practice is considerable, not only because of the physical changes are in progress, but also because of the pressure to achieve social sustainability. The research argues from empirical evidences and data analysis that condominium development policies need to be adapted to specific circumstances at the local level. Recent government plans and other reports are advocating the importance of mixed communities in order to achieve social sustainability. In the same way, there are forceful arguments for condominium development, illustrating its central role in the machinery of local government. However, the research findings also suggest that the contributions to social sustainability would be greater if modifications are made to the current policies. These modifications require a specifically local approach to policies to accommodate the varying socioeconomic circumstances of different neighbourhoods. Policies need to be carefully tailored to the local circumstances, especially those neighbourhoods that will experience huge socio-spatial transformation because of condominium development as discussed in Chapter 6.1, which are Church-Yonge Corridor, Trinity-Bellwoods, Casa Loma, Yonge-Eglinton, and Forest Hill South.

7.2.1 Promote Purpose-Built Rental Housing

The residential development and population growth are on track to meet the Provincial Growth Plan forecast of 3.19 million people in 2031 and 3.40 million people in 2041 (as shown in Table 3-1). The types and tenures of new housing need to accommodate this growth. The current housing policies try to make affordable homeownership happen (City of Toronto, 2012), while this research indicates that the condominium development has limited effects on promoting homeownership. Considering the preference of renting than buying discussed in Chapter 6.2.3.2, especially for the millennials, policies

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need to be adjusted away from encouraging home ownership and toward promoting purpose-built rental housing. Policies should be in place to prevent Toronto's rental housing stock from conversion and demolition and encourage new rental housing opportunities.

Even though facing financial difficulty, homeowners typically let the mortgages fall behind as the last payments, especially when credit is cheap. Non-securitized debts such as credit cards are drawn to make mortgage payments (Terrio, 2017). The correlation analysis shows that the mortgage rate raises with the increase of condominium unit density and dwelling prevalence. Considering the large proportion of young condominium residents, who are most likely to be influenced by mortgage policy, it is vital to maintain mortgage lending standards and limit the amount of debt carried by households relative to their income. Moreover, the widening of housing subsidy approaches and schemes could help to increase housing choices (Chiu, 2002). Since rents are derived from unit prices plus a premium to the investor, higher housing prices will also be translated to higher rents. Therefore, federal supports for both rental and ownership housing are critical to achieve housing affordability.

7.2.2 Encourage Children-Friendly Condominiums

The Pearson correlation analysis shows that condominium dwellings house certain groups of people, who are young professionals, singles or couples without children, immigrants, visible minorities, labour force in service-oriented industries, and those who want to become property owners but cannot afford ground-related housing. The negative relationship between condominium development and the number of families with children indicates that fewer families live in condominium-dominated neighbourhoods, not merely because children-unfriendly housing design but also the identified uneven education distribution.

Toronto's Official Plan (City of Toronto, 2018d) and Downtown Plan (City of Toronto, 2018a) encouraged residential intensification in *Downtown*, *Centres*, along *Avenues*, and on *Mixed Use Areas* as demonstrated in Chapter 4.3 and 4.4. Even though the current condominium dwellings in the inner city are considered as unfriendly to families with children, more families will probably move to a condominium community seeking for the concentration of resources and services. In 2005, the City of Toronto Planning Division initiated a study called 'Growing Up: Planning for Children in New Vertical Communities' to produce guidelines for new housing development to accommodate larger households with children in vertical communities at the unit, the building and the neighbourhood scales (City of Toronto, 2018c). Future housing policies should be in keeping with the guidelines and integrate more considerations in providing family-friendly condominium housing to build complete communities. It is also important to recognize the prevalence of family-based welfare in Canada. For example, in addition to parental transfers for home-buying, the differing abilities of parents to support secondary education have also created social inequalities. Policies should recognize the inequalities and attempt to support sustainable changes in wealth trajectories.

7.2.3 Assist Social Integration

The condominium development may be desirable, and probably accepted by the majority of residents in the future. Thus, the needs of different social groups should be taken into account to revise the existing regulations related to condominium development. For example, a more balanced approach should embrace a mix of the young and the old. According to the Toronto Proposed Downtown Plan (City of Toronto, 2018a), the city encourages the building of complete communities, which provides opportunities for people of all ages and abilities to conveniently access most of the necessities for daily living, supporting quality of life and human health. Therefore, condominium development in cities needs

to be designed in high standards, incorporating features that are considered relevant to people's quality of life (such as individual front doors onto streets and an appropriate proportion of homes with gardens or balconies and terraces). Furthermore, the condition and appearance of neighbourhoods need to be improved to minimize crime and traffic problems. It is vital that local services, particularly schools, are of a high standard, comparable with their counterparts in the suburbs and rural areas.

