

Assessing the Role of Planning Interventions in Achieving Desired Land Use Impacts Around Toronto's Yonge and Spadina Subway Lines

by
Erica Warsh

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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.

I understand that my thesis may be made electronically available to the public.

Abstract

The effect transit investments can have on surrounding land uses has been studied in planning literature. Often it is argued that high-density, more sustainable development occurs around stations on newly constructed transit lines. This study examines the impacts of the Yonge-University-Spadina line on development in the north ends of the city of Toronto.

This study is guided by three objectives. First, the research aims to determine the extent of the differences in built form and densities between the two study sites. Second, the thesis explains why these differences have emerged and what factors have shaped the evolution of the two sites. Based on the first two analyses, the research provides recommendations to encourage intensified, transit-oriented development in areas that currently do not reflect these principles.

A variety of methods are used to achieve these objectives including: an analysis of empirical census data, a comparison of land uses and built form through archive and current photographs, a property value comparison, a transit ridership analysis, a review of archive newspaper articles, an examination of previous and existing policy documents, and a review of previously conducted interviews with Toronto area developers and municipal officials.

This study concludes that the Yonge line has experienced significantly more growth over time than the Spadina line. It finds that the policy provisions that dictate development along the Yonge line are much more conducive to intensified growth. As a result, recommendations are made that the city establishes a similar policy framework for land around the Spadina line so that obstacles to potential for intensified growth may be eliminated. More specifically, the thesis identifies contemporary monetary and policy incentives to developers to encourage sustainable development.

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1.0 Introduction

The connection between transit and land use has been the focus of numerous studies in the field of urban planning. Scholars, politicians and reporters have examined the connection and its impacts for decades from varying perspectives. Studies have commonly found a strong connection between transit infrastructure investments and land use including minimizing reliance on automobiles, health benefits from active forms of transportation, decreased environmental impacts, social interactions and cost benefits to the users. Studies assessing the conditions (economic, social, environmental, etc.) under which strong positive results are experienced from this relationship are lacking. This thesis examines the state of such conditions in the city of Toronto from the ground-breaking of the Yonge-University-Spadina subway line to the present.

This study seeks to understand why the western branch of the subway line has not spurred the development that was anticipated since its construction and provides recommendations for ways the city can encourage new forms of development moving forward. Important events and dates in the history of transit in the city of Toronto can be found in **Appendix A**.

1.1 Research Problem

Current trends suggest that in some North American cities, residents are transitioning from suburban style housing to a more compact way of living in urban cores (Benfield, 2012;

Elash, 2012). Demand for single-detached housing on the periphery of the cities appears to be dwindling while condominium living in city centres and in close proximity to major amenities is on the rise. As a result, residents are shifting away from the automobile dependence of the past 60 years and are relying more on transit. Evidence of this transition can be seen throughout the downtown core of Toronto, as the city currently has the most condominium developments in progress of any city in North America (Kennedy, 2011). These projects are leading a shift away from separated land uses and are creating mixed-use neighbourhoods with amenities including access to public transportation options.

Toronto's subway network covers more than 60 kilometres of the city across three, mainly underground, lines. The Bloor-Danforth and Sheppard lines travel east-west while the Yonge-University-Spadina line travels in a north-south 'U' shape (Subway/RT, 2012). In the heart of the city, there is a strong presence of high-density residential and employment development. Densities are high closest to subway stations and, although they drop off as the distance from the stations increase, on the whole they remain quite high compared to other North American cities (Derrible, 2012). North of the Bloor-Danforth line, dramatic land use and built form differences become apparent between the areas surrounding the Yonge and Spadina lines.

This study examines the land use-transportation connection in the context of the city of Toronto and its existing subway network. Comparing development surrounding the two northern branches of the Yonge-University-Spadina line provides case studies which

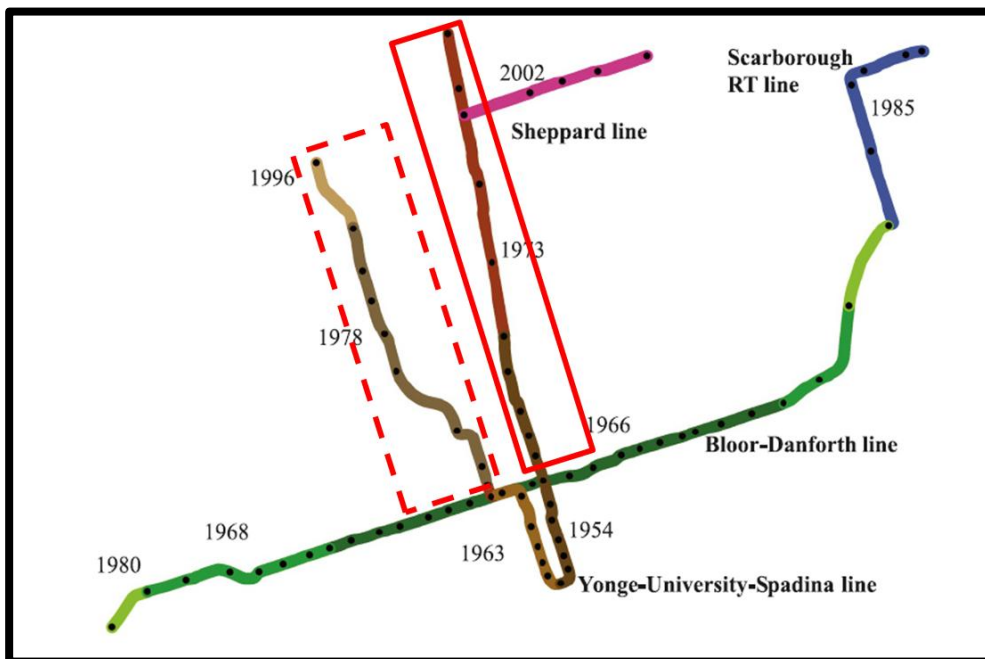
represent both high-density and medium-low density development within the city.

Demographic data, archive and current photograph comparisons, property value analysis, transit ridership data, archive newspaper articles, existing public policies and previously conducted stakeholder interviews are all reviewed to provide a framework for conclusions made about the correlation between high-density development and the presence of transit infrastructure within the city.

1.2 Introduction to Case Study Sites

The city of Toronto, specifically the lands surrounding the northern ends of the Yonge-University-Spadina line have been selected as the case study sites for this thesis. An approximation of the selected areas are outlined with a dashed line (Spadina line) and solid line (Yonge line) in **Figure 1.1** below. A 400 metre buffer around the lines has been selected, although in certain locations the area is larger due to census tract borders. This buffer distance is an agreed upon walkability distance in the fundamentals of transit oriented development, discussed in **Section 2.2.1** (Calthorpe, 1993; Curtis, 2008; Langdon, 2011).

Figure 1.1 – Schematic diagram of the study sites



Source: Derrible, 2012

Site selection was made on the basis that these branches are surrounded by areas with significant differences in land use with similar proximity to stations along the city's subway network and similar distances to Toronto's central business district (CBD). The remainder of the network, including the Sheppard and Bloor-Danforth lines are not included as they are considered outside the scope of this study. The city of Toronto is currently extending the Spadina subway line six kilometres north in to the Regional Municipality of York. One of the

driving factors for this is the increased desire from residents of the suburbs for improved transit access. This is a key motivator for selecting this topic, as expanding a network with surrounding low density land uses is an interesting decision by the city and regional/provincial governing bodies (although one major motivation is connectivity of York University to the downtown core).

1.3 Purpose and Significance of Study

This study aims to investigate the relationship between transit and land use within the city of Toronto.

Through detailed analysis, three questions will be investigated and answered including:

1. How can the differences in land use surrounding the northern ends of Toronto's Yonge-University-Spadina subway line be explained?
2. What role do policies (zoning, official plans, etc.) and development incentives play in the development projects undertaken within the city?
3. What practice and policy changes can the city of Toronto make to increase the instances of high-density, transit-oriented development surrounding the subway network (and future transit infrastructure investments)?

The results of the research suggest that while there are numerous factors at play when it comes to creating successful development around transit infrastructure, the city of Toronto has prioritized the Yonge Street corridor while simultaneously overlooking the potential of the Spadina corridor. This conclusion is supported through empirical research, policy review, key stakeholder interviews and archive newspaper articles. Based on this analysis, recommendations are made to the city in regards to policy changes and development goals for the future of the city.

This is a timely study based on current market conditions in the city of Toronto. As previously stated, there is a shift occurring in the type of housing residents are searching for (Gillis, 2012a; Gillis, 2012b; Hume, 2012; Scallan, 2012). Many are leaving their cars behind, or at the very least, using them less and relying on transit more for daily trips (Elash, 2012; Lunau, 2012). If the city can capitalize on the assets it already possess, such as a transit network with room for surrounding development, the impacts on mode share can be significant and outward growth can be managed.

The creation of the Growth Plan for the Greater Golden Horseshoe (discussed in detail in **Section 4.6.1**) means that municipalities within the Greater Golden Horseshoe (GGH) need to intensify development and increase densities through infill projects. By constructing high-density projects, following the principles of transit-oriented development, the city can lighten the demand on existing transit and street networks. Increasing densities in areas without access to transit will increase traffic congestion and put a heavier load on existing

infrastructure. If municipal policies are supportive to development near transit, the city and its infrastructure will be better off.

The findings of this thesis are also applicable for other cities looking to intensify around new or existing transit infrastructure. This research identifies new variables that can lead to a successful transformation of a decentralized region to an intensified, transit supportive one.

1.4 Scope of Thesis

This thesis is a combination of quantitative and qualitative analyses of the case study sites and the policies that affected them. The study examines census information at the census tract level from the 1960s to the most recent data. Information about employment densities and location are also included in this study. The goal is to create demographic profiles for the two areas over time in order to analyze changes.

This study also looks at existing policies, such as official plans and zoning regulations for each site to conduct a comparison study. Previously conducted key informant interviews with land developers and municipal officials in Toronto are also included in this study but are used to reinforce evidence found during the quantitative analysis. Technical planning decisions, such as scheduling and vehicle technologies are considered to be outside the scope of this study. While they are vital to the positive functioning of a transit network, their impacts have not been accounted for in this research.

1.5 Outline of Thesis

This chapter provides an introduction to the key objectives and research questions this thesis seeks to address. Chapter 2 presents a review of relevant literature related to residential and employment location selection, the connection between land use and transit, the principles of transit oriented development and the importance of policy. Chapter 3 outlines the methodology applied to conduct this study. Chapter 4 presents the findings obtained through the application of the methodology in the selected study sites. Chapter 5 is an analysis of the study findings and also provides recommendations for how the results of this study can be applied to planning practice. Finally, Chapter 6 summarizes the study, outlines conclusions from the findings and identifies areas for further research.

2.0 Literature Review

The following sections present a review of literature relevant to three subtopics of the major research area covered in this thesis. The review also presents gaps in existing literature which this study will attempt to fill. First, an examination of development trends in cities provides a foundation for the analysis of Toronto's urban evolution over the past 60+ years; particular emphasis is placed on the impacts of automobile dependence and its impacts on built form. Second, a review of literature on the relationship between transit investments and land uses is presented. Focus is placed on transit-oriented developments and the impacts they have on built form and travel behaviour. Third, the literature review discusses the strengths and weaknesses of existing policies and economic incentives as planning tools and their effects, both positive and negative, on development within cities. The purpose of this review is to explore the overall relationship between transit and land use on a general level within a variety of contexts. The conclusions obtained from the review will be used to determine how these factors have contributed to the built form of the city of Toronto.

2.1 Post-War Suburban Development

Following the end of World War II, development in cities in North America, like Toronto, experienced a transformation. As automobiles and housing became more affordable to the average family, the built form shifted to reflect the growing freedom of movement and availability of space. There was an increase in demand for housing outside the industrialized

cores of cities which were sometimes viewed as dirty and unhealthy (Freidberger, 2000; Marshall, 2000; Hodge & Gordon, 2008; Sewell, 2009). This was arguably the most impactful period in the history of North American development. Decisions made at that time are now at the forefront of planning as obstacles to overcome in order to foster more sustainable lifestyles in existing cities (Parker, 2004; Filion, 2010; Gruen, 2010; Sewell, 2009; Bunting, Filion & Walker, 2010). This review provides a framework for understanding how the city of Toronto expanded into its current spatial structure. In addition, an examination of residential and employment location choices and complementary development patterns provide a basis for understanding built form and land uses in cities today, including Toronto.

2.1.1 Spatial Structure of the City

Suburban communities stem from 1950s post-war development that encouraged auto-dependence¹ and decentralized, low density land uses. As residents' desires to live outside the dirty industrial city increased, growth spread outwards from the core to create today's suburbs (Marshall, 2000; Parker, 2004; Boudreau, Kiel & Young, 2009; Sewell, 2009; Bunting, Filion & Walker, 2010). To understand the motivation behind location selection, it is first important to outline the characteristics associated with decentralization.

¹ For the purposes of this thesis auto-dependence refers to the overall reliance that suburban residents have on their private automobiles.

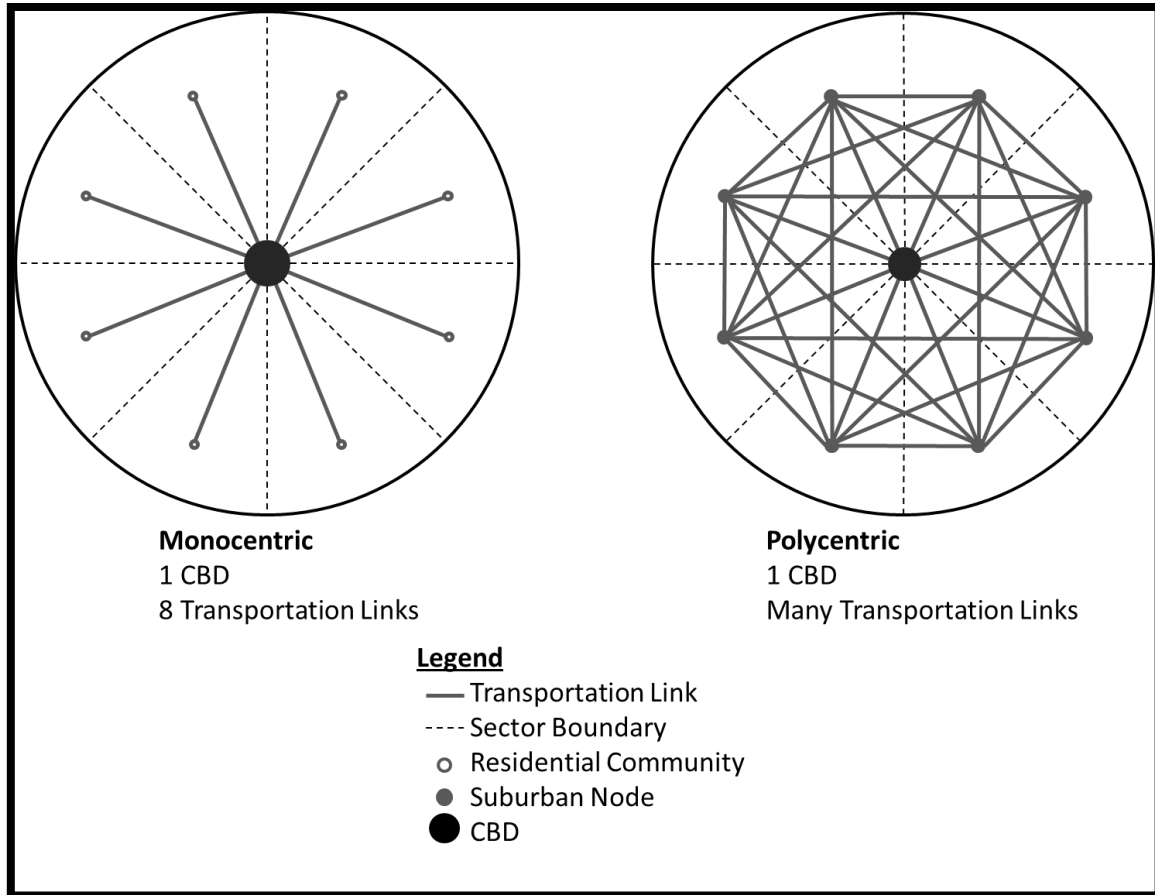
Harvey (1965) defines decentralization as a scattering of urban development in the rural landscape. It is a dynamic phenomenon with a density lower than that of the core. Johnson (2001) agrees, stating that the densities of suburbs fall somewhere in between that of the compact downtown of a city and the rural hinterland. Decentralization can occur in three major forms: low density continuous development, ribbon sprawl (segments that spread more linearly but leave some areas undeveloped), and leap-frog style sprawl (Harvey, 1965). Ewing (1997) explains the characteristics of decentralization as a combination of three elements: strip malls used for commercial business and large expanses of low density, leapfrog or scattered development outside the borders of the central city, and single use development which can be found in Toronto's existing suburbs (Sewell, 2009). Other common characteristics shared by decentralized communities include high dependence on automobiles (Harvey, 1965; Johnson, 2001), increased traffic congestion (Johnson, 2001; Pendall, 1999) leading to longer commute times (Johnson, 2001), separation of land uses (Harvey, 1965; Pendall, 1999) and negative environmental impacts like air pollution (Johnson, 2001).

Bourne (1996) argues that these edge communities will eventually become a part of the 'inner city' if outward growth continues. One way to combat this is through the introduction of a growth boundary. He states that "yesterday's new suburbs are today's mature suburbs and tomorrow's older suburbs or inner city" (1996). The literature on decentralization and post-war suburbs agree that land use controls, such as zoning regulations, create exclusionary

spaces where only one form of development is permitted. These restrictions hinder the planning process and continue to encourage decentralized growth (Bourne, 1996; Johnson, 2001; Pendall, 1999).

When suburban communities originally developed, they took on a monocentric form, meaning they were small clusters of development outside the centre of the city where employment and retail space existed (Belmont, 2002; Squires, unpublished). As seen in **Figure 2.1**, these communities were connected to the central city but had little need for connectivity to one another, as their primary land use was residential (Belmont, 2002; Squires, unpublished). As the suburbs evolved and two vehicle households became more prominent, the nature of the suburbs shifted. Residents wanted to travel shorter distances for employment and recreational activities. Small nodes of business and retail concentrations emerged in suburban communities (Squires, unpublished). This shift meant a greater need for transportation infrastructure as residents were not only traveling to the centre of the city, but were also driving to neighbouring communities (See **Figure 2.1**). This polycentric urban form generated an increased number of trips with varying origins and destinations (Badoe & Miller, 2000).

Figure 2.1 – Monocentric vs. Polycentric forms of development



Source: Adapted from Belmont, 2002

Multiple nodes with varying functions changed the relationship between the central business district and its surrounding suburbs (Bunting, Filion & Walker, 2010). In the past few decades, scholars have come to realize that there are shortcomings to decentralization and the polycentric nature of today's cities and surrounding suburban neighbourhoods (Belmont, 2002; Squires, 2013). Numerous studies on methods of planning to combat and offset those

negative impacts have been undertaken. These strategies will be discussed in detail in

Section 2.2.

2.1.2 Population Location Selection

The distribution patterns of residential populations are important to any analysis of physical development within a metropolitan area. Examining how this distribution changed over time is also vital for any study of settlement patterns (Ingram, 1998). Large cities typically have an old or original central business district that has always been known as the core or heart of the city. Over time a number of sub-centres formed to create what is known as a polycentric development pattern (Dowall & Treffeisen, 1991; Casello, 2007; Squires, unpublished).