As indicated earlier, evidences show that a social class mix helps to support the variety of functions in the city centre. Policies in terms of constructing more affordable housing and countering gentrification, appear to be well-founded on social sustainability grounds (Bromley et al., 2005). However, the imbalance of age structure and sex composition in the study area seems to be advantageous to the city centre's economy. This concern to maintain the economic functions of the city centre links with the importance of providing an appropriate mix of jobs for the expanding population in the city centre. The continued attraction of varied employment opportunities is vital to reduce any mismatch between housing and jobs, and in this way to encourage social sustainability.

For housing policy makers, the critical lesson from the thesis is that many of the potential benefits of condominium development, increased scope for walk, job opportunities and good access to facilities, will fail to materialize without accompanying measures, and the negative impacts, such as relatively small dwellings, shortage of green space, and increased crime, need to be addressed. Alongside these suggested modifications to policy, it is also important to recognize that condominium development embraces some internal threats to social sustainability. The most notable threat relates to the importance of retaining or strengthening the commercial and leisure/entertainment roles of the city centre (Bromley et al., 2005). If housing expansion leads to too much replacements of these uses, where the economic

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circumstances are more buoyant, residentialization will fail to be an effective strategy to achieve sustainability for the local economy as there are displacement and decentralization of activities.

7.3 Limitations

It is clear that more works need to be done on the measurement and analysis of condominium development and its social outcomes. This study provides some new evidences and insights, but its limitations must be acknowledged. The study develops a mixed-method design to examine factors regarding condominium development and social sustainability in different neighbourhoods at the same time instead of using a longitudinal analysis due to the limitations of the data. While the census profiles are conducted every census year, the other data sources are not available for all census years. With the lack of panel data, the causal inferences linking changes in condominium development to changes in social sustainability identified in this research are not comprehensive. Also, this research leaves some associations between condominium development indicators and social sustainability indicators as inconclusive. These associations may be clearly identified by evolving a larger data volume.

Another major limitation is the incompleteness of dataset. The dataset compiled for this study includes most of the important socioeconomic and demographic factors that could represent social sustainability, but other significant variables are not able to be analyzed. The measurement of condominium development remains crude and incomplete in some respects, and at the same time, the aspects of social sustainability outcomes are not completely operationalized from the literature. Some variables, if applied, would further enrich the research findings such as marital status and parental wealth. Other variables like health are mentioned in the literature review as an aspect of quality of life. However, due to the limitation of data source, the indicators in terms of health are not incorporated in this study.

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Last, the Pearson correlation method used in this study only test the linear relationship between variables, leaving the possible nonlinear relationships remain undiscovered. The Pearson correlation coefficients can be easily influenced by extreme values. A high level of Pearson correlation from large values does not always mean an obvious linear relationship between variables. Thus, the misinterpretations from the Pearson correlation method could affect the accuracy of research findings.

7.4 Further Research

This thesis has proven the complex relationship between condominium development and social sustainability at the neighbourhood level in the inner city of Toronto. According to the limitations discussed in Chapter 7.3, this study could be further improved in the following ways.

First, the dataset in this study is not comprehensive with some aspects of social sustainability unexamined because of the lack of data source. Therefore, relationships identified between indicators of condominium development and social sustainability could be monitored or re-examined in a larger dataset to verify the identified associations and explore the inconclusive associations. The data sources used in this research have been proven as valuable sources of data for analyzing social sustainability from different perspectives. As the data sources get updated and supplemented, a more comprehensive research can be conducted to verify the results and statements offered in this study in the future. Conducting more social sustainability studies under condominium development becomes available as well. Furthermore, a comparison between this study and future study could help policymakers test the impact of related policies as well as forecast demographic trends at a micro level.

The Pearson correlation analysis employed in this study indicates some inconclusive relationships between variables (as displayed in Table 6-2). Future studies could expand the scale and size of the dataset to clarify these inconclusive relationships. Also, a low Pearson correlation coefficient does not always mean that no relationship exists between the variables. Other correlation analysis such as Spearman correlation could be conducted in the future to further test the possible non-linear relationship between condominium development and social sustainability.

As mentioned in Chapter 5.5 (i.e. Data Limitations), the dataset is comprised of official data to avoid subjectivity, while the preferences and feelings of local residents remain undiscovered. Research in the future may conduct some qualitative analysis such as survey or interview to gather opinions from local residents and to supplement the disadvantages of using only secondary data.

Last but not least, the thesis only selects 20 neighbourhoods from all 140 neighbourhoods in the City of Toronto as the study area. As identified the Chapter 6.1, the condominiums will expand from the inner city to more areas in suburban areas. Further research could expand the study area from the selected neighbourhoods to all neighbourhoods not only in the inner city but also in suburban areas in Toronto. Additionally, a social sustainability study under the implications of condominium development in suburban areas could be conducted and provide an informative comparison between the inner city and the suburban areas.

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Appendices

Appendix A: Research Data of Condominium Development

Condominium Development Indicators

Neighbourhood	Condominium Units per Square Kilometre (number)	Condominium Dwelling Prevalence (%)
South Riverdale	73.94	18.60
Regent Park	702.34	41.13
Moss Park	1489.75	45.56
North St. James Town	1497.53	13.65
Church-Yonge Corridor	1603.33	68.04
Bay Street Corridor	2577.72	71.28
Waterfront Communities-the Island	890.44	87.67
Kensington-Chinatown	267.06	30.97
Trinity-Bellwoods	62.26	7.44
Niagara	1787.01	83.70
Little Portugal	628.77	35.82
Annex	461.39	28.31
Casa Loma	23.34	16.45
Rosedale-Moore Park	68.78	30.55
Yonge-Eglinton	131.73	11.44
Forest Hill South	191.02	18.42
Lawrence Park South	52.29	10.87
Mount Pleasant West	1359.48	28.60
Lawrence Park North	215.60	2.95
Humewood-Cedarvale	135.90	1.75

Source: Condominium Database from Urban Toronto; 2016 Census Profile from Statistics Canada. Calculated by the author.

Appendix B: Research Data of Social Sustainability

Accessibility Indicators of Social Sustainability

Neighbourhood	English Public School (km)	English Separate School (km)	French Public School (km)	French Separate School (km)	Private School (km)	Bicycle Parking (km)	Bus Stops (density)	Grocery Stores (density)	Pharmacies and Drug Stores (density)	Commercial Banking (density)	Restaurants (density)
South Riverdale	1.26	1.86	3.07	3.44	1.96	2.79	10.46	1.55	7.00	1.09	0.45
Regent Park	0.18	0.51	1.03	3.89	0.47	1.26	32.20	7.67	18.40	0	0
Moss Park	0.48	0.46	0.45	4.53	0.17	0.64	47.99	7.06	42.34	3.53	1.41
North St. James Town	0.23	0.16	0.82	3.95	0.69	0.70	39.97	9.40	28.21	14.11	0
Church-Yonge Corridor	0.44	0.47	0.33	3.75	0.45	0.52	51.15	10.96	166.62	8.04	8.77
Bay Street Corridor	0.45	0.67	0.84	3.31	0.72	0.47	64.48	38.58	259.59	16.53	36.93
Waterfront Communities-the Island	1.63	1.57	2.55	5.35	2.28	1.14	8.03	2.01	16.72	0.59	1.19
Kensington-Chinatown	0.27	1.04	1.37	2.69	0.33	0.35	30.54	24.69	130.61	9.10	14.94
Trinity-Bellwoods	0.46	0.49	0.23	2.09	1.69	0.41	22.48	6.34	53.04	6.34	5.77
Niagara	0.87	1.20	1.71	2.91	2.36	1.21	22.15	1.85	12.31	0.92	0.62
Little Portugal	0.21	0.69	1.03	1.03	1.28	0.61	27.05	3.28	29.51	4.92	0.82
Annex	0.14	0.92	2.32	1.68	0.41	1.58	38.60	8.93	63.61	5.00	2.86
Casa Loma	0.64	0.60	3.24	2.03	0.44	0.55	22.82	2.07	3.63	0.52	0
Rosedale-Moore Park	0.49	0.58	2.26	3.95	0.87	2.06	19.44	1.92	8.12	1.71	1.50
Yonge-Eglinton	0.55	0.59	5.12	4.41	0.08	2.49	39.28	3.63	30.82	1.21	3.63
Forest Hill South	0.10	1.05	4.45	3.06	0.61	1.20	18.50	0	3.22	0.40	2.41
Lawrence Park South	0.26	1.11	4.78	5.67	0.69	3.78	15.07	0.92	3.08	0.31	0.31
Mount Pleasant West	0.44	0.41	4.82	4.76	0.32	2.86	33.41	5.20	54.20	5.94	2.23
Lawrence Park North	0.40	0.12	3.59	7.10	0.07	5.22	18.73	1.31	16.12	0.87	3.05
Humewood-Cedarvale	0.53	1.01	3.45	2.63	0.44	1.37	13.86	3.20	5.862550416	1.07	1.60

Source: School Shapefile and Bicycle Parking Shapefile from Open Data Toronto; DMTI's Enhanced Points of Interest (EPOI) Database.
Calculated by the author