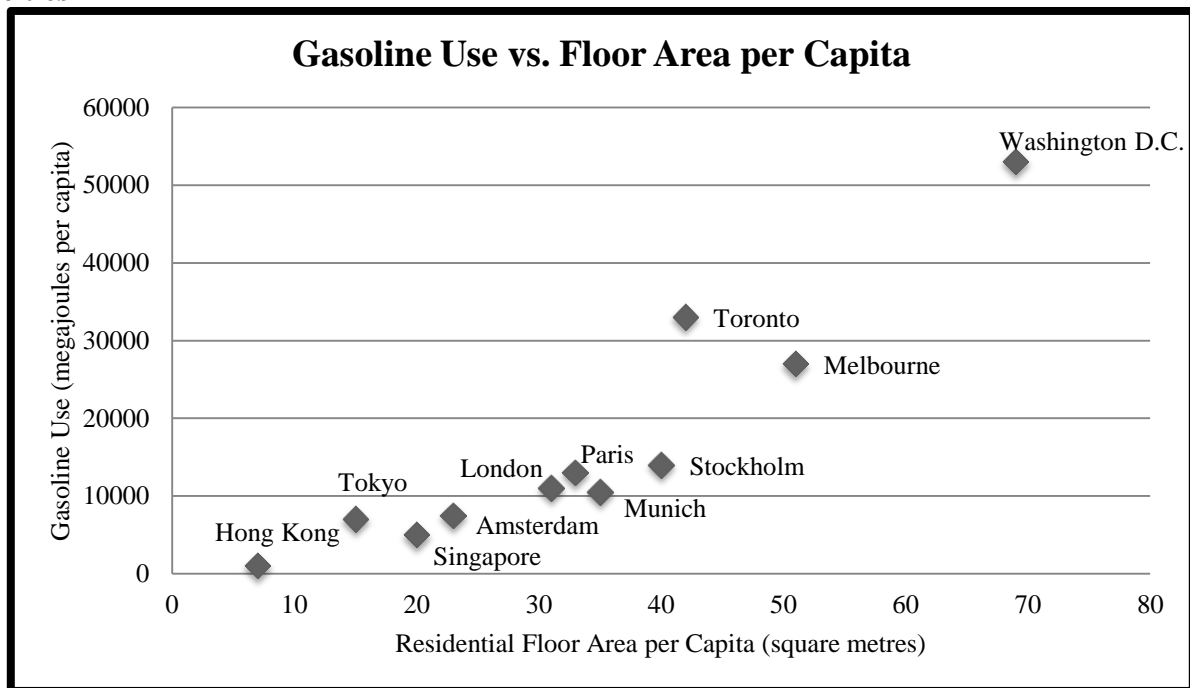
Small activity centres form within these decentralized communities to meet the everyday needs of residents (Newman & Kenworthy, 1999; Srinivasan, 2001; Casello & Smith, 2006; Levine & Frank, 2006).

Residents select housing options based on a balance of three main factors: wages, environmental quality, and cost of living (Moore & Thorsnes, 1994; Small & Song, 1994). Prior to World War II, residents could not afford to live on properties outside of the city, and their ability to access the centre was limited and expensive (Hodge & Gordon, 2008; Bunting, Filion & Walker, 2010). In the post-war era, cars were affordable to most middle/high income families and mortgage incentives were provided to returning soldiers

(Dalton, 2009). When costs decreased, the decision to live outside the industrial city was more attainable (Dalton, 2009; Bunting, Filion & Walker, 2010).

The low density of the auto-centric neighbourhoods has led to an increase in gasoline consumption and therefore has a strong impact on the environment. Newman and Kenworthy (1991), conducted a study comparing gasoline use in metropolitan areas to their average densities (See **Figure 2.2**). Their findings showed that communities with lower densities are responsible for consuming more gasoline. From the graph it is clear that North American cities are less dense and consume more gasoline than European and Asian cities.

Figure 2.2 - Gasoline consumption and residential floor area per person in selected cities



Source: Adapted from Newman and Kenworthy, 1996

Hunt et al.'s (1994) study determined factors that contributed to housing location selection and asked potential residents to rank hypothetical housing options based on monthly housing costs, travel time to work, and proximity to major transit infrastructure. Results found that there are two types of households: those who value proximity to public transit and believe that it influences the quality of their location selection, and those who have no intention of using public transit and consider its attractiveness insignificant in the location selection process. Residential location theory reiterates these findings stating that commuters would prefer to trade off transport costs (in both dollars and time), to save on housing costs (Heenan, 1966; Small & Song, 1994; Yang & Huei, 1997; Rivera, & Tiglao, 2005).

Commute time is not a heavily weighted variable for most when deciding where to purchase a home (Richardson, 1977; Ingram, 1998; Cervero, 2002). Potential residents also look for quiet, safe and low traffic volume areas (Rivera & Tiglao, 2005).

2.1.3 Employment Location Selection

The factors that contribute to location selection for employment centres vary from those of residential location selection. Data on employment distribution are less prevalent than population and residential information. While only a handful of studies have examined location selection of employers, a standard set of findings have emerged.

The research shows a strong tendency for employment to decentralise. The number of jobs located in the heart of the city fell over time as new growth stretched beyond existing city

boundaries (Meyer & Gomez-Ibanez, 1981; Small & Song, 1994). In the early 1990s, more than half of all ‘urban jobs’ in the United States were located in the suburbs (Yang & Lee, 1997). This was also the location of three-quarters of the new office space constructed throughout the country (Downs, 1992; Diamond & Noonan, 1996; Yang & Lee, 1997). For businesses the major motivation behind location selection is increasing profits. Some other local factors that contribute to this are access to the labour force, wage expectations, agglomerative economies, public services and tax rates (Moore & Thorsnes, 1994)

According to Ingram (1998), it is rare in the United States for more than 8 percent of a city’s jobs to be located within the central business district. An average commuter trip originates at “a residence more distant from the centre, to a workplace less distant from the centre” (Ingram, 1998). This means that employees are travelling from suburb to suburb daily rather than commuting into the heart of the city as describes in **Section 2.1.1** on polycentric cities. These travel patterns can be positive for a city as they lessen the burden on existing transportation infrastructure however, there is also a need to construct more networks to connect these suburban communities (Belmont, 2002).

Zoning and agglomeration are factors that have led to the creation of employment centres in suburban settings. Employment is more centralized and clustered in suburban settings due to policies separating land uses (Hamilton, 1982; Bartik, 1985; Pivo, 1993; Small & Song, 1994; Casello & Smith, 2006). Other physical infrastructure necessities such as freeways and airports play a significant role in location selection (Bartik, 1985; Pivo, 1993; Yang & Lee,

1997). Easy access to transportation networks is one of the most important factors in employment location selection (Shukla & Waddell, 1991; Casello & Smith, 2006).

There can be positive outcomes from the decentralisation of employment. Moving jobs closer to where people are living helps to improve the jobs-housing balance in suburban communities and can reduce the length of the average work related trip (Downs, 1992; Ingram, 1998). This, in turn, reduces the amount of gasoline used in metropolitan areas and reduces the negative environmental externalities of automobile use.

2.2 Transportation and Land Use Connection

One of the most pressing issues in urban planning is the importance of designing sustainable transit systems for modern cities that integrate with the urban fabric (Hall, 1998, Dittmar & Ohland, 2004). There is debate about what characteristics cities need in order to remain sustainable (Anderson, et al., 1996; Newman & Kenworthy, 1989; Gordon & Richardson, 1989). The relationship between transportation and land use has been examined in planning literature for years. Arguments exist that make a case for a strong connection while others state that the effects from the relationship are minimal at best. The debate has often been likened to that of the ‘chicken and egg’. Does transportation investment produce land use change or does land use change warrant additional investment in transportation (Moore & Thorsnes, 1994, Handy 2005)?

The general belief is that new transit investments act as a catalyst for development within a municipality and encourage sustainable corridor planning in areas around the stations (Moore & Thorsnes, 1994). Transit networks can be used by planners as a strategy to guide growth (Ingram, 1998). Some scholars argue that development surrounding transportation networks is simply growth that would have occurred otherwise, only in another location, and possibly another form (Yao, 2007; Li et al., 2010). Huang (1996) conducted a study in the city of Washington, D.C., and found that not all stations were promoters of development. Only a few stations saw meaningful growth and expansion in reaction to the new infrastructure.

A finding on which scholars agree is that there are a multitude of variables at play when it comes to the degree and success of development around transit networks (Moore & Thorsnes, 1994; Banister & Berechman, 2000; Cervero, 2002; King, 2011). Banister & Berechman (2000) argue for the importance of economic conditions during a period of development. They state that if the infrastructure investment is being made in a municipality not on the cusp of growth, the likelihood of a successful shift in the built environment is minimal. The presence of positive or supportive economic conditions plays a large role in a successful shift to a transit supportive community where residents choose more active modes of transportation. They also state that, on its own, a transit system cannot create development, but rather a system may reinforce economic trends that are already prevalent within the municipality.

Another consensus throughout transit and land use literature is that higher investments in infrastructure projects typically stimulate greater investment in surrounding land uses (Dittmar & Ohland, 2004; Vuchic, 2005). Approving more permanent transit with fixed tracks and stations has a greater impact on surrounding land uses than investments in new bus routes. Developers and prospective buyers want a guarantee that the property in which they are investing will have the same transportation amenities in the future (Vuchic, 2007).

Proximity to transit also has an impact on property values (Bowes & Ihlanfeldt, 2000; Hess & Almeida, 2007) and the permanence of a system plays a pivotal role in those increases. This is the basic premise of location theory which states that the highest rents in a city will be at the centre (or closest to a site with significant desirability). Higher land prices lead to greater development densities in an effort to get the most value for a property (Badoe & Miller, 2000; Bowes & Ihlanfeldt, 2000). This acts as a catalyst for surrounding development. Location theory places monocentric rings around the city, and as distance from the centroid increases, property values decrease, but the cost for commuting increases (North, 1955; Ingram, 1998; Squires, 2013). This means that utility maximizing location that an individual can select is the point at which marginal savings in housing costs for living slightly farther from the centroid equal marginal costs of commuting (Huang, 1996).

There are still those who argue that over time the decision to live near transit infrastructure becomes less important. Guiliano (1995), studied the Bay Area Rapid Transit (BART) system in San Francisco. She found that five years after service on the system opened,

residents felt that transportation access was rarely a factor in both job location choice and household location. Cervero and Landis (1997) revealed similar findings in a study conducted 20 years after service commenced and also found little impacts on land-use. Both concluded that the BART system itself has not induced large-scale land use changes in San Francisco.

Several studies have been conducted that measure the Toronto subway network's impact on the land uses throughout the city. Heenan (1966,1968), Knight and Trygg (1977) and Meyer and Gomez-Ibanez (1981) examined the land use impacts in Toronto following the opening of the city's subway network. All three studies reached different conclusions. Knight and Trygg (1977) found that in comparison to other North American cities, Toronto had done 'relatively well' in terms of its land use response. They determined the density surrounding the subway network to be higher than other North American cities with new transit investments. Heenan (1966, 1968) found that the impact of rapid transit in Toronto spurred more than \$10 billion in development along its routes. The study also found that the new transit infrastructure accounted for two-thirds of the appreciation of land values and facilities within the city during a 10 year period. Finally, Meyer and Gomez-Ibanez (1981) contradict Heenan's findings and concluded that the subway had a much smaller impact on land use throughout the city. These contrasting results from studies on the same city demonstrate that the impacts of transit networks are hard to measure and can be difficult to illustrate.

This thesis examines the combination of factors that lead to sustainable, transit supportive communities. Fostering positive relationships between transportation and land use is a major theme throughout the research. The balance between these external factors is imperative to successful transit oriented developments (TOD) within cities. TOD principles have been embraced in cities across North America, some have been more impactful than others. The following section will provide a brief outline of the principles of TOD and highlight characteristics conducive to their success.

2.2.1 Transit Oriented Development (TOD)

TOD is a collection of design guidelines that promote neighbourhoods supportive to alternative modes of transportation (transit, walking, cycling) and discourages auto-dependence. Many of the features are in direct contrast to the suburban model of the past. The characteristics of TOD reflect numerous studies into how built form can influence travel behaviour (Calthorpe & Fulton, 2001; Marshall, 2000; Rajamani et al., 2002; Ditmar & Ohland, 2004; Curtis, 2008). This style of development is being encouraged as a strategy to help combat the issues of suburban sprawl through urban infill or intensification² projects in existing communities. The principles of TOD have been used in Toronto along the Yonge subway line to encourage sustainable development and increased transit usage (Nieweler, 2004).

² For the purposes of this study intensification refers to the shift to building dense developments in existing built up areas. Intensification typically occurs in communities that have instituted growth boundaries similar to the one created by the Growth Plan for the Greater Golden Horseshoe.

TOD principles encourage high-density, mixed-use communities surrounding existing or future transit stations. The distance separating the TOD from the transit network plays a large role in the overall success of the neighbourhood. The connectivity of these nodes allows residents to walk from their homes to the transit network or to their destination. A walking distance within 400 meters (a 5 minute walk) is believed to be optimal (Calthorpe & Fulton, 2001; Dittmar & Ohland; 2004; Jenks, 2005). Further distances promote car usage over active transportation modes (Cervero, 1996, 2007). TOD designs incorporate spaces for automobiles and recognize their place, however this form of development aims to reduce general reliance (Calthorpe & Fulton, 2001; Marshall, 2001; Dittmar & Ohland, 2004).

Many cities have implemented the principles of TOD, some more successfully than others. TOD developments can be found in: Portland, Oregon (Schlossberg & Brown, 2004); Calgary, Alberta; Vancouver, British Columbia (Grant, 2002); Toronto, Ontario (Huang, 1996; Fisher, 2009); Dallas, Texas; Atlanta, Georgia; and San Francisco, California just to name a few (Dittmar & Ohland, 2004; Jacobson & Forsyth, 2008). Not all TOD communities have as large of an influence as intended.

The impacts of TOD can be measured in several ways to determine overall change in travel and lifestyle habits (Newman & Kenworthy, 1999; Nieweler, 2004; Jenks, 2005; Jacobson & Forsyth, 2008). These measurements include:

- ⊙ Mode shift away from auto dependence,

- ⊙ New revenue and cost saving versus capital costs and operating costs of transportation and other infrastructure,
- ⊙ New population and employment in and near TODs,
- ⊙ New private investment compared to public investment, and
- ⊙ Urban design and parking reductions in the station area.

The principles of TOD cannot be implemented in every community (Dittmar & Ohland, 2004). There is a need for the right market and planning conditions at the time of development. Nelson, Niles & Hibshoosh (2001) studied what conditions are necessary for the success of a TOD project on a local level (station area) and a regional level. They found that key conditions to successful TOD include: zoning flexibility, resident support, quality of the transit network, mix of uses, connectivity of the transit network and to other TODs, and travel behaviour/trip chaining.

There is a link between TOD development and the walkability of a neighbourhood (Getzlaff, Sirmans, & Carver, 1999; Cervero, 2002; Scholossberg & Brown, 2004; Moses & Lastrape, 2009; Boarnet, John, Siembab, Fulton & Nguyen, 2010). In order to encourage more active transportation within a community, TOD has specific design guidelines to ensure walkable communities. Scholossberg & Brown (2004) conducted studies at eleven sites in Portland, Oregon and determined that easy access from transit stations to the immediate surrounding area is key to successful TOD communities. They found that the street network impacts the walkability of a neighbourhood, grid patterns are more conducive to walkable neighbourhoods, dead end roads and high traffic arterials can also decrease walkability.

2.3 Importance of Municipal Policies

Supportive planning policies are a major influence on the success of TOD developments discussed above. Planners work within the confines of existing municipal, provincial and federal policies including growth strategies, official plans, secondary plans and zoning regulations (Hodge & Gordon, 2008). This section of the literature review focuses on the roles these policies play in the planning process and examines the impacts they have on proposed and future developments. A review of economic incentives that can be offered to the development community to encourage more sustainable styles of development within priority corridors and nodes is also presented.

2.3.1 Official and Secondary Plans

An Official Plan (OP) is a long-term, general policy guide for the future of development within a city. Typically an OP contains regulatory laws and tools used to bring the plan's goals to fruition (Haar, 1955; Hodge & Gordon, 2008; Grant, 2008; Fath, 2010). OPs also establish parameters and strategies for cities to manage growth. According to Haar (1955), a plan is "the balance sheet of the planning process, a snapshot of conditions and goals as they exist at one particular moment in time," (p. 357). He states that the OP "embodies recommendations for an area's development based on projections of needs and resources for an estimated period of time," (p. 361).

An OP is a legally binding document that, once approved by council, is the most important planning document a municipality has (Boudreau, Keil & Young, 2009). The OP serves as a base on which all other planning decisions are made. In order to remain relevant, they are consistently updated, typically every 5 years (Hodge & Gordon, 2008). These documents are important for maintaining order and a single vision for the community. All development proposals presented to the city must fit within the policies and guidelines established through this framework (Haar, 1955; Neuman, 1998; Alfasi, Almagor & Benenson, 2012).

The OP is a public document and a source of information not only for public officials but members of the community as well. Residents are able to contribute to the creation of the goals in the OP and can rely on it to better understand the goals and projections for the future of the municipality (Neuman, 1998). The OP can also be used as an educational tool for planners to help the public understand new planning initiatives and how they will be integrated into the community (Hodge & Gordon, 2008; Alfasi, Almagor & Benenson, 2012). Another strength of the OP is that it can be used by officials to stimulate public interest in local projects. In addition, an OP can be used as a tool for coordination among different municipal departments and neighbouring municipalities (Filion, 1988; Neuman, 1998; Grant, 2008; Hodge & Gordon, 2008).

Although the OP may be a useful tool for urban planners, it is not a document with that has significant influence on its own (Haar, 1955; Neuman, 1998). It should be used in conjunction with other planning tools, like secondary plans and zoning by-laws, to shape

cities (Neuman, 1998). Many argue that OPs are general and vague and do not provide detailed descriptions for future development (Haar, 1955; Neuman, 1998; Grant, 2008; Hodge & Gordon, 2008). The idea behind the existence of the OP is to provide overarching statements about the future of the community. These documents avoid specific details and concrete solutions to meet these goals and this is what weakens them. The OP also provides little in the way of implementation plans (Neuman, 1998).

Due to their generic nature, scholars state that the impacts of the OP can be minimal and often times they may even cause negative effects (Neuman, 1998). By creating this overarching document with many broad assertions about the way the city should be, new, innovative developments can be precluded. The restrictive nature of the OP can hinder creativity and ingenuity among the development community and city planners (Haar, 1955; Neuman, 1998).

From background studies to final approval by council, creating and updating an OP can be a long process. This may make the plan outdated by the time it is adopted (Haar, 1955). It is also vital that the OP is given the proper amount of legal authority and that those affected by the regulations outlined in the plan recognize its importance (Neuman, 1998, Hodge & Gordon, 2008). While supplementary regulations are necessary for more specific site and neighbourhood plans, there should be an understanding that all proposals must fit within the goals of the OP (Haar, 1955). There appears to be a gap in empirical studies on the strengths and weaknesses of OPs. While the literature presents much in the way of discussion, the

concrete findings to support these claims are lacking. While filling that gap is outside the scope of this study, it is a shortcoming of the literature that should be addressed through future research.

There is a lack of literature on the role and importance of the secondary plan. In this review it was difficult to uncover peer-reviewed research that addressed the influence of a more site specific, detail oriented plan. This gap in the literature should be filled by future researchers as these documents are key to shaping the future of cities.

2.3.2 Zoning

Zoning is one of several supporting strategies that are used by city planners to facilitate the goals expressed in OPs (Haar, 1955, Nueman, 1998; Grant, 2008; Hodge & Gordon, 2008). According to Shlay and Rossi (1981), zoning is a “means to insure a place for everything and everything in its place” (p. 704). Zoning regulates not only the location of a development, but also its major characteristics (building height, floor space ratios, parking requirements, etc.) (Haar, 1955; Grant, 2008). This section of the literature review outlines the origins of zoning as official municipal policies and examines research into the positive and negative impacts of zoning on urban planning, specifically land use and urban form.

The first sanctioned zoning by-law was enacted in 1916 in New York City and is recognized in North America as the first time the government became formally involved in determining the use and appearance of development projects within a municipality (Shlay & Rossi, 1981).

Presently, planners utilize zoning as a means to control the style and size of development within a municipality.

Zoning powers granted to municipalities were originally meant to enforce standards and ensure the health and safety of residents. Regulations on structural standards of new buildings, the amount of green space within a community or the number of structures on a single parcel of land were all at the discretion of the municipality (Shlay & Rossi, 1981; Knapp, 1990; Hodge & Gordon, 2008; Zellner et al., 2010). The motivation for zoning was to establish goals in regards to the built form and function of the community (Willhelm, 1962). Zoning regulations can help to shape a community by providing guidelines for parking allowance, densities, land uses and other physical characteristics like building setbacks (Shlay & Rossi, 1981; Knapp, 1990; Hodge & Gordon, 2008; Zellner et al., 2010).

The impacts of zoning on a community can be positive; as a response to inefficiency, but also negative as a source of inefficiency (Zellner et al, 2010). Recent literature focuses on some of the shortcomings of the existing style of zoning that permits certain uses while excluding others. This style of zoning has become known in literature as exclusionary zoning (Zellner et al., 2010). It is argued that this form of zoning is out of date and does not reflect the current state of planning in North America (Knapp, 1990; Qian, 2011). By restricting land uses, there is concern that existing zoning is protective of existing land uses and restrictive of new uses (Levine & Frank, 2007; Hodge & Gordon, 2008; Sullivan, 2010).

With significant updates to existing policies and regulations, there is a greater possibility for a better, brighter future for our cities with more sustainable, liveable communities (Levine & Frank, 2007; Arendt, 2010). If land use restrictions are removed from zoning guidelines, leaving only specifications for densities and building height, new, mixed uses would be attracted to these districts (Hodge & Gordon, 2008; Qian, 2011). Studies have shown that this mixture of uses aids in creating vibrant, healthy communities where residents rely less on their automobiles and interact more with their neighbours (Levine & Frank, 2007; Sullivan, 2010; Zellner et al., 2010; Qian, 2011). According to Hodge and Gordon (2008), “the zoning plan is the second most important planning instrument in the community next to the overall plan [Official Plan],” (p.331). Planners need to ensure that they are using the tool properly to see maximum positive output from future plans.

2.3.3 Economic Incentives

Changes in development and behavioral patterns can occur simultaneously. There are a number of economic incentives that can be used by municipal governments to encourage more sustainable community designs. Carnoske et al. (2010) interviewed a random sample of developers from the American National Association of Home Builders in 2009 to get their perspectives on the changing market and how municipal policies impact their ability to create communities that fit within current ideals. Their study aimed to determine what key factors affect developers’ interest in building TOD style neighbourhoods.

Developers reported that current factors that encourage them to develop sustainable communities are:

- ⊙ Shorter time for permitting,
- ⊙ Reduced impact fees,
- ⊙ Higher allowable densities,
- ⊙ Reduced infrastructure costs, and
- ⊙ Reduced storm water management costs.

Members of the development community were also asked what specific factors currently prevent or discourage them from building sustainable communities. The most frequent answers included:

- ⊙ Inability to overcome governmental/political hurdles,
- ⊙ Inability of government agencies to work together,
- ⊙ Perceived lack of market demand,
- ⊙ Issues/complications with brownfield sites, and
- ⊙ Public sector participation.

There are several economic tools at the government's disposal that can be employed to make the development process easier and encourage growth in a sustainable manner. Tax Increment Financing (TIF), tax abatements, and reduced development charges are some of the available tools that have been proven useful in many cities. The following four subsections will present the fundamentals of these tools.

Tax Increment Financing (TIF)

TIF is a funding strategy that can be applied to a designated zone within the city in need of urban renewal. At the most basic level, TIF freezes property taxes for the life of a TIF zone based on property values prior to redevelopment (Rubin & Rubin, 1987; Davis, 1989, Dye & Merriman, 2000). For the life of the zone, which is at the discretion of the municipality, land owners will not forfeit increases in property taxes even if land values increase. TIF projects are based on the assumption that following revitalization, the increase in property values will compensate for lost revenues during the life of the zone (Rubin & Rubin, 1987; Davis, 1989). TIF is the most popular tool currently being used to fund economic development in the United States and is authorized practice in 49 states and the District of Columbia. In 2007, the city of Chicago had 155 TIF districts (Briffault, 2010). In Canada, TIFs are being tested as a strategy on a handful of current projects, like the Spadina subway extension into Vaughan (Tax Incremental Financing Act, 2006; Planning and Economic Development Committee, 2007). Its infancy as a tool in Canada has led to a lack of literature on its prospects as a solid funding plan.

TIFs present risk for municipalities, as they are making projections and relying on future increases in growth and property values (Dye & Merriman, 2000). TIF should only be used in areas that are projected to experience population and employment growth. Although the tool is used for areas in need of renewal, there needs to be a clear demand for change. If this demand does not exist the municipality may end up subsidizing projects that remain empty

and unused (Rubin & Rubin, 1987; Dye & Merriman, 2000; Briffault, 2010). From the perspective of developers, TIF is a valued tool. It allows them to purchase property that can be redeveloped without the threat of increased taxes during construction and a few years after completion (Briffault, 2010). TIFs also show a municipality's commitment to revitalization which can be encouraging for developers and prospective residents (Briffault, 2010).

Land Value Taxation

Land value taxation (LVT) is the process of taxing a plot of land based on its development potential as opposed to its current use or condition. This strategy is meant to discourage development of greenfield sites and increase the potential and desire for intensification projects (Mathis & Zech, 2006). LVT has the potential to stimulate urban renewal and development in a community (Mills, 1981; Wildasin, 1982; Ryan, 2003). It is a tax that ensures the highest and best use for urban land because the tax rates act as an incentive to build to a properties full potential (Brueckner & Kim, 2003; Mathis & Zech, 2006). Often it is argued that real property taxation (the main form of taxation currently used) discourages owners from making improvements on their properties from fear of reassessment and therefore higher taxes. This form of taxation would eliminate those fears and would be a motivator to better maintain the conditions of a property (Mathis & Zech, 2006). Some argue that the reduction in taxes is so minimal that this change would have little impact on development patterns in the city (Ryan, 2003; Mathis & Zech, 2006). It is also argued that

the fear of property reassessment by the owners after they improve the property is exaggerated by the literature (Mathis & Zech, 2006).

Tax Abatements

Tax abatement grants exemption or reduction of taxes by the government to a property owner for a specific period of time (Wassmer, 1992; Severn, 2001; Sands, Reese & Khan, 2006; Wolkoff, 2007). It is a tool used widely across North America, including thirty-one states (Wolkoff, 2007), that is typically applied on projects that will renew a neighbourhood. Businesses or property owners pay less taxes to government with the understanding that those funds will be put towards the project (Wassmer, 1992; Severn, 2001; Sands, Reese & Kahn, 2006; Wolkoff, 2007). Abatements are popular for all stakeholders because the process is simple. A request for a tax abatement is made to the government who can either grant or refuse the request (Wassmer, 1992; Wolkoff, 2007). There is some risk on the part of the municipality. Success relies on the ability to predict positive economic development results from the project upon completion (Rubin & Rubin, 1987).

Reduced Development Charges

Development charges are fees paid by developers to cover the costs for facilities and services necessary for new units to function. Infrastructure, schools, libraries, police and fire stations, and even open spaces which would otherwise not be needed if the development did not exist, are provided or funded by the developer (Watkins, 1999; Silva, Deus, & Tenedorio, 2012).

The motivation for these fees is that facilities and services primarily used by residents should be funded by the developer and not by the general tax base (Downing, 1973; Watkins, 1999; Slack, 2002; Tomalty & Skaburskis, 2003; Needham, 2011).

Development charges can reinforce planning goals and steer development to preferred, efficient locations in a well-designed system (Tomalty & Skaburskis, 2003). In the province of Ontario, development charges are applied to projects in a uniform manner across entire municipalities. Infill projects within the province are also subject to development charges despite not necessarily placing new strains on existing infrastructure (Watkins, 1999; Tomalty & Skaburskis, 2003). These standards do not reflect current planning goals. Tomalty & Skaburskis (2003) and Slack (2002) recommend that municipalities reduce fees on higher density projects as an incentive for developers to reflect new planning objectives.

In most North American cities, development charges have led developers to inflate the prices of housing to recoup some of the cost (Skaburskis & Tomalty, 2000). Development charges increase the construction costs because they are paid when a permit is obtained. According to Skaburskis & Qadeer (1992), this can delay a project until market housing prices rise enough to cover the additional costs. In response, the process is better designed for low-density projects that can be built in stages and recapture costs faster.

Skaburskis and Tomalty (2000) conducted interviews with developers in the Greater Toronto Area and Ottawa regarding their views on development charges and the impacts they have on development. The five most common responses were:

- ⊙ Development charges decrease density by increasing the frontage of lots,
- ⊙ Development charges delay development but have no effect on density as this is primarily set by zoning,
- ⊙ Development charges have not eased the approvals process,
- ⊙ Development charges do not ensure timely infrastructure expansion, and
- ⊙ Development charges have not made higher density projects more acceptable to suburban communities.

Developers require incentives and benefits to shift away from the safety and relative affordability of suburban style communities. Numerous studies have found that provisions of tax or fee incentives contribute to local business investment, employment and economic growth (Newman, 1983; Wasylenko and McGuire, 1985; Papke, 1994). North American cities, Toronto in particular, can experience these benefits if shifts are made in the development charges process.

2.4 Summary

This literature review is meant to tell a story of evolution in urban centres that have higher-order transit networks. This review is also a way to assess tools that influence the land use and transportation connection. The findings of this review will be applied to the city of Toronto and its growth in the study sites from the 1950s, prior to the existence of the Yonge-University-Spadina line, to present times. This review provides a solid framework to begin to

answer the major research questions of this thesis. It examines the history of development in North American cities following World War II and provides a brief discussion of the strengths and importance of TOD. There is a discussion from the perspective of developers and their views on the impacts the planning process has on projects they undertake. Finally, examples of incentives and funding strategies that can be used to entice the development community to take on more sustainable projects are reviewed.

3.0 Methodology

Previous studies often focused on an individual factor that influences the development occurring around public transit networks. This thesis aims to compile results for numerous variables to better explain the phenomenon that has occurred with land uses surrounding the Yonge and Spadina subway lines. Following this examination, research regarding ways to encourage more sustainable styles of development is conducted.

This thesis is informed by several research methods to explore those circumstances and search for ways to explain the current differences in the urban landscape. The research methods are a balance of qualitative and quantitative approaches. This chapter will first explain the site selection process and then the empirical data selection. Following this, the photographic analysis methodology is explained along with the method used to create a property value analysis. Transit ridership data collection is also explained as a method to determine the overall differences between the study sites. A review of archive newspaper articles is also conducted as well as a review of existing policies. Finally, a review of stakeholder interviews is conducted.

These methods are used to answer the three major research questions of this study:

1. How can the differences in land use surrounding the northern ends of Toronto's Yonge-University-Spadina subway line be explained?

2. What role do policies (zoning, official plans, etc.) and development incentives play in the development projects undertaken within the city?
3. What practice and policy changes can the city of Toronto make to increase the instances of high-density, transit-oriented development surrounding the subway network (and future transit infrastructure investments)?

3.1 Site Selection

The site selection process for this research involved choosing a reasonably sized study zone around the existing subway lines. As stated in the literature review, standard distance where TOD is effective and residents are willing to walk is approximately 400m, or a ten minute walk, from a station (Calthorpe & Fulton, 2001; Dittmar & Ohland; 2004; Jenks, 2005).

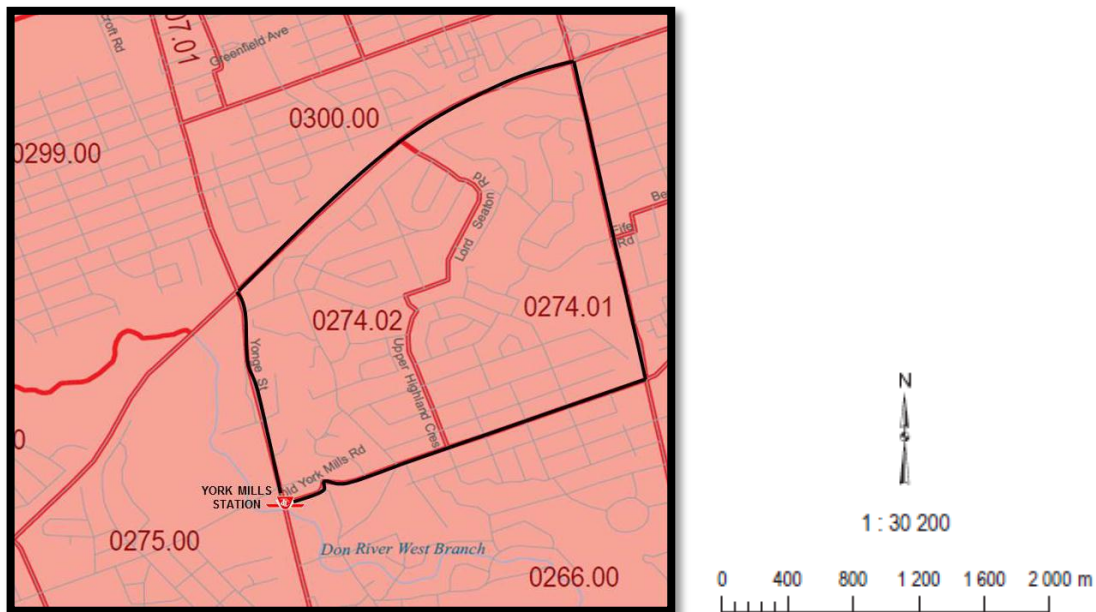
Since this study looks at the conditions of development surrounding existing transit infrastructure, all census tracts (CT) located within 400m of the network are considered part of the study site.

CTs, as defined by Statistics Canada, provide information on a micro level that is site specific. Census tracts are seen as stable geographic areas that typically house populations between 2,500 and 8,000 (Census Tract Profiles, 2006). Archive data is also available at this level from the 1960s to present day. When the population increases in a CT, the CT is split, typically along a major roadway or natural feature within the zone, into new tracts, smaller in area. Census tracts are a common level of spatial disaggregation which allows replication if

other researchers are interested in conducting similar investigations for other transit networks.

A limitation of this study is that some of the census tracts that have split since 1960 do not fall within the 400 metre study zone. In order to show growth in the area over time, all the split tracts, no matter their distance from a station, are included. For example, in 1961 CT 0274.00 was considered one large CT as illustrated by the black border line in **Figure 3.1**. Over time, the population of the tract grew and in 1986, the CT was split into 0274.01 and 0274.02 as illustrated by the red border line in **Figure 3.1**. Although CT 0274.01 is not within 400 metres of the York Mills subway station in the bottom left corner of 0274.02, it is included in this study. This decision will impact the study results, but it is the only way to complete the comparison over the chosen study period.

Figure 3.1 – An example of a split census tract in Toronto



3.2 Study Time Period

The Yonge subway line, north of Bloor St. officially opened in 1954. There were numerous extensions made to that line until it reached Finch Ave. in 1978. The Spadina subway line officially opened north of Bloor St. in 1978 and also experienced several extensions until it reached Downsview in 1996 (this line is currently undergoing another extension north into Vaughan). The changes in built form in the city of Toronto are studied in various methods from 1954 to the present in order to include all the stages of growth in the areas.

Demographic information from Statistics Canada Census Tract profiles was gathered for the time period between 1961 and 2011. Due to availability and quality of information, some of

the characteristics are reviewed for shorter periods of time. Population density is calculated using data obtained for the period from 1971 to 2011. The data collection begins later due to the unreliability of data prior to 1971. Inaccuracies between numbers from 1961 and 1971 would have skewed the results of this study. Data for types of dwellings, as well as period of construction are obtained for the period from 1961 to 2006.

The most recent national census from 2011 has not been fully released and therefore cannot be included in all aspects of this study. Some of the data comes from the 2006 census, while population and density values have been released for 2011 and are included. Future study could continue this research once all 2011 census data become available to determine if trends found in the analysis of this study continue or if the city experiences significant changes.

3.3 Empirical Data

The first step following the literature review was to determine, using demographic information, if there are differences in the urban form along the two subway lines. Several demographic metrics are used in this section. **Table 3.1** shows the different variables that were chosen from Statistics Canada's census database. The sub-variables reflect either the timeframe for which the data are obtained or any further breakdown of the characteristic.

Sub-variables preceded by an * are only examined from 1991 to 1996 due to the unavailability of this specific breakdown prior to 1991. It is important to note that for the

‘type of dwellings constructed,’ the census breaks down the apartment category based on the number of floors. However, this only began in 1991. All numbers recorded prior to that were broken into single detached, semi-detached, apartment or other. In order to obtain more specific data about the types of dwelling units, both breakdowns are used.

Table 3.1 – Summary table of the variables used in empirical data collection

Variable	Sub-variable	Sub-variable
Population Density	1971 - 1981	
	1981 - 1986	
	1986 - 1991	
	1991 - 1996	
	1996 - 2001	
	2001 - 2006	
	2006 - 2011	
	Period of Construction	Before 1946
1946 - 1960		
1961 - 1970		
1971 - 1980		
1981 - 1990		
1991 - 1995		
1996 - 2000		
2001 - 2006		
Type of Dwelling		Single Detached
	Semi-Detached	1971
	Apartment	1981
	Other	1991
	*Apartment >5 storeys	1996
	*Apartment <5 storeys	2001
	*Duplex	2006

These three variables are studied because each one helps to provide details about the state of land use during the study period. Population density provides information about the number of people in each census tract based on the size. Tracts can then be compared on a more equal level based on the number of people per km². The period of construction was included to

gain insight on when dwelling units were constructed along each subway line and whether large amounts of growth occurred at once or if growth was more evenly spread over the life of the system. Finally, the type of dwelling is used to compare the built form surrounding each line of the subway. These data speaks to the number of high density units available to residents compared to lower density options. Overall, these data give an indication of the differences in land use patterns is a function of time in the study sites. Mathematically, these are given as shown in the following sections.

3.3.1 Measuring Population Density

Measuring population density is the most effective way to compare the number of people and jobs in a given area. Population density is defined as the number of individuals living per km² of land. This was calculated for each census tract and then an overall population density was determined for each subway line, during the chosen time period.

Equation 3-1: The population density of CT_i :

$$pd_i = \frac{p_i}{a_i}$$

Equation 3-2: The cumulative population density of CT_i in time period _y:

$$cpd_y = \frac{\sum_i p_{i,y}}{\sum_i a_{i,y}}$$

Where,

pd = population

p_i = population of census tract i

a_i = area of census tract i

cpd_y = cumulative population density in period y

$p_{i,y}$ = population in census tract i in period y

$a_{i,y}$ = area of census tract i in period y

The results of these inquiries are graphed to show the total values and the changes over each time period. A graph is also presented noting the total change in percentage of population over time from a normalized value. These two graphs allow the researcher to visualize the change in density for each time period and each subway line.

3.3.2 Employment Location Information

Employment data are difficult to obtain as Statistics Canada does not compile a public database about employment information similar to the population data released. Several existing documents are examined to inform this aspect of the study including the Canadian Urban Institute's *The New Geography of Office Location and the Consequences of Business as Usual in the GTA* (2010) and the City of Toronto Employment Surveys available to the public from 2003 to 2010.