Commute Indicators of Social Sustainability

Neighbourhood	Commute Destination (%)	Commute by Car, Truck, Van as a Driver(%)	Commute by Car, Truck, Van as a Passenger(%)	Commute by Bicycle (%)	Commute by Public Transit (%)	Commute by Walk (%)	Commute Time (%)
South Riverdale	89.38	37.55	4.76	7.96	38.44	9.74	44.05
Regent Park	91.22	23.89	2.43	6.34	47.46	18.6	46.52
Moss Park	91.93	21.07	1.58	6.62	31.62	37.57	61.18
North St. James Town	90.62	13.99	1.52	5.15	56.72	21.1	43.33
Church-Yonge Corridor	90.98	15.31	1.85	2.6	30.42	48.74	65.35
Bay Street Corridor	91.89	15.07	1.4	2.75	29.96	49.43	68.35
Waterfront Communities-the Island	89.42	20.78	1.74	3.59	24.93	47.63	62.76
Kensington-Chinatown	92.57	13.09	1.96	11.18	26.71	45.69	62.34
Trinity-Bellwoods	91.25	25.14	3.82	16.72	31.56	21.32	51.09
Niagara	85.48	32.28	3.03	6.3	32.97	24.00	46.72
Little Portugal	88.56	28.5	3.07	14.05	38.48	14.89	44.98
Annex	92.24	22.07	1.95	11.23	41.58	21.46	57.63
Casa Loma	92.15	40.08	2.55	4.22	38.70	12.38	51.57
Rosedale-Moore Park	91.78	38.07	3.33	3.61	39.18	13.32	60.62
Yonge-Eglinton	89.77	33.19	2.61	2.44	49.45	10.7	41.45
Forest Hill South	90.60	49.01	2.08	3.12	38.09	5.93	54.42
Lawrence Park South	87.56	52.61	4.61	2.04	32.65	6.35	40.59
Mount Pleasant West	88.92	28.34	2.21	1.49	56.35	10.99	38.12
Lawrence Park North	87.42	47.41	3.02	1.31	41.69	5.26	40.88
Humewood-Cedarvale	89.33	34.7	3.69	3.76	50.00	6.04	35.93

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

Crime Indicator of Social Sustainability

Neighbourhood	Major Crime Incidents Rate
South Riverdale	39.20
Regent Park	272.96
Moss Park	504.58
North St. James Town	702.92
Church-Yonge Corridor	836.74
Bay Street Corridor	368.72
Waterfront Communities-the Island	84.58
Kensington-Chinatown	376.87
Trinity-Bellwoods	142.40
Niagara	74.45
Little Portugal	136.08
Annex	205.85
Casa Loma	48.24
Rosedale-Moore Park	66.64
Yonge-Eglinton	38.67
Forest Hill South	18.10
Lawrence Park South	23.38
Mount Pleasant West	154.44
Lawrence Park North	33.97
Humewood-Cedarvale	42.10

Source: Major Crime Incidents Dataset from Toronto Police Service Public Safety Data Portal. Calculated by the author.

Dwelling Indicators of Social Sustainability

Neighbourhood	Vacancy Rate (%)	Dwelling Diversity by Number of Bedrooms	Dwelling Diversity by Number of Rooms	Number of Rooms per Dwelling
South Riverdale	5.24	0.87	0.91	5.10
Regent Park	4.30	0.81	0.48	3.50
Moss Park	7.66	0.70	0.45	3.40
North St. James Town	5.45	0.60	0.22	3.10
Church-Yonge Corridor	13.67	0.65	0.43	3.50
Bay Street Corridor	18.24	0.60	0.33	3.30
Waterfront Communities-the Island	13.67	0.92	0.58	1.90
Kensington-Chinatown	10.36	0.87	0.61	3.90
Trinity-Bellwoods	8.62	0.89	0.90	5.40
Niagara	4.51	0.65	0.45	3.50
Little Portugal	8.25	0.83	0.74	4.50
Annex	12.01	0.85	0.70	3.70
Casa Loma	7.32	0.87	0.84	5.30
Rosedale-Moore Park	6.05	0.86	0.82	5.80
Yonge-Eglinton	7.00	0.91	0.82	5.10
Forest Hill South	7.51	0.84	0.78	6.10
Lawrence Park South	4.45	0.84	0.82	7.30
Mount Pleasant West	5.40	0.68	0.41	2.30
Lawrence Park North	3.63	0.79	0.92	6.80
Humewood-Cedarvale	4.36	0.88	0.78	5.00