The Toronto Employment surveys provide data on the employment opportunities available in the study sites in various sectors. The data provide an indication of the types of services offered along each subway route. These surveys also indicate the number of jobs located near the subway stations and allow comparisons similar to those completed with the population

density data. The Canadian Urban Institute's report on office locations in the GTA provided more detail to reinforce the findings of the Toronto Employment Surveys. Data are compiled regarding the types of businesses that located in the city as well as their priority locations. This report also provided data on employment leaving the urban centre and locating in the suburbs and provided the rationale behind these changes.

3.4 Photographic Analysis

Ideally, an analysis of the changes to many parcels located within the 400m zone would be conducted. To accurately measure the land use changes over time, due to time constraints and the scope of this thesis, a photographic analysis was chosen as a research method to attempt to replicate some of the results of a study of this manner. In this section, archive photographs are used to illustrate the development that has occurred along the two subway lines for the study period. Some of the archive photographs were taken prior to the existence of the subway while others were taken in the early stages of its existence. Present day photos, taken by the author or found through online resources, are compared. These 'before and after' photographs provide a means to perform photo observation to demonstrate the differences in development and built form.

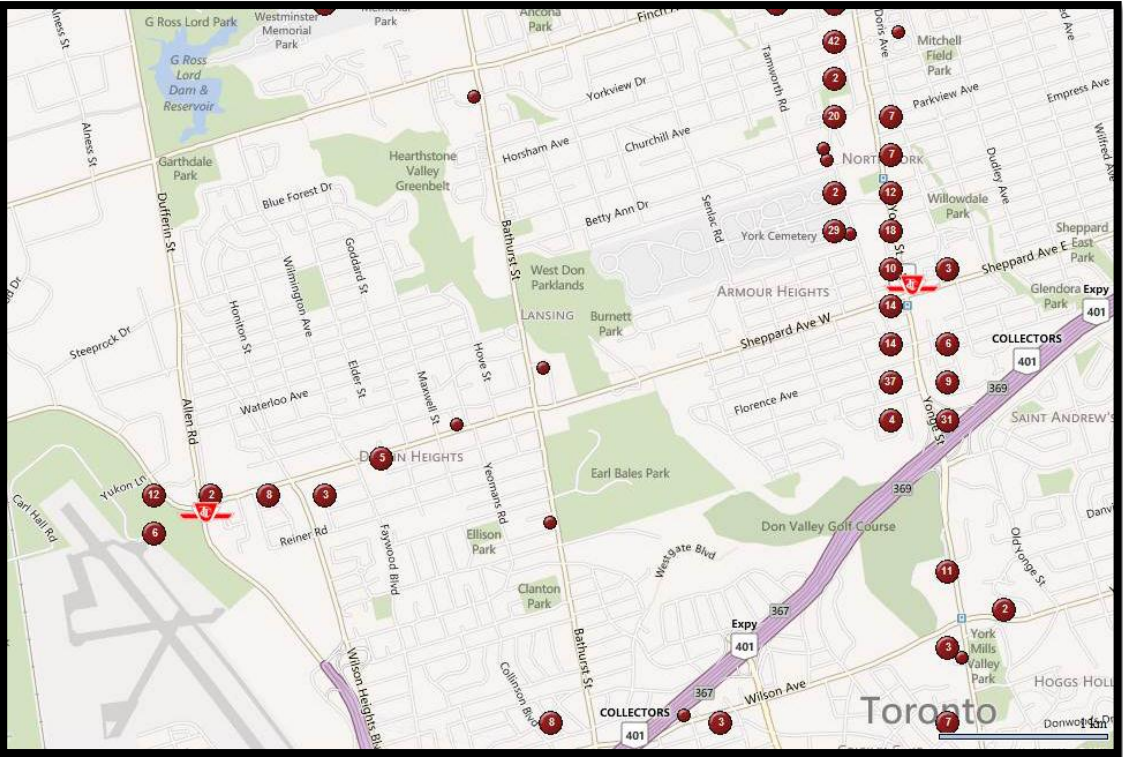
Sources, including an extensive photograph collection in the Facebook group 'Vintage Toronto', are explored. The city of Toronto online photographic archives library is also

utilized as a resource. These photographs provide evidence of the trends represented in the demographic analysis conducted in the earlier stages of the research process.

3.5 Property Value Analysis

The pricing/value of properties along both subway lines can provide an indication of the demand for properties in each area. Data are compiled from the online database of properties listed for sale on *mls.ca*. The maps available on this website also show the number of properties available surrounding each transit station as seen in **Figure 3.2**.

Figure 3.2 – An image showing available properties around Toronto subway stations



Source: *mls.ca*
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Costs are compared in terms of price per square foot for properties along both lines. This helps quantify the relative desire for growth in each corridor. If the costs are higher in one over the other, it can be determined that one is more desirable and competitive than the other. If costs are comparable, the natural momentum for growth may be equal. **Table 3.2** below shows what information is obtained for properties located within 400m of transit stops. Three stations were selected for each corridor. The station pairings are parallel to one another (virtually equal distance from the CBD) and are therefore excellent candidates for comparison.

Table 3.2 – Table used for the cost of living comparison

Station	Downsview ▫ (1)	Sheppard ⌘ (2)	Wilson▫ (3)	York Mills⌘ (4)	Eglinton West▫(5)	Eglinton⌘ (6)
Main Intersection						
Address						
# of Bed/Bath						
Square Feet						
Asking Price						
Maint. Fees /month						
Parking						
Price per ft²						
Cost Difference						
Distance to Subway Station						
TT to CBD						

▫ stations on the Spadina Subway line

⌘ stations on the Yonge Subway line

3.6 Transit Ridership Analysis

Examining ridership distribution at the stations along the Yonge and Spadina lines can provide valuable information relating to the land uses and development around the stations (Grinspun & Miller, 2004). The collection of ridership data is typically broken down to reflect various peak periods during an average day. In this instance, AM peak period boardings (between 6am and 9am) are used to show the difference in travel demand throughout the Yonge-University-Spadina line. The boarding data collected and used in this study are a representation of both north and southbound trips. The reasoning for this is that some of the stations along both networks have central platforms which make distinguishing between north and southbound passengers virtually impossible. In order to ensure equitable data collection, the direction of the traveler is not considered in this case.

Average single day boardings were also examined over the life of the subway network to determine how demand changed over time. Data from 1979, 1997 and 2006 are compiled and compared in terms of percentage of total boardings in the two study sites. Ridership numbers at each station are divided by the total number of boardings at all stations within the study sites to get a percentage of total trips. These calculations are presented on a schematic diagram of the subway networks. Each station is shown as a circle where the radius is proportional to the percentage of trips. This is completed for the three time periods selected.

3.7 Archive Newspaper Article Review

Due to the historical nature of this study, obtaining perspectives on decisions made in the past is difficult. One way to include points of view from the past is to review archive newspaper articles centred on the various stages of subway expansion. This research method provides perspectives from politicians, planners, journalists and residents at the time of the changes. The insights obtained through this review cannot otherwise be compiled. The *Toronto Star* and *The Globe and Mail* online archive database is searched for any articles from the 1970s, 1980s and 1990s that discuss transportation policies, new plans for network expansion and criticisms of the system and the political decision making processes of the past.

3.8 Policy Review

One of the fundamental features of this research is a review of existing and relevant public policy documents. The two case study sites were selected in the same municipality. This means that, for the most part, they fall under the same policy provisions and regulations. This study is informed by many policy documents including the Growth Plan for the Greater Golden Horseshoe (2006), the City of Toronto Official Plan (2010), the North York Official Plan (2000), the North York Centre Secondary Plan (2000 and 2010), the Yonge-Eglinton Secondary Plan (2010), the Yonge-St. Clair Secondary Plan (2010), The Downsview Area Secondary Plan (2006), the Lawrence and Allen Secondary Plan (2011), and the City of

Toronto Zoning by-laws and maps, from the past and present. Each document is reviewed to gauge the overall goals and priorities in terms of future growth within the city and the integration of the transit networks.

This review identifies differences or similarities in policies used to guide growth along the two study sites. The OP is reviewed to provide a framework of the expectations of the city as a whole and its future goals. While many of these policy documents have a variety of goals and objectives, for the purpose of this study, transit and growth related policies are the priority. The extent to which each document is permissive in regards to transit-oriented development and growth aimed at transit centres is reviewed. These policies may provide explanation to differential growth in the study sites.

3.9 Stakeholder Interview Review

In the initial stages of research, the intention was to conduct key informant interviews with members of Toronto's development community to gain their perspective on the development process and some of their struggles with municipal staff and policies. Through the literature review process, a study was found which previously asked many of the researcher's questions to this stakeholder group from both Toronto and Ottawa. Although the interviews are slightly older, conducted in 1995, this immediately preceded some of the large demographic and built form shifts that occur within the city. To gain perspective on how developers and municipal officials felt about policies at the time is a valuable resource.

Additional interviews fell outside the scope of this study but might be a valuable addition for future study.

The study by Skaburskis and Tomalty (1997, 2000, 2003) was conducted in 1995 and posed questions about the planning process to 39 respondents. 18 were from the Ottawa area and 21 from the Greater Toronto Area. From Toronto, 9 developers were interviewed and 12 municipal officials. The interviews were informal, structured sessions that assumed practical knowledge of the planning process.

The key topics covered in interviews conducted by Skaburskis and Tomalty (1997, 2000, 2003) that inform this research include:

- ⊙ The impacts of property taxes on developers decisions concerning housing mix and commercial floor space in a project;
- ⊙ The impact property taxes have in urban vs. suburban projects;
- ⊙ Existing policies and practices favouring one form of development over the other;
- ⊙ The effects of development charges on decisions of building type and lot size;
- ⊙ The role of market demand in the development process; and
- ⊙ The impacts of the municipal approvals process.

This study presents some perspective on the points of view of developers and municipal officials at a time when the built form of Toronto was about to undergo large changes which will be discussed in the demographic information analysis in **Section 4.1**.

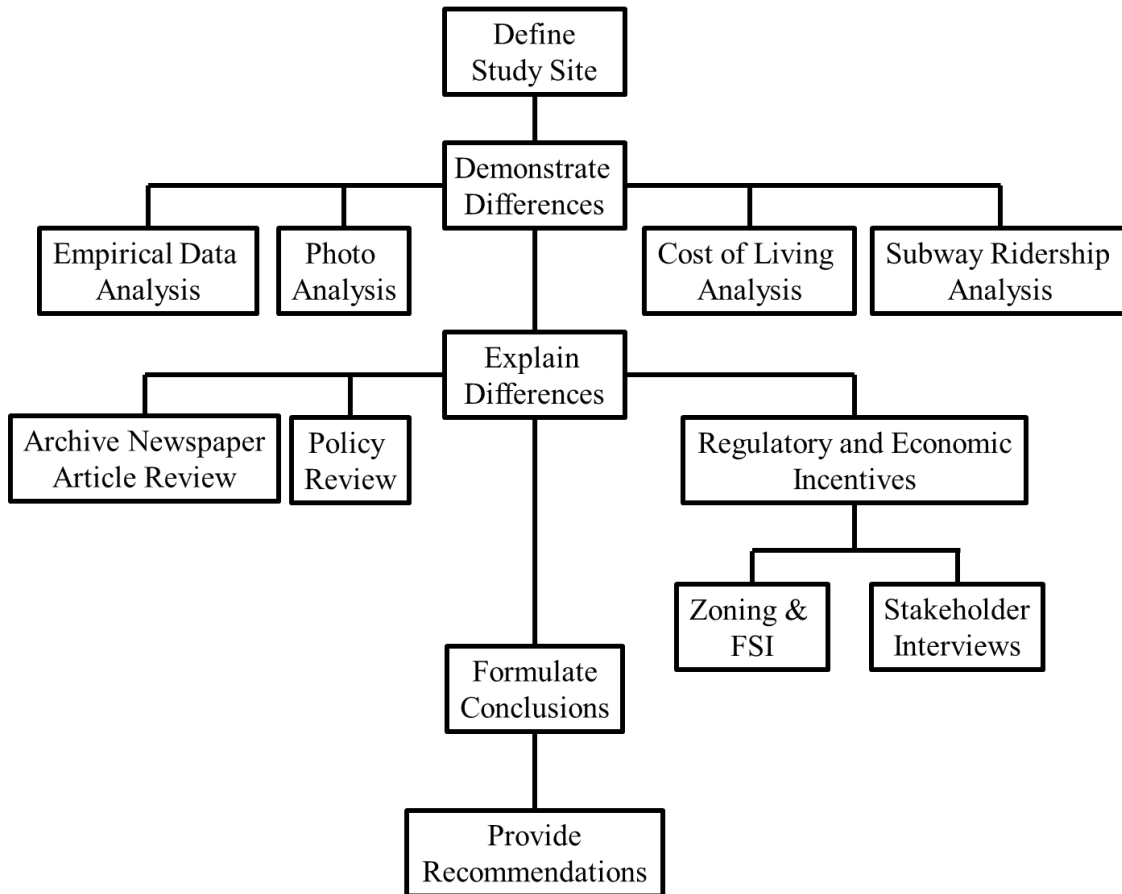
3.10 Summary

This chapter has outlined the various methods used to conduct this study. Qualitative and quantitative research methods are utilized to explore the answers to the research questions. To first determine the existence of a problem that needs solving, demographic information from Statistics Canada was reviewed to create a profile for each route including: population density, type of dwelling units and the period in which they were constructed. Comparisons of the results demonstrate significant differences. A photographic analysis using observation in before and after photographs was also conducted and a property value comparison helped to establish the major differences in land use around the Yonge and Spadina subway lines. Here, also, clear contrasts were observed at the parcel level. Transit ridership data for each study site were also analyzed. An archive newspaper article review was conducted along with an existing policy review. Finally, stakeholder interviews conducted by Skaburskis and Tomalty (1997, 2000, 2003) were used to inform the section on economic incentives for the development community. A summary of these strategies is presented in **Figure 3.3**.

While this thesis draws on many research methods to answer the three main questions, there are two methods that are regarded as highly important in illustrating these points. In terms of demonstrating the differences, the collection of empirical, demographic information shows how the two study sites developed differently over time. The use of density and type of dwelling data illustrates that the built form of the Yonge and Spadina lines are very different.

When explaining the differences, the policy review is key. While the other methods are used to supplement what is found, the policy review shows the true contrast in planning mentality from one study site to the other.

Figure 3.3 – Summary of research methods



4.0 Findings: Yonge and Spadina Subway Corridor Case Studies

Using the methods outlined in Chapter 3.0 this chapter presents the findings of this study. Results from census data, employment location selection data, photographs, property value comparison, ridership information, archive newspaper article review, a planning policy review and a study that conducted key stakeholder interviews are all presented.

The goals of this study are to identify built form and land use differences between the two study sites. The findings presented in this chapter describe the extent of those differences, explain their causes and establish a framework for ways the city of Toronto can improve on current conditions.

4.1 Census Data Analysis

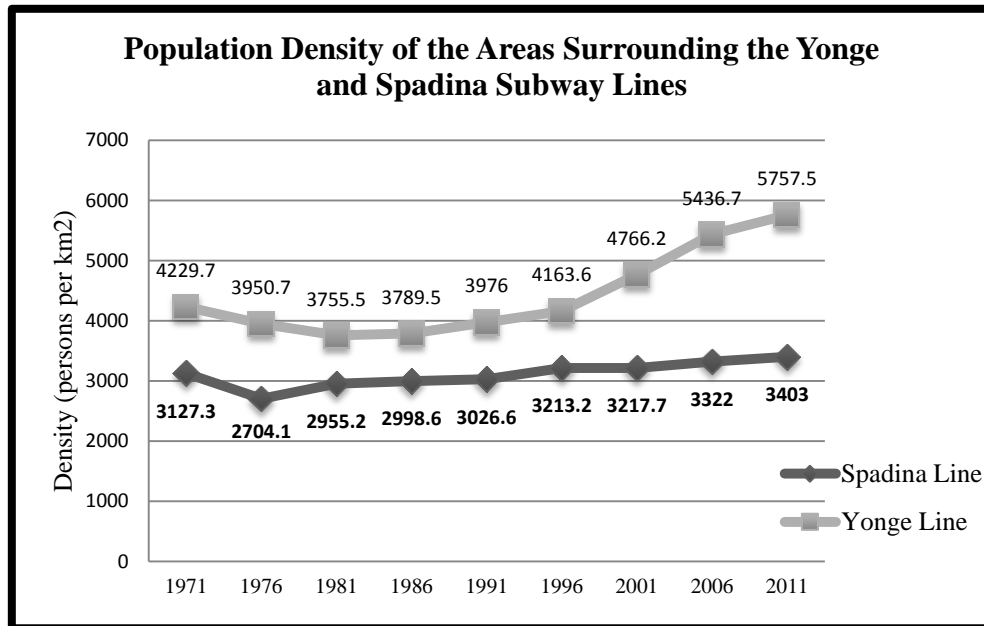
Determining the primary differences between the two study sites is completed through the use of census data from Statistics Canada's quinquennial national surveys. Factors including population density, period of building construction, and type of dwelling units help to create a comparable profile for the study sites. Census data assist in analyzing the built form of these two subway corridors. Data are available from Statistics Canada at a variety of scales including census metropolitan areas, census tracts and dissemination areas. For the purposes of this study, the census tract level, which typically reflects approximately 2,500 to 8,000 residents, is utilized (Kitchin & Tate, 2000).

4.1.1 Population Density

Population density refers to the number of people within a specific area, typically measured in Canada as persons per square kilometre. After determining which census tracts fit within the study zone, a spreadsheet is created that contains each census tract's land area and the population of each tract for all years being studied (1971, 1976, 1981, 1986, 1991, 1996, 2001, 2006, and 2011). The total population for each tract is then divided by the land area value to determine the population density per km². The population density numbers for each tract located along the corridor are averaged to determine the average population density along each subway line during each time period.

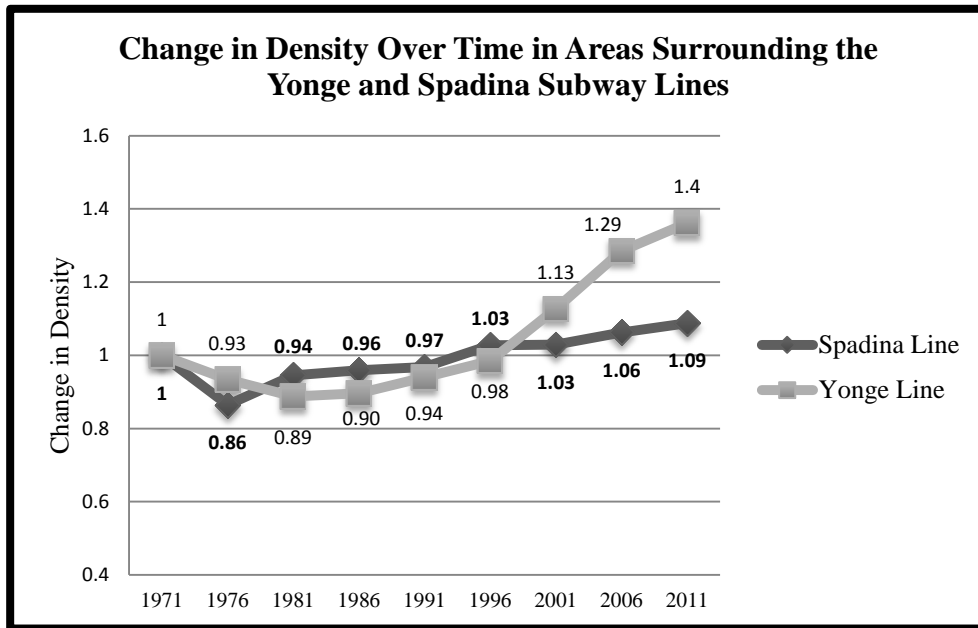
Average population densities for each time period along the Yonge and Spadina subway corridors are then compared to determine the extent of the difference from one line to the other. Both sides saw a drop in density after 1971 but by 1996 the density totals on either side returned to approximately the 1971 level. After 1996 both sides saw an increase in population density. The density surrounding the Yonge line increased at a significantly higher rate than that of the Spadina line. It is clear from the slopes of the lines in **Figure 4.1** that the density along the Yonge line not only increased at a faster rate, but the total density in 2011 is significantly higher, with the Yonge side having 2354.5 more persons per km².

Figure 4.1



When these numbers are normalized, the differences in the rate of change are even more visible, as seen in **Figure 4.2**. By indexing the density numbers to 1971, the rate of change in density from 1971-2011 becomes more evident. The density on both sides dropped slightly in 1976 and for about 10 years, census tracts on the Spadina side maintained slightly higher population density than those on the Yonge side. After 1991, each side saw an increase in population density and a return to the values recorded in 1971. The slope of the lines in the graph indicate that the increases in density are significantly more on the Yonge line between 1996 and 2011. The Spadina line experienced growth as well, but not to the same extent, which is shown through a more level graphic representation. The Yonge side grew by 40% from 1979 to 2011. In contrast, the density on the Spadina side increased only 9% from 1971 to 2011.

Figure 4.2



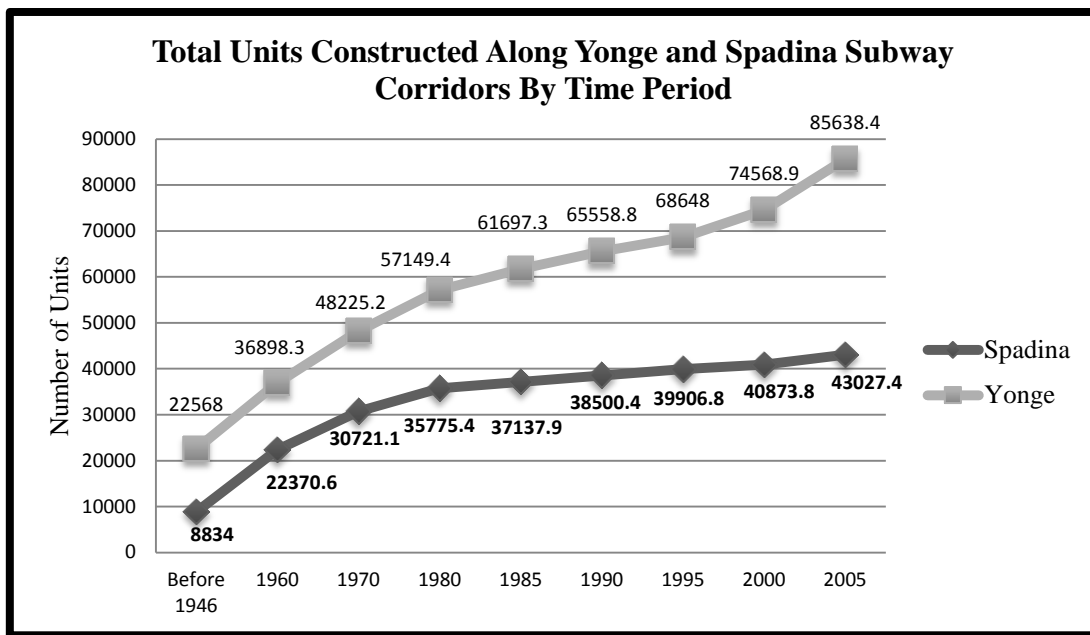
4.1.2 Period of Construction

The relationship between the number of units and when they were constructed should correlate to the density findings. In order to explain growth in density, new residential units would need to have been constructed. This analysis may also help to establish a connection between the investment in transit infrastructure and the development that surrounds it.

From **Figure 4.3** it is clear that the Yonge Line saw a large amount of growth from 1946 to 1980 where new construction levels off slightly. There is another significant increase in new construction of units from 1995 to 2005, with 16,990 units constructed in the 10 year period. In contrast, the majority of growth on the Spadina side occurred prior to 1980 and then development slows significantly in these census tracts with very minimal increase of only

7,252 units in 25 years. There is a significant difference in the total number of units constructed between 1980 and 2010 along each route with the Yonge line having almost twice as many as the Spadina corridor.

Figure 4.3



4.1.3 Type of Dwelling Constructed

Data are also gathered on the types of dwelling units that were constructed along both subway corridors over the study period. These data are available from as early as the 1961 Canadian census, however, the categorical breakdown of property types change in 1991 to provide more specific information about the type of apartments. These values, along with population density results can help to form an understanding of the built form of the two

study sites and examine the overall differences in residential unit selection. Based on the results from the data analysis of census tract population, one could hypothesize that the types of units on the Spadina side would reflect the lower density.

Table 4.1 and **Table 4.2** are representations of the breakdown of single-detached, semi-detached and apartment units located along each line between 1961 and 2006. The percentage of the total units is shown in parentheses beside the actual value. In 1961, single-detached homes represented more than 50% of the total dwelling units along the Spadina corridor and apartments accounted for 30%. By 1991, 32.5% of the units in this corridor were single-detached homes while apartments climbed to 59.3% of the total dwellings. The most recent values, from 2006, show that single-detached homes fell to 26.8% of total units while apartments increased to 65.5%. Semi-detached homes in the Spadina corridor decreased from 53% to 26.8%, about half between 1961 to 2006³.

³ There is no real explanation for the jump in semi-detached homes in 1986. It is possible that the criteria for what is considered a semi-detached were altered and therefore some apartments were considered to be semi-detached. This is evident for both the Yonge and Spadina corridors for 1986.

Table 4.1 – Type of dwelling units by year along the Spadina subway line

Spadina	Single-Detached	Semi-Detached	Apartment	Total
1961	12,533 (53.2%)	3,964 (16.8%)	7,077 (30%)	23,574
1971	15,305 (38.6%)	3,615 (9.1%)	20,795 (52.4%)	39,700
1986	15,290 (32.6%)	15,445 (32.9%)	16,180 (34.5%)	46,940
1991	15,725 (32.5%)	3,980 (8.2%)	28,705 (59.3%)	48,370
1996	15,245 (30.4%)	4,120 (8.2%)	30,835 (61.4%)	50,215
2001	16,165 (31.7%)	5,425 (7.5%)	30,950 (60.8%)	50,935
2006	14,015 (26.8%)	3,980 (7.6%)	34,350 (65.6%)	52,385

In 1961, single-detached homes represented 45.6% of the total dwelling units along the Yonge subway corridor while apartments accounted for 29.3%. By 1991, 32.2% of the units in this corridor were single-detached homes, which is virtually the same percentage as the Spadina side at the time. Apartments in census tracts along the line reached 59.9% of the total dwellings. 2006 data show that dwelling units along Yonge were comprised of 22.8% single-detached homes and 70.3% apartments. Semi-detached homes along the Yonge line decreased significantly from almost 25% to less than 7% of all dwelling units.

Table 4.2 – Type of dwelling units by year along the Yonge subway line

Yonge	Single-Detached	Semi-Detached	Apartment	Total
1961	17,975 (45.6%)	9,341 (24.2%)	11,313 (29.3%)	38,639
1971	21,720 (37.5%)	4,730 (8.2%)	31,530 (54.4%)	57,970
1986	21,680 (33.2%)	17,430 (26.7%)	26,115 (40.0%)	65,215
1991	21,890 (32.2%)	5,380 (7.9%)	40,645 (59.9%)	67,900
1996	18,855 (32.0%)	4,565 (7.7%)	33,935 (57.5%)	58,995
2001	22,725 (29.3%)	6,115 (7.9%)	48,585 (62.7%)	77,430
2006	20,330 (22.8%)	6,075 (6.8%)	62,655 (70.3%)	89,125

Figure 4.4 shows the breakdown of these three types of dwellings using the true numbers as opposed to the percentage value so that the total number of units can also be compared. In all time periods studied, the quantity of dwelling units along the Yonge subway corridor is higher than that of the area surrounding the Spadina subway line.

The lack of detail in the breakdown of these units provides little in the way of concrete evidence of difference along these two lines. There are similarities in the percentages for each type of unit. Since more specific data were available for the styles of apartment units in each census tract from 1991 to 2006, a secondary evaluation was conducted to get more specifications on the built form of these areas. **Figure 4.5** provides a graph similar to **Figure 4.4** but the types of units are broken down more specifically into duplex apartments, apartments shorter than 5 storeys and apartments 5 storeys or more. This provides more insight into the make-up of these census tracts and the differences in built form.

In 1991, census tracts around the Spadina line had more apartments less than 5 storeys tall than around the Yonge line (10,710 vs. 9,860). The Yonge line had more single detached homes (21,890 vs. 17,650) and more apartments of more than 5 storeys (28,880 vs. 17,995). At that time, the Yonge line had a total of almost 16,000 more residential units.

Between 1991 and 1996, 2,015 new units were constructed along the Spadina route and 2,325 along Yonge. The Yonge side had 10,890 more apartment units in 5 storey or more buildings and 4,710 more single-detached homes. Both sides had almost equal amounts of

apartments in buildings under 5 storeys (11,925 vs. 11,385), but proportionally, the Spadina side has a larger amount of mid-rise buildings.

From 1996 to 2001, 5,040 new units were built along the Yonge corridor and 2,855 were built in the census tracts around the Spadina line. Surrounding the Yonge line, there was an increase of 5,810 new apartments in buildings over 5 storeys and a decrease of 850 units in buildings less than 5 storeys tall. On the Spadina side, 605 new units were built in 5 storey or taller buildings, which the number of units in mid-rise buildings dropped by 190 units. 990 more single-detached homes were built in this area during that period.

By 2006 the difference in the total number of units on each side was 32,705 units (89,095 on the Yonge side and 56,390 on the Spadina side). The census tracts surrounding the Yonge corridor had more single-detached homes (20,330 vs. 15,670) and apartments taller than 5 storeys (48,075 vs. 20,360). The Spadina side had more apartment units in buildings less than 5 storeys tall (12,695 vs. 12,465). When examined proportionately, mid-rise units make up a larger percentage of total units on the Spadina side and high-rise units are most abundant on the Yonge side.

Figure 4.4

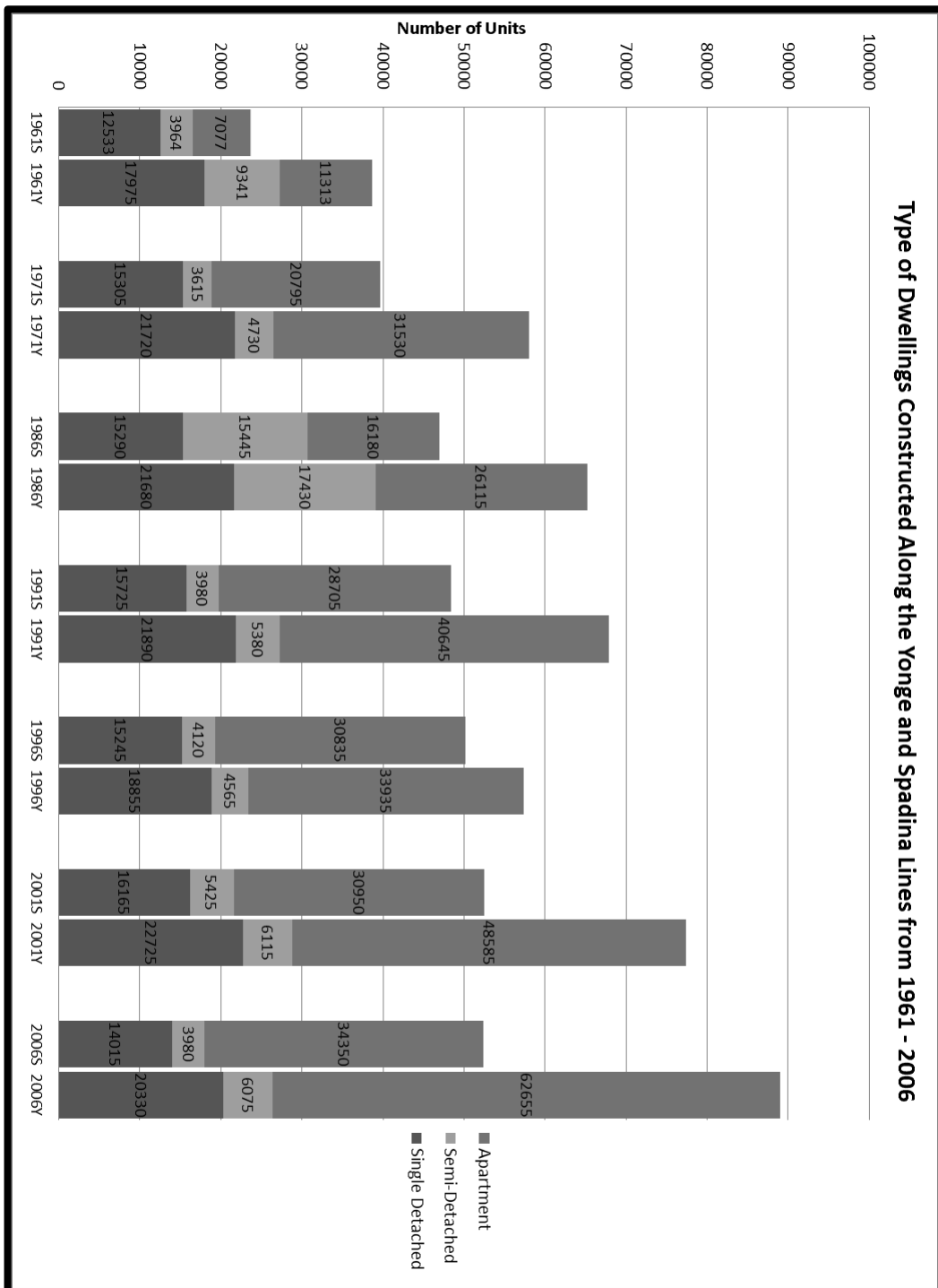
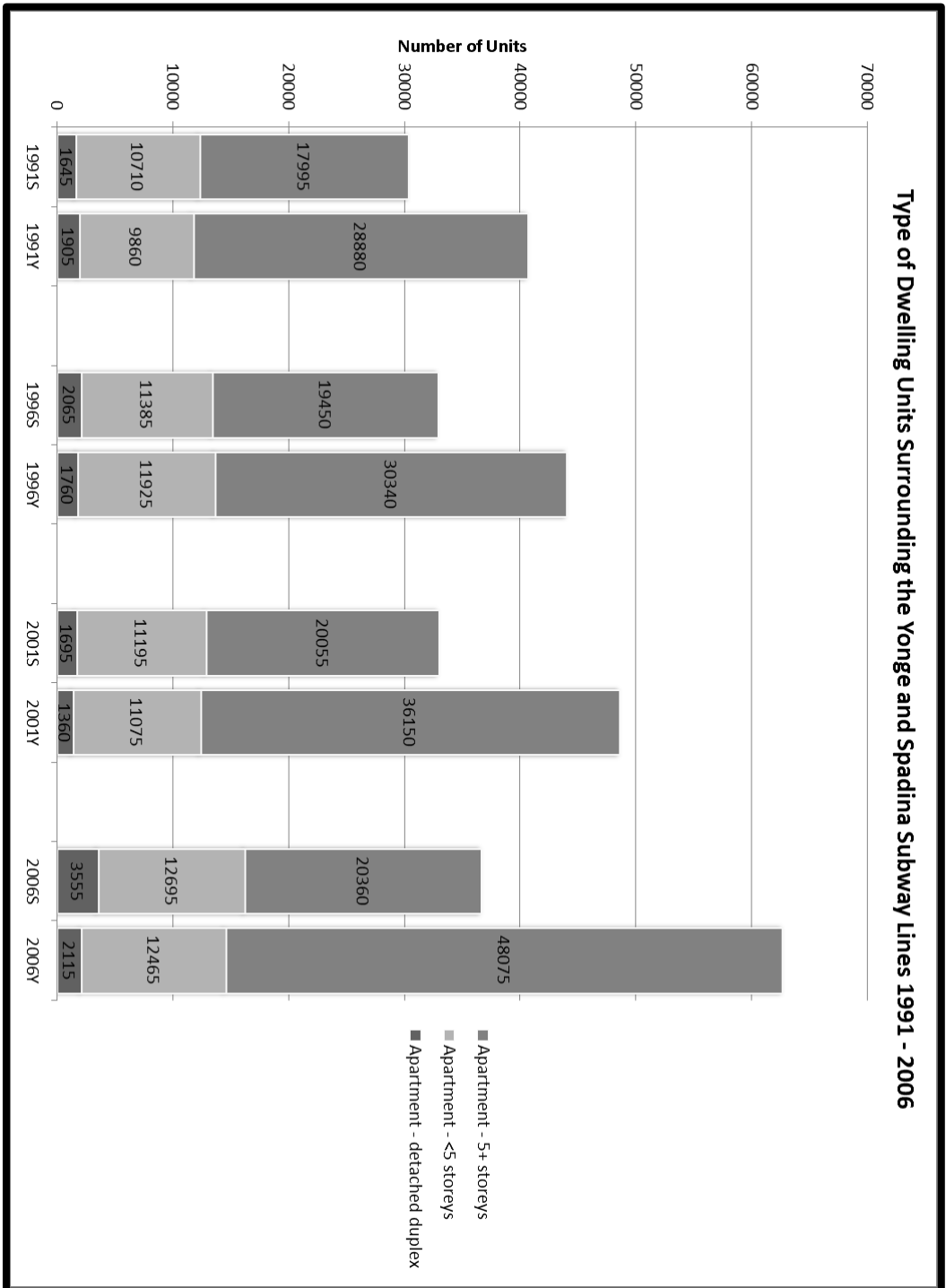


Figure 4.5



Key Findings

This section presents the empirical data that has been collected as a part of this study. The goal of this analysis is to highlight the differences in density and built form in the two study sites. From the data, similar patterns of population density emerge for each study site but with higher rates of growth along the Yonge line after 1996. The growth pattern is also more pronounced when considering the units constructed, with growth in apartments over 5 storeys being most prominent along the Yonge line.

4.2 Employment Location Selection Data

Residential data are covered extensively through the Statistics Canada census, which is updated every 5 years. Employment location data are, however, more difficult to ascertain. Two major resources inform this section of the findings chapter. First is a report published by the Canadian Urban Institute titled '*The New Geography of Office Location and the Consequences of Business as Usual in the GTA*' (2011); second is the city of Toronto Employment Surveys (2003-2011). This chapter also provides the basis for comparing the impacts of employment location on both study sites. An analysis of these impacts can be found in **Section 5.1.2**.

4.2.1 The New Geography of Office Location and the Consequences of Business as Usual in the GTA – Canadian Urban Institute Report

This report discusses the location choice for office spaces and how they have changed over time. Four time periods were selected: pre-1950, 1980, 1999 and 2010. Before 1950, businesses were almost exclusively located in the financial core of Toronto. There were few other options for businesses as transportation options were minimal. The core was home to government buildings, educational facilities, cultural buildings and the majority of the city's shopping.