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

Housing Indicators of Social Sustainability

Neighbourhood	Housing Affordability Index	Housing Appreciation	One or fewer Person per Room (%)	Housing Suitability (%)	Housing Condition (%)	Shelter Costs (Owner and Tenant) (%)	Mortgage (%)	Shelter Costs (Owner) (%)	Average Monthly Shelter Costs (Owned dwelling) ($)	Average Dwelling Price ($)	Subsidized Housing (%)	Shelter Costs (Tenant) (%)	Average Monthly Shelter Costs (Rented dwelling) ($)	Housing Tenure: Owner (%)
South Riverdale	0.15	249.75	97.75	93.80	91.75	30.53	67.71	23.40	1836	741564	26.86	41.48	1184	61.42
Regent Park	0.12	194.75	90.32	84.06	90.22	39.47	84.96	43.21	1991	490761	48.98	38.15	993	25.43
Moss Park	0.14	194.75	97.71	91.95	92.25	39.99	76.44	32.79	1908	590261	35.62	43.60	1076	33.92
North St. James Town	0.10	194.75	88.76	77.24	90.27	44.00	73.18	33.83	1937	517378	23.06	45.13	1030	9.99
Church-Yonge Corridor	0.18	194.75	97.64	91.14	96.00	42.01	59.63	31.33	1809	522517	16.66	49.82	1471	42.56
Bay Street Corridor	0.13	194.75	96.75	87.40	97.28	57.22	57.10	50.59	1792	647418	9.33	60.32	1784	32.06
Waterfront Communities-the Island	0.20	211.75	98.05	92.77	97.99	40.67	73.74	37.16	1924	534188	8.37	43.10	1744	41.28
Kensington-Chinatown	0.10	211.75	96.16	90.73	90.16	48.13	54.74	41.30	1704	678927	29.92	51.06	1181	29.08
Trinity-Bellwoods	0.11	211.75	98.7	94.14	92.54	36.15	51.59	28.04	1755	931549	1.80	44.58	1427	52.02
Niagara	0.21	211.75	98.08	94.09	98.03	38.46	81.93	32.90	1943	502531	9.19	44.04	1651	49.96
Little Portugal	0.12	211.75	98.38	93.54	93.54	42.27	67.17	35.66	1721	710829	6.13	47.21	1431	44.18
Annex	0.14	216.00	98.68	94.98	92.53	40.65	42.18	24.90	2081	1280125	6.52	50.21	1517	38.04
Casa Loma	0.17	216.00	98.89	95.65	92.98	36.87	44.94	21.78	2459	1699255	5.58	46.74	1813	40.11
Rosedale-Moore Park	0.21	157.50	99.06	95.18	94.53	30.72	38.42	18.16	2440	1682393	3.24	46.01	1693	44.60
Yonge-Eglinton	0.11	234.50	98.24	93.84	94.27	33.95	50.49	18.49	2225	1311944	3.40	43.80	1505	38.71
Forest Hill South	0.18	234.50	99.39	96.66	93.43	33.33	33.24	19.70	2548	2046715	6.26	48.50	1356	52.83
Lawrence Park South	0.20	212.25	99.04	96.34	93.29	22.93	46.94	13.41	2550	1765148	6.19	44.45	1549	69.71
Mount Pleasant West	0.13	221.75	96.03	90.39	95.28	41.74	61.04	27.99	1892	656303	9.23	46.39	1362	25.22
Lawrence Park North	0.17	212.25	99.54	97.14	94.55	22.44	53.55	15.60	2289	1303571	8.69	44.66	1434	75.99
Humewood-Cedarvale	0.10	212.25	96.88	90.11	90.56	35.73	55.05	18.15	2133	1215917	8.93	45.26	1149	35.39

Source: Market Watch Report from Toronto Real Estate Board; 2016 Census Profile from Statistics Canada. Calculated by the author.

Education and Knowledge Indicators of Social Sustainability

Neighbourhood	Knowledge of Official Languages (%)	Level of Education Diversity	Higher Education (%)	Major Field of Study Diversity
South Riverdale	93.03	0.82	62.83	0.87
Regent Park	94.01	0.85	53.51	0.87
Moss Park	97.96	0.77	70.08	0.85
North St. James Town	97.20	0.85	63.64	0.88
Church-Yonge Corridor	98.65	0.67	76.76	0.84
Bay Street Corridor	97.28	0.59	73.10	0.84
Waterfront Communities-the Island	98.56	0.59	83.48	0.80
Kensington-Chinatown	86.58	0.82	56.33	0.88
Trinity-Bellwoods	87.88	0.81	55.89	0.85
Niagara	98.53	0.67	82.09	0.83
Little Portugal	92.42	0.81	62.21	0.85
Annex	98.59	0.64	77.73	0.85
Casa Loma	99.36	0.65	77.40	0.85
Rosedale-Moore Park	99.57	0.64	78.25	0.81
Yonge-Eglinton	99.15	0.65	79.95	0.83
Forest Hill South	99.21	0.68	75.30	0.82
Lawrence Park South	99.47	0.64	77.51	0.82
Mount Pleasant West	98.39	0.71	77.5	0.86
Lawrence Park North	99.11	0.66	76.81	0.83
Humewood-Cedarvale	98.63	0.77	72.25	0.88