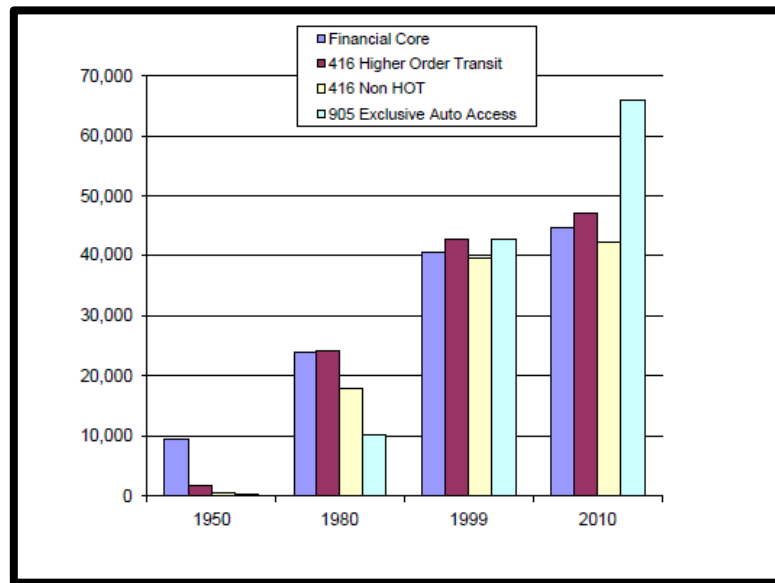
Between 1950 and 1980 office spaces continued to locate in the financial core as well as along transit routes (p. 19). By 1980 there was a shift in this trend and businesses began to locate away from the transit network. Investments and improvements in the arterial road network, and the affordability of automobiles provided greater options for employment location (p. 21).

Employment locations within the GTA saw an unprecedented amount of growth in the 1980s and early 1990s. The growth occurred throughout the region; in the core, along transit networks and most of all, in the suburban '905' district (p. 21) (See **Appendix D** for a map of each district). During this time, over 20 million ft² of office space was developed, equivalent to roughly 100,000 jobs. More than half of that development, 11 million ft² took place throughout the 905. The rapid growth in the suburbs strained the minimal infrastructure that

was in place and development charges were introduced as a strategy to avoid higher taxation on residents to keep up with demand (p. 37). Between 1992 and 1999 growth of office space stagnated as the region recovered from a recession which left a large amount of vacant office space relative to demand (p. 22).

The year 2000 brought with it many challenges. The economy was almost recovered from the recession in the 1990s and the City of Toronto was amalgamated in an effort to reduce costs. This, however, was not the case. The city saw very little growth as most offices elected for scattered, 'non-cluster' locations in the 905 (p. 39). It took almost a decade before office development began to return to the city, although the most of the growth came in the form of six new office buildings (p. 40). The majority of new office development in the City of Toronto built since 2005 (4.6 million ft² of 4.8 million ft²), was built near higher-order transit, but that development centred on the Yonge Street line (p. 23). **Figure 4.6** shows the total growth in each district for 1950, 1980, 1999 and 2010.

Figure 4.6 – Location selection for office space in the GTA



Source: (CUI, 2010)

In the late 1980s to early 1990s, 63% of the region’s office space was located in the Financial District or directly on subway lines. This report found that in 2010 the majority of office space, 54%, is now located beyond the reach of higher-order forms of transit. The report states that this may be the biggest shift in the region’s geography since businesses relocated from Montreal to Toronto in the 1970s (p. 19). The CUI concludes that office space within the region is now divided into four categories: the Financial Core (22%), the Toronto Transit-Oriented Submarket (24%), the Toronto “Non-Transit” Submarket (21%), and the Suburban Municipalities, the 905 (33%). Figures showing the boundaries for each of these regions can be seen in **Appendix B-D**. The Financial District and the Suburban Municipalities, although

major parts of the region, are outside the study site for this thesis. However, the 905 does play a role in the movement of businesses over time within the GTA.

The CUI report also seeks to explain why properties in the 905 district were so attractive to employers and led to the shift in office location. A major catalyst for change involved rental fees and taxes, more specifically higher rates in the city versus the suburbs. There are numerous taxes at play in this scenario, the first being the Business Education Tax (BET) (p. 25). The rates for this tax are significantly higher in the city than in surrounding suburbs despite an attempt from the province to balance the rates. Although this tax is only a small percent of total occupancy costs, employers in the city are paying more than their suburban counterparts. The education tax rate in Toronto is 1.6% of the assessed value in comparison to 1.29% in Vaughan (p. 26).

Property tax rates are also significantly higher in the city than the 905 district. From 2004 to 2010 there has been minimal change in the property tax rates in both the city and surrounding suburbs. The tax rate in the city is significantly higher at an average of \$10.69 per square foot, compared to an average of \$3.47 per square foot in the suburbs. Promised provincial change for the BET has had minimal impact and tax rate incentives are being offered on new construction when most new office spaces in the city are adaptive reuse projects (p. 26).

4.2.2 Toronto Employment Surveys (2003-2011)

The Toronto Employment Survey is a data collection exercise through which economic changes can be monitored. The data can also be used for forecasting and aiding in policy decisions. Toronto city staff has been conducting this survey since 1983. Almost 74,000 businesses in the city are contacted from which information is collected regarding the number of employees and the type of work conducted at each site. These surveys are then used to identify employment districts that can be analyzed based on their varying characteristics. **Figure 4.7** and **Figure 4.8** show the breakdown of these districts in the city. The three areas of focus for this study are highlighted with black boxes.

Figure 4.7 – Employment Centres in the City of Toronto

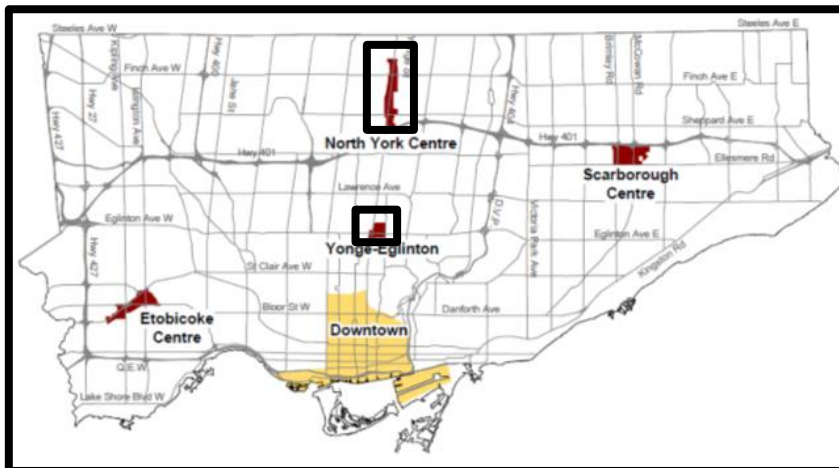
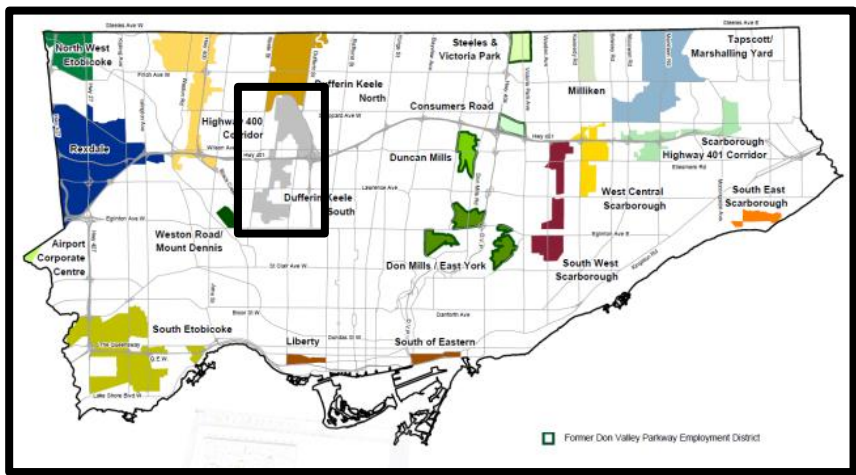


Figure 4.8 – Employment Districts in the City of Toronto



Source: Toronto Employment Surveys (2010)

These surveys provide information on the types of employment in each district and the total number of jobs in each employment sector. In the North York Centre, as of 2011, there are a total of 36,500 jobs. Roughly 30,400 or 84% of those jobs are in the office sector. These office sector jobs include Federal and Provincial government offices, investigative services (security guards and patrol services), banking services and insurance companies.

Yonge-Eglinton Centre has fewer employment opportunities at 16,900 jobs. 13,000 of those jobs, 76.9% are in the office sector and 1,700 jobs, or 10.1% are in the service sector.

The Dufferin Keele South Employment District has 24,600 jobs in a significantly larger area. Office sector jobs in this district have fallen in recent years, although the service sector remains the largest in the area at 9,800 jobs, or 40%. The office-related employment in this district is in the mining, manufacturing, transportation, utilities, construction and resource

production sub-sector. This is a contrast to the office jobs in North York Centre where the Manufacturing and Retail sectors are the next largest at 5,100 and 5,000 jobs with Retail seeing the most gains recently.

Key Findings

This section shows that there are differences in the type and density of employment opportunities in the two study sites. The results of this section show a general decentralization of employment locations from the city to the surrounding 905 region. Also, differences in the types of employment emerge with more office and retail locating along the Yonge line and more industrial and manufacturing buildings along the Spadina line. These trends likely have transportation demand impacts.

4.3 Photographic Analysis

A comparison of photographs between the past and current built forms provides visual evidence of more rapid commercial and residential growth along the Yonge line compared to the Spadina line. A search through the city of Toronto's archive photograph database yielded several photos from before the subway's existence and the early stages of service. Updated versions of these images were taken by the author or found through online sources.

4.3.1. Spadina Subway Corridor

The following photographs are from different locations along or surrounding the Spadina Subway Corridor. Only the most impactful images have been included in this section but additional examples can be seen in **Appendix E**. **Figure 4.9** was taken in 1960 looking east along Wilson Ave, a major east-west arterial in the city, at Dalehaye St., approximately 400m from Wilson Station. This photograph was taken prior to the existence of Wilson Station along the Spadina line, which did not open until 1978. In this photograph, Wilson Ave. is a four lane road with 2 storey residential apartment structures on either side of the street. On the right side, in the forefront of the photo, a gas station is visible.

Figure 4.10 was taken in 2012 from almost the same spot on Wilson Ave. just west of Dalehaye St. When comparing these two photos, it is clear that very little change has occurred in this area in over 50 years. Wilson Ave. remains a four lane arterial road, surrounded by the same 2 storey residential buildings on either side of the street. These buildings are now covered by the mature trees visible on the left side of the image. The gas station, visible in the photo from 1960 is still the site of a gas station. There has been no intensification or changes to the built form of this neighbourhood. Its characteristics appear to have been unaltered despite the introduction of a subway station nearby in 1978.

Figure 4.9 - 1960 – Wilson Ave. looking east from west of Dalehaye St.



(Source: Toronto Photo Archives)

Figure 4.10 - 2012 – Wilson Ave. looking east from west of Dalehaye St.



(Source: Author Photo)

Figure 4.11 was taken in 1978 on the opening day of the Eglinton West Station, which is visible in the background of the photo. The station is located on top of the overpass above the subway tunnel and the Allen Expressway. This photo's orientation is facing south towards Eglinton Ave. The two lanes where the Allen Expressway ends at Eglinton Ave. are congested with automobile traffic, even in 1978. Single-detached homes surrounding the expressway are also visible on the left side of the photograph.

Figure 4.12 was taken in 2012 from the same location looking south towards Eglinton Ave. The differences between the two photos are minimal. The number of lanes on the highway have not changed, there is little in the way of development around the station, seen in the background, or visible surrounding the highway. The houses that were visible in the archive photograph are no longer visible on the left side of the picture because of the greenery so it is unclear if they have remained the same.

Figure 4.11 - 1978 – Eglinton West Station looking south



(Source: Toronto Photo Archives)

Figure 4.12 - 2012 – Eglinton West Station looking south



(Source: Author Photo)

4.3.2 Yonge Subway Corridor

The following collection of photographs provide before and after perspectives along the Yonge Subway corridor with archive photos from the 1960s and 1970s and current photos taken by the author. Additional photographs and their examinations can be found in

Appendix F.

Figure 4.13 was taken in 1968 at Yonge St. and Avondale Ave. looking north-east. This intersection is located between Sheppard Ave. and Highway 401, approximately 400m from what is now Sheppard Station. There are two single detached houses on the right side of the photograph. The structure to the north appears to contain a retail business. North of these two houses are retail strip plazas and a gas station. There are three lanes of traffic in each direction along Yonge St.

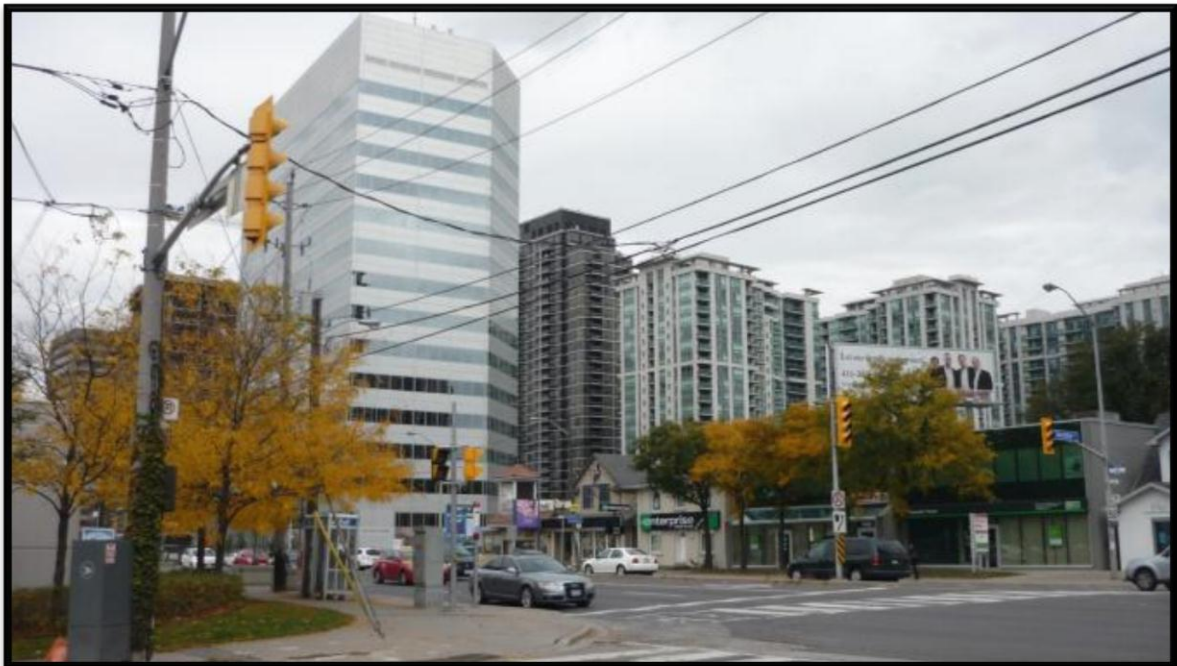
44 years later, this strip of Yonge St. has changed dramatically, as seen in **Figure 4.14**. The two houses from the archive image are still visible in the photo from 2012, only now they are surrounded by high-rise office and residential towers. Significant growth has occurred along street but some historical features have been maintained.

Figure 4.13 - 1968 – Yonge St. and Avondale Ave. looking north-east



(Source: Toronto Photo Archives)

Figure 4.14 - 2012 – Yonge St. and Avondale Ave. looking north-east

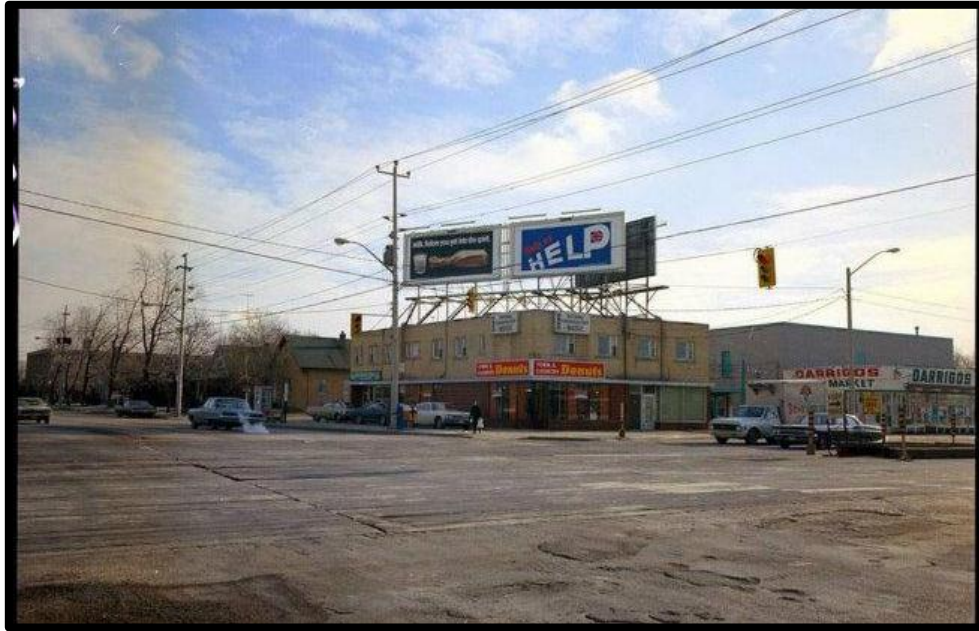


(Source: Author Photo)

Finally, **Figure 4.15** and **4.16** show the south-east corner of the intersection of Yonge St. and Finch Ave. in 1972 and 2009. The two storey building on the corner appears to be retail on the main floor and the second floor use is unclear. In 1972, Yonge St. appeared to be two lanes of traffic in each direction. Eastbound on Finch Ave. there are a number of single detached houses. The cut and cover tunneling technique that was used for the extension of the subway to Finch is clearly visible in this image.

In the updated photo, the building on the corner remains with retail on the main level and office space on the second floor. The houses along Finch Ave. have been replaced by a condominium complex with retail at street level. Yonge St. has been widened to three lanes of traffic in each direction. It also appears that the setbacks for the buildings have been reduced by this road widening. Store-front parking has been replaced by on street parking on Yonge St.

Figure 4.15 - 1972 – Yonge St. and Finch Ave. looking south-east



(Source: Toronto Photo Archives)

Figure 4.16 - 2009 – Yonge St. and Finch Ave. looking south-east



(Source: Vintage Toronto Facebook Group)

Key Findings

This section is included in this study to provide visual representation of the changes that have occurred along the Yonge and Spadina subway lines over time. The images in this section are telling of the transformations in land uses along each subway line. They provide an easy and direct way to compare the built forms around each study site.

4.4 Property Value Analysis

As a part of this thesis, a property value analysis is completed for available properties along the study sites. To complete this comparison, properties were selected along arterial roads within walking distance of a station (400m) (an exception was made for the property near Eglinton West station as there were no available properties within the 400m zone). Using *mls.ca*, properties were selected with the same number of bedrooms and bathrooms, while square footage was not a priority in the search. The stations were selected randomly based on property availability, but similar proximity to the core of Toronto was crucial for more accurate comparison. **Figure 4.17** provides a schematic drawing of Toronto's subway network including the locations of the six properties used for this analysis. Although the selection of properties represents only a small sample size, they are meant to provide context for the market momentum in both study sites.

Figure 4.17 – Schematic map of locations used in the property value analysis



The first two properties are located on Sheppard Ave., one north-west of Downsview station and the other north-east of Sheppard station. Each unit is a 1+1 bedroom condominium with one bathroom. The Downsview unit has 26 extra square feet. The Sheppard condo, although smaller in size, costs \$42.18 more per square foot. Monthly maintenance fees for the tenant are \$59.94 more per month in the Yonge and Sheppard apartment. One parking space is also provided for each of the units. The closest subway stations to these properties are less than a three minute walk and a trip to the CBD takes approximately 35 minutes.

Properties near Wilson and York Mills stations are compared in the same manner. The first condominium is located on Wilson Ave., south-east of Wilson station. The second property is located on Old York Mills Rd., south-west of York Mills station. The units are larger than the previous two, with two bedrooms and two bathrooms in each. They are an option for small families or may be attractive for roommates sharing expenses.

The York Mills unit has 113 extra square feet but costs \$107.79 more per square foot than the property on Wilson Ave. Maintenance fees in the York Mills apartment are \$240.83 more per month. Parking is provided for the Wilson condo while there was no mention of parking in the advertisement for the York Mills unit. Renting a parking space for the York Mills unit, if one is not provided, could add an extra \$15,000 - \$20,000 to annual living costs (Wong, 2011; Chittley, 2012). These residential units are located within a 3-4 minute walk to the closest station and travel time to the CBD is approximately 32 minutes.

A third comparison was completed for properties near Eglinton and Eglinton West stations. At the time of this study, there were no properties with comparable size units available within 400m of Eglinton West station (there were a handful of single detached homes but that style of housing is not available near Eglinton station). These two condominiums have two bedrooms and two bathrooms, the Eglinton property is 60 square feet larger. The price per square foot for the Eglinton condominium is \$139.27 more than the unit found near Eglinton West station. The monthly maintenance fees are equal for the two units and both have an underground parking space.

There is a dramatic difference in the distances to the closest transit station, with the unit for Eglinton West being located 1.3 km away from the station. The lack of available properties near Eglinton West speaks to some of the main issues behind this thesis study. The Eglinton property is a two minute walk from Eglinton station. Taking into account walking time to the station, total travel time for a trip to the CBD from the Eglinton West condominium would be 39 minutes, while a trip from the Eglinton unit would take 25 minutes. Through this comparison, it is clear that properties along the Yonge subway line are more costly to residents than similar units on the Spadina line despite similar characteristics. **Table 4.3** provides a summary of the results of this property value analysis.

Table 4.3 – Summary table of the property value analysis

Station	Downsview ▫ (1)	Sheppard ⌘ (2)	Wilson▫ (3)	York Mills⌘(4)	Eglinton West▫(5)	Eglinton ⌘(6)
Main Intersection	Allen and Sheppard	Yonge and Sheppard	Allen and Wilson	Yonge and York Mills	Dufferin and Castlefield	Yonge and Eglinton
Address	#1410 - 1070 Sheppard Ave. W.	#2307 - 33 Sheppard Ave. E.	#265 - 525 Wilson Ave.	#708 - 10 Old York Mills Rd.	#129 - 1001 Roselawn Ave.	#2011 - 2191 Yonge St.
# of Bed/Bath	1+1 Bedroom 1 Bath	1+1 Bedroom 1 Bath	2 Bedroom 2 Bath	2 Bedroom 2 Bath	2 Bedroom 2 Bath	2 Bedroom 2 Bath
Square Feet	656 ft ²	630 ft ²	987 ft ²	1100 ft ²	1030 ft ²	1090 ft ²
Asking Price	\$339,900	\$353,000	\$395,990	\$559,900	\$399,900	\$575,000
Maint. Fees /month	\$318.30	\$378.24	\$430.00	\$670.83	\$586.02	\$580.05
Parking	Included	Included	Included	N/A	Included	Included
Price per ft²	\$518.14	\$560.32	\$401.21	\$509.00	\$388.25	\$527.52
Cost Difference	\$42.18/ft ² (~7%)		\$107.79/ft ² (~20%)		\$139.27/ft ² (~25%)	
Distance to Subway Station	250 m / 3 mins walk	220 m / 3 mins walk	200 m / 3 mins walk	300 m / 4 mins walk	1.3 km / 16 mins walk	130 m / 2 mins walk
TT to CBD	35 mins	34 mins	32 mins	31 mins	39 mins	25 mins

▫ Located along the Spadina Line

⌘ Located along the Yonge Line

Key Findings

The goal of this section is to highlight the difference in demand for properties in the two study sites, as is evident from the costs associated with the properties selected. Although the properties selected represent a small sample size, despite their equal proximity to transportation and the CBD, there is clear market momentum on one side and not on the other.

4.5 Transit Ridership Analysis

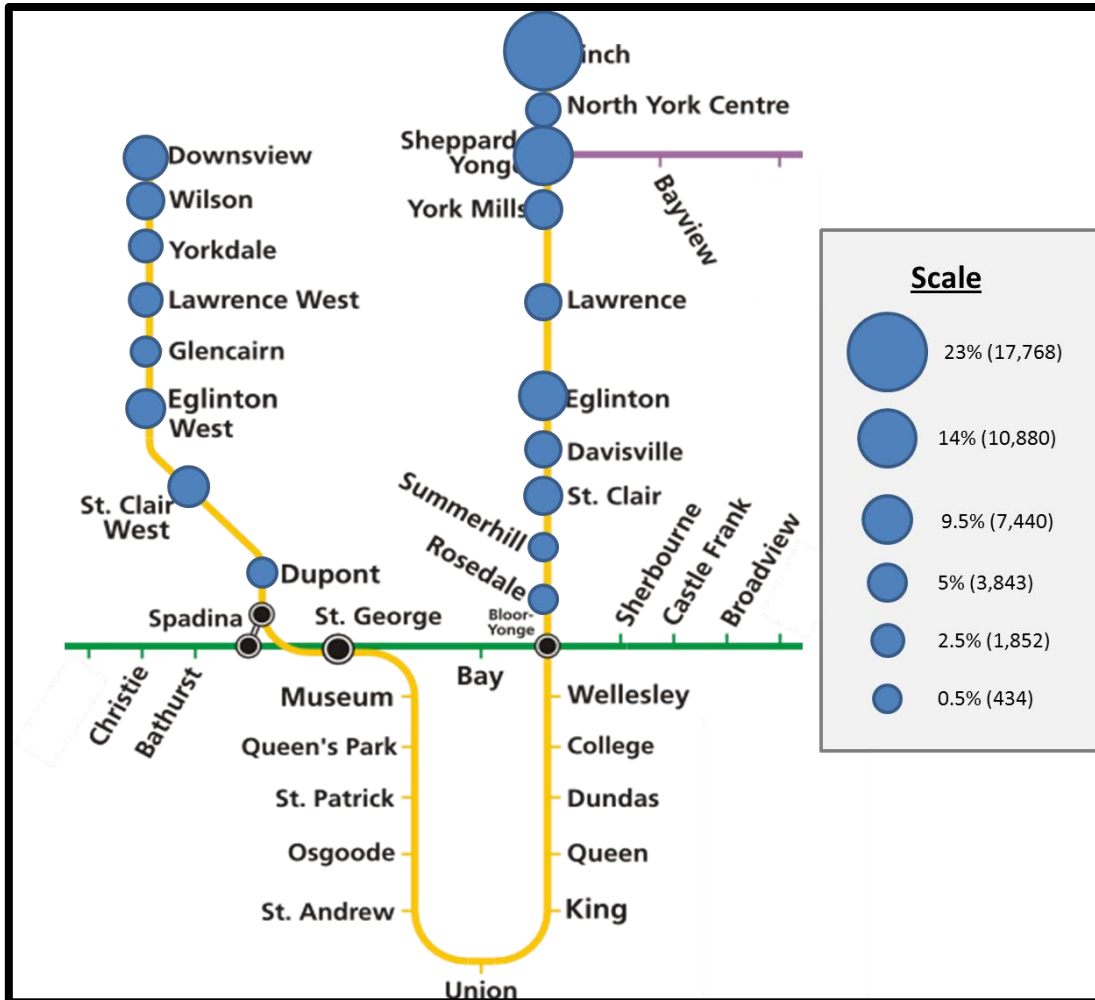
The number of transit boardings can be an indicator of the demand placed on each station and each section of the subway network. These data can also be a reflection of the development and momentum in the surrounding neighbourhoods. Taken from the *2006 Station Platform Usage Counts Report* from the Toronto Transit Commission, the data presented in **Figure 4.18** show the AM peak boardings at the stations along the Yonge and Spadina subway lines. The data are presented as a percentage of total AM peak period boardings throughout the system. The data are presented using a circle, the radius of which is proportional to the percentage of total boardings occurring at each station in the two study sites. From the graph it is clear that overall usage is higher on the Yonge line compared to the Spadina line.

Finch station, the most northern end of the Yonge Line, has the highest ridership count with 17,768 boardings in the peak period. In contrast, Downsview station, the most northern station on the Spadina line, saw only 5,928 boardings, only approximately 30% of the

boardings at Finch station. Boardings at Eglinton station (Yonge) significantly outnumber those at Eglinton West station (Spadina), by 3,278 riders per day. Summerhill station has the fewest boardings of all the stations with only 434 boarders between 6am and 9am.

In terms of AM peak trips, the Yonge line appears to have stations with significantly more ridership and some with a low number of boardings. In contrast, the boardings on the Spadina line are more evenly dispersed between the eight stations. This presents an interesting case as there may be pockets of extremely high density on the Yonge line but the low density of the Spadina corridor may have an influence on the more even ridership findings.

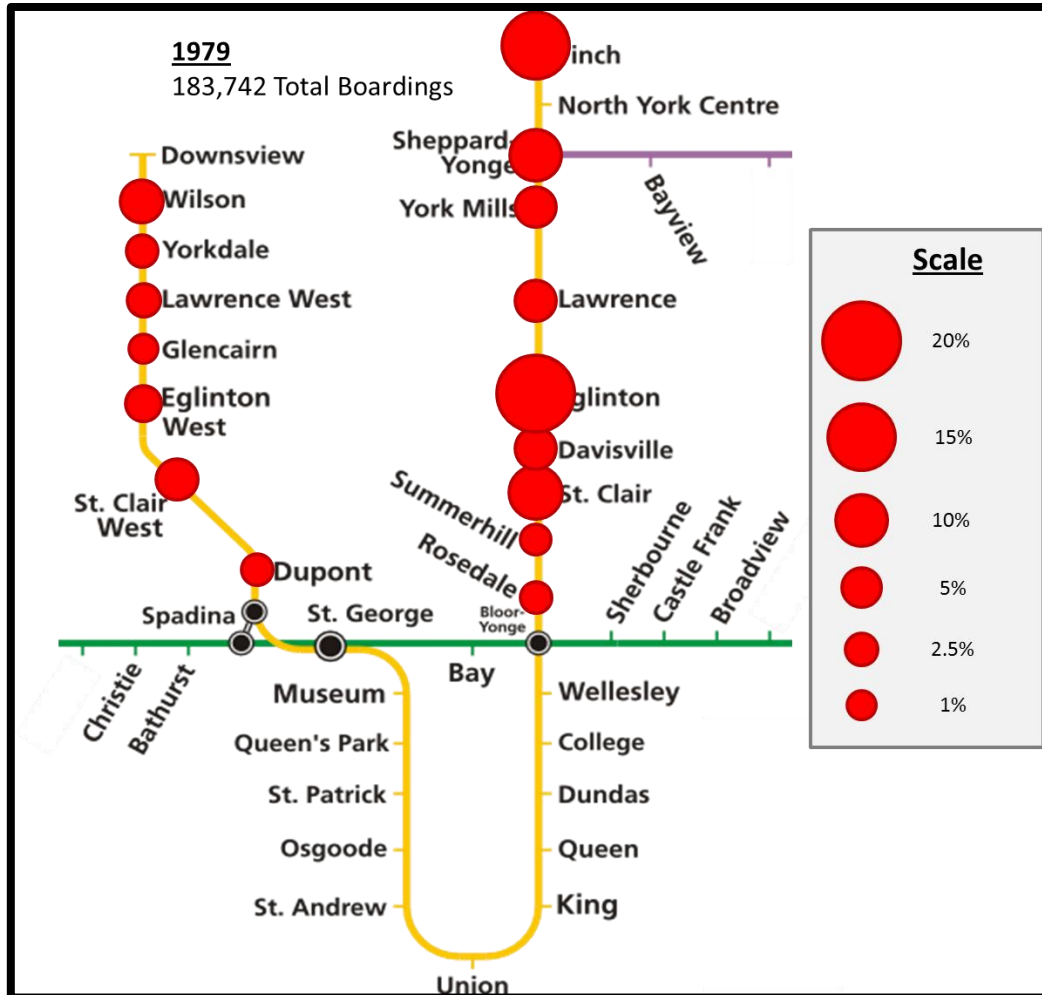
Figure 4.18 – AM peak boardings represented by the percentage of total trips at each station



The 2006 *Station Platform Usage Report* also provides information about the full day boardings at each station since their opening. All day boardings for each station in the study sites were compiled from 1979, 1997 and 2006 to compare how the dispersion of riders has changed over the life of the system.

In 1979, 75% of boardings were dispersed along the Yonge line while the Spadina line only carried 25% of riders from north of the Bloor-Danforth line. Finch, Eglinton and St. Clair stations accounted for most of the boardings along the Yonge line but must stations saw higher boardings than all those on the Spadina line. The highest number of boardings on the Spadina line in 1979 was at the end of the line, which at the time was Wilson station (only 6.4% of total boardings). Full day boardings on the Spadina line were more evenly distributed but were significantly lower (see **Figure 4.19**).

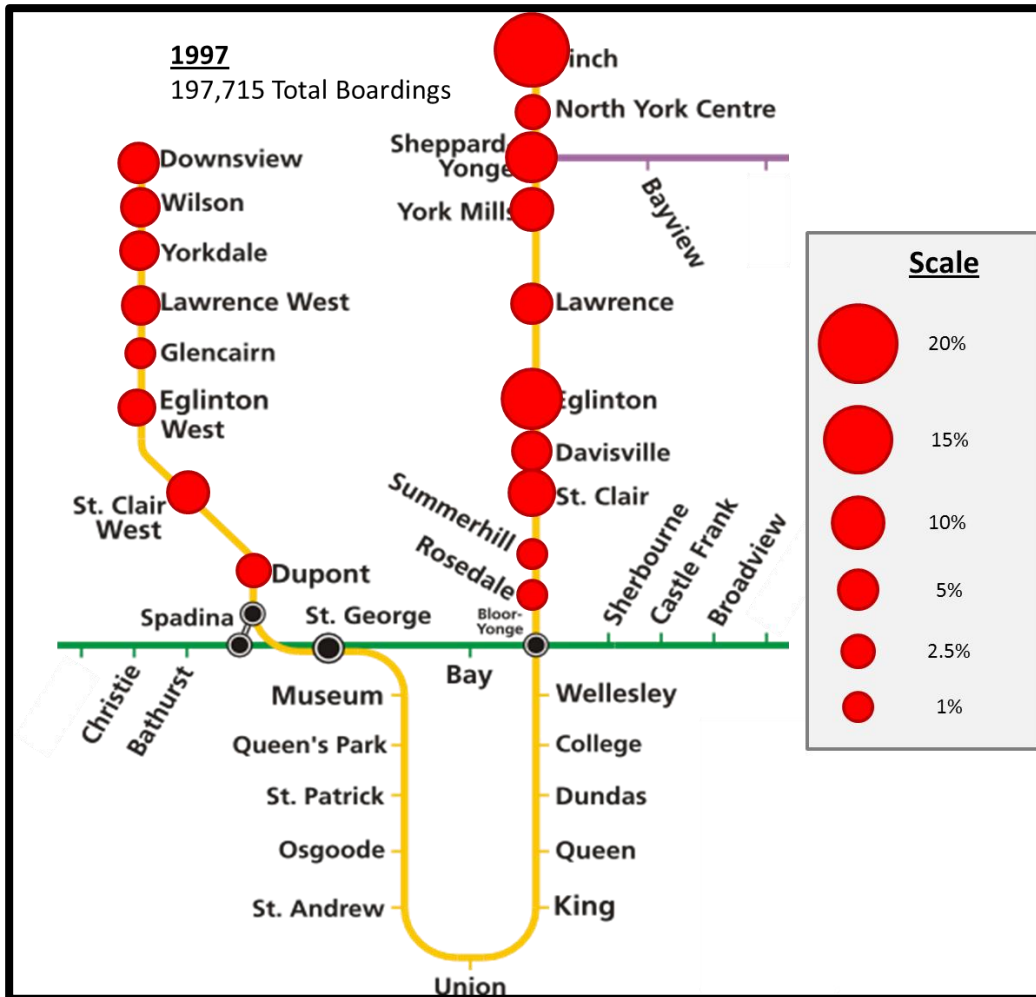
Figure 4.19 – 1979 full day boardings represented by a percentage of total trips at each station



By 1997 the percentage of trips taken on the Yonge line decreased slightly to 68% of total trips. The Spadina line saw the opening of Downsview station as the new end of the line and boardings were, again, evenly distributed along the line with most stations accounting for between 3% and 5% of trips. Trips on the Yonge line were more dispersed than in 1979 but Finch, Eglinton and St. Clair stations still accounted for 40% of all boardings on both lines.

Some stations on the Yonge line, including Summerhill and Rosedale had only 1% of total boardings (see **Figure 4.20**).

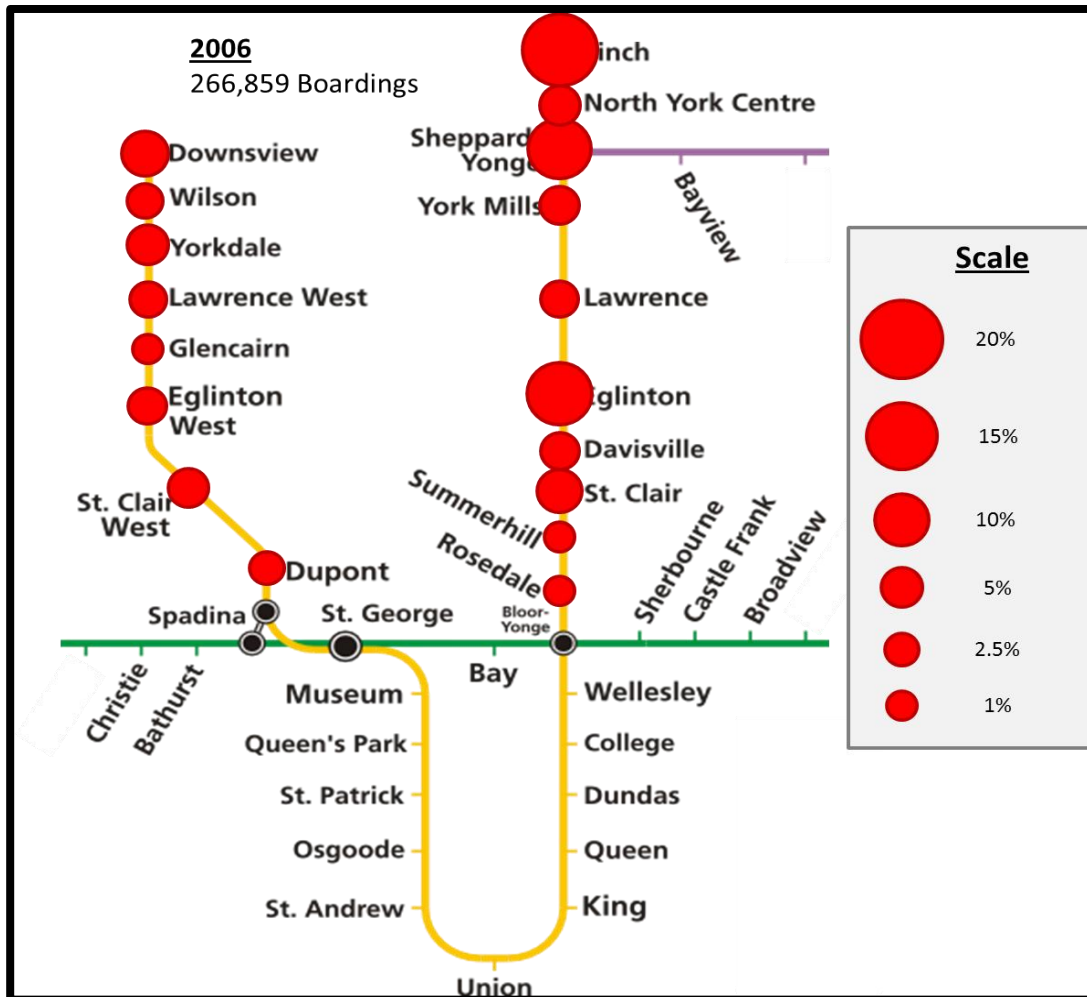
Figure 4.20 – 1997 full day boardings represented by a percentage of total trips at each station



The division of boardings between the two lines did not change significantly between 1997 and 2006. 69% of trips were still taken on the Yonge line. Following the introduction of the

Sheppard subway line in 2002, Sheppard station saw a significant increase in boardings increasing by 4%. After the number of boardings dropped at Eglinton station in 1997, they increased slightly in 2006. The Spadina line still had a more even distribution of boardings between the eight stations. Downsview and Yorkdale stations saw the largest increases but they were not significant. Eglinton West, St. Clair West and Dupont stations all saw slight drops in boardings in the nine year period (see **Figure 4.21**).