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

Employment Indicators of Social Sustainability

Neighbourhood	Participation Rate (%)	Employment Rate (%)	Unemployment Rate (%)
South Riverdale	70.94	66.49	4.49
Regent Park	62.58	56.61	6.03
Moss Park	72.39	67.46	4.96
North St. James Town	67.47	60.44	7.00
Church-Yonge Corridor	73.94	67.80	6.11
Bay Street Corridor	62.66	56.20	6.41
Waterfront Communities-the Island	82.43	78.18	4.26
Kensington-Chinatown	62.59	57.54	5.11
Trinity-Bellwoods	69.39	65.15	4.21
Niagara	86.63	82.74	3.91
Little Portugal	78.02	73.00	5.02
Annex	70.58	65.81	4.75
Casa Loma	67.17	62.81	4.41
Rosedale-Moore Park	63.93	60.07	3.86
Yonge-Eglinton	73.24	68.18	5.05
Forest Hill South	65.79	62.12	3.66
Lawrence Park South	68.17	63.08	5.09
Mount Pleasant West	74.47	69.47	5.01
Lawrence Park North	70.43	65.91	4.48
Humewood-Cedarvale	73.68	68.50	5.22

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

Gender Equity Indicators of Social Sustainability

Neighbourhood	Female Population (%)	Female with Higher Education (%)	Female in Low Income (%)	Female Participation Rate (%)	Female Employment Rate (%)
South Riverdale	50	65.54	18.69	68.51	64.33
Regent Park	49	52.82	43.26	57.50	52.20
Moss Park	43	72.52	30.92	71.11	65.86
North St. James Town	47	62.86	38.03	61.73	53.95
Church-Yonge Corridor	45	75.13	26.61	70.41	63.65
Bay Street Corridor	53	72.66	39.59	58.09	51.71
Waterfront Communities-the Island	50	84.41	17.49	78.75	73.96
Kensington-Chinatown	51	56.95	34.39	60.57	55.63
Trinity-Bellwoods	51	56.47	14.71	67.07	63.61
Niagara	51	83.14	14.44	84.66	80.53
Little Portugal	51	63.59	16.58	76.39	71.46
Annex	53	78.86	18.49	67.62	63.14
Casa Loma	54	77.03	13.13	62.26	58.05
Rosedale-Moore Park	54	78.38	10.94	57.71	53.92
Yonge-Eglinton	53	80.99	12.32	69.99	64.31
Forest Hill South	54	76.53	10.69	59.76	56.41
Lawrence Park South	53	78.69	7.92	63.48	59.36
Mount Pleasant West	55	78.29	21.39	70.18	65.53
Lawrence Park North	52	77.95	6.98	66.22	61.78
Humewood-Cedarvale	54	74.13	16.23	71.48	66.57

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

Occupation and Industry Indicators of Social Sustainability

Neighbourhood	Occupation diversity	Occupations in Business, Finance and Administration (%)	Occupations in Sales and Service (%)	Occupations in Manufacturing and Utilities (%)	Industry Diversity	Industries in Finance, Insurance, Real Estate, and Professional Services (%)	Industries in Construction and Manufacturing (%)
South Riverdale	0.89	16.51	22.15	2.27	0.9	26.86	8.19
Regent Park	0.87	14.22	30.64	2.11	0.89	20.26	6.05
Moss Park	0.87	19.77	21.93	0.96	0.87	34.04	5.49
North St. James Town	0.84	14.71	35.17	2.36	0.88	20.74	6.99
Church-Yonge Corridor	0.85	22.42	18.7	0.64	0.85	35.76	3.66
Bay Street Corridor	0.85	20.61	15.21	0.52	0.83	35.2	4.01
Waterfront Communities-the Island	0.83	26.89	15.95	0.4	0.82	46.78	4.65
Kensington-Chinatown	0.87	16.56	29.9	1.94	0.87	23.78	5.91
Trinity-Bellwoods	0.88	15.67	24.13	2.37	0.89	24.43	8.46
Niagara	0.86	21.24	17.54	0.58	0.87	36.52	6.72
Little Portugal	0.87	15.69	24.82	2.09	0.88	23.87	10.46
Annex	0.85	18.74	17.59	0.66	0.86	32.8	4.86
Casa Loma	0.84	20.9	17.28	0.39	0.85	37.08	5.03
Rosedale-Moore Park	0.84	21.81	13.67	0.31	0.85	42.96	4.6
Yonge-Eglinton	0.85	22.35	16.99	0.42	0.86	35.4	6.13
Forest Hill South	0.85	19.9	16.33	0.58	0.85	36.21	5.22
Lawrence Park South	0.84	22.67	14.83	0.31	0.85	39.22	5.88
Mount Pleasant West	0.86	13.72	19.38	0.96	0.88	32.77	6.83
Lawrence Park North	0.85	18.63	14.87	0.64	0.87	37.27	5.74
Humewood-Cedarvale	0.88	16.1	21.49	2.12	0.87	24.51	7.96

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

Poverty Indicators of Social Sustainability

Neighbourhood	Average Total Income of Individuals	Average After-Tax Income of Individuals	Average Total Income of Households	Average After-Tax Income of Households	Low-Income Status (%)
South Riverdale	62822	48976	108169	85495	18.02
Regent Park	35943	30502	59127	50512	42.30
Moss Park	50013	39590	84610	65926	31.94
North St. James Town	36660	31516	52353	45721	36.47
Church-Yonge Corridor	62953	49287	93656	73514	24.59
Bay Street Corridor	79451	57208	85849	65901	37.75
Waterfront Communities-the Island	68878	53281	104984	80753	16.49
Kensington-Chinatown	36305	30454	67448	56344	33.23
Trinity-Bellwoods	50813	40767	104020	83484	14.70
Niagara	63466	49731	105142	81598	13.75
Little Portugal	43076	36048	82416	68273	15.61
Annex	119898	84853	181704	129116	18.31
Casa Loma	151848	105989	284792	198503	12.52
Rosedale-Moore Park	225566	145647	357178	231849	10.24
Yonge-Eglinton	89731	65621	150453	110072	12.03
Forest Hill South	190339	132543	373885	261094	10.74
Lawrence Park South	175356	115206	345165	227671	7.28
Mount Pleasant West	60156	47376	83527	66545	20.83
Lawrence Park North	110575	78426	222913	157751	6.73
Humewood-Cedarvale	68620	52023	115914	88713	15.72

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

Social Mix Indicators of Social Sustainability

Neighbourhood	Individual Income Diversity, Before Tax	Individual Income Diversity, After Tax	Household Income Diversity, Before Tax	Household Income Diversity, After Tax	Age Diversity	Ethnic Diversity
South Riverdale	0.93	0.95	0.97	0.96	0.82	0.7
Regent Park	0.84	0.86	0.96	0.98	0.83	0.77
Moss Park	0.92	0.95	0.99	0.99	0.75	0.78
North St. James Town	0.84	0.86	0.95	0.97	0.80	0.72
Church-Yonge Corridor	0.94	0.96	0.98	0.99	0.74	0.73
Bay Street Corridor	0.87	0.9	0.97	0.96	0.80	0.62
Waterfront Communities-the Island	0.96	0.97	1.01	0.96	0.66	0.7
Kensington-Chinatown	0.85	0.88	1.04	0.99	0.85	0.68
Trinity-Bellwoods	0.92	0.94	0.96	0.97	0.81	0.59
Niagara	0.97	0.98	0.94	0.96	0.57	0.71
Little Portugal	0.94	0.95	0.96	0.97	0.76	0.65
Annex	0.92	0.95	0.97	0.96	0.85	0.62
Casa Loma	0.91	0.93	0.92	0.91	0.90	0.55
Rosedale-Moore Park	0.88	0.9	0.87	0.87	0.92	0.56
Yonge-Eglinton	0.92	0.94	0.94	0.94	0.85	0.62
Forest Hill South	0.9	0.92	0.89	0.87	0.93	0.55
Lawrence Park South	0.85	0.87	0.80	0.78	0.94	0.56
Mount Pleasant West	0.95	0.96	0.97	0.98	0.77	0.67
Lawrence Park North	0.87	0.89	0.81	0.79	0.91	0.57
Humewood-Cedarvale	0.92	0.94	0.96	0.96	0.87	0.69

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.

Urban Fabric Indicators of Social Sustainability

Neighbourhood	Building Structure Diversity	Land Use Diversity	Green Space Ratio
South Riverdale	0.908714432	0.690677231	0.303104601
Regent Park	0.441251779	0.713996909	0.137988423
Moss Park	0.476066925	0.686154429	0.144282356
North St. James Town	0.157580911	0.238560782	0.032072212
Church-Yonge Corridor	0.172406503	0.481132971	0.042243366
Bay Street Corridor	0.054716671	0.312435936	0.078010811
Waterfront Communities-the Island	0.098977694	0.53786505	0.245130502
Kensington-Chinatown	0.624479954	0.5947547	0.043616436
Trinity-Bellwoods	0.785717653	0.504406058	0.103690744
Niagara	0.36023107	0.724593886	0.142289273
Little Portugal	0.747317344	0.520546492	0.016942203
Annex	0.699565199	0.623106703	0.03691758
Casa Loma	0.759895792	0.482180139	0.116645255
Rosedale-Moore Park	0.744424474	0.527172136	0.640973937
Yonge-Eglinton	0.813994041	0.462721203	0.199443686
Forest Hill South	0.668751396	0.233715812	0.122469067
Lawrence Park South	0.648200465	0.429488529	0.05970646
Mount Pleasant West	0.341424981	0.55702122	0.182985695
Lawrence Park North	0.674846842	0.333944719	0.302839579
Humewood-Cedarvale	0.714482801	0.334943007	0.119622993

Source: Land-use Shapefile and Parks Shapefile from Open Data Toronto; 2016 Census Profile from Statistics Canada. Calculated by the author.

Demographic Indicators as Intervening Variables

Neighbourhood	Popu-lation Density	Popula-tion Percent Change (%)	Child-ren (0-14)	Youth (15-24)	Work-ing Age (25-54)	Pre-Retire-ment (55-64)	Seniors (65+)	Citi-zenship (%)	Immi-gration Status (%)	Visible Mino-rity (%)	House-hold Diver-sity by House-hold Size	Average House-hold Size	Census family Diversity by Family Size	Average Size of Census Families	Census Families with Children (%)	House-hold Diversi-ty by House-hold Type
South Riverdale	3530.45	6.87	0.14	0.09	0.54	0.11	0.12	92.23	29.82	39.18	0.90	2.30	0.82	2.80	59.64	0.70
Regent Park	16879.69	7.95	0.15	0.16	0.52	0.10	0.07	87.68	46.98	69.98	0.86	2.20	0.89	3.00	66.33	0.68
Moss Park	14752.52	25.76	0.08	0.10	0.61	0.12	0.09	88.00	35.06	42.58	0.64	1.60	0.60	2.50	37.87	0.59
North St. James Town	44321.43	4.39	0.12	0.12	0.56	0.11	0.09	74.72	51.68	66.85	0.80	1.90	0.81	2.57	60.73	0.65
Church-Yonge Corridor	16498.77	1.84	0.04	0.16	0.60	0.10	0.10	85.07	37.61	44.74	0.66	1.70	0.50	2.37	35.17	0.60
Bay Street Corridor	14096.72	33.33	0.07	0.27	0.51	0.07	0.09	67.13	40.83	62.19	0.69	1.70	0.63	2.43	42.17	0.60
Waterfront Communities-the Island	8943.42	52.01	0.06	0.12	0.68	0.07	0.07	83.51	36.30	44.03	0.63	1.60	0.53	2.38	31.74	0.61
Kensington-Chinatown	11805.92	-2.97	0.07	0.19	0.49	0.10	0.15	82.76	43.61	60.27	0.81	2.00	0.75	2.63	54.51	0.67
Trinity-Bellwoods	9569.94	-1.46	0.11	0.10	0.56	0.10	0.14	88.57	35.80	29.70	0.91	2.30	0.78	2.68	54.02	0.73
Niagara	10156.35	46.56	0.07	0.08	0.75	0.06	0.05	89.20	29.55	35.04	0.64	1.60	0.52	2.36	32.96	0.62
Little Portugal	12858.68	29.12	0.09	0.10	0.60	0.09	0.12	89.01	32.12	28.33	0.81	2.00	0.73	2.63	50.35	0.69
Annex	10863.35	4.62	0.08	0.12	0.49	0.11	0.19	89.20	28.88	25.38	0.74	1.60	0.68	2.50	42.84	0.64
Casa Loma	5682.90	4.59	0.11	0.10	0.42	0.13	0.24	92.47	26.52	17.18	0.81	2.00	0.77	2.63	45.59	0.65
Rosedale-Moore Park	4499.57	1.42	0.12	0.10	0.38	0.14	0.25	90.71	26.66	18.15	0.83	2.00	0.81	2.78	49.37	0.65
Yonge-Eglinton	7161.82	11.71	0.15	0.10	0.5	0.11	0.13	88.31	26.94	26.73	0.85	2.10	0.85	2.85	57.91	0.66
Forest Hill South	4380.41	-1.78	0.13	0.13	0.39	0.14	0.21	90.61	25.98	16.75	0.86	2.10	0.84	2.73	52.50	0.65
Lawrence Park South	4684.88	0.72	0.19	0.14	0.39	0.14	0.15	93.02	21.05	16.94	0.96	2.60	0.94	3.18	67.19	0.56
Mount Pleasant West	21968.89	3.72	0.08	0.08	0.58	0.10	0.15	82.11	39.04	33.64	0.67	1.20	0.65	2.50	44.92	0.62
Lawrence Park North	6406.58	0.45	0.23	0.11	0.41	0.12	0.13	95.30	22.94	21.36	0.96	2.70	0.93	3.17	71.67	0.55
Humewood-Cedarvale	7681.82	1.81	0.15	0.11	0.49	0.11	0.14	87.53	32.77	28.79	0.88	2.10	0.86	2.87	61.30	0.67

Source: 2016 Census Profile from Statistics Canada. Calculated by the author.