Figure 4.21 – 2006 full day boardings represented by a percentage of total trips at each station



Key Findings

This section is meant to provide a review of the demand placed on Toronto's transit infrastructure based on the ridership at each station in the study sites. The ridership analysis points to a dominance of the Yonge line but also shows less uniformity in the ridership along this route. This indicates pockets of high intensity along the Yonge line and more even dispersion along the Spadina line.

4.6 Archive Newspaper Article Review

Through a review of archive newspaper articles from the *Toronto Star* and *The Globe and Mail*, major themes emerged. First, there was a very public debate occurring regarding transit investments and the controversy surrounding the proposed Spadina Expressway. Second, there were discussions about station placement and a shift away from suburban development to more transit-oriented development communities. Finally, there was discussion regarding the initial conditions that existed on either side of the network when expansion of the system occurred.

In relation to the Spadina Expressway, the debate between politicians and the public over this new freeway eventually led to the lands where the current Spadina subway line exists. The right-of-way had already been established and work on the foundation for the expressway had already begun when the decision was made to eliminate the majority of the highway to avoid cutting through mature city neighbourhoods. By 1962, it was decided that the subway

extension would run along the centre of the right-of-way for the Allen Expressway (Spadina Expressway Controversy is a Phony Issue, 1962).

Early newspaper articles also suggest that residents and politicians at the time believed that new transit projects, mainly subways, would automatically promote new and increased investment in certain neighbourhoods of the city (A Reprieve not a Solution, 1963; Campbell, 1963).

Recurring themes through the review of include; the negative qualities of the suburbs; “Increasingly, politicians, planners and critics of development alike are agreeing that the picture [of sprawl] that has emerged is not pretty” (McInnes, 1992), a need to rely less on automobiles; “Urban designers aim to reduce Canadians’ dependence on cars by integrating land use planning and transportation policy” (The Choice is up to Us, 1993), shift towards intensified cores, higher density communities, importance of supportive zoning and policies; “When it comes to housing, intensification is in, zoning is out” (Vaughan, 1992), employment location selection, cost of living comparisons, and station location choices; “Why is there a subway line ending here, in the middle of nowhere?” (Barber, 1995). All of these themes are mentioned on several occasions in newspaper articles found from as far back as 1992, before the large spike in development and density initially seen along the Yonge corridor in 1996.

In April 1992, Craig McInnes, the Urban Affairs reporter for *The Globe and Mail* wrote an article recognizing the explosion of urban sprawl and the externalities associated with this type of development. He created a table showing the population growth in the different municipalities within what is now considered the GTA to show the change in population between 1986 and 1991 (See **Table 4.4**). Although these are population numbers and not density figures, they highlight the drastic growth the suburban regions saw in comparison to the city of Toronto.

Table 4.4 – Population Change in the GTA from 1986 - 1991

	1986 Population	1991 Population	% Change
Metro Toronto	2,192,721	2,275,771	3.8
Halton Region	271,389	313,136	15.4
Peel Region	592,154	732,798	23.3
York Region	350,602	504,981	44.0
Durham Region	326,179	409,070	25.4
Toronto	612,289	635,395	3.8
Etobicoke	302,973	309,993	2.3
North York	556,297	562,564	1.1
East York	101,085	102,696	1.6
York	135,401	140,525	3.8
Scarborough	484,676	524,598	8.2

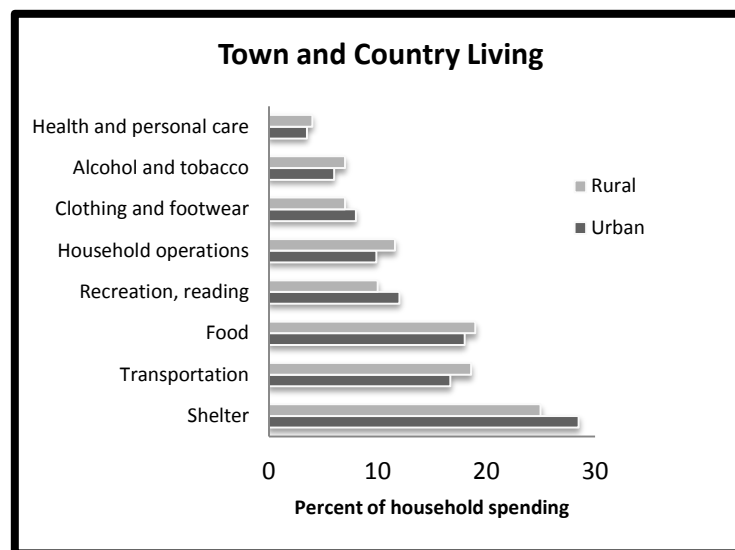
In this article, McInnes also states that this was the end of what he considered to be a population growth boom in the suburbs and a change towards more intensified, higher density communities was needed in the early nineties in order to make the most of existing infrastructure and have more transit supportive communities. These arguments arise several times throughout the 1990s and into the 2000s in articles including: ‘Cities Face Overdue Repair Bill’ (McInnes, 1992), ‘The Choice Is Up To Us: Smooth or Chaotic Change’ (No

Author, 1993), ‘Subway Stew Missing Some Key Ingredients’ (Barber, 1994), ‘Rae’s Sweet Seduction of Metro’ (Barber, 1995), and ‘Sheppard Subway Makes No Sense’ (Barber, 1996).

Another theme present in these articles is that employers of the time decided to move their existing and new businesses into the suburbs. Companies were enticed by lower property taxes in the suburbs and the close proximity to where the wealthy, educated workers chose to live (Barber, Mar 11, 1994). These newspaper articles reiterate the findings in **Section 4.2**, Employment Location Data.

A third focus found in the archived articles was an examination of the cost of living in urban versus suburban (rural) settings. ‘Surroundings that Affect Spending’ was an article written by Bruce Little in March of 1995 that compared some common household expenses between urban and rural locations. **Figure 4.22** below is adapted from this article and shows that certain categories were higher in the city, while others were higher in suburban settings.

Figure 4.22 – Graph comparing the cost of living in urban vs. rural settings in 1995



According to the data compiled for this table, urban residents spent 28.5% of their budget on housing/shelter compared to 25% for rural residents. This is the primary expense for most households followed by transportation costs. Residents of urban areas spent 16.7% of their budgets on transportation compared to 18.6% spent by suburban residents. In urban settings costs for recreation and reading, and clothing and footwear were determined to be higher than in the suburbs. In contrast, in suburban settings food, household operations, alcohol and tobacco, and health and personal care were more expensive in 1995.

A final recurring theme in these articles is a critique of the station site selections made for the Spadina subway extension north of Bloor St. to Downsview station. In March 1995, John Barber discussed the shortfalls of location selection for the entire Spadina subway extension stating that “the line was an error from the beginning. It should have followed a street, not an

expressway,” (Mar 2, 1995). He also felt that locating stations near CFB Toronto in Downsview was a mistake because although the site was slated for redevelopment, the decision was made to locate the station at the south-east corner near the airport as opposed to the centre of the property.

An article from 1994 discussed some of the challenges associated with St. Clair West station and neighbouring St. Mike’s College School. In 1959, part of the property from St. Mike’s College School was taken for the subway station and was rezoned a decade later for high-rise housing. In the late 1980s this plan was opposed by local residents who felt that the school was too significant to the area and a high-rise development would ruin the neighbourhood feel (Dec 12, 1994).

These locations selections coincide with the struggles for the Spadina side based on pre-existing conditions. The Yonge St. corridor had always been a transportation backbone for the city, with early streetcar lines (McInnes, 1992, Barber, Mar 11, 1994). When station location decisions were made for the Spadina side, locations in fully developed communities, less suited for transit were selected. The above examples of St. Clair West and Downsview stations illustrate these issues.

Key Findings

Through a review of archive newspaper articles, perspectives from various stakeholders involved in the decision making process for transit infrastructure are examined. These

archive articles highlight the serious public debate that was occurring about transportation investments in the GTA. There was a general movement away from highways and thoughtful discussion was occurring in relation to station placements that would promote intensification.

4.7 Planning Policy Context

As previously stated, these two sites present an interesting case as they both fall within the jurisdiction of the City of Toronto. Planners work within the same policy confines for projects on both the Yonge and Spadina subway lines. The goal of this section is to review the wealth of planning policy that influence development in the two study sites at different scales. The impacts of these policy documents will be assessed in Chapter 5.0.

4.7.1 Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe is a policy document aimed at halting decentralized growth within the GTA and promoting higher density, infill development. The Ontario Ministry of Infrastructure released this plan under the framework of the Places to Grow Act of 2005. Its impact has been felt throughout the Greater Golden Horseshoe (GGH), in some neighbourhoods more than others. By 2031 the population of the GGH is expected to grow to 11.5 million people (from 3.7 in 2001) and this plan provides guidelines for managing that growth sustainably within an urban boundary.

The vision of this plan is to increase intensification of existing built areas focusing on growth centres, intensification corridors, major transit station areas, brownfield and greyfield sites (p. 12). The plan looks for communities to grow at “transit supportive densities, with transit-oriented street configurations,” (p. 12).

Section 2.2.4 sets out the residential and employment densities for urban growth centres in municipalities that fall within the GGH. In the city of Toronto, 400 residents and jobs combined per hectare is the goal. Areas considered urban growth centres in Toronto include the Yonge-Eglinton Centre and North York Centre. There are no areas along the Spadina subway line that have been designated as urban growth areas by the Province. Some of the urban growth centres established in this plan are visible in **Figure 4.23**. Areas not considered urban growth centres must see a minimum of 40% of all residential development within the built-up area, outlined in dark purple.

Figure 4.23 – Map of Growth Centres as outlined by the Growth Plan for the GGH



Section 2.2.5 of the Growth Plan focuses on intensifying growth around major transit station areas and corridors. The Plan calls for mixed uses including retail, office, institutional, and commercial development in these areas. Incorporating recreational, cultural and entertainment facilities into these neighbourhoods is also important. The Growth Plan also states that station areas should be planned to provide access to and from various modes of transportation, with drop-off areas and bicycle parking facilities.

Section 3.2.2 of the Plan provides general recommendations for transportation within the GGH. The goals of the network should be to provide connectivity throughout the region through a balance of modes. This section also calls for network planning to be well coordinated with land-use planning. In line with the goals of this plan, the section contains text

that requires the development of transportation corridors that combine residential uses with services and businesses to meet the daily needs of residents (p. 24).

Making public transit an infrastructure investment priority is the focus of Section 3.2.3. Transportation investments should be used as tools for managing growth and, in turn, the capacity of the system needs to be improved. This section also calls for safe pedestrian and cycling routes that connect easily with higher order transportation networks. Linkages between intensification areas are also an important part of managing growth and encouraging more transit usage and less automobile dependence. A more detailed look at how the Growth Plan influenced the study area is contained in Chapter 5.0.

4.7.2 North York Official Plan (Consolidated 2000)

Pre-amalgamation in the city of Toronto, each municipality had its own Official Plan that outlined policies and regulations on a smaller scale. The former City of North York was where the majority of the station sites in this study are located. An examination of the North York Official Plan, consolidated in 2000, gives insight into what policies were in effect that may have impacted development in these neighbourhoods.

Section 9.2 of the Official Plan outlines goals for improving the integration of public transit and development proposals to encourage high intensity communities. This section also mentions the Yonge line as a priority for development and calls for the creation of new feeder bus routes to bring more riders to the subway network.

The Official Plan has a small section, 10.1.0 on land use and transportation planning. This section discusses the need for more transit ridership to reduce energy consumption in the city. Energy efficient designs were to be encouraged in all new development proposals. Overall, the City of North York Official Plan makes little mention of regulations for developing around existing subway stations and goals for densities or built form. By 2000, only one secondary plan existed for areas within the study boundaries for this thesis. The North York Centre Secondary Plan will be discussed in more detail in **Section 4.7.4**.

4.7.3 Toronto Official Plan (Consolidated 2010)

The city of Toronto Official Plan, consolidated in 2010 is a strategy for growth management in post-amalgamated Toronto. The Yonge and Spadina subway lines both fall under the jurisdiction of this planning document. Part of the vision for Toronto outlined in Chapter One includes “a comprehensive and high quality affordable transit system that lets people move around the City quickly and conveniently,” (p. 1-2).

Section 2.2 of the Official Plan focuses on the integration of land use and transportation in the city. It calls for growth within the city to be steered towards areas that are well served by existing transit networks. The plan also states that a prime area of concern for the city is protecting the incremental expansion of the rapid transit system as demand justifies and funding becomes available (p. 2-4).

The Toronto Official Plan names four locations within the city as ‘centres’ that are important for growth management. The centres are Scarborough, North York, Etobicoke and Yonge-Eglinton. These are areas with high transit accessibility and good housing-employment balances. These centres are similar to the ones mentioned in the Growth Plan. Growth and intensification are encouraged in these areas. There is no mention of any centres along the Spadina line.

Each of these centres has a Secondary Plan to set more specific details for growth. The Official Plan called for these Secondary Plans to:

- ⊙ “Set out local goals and a development framework consistent with this Plan;
- ⊙ Establish policies for managing change and creating vibrant transit-based mixed-use Centres tailored to the individual circumstances of each location, taking into account the Centre’s relationship to Downtown and the rest of the City;
- ⊙ Create a positive climate for economic growth and commercial office development;
- ⊙ Support residential development with the aim of creating a quality living environment for a large resident population, including encouraging a full range of housing opportunities in terms of type, tenure, unit size and affordability;
- ⊙ Support the use of existing public investment in transit and other municipal assets, and create strong pedestrian and cycling linkages to transit stations;
- ⊙ Identify future public investment in transit facilities, streets and other infrastructure, parks, community facilities and local amenities to support population and employment growth;
- ⊙ Set out the location, mix and intensity of land uses within the Centre;
- ⊙ Establish a high quality public realm featuring public squares, parks and public art;
- ⊙ Support the potential for growth within the Centre and protect adjacent neighbourhoods from encroachment of larger scale developments by:

- Establishing firm boundaries for the development area;
 - Ensuring an appropriate transition in scale and intensity of activity from within the Centre to surrounding neighbourhoods; and
 - Connecting the Centre with the surrounding City fabric through parks, trails, bikeways, roads and transit routes; and
- ⊙ Be accompanied by zoning to implement the Secondary Plan that will incorporate transit-supportive development guidelines and in particular, within convenient walking distance of an existing or planned rapid transit station, establish
- Minimum development densities as well as maximum development densities;
 - Maximum and minimum parking standards;
 - Restrictions on auto-oriented retailing and services; and
 - Establish appropriate holding zones in those Centres where it has been demonstrated that full development build-out is dependent on the construction and extension of major roads, transit or other services” (p. 2-14).

These are the parameters set for Secondary Plans which provide a greater amount of site specific detail in comparison to the goals and statements presented in this OP. The Plan goes on to call for mixed-use developments that integrate park land, open space and connect to existing transportation networks. Increasing services to all residents and ensuring equal access are also important elements mentioned in the OP. Overall, the document does not provide many specifications for policies and guidelines to help shape the physical form of the city. More detailed plans can be found in secondary plans and zoning maps and regulations.

4.7.4 Secondary Plans

In 1998, following amalgamation, only one secondary plan existed that affected the study sites of this thesis. That was the North York Centre Secondary Plan. Since then, several new secondary plans have been implemented in areas located within the study site. Some have transit and land-use integration as a high priority while others make little mention of the importance of that development strategy. The secondary plans reviewed in this section include: the North York Centre Secondary Plans (2000 and 2010), the Yonge-Eglinton Centre Secondary Plan (2010), the Yonge-St. Clair Secondary Plan (2010), the Downsview Area Secondary Plan (2006), and the Lawrence and Allen Secondary Plan (2011). These plans all take precedence over the Official Plan if there are discrepancies between their regulations.

North York Centre Secondary Plan (2000)

The North York Centre Secondary Plan (2000) covered the corridor from the 401 and Yonge St. to Yonge St. and Finch Ave. This area includes three subway stations: Finch station, North York Centre station and Sheppard station. One of the main goals of this plan was to create a corridor of mixed-uses that focused on the area's transit assets and the connectivity of the community. The secondary plan called for street level retail for all properties with prime frontage and residential or office space above. Section 1.13 states that the plan should

work towards reducing automobile reliance and increasing the transit modal split in the corridor.

The density specifications for the area ensured that the amount of development did not exceed the capacity of the physical infrastructure in the area, although obvious improvements would be made over time (p. D1-2). Section 3.3 outlined density incentives for developers who include elements such as bicycle parking, street level retail or transit terminals and the gross floor area exemptions associated with them. Overall, this plan focuses on creating a high-density corridor with an emphasis on the existing transit infrastructure in the area. The plan aims to reduce auto-reliance and create a community that meets the everyday needs of the individuals who live and work in the neighbourhood.

North York Centre Secondary Plan (2010)

The updated version of the North York Centre Secondary Plan contains many of the same goals and objectives as the original. The plan area has not changed from the 2000 boundaries but this document goes into greater details about specific properties throughout the corridor. There are also more in-depth examinations of the experiences of the pedestrians and the impacts of the high-rise buildings on wind and sunlight at street-level.

The major emphasis of the updated secondary plan remains the intensification of the corridor around existing transit infrastructure. Section 1.8 calls for a variation in the densities in the area “with the highest densities served well by transit” (p. 1). The plan still aims to increase

the transit mode split. It continues to promote a mix of uses within the corridor but specifically states that “there be significant commercial nodes in the vicinity and between the Sheppard and North York stations” (p. 3). It also calls for “substantial office buildings or other commercial uses including retail and entertainment” for properties with Yonge St. frontages (p. 3).

Density bonuses have remained the same for the most part, but the addition of monetary contributions now allow developers to essentially pay for increased density allowances in the area. The secondary plan states that the amount of monetary contribution will be equal to the market value of the gross floor area obtained through the incentive (p. 9).

A new component in this secondary plan is the recommendation to implement transportation demand management (TDM) strategies such as reduced parking and promotion of bicycle use. This plan’s main focus is on the built form of the corridor and ensuring its seamless integration with the subway network and other forms of transportation in the area. The goals of increasing densities, supporting transit use and reducing automobile dependence are all apparent in this secondary plan.

Yonge-Eglinton Secondary Plan (2010)

The Yonge-Eglinton Secondary Plan covers the area surrounding the intersection of Yonge St. and Eglinton Ave., with the Eglinton subway station located at the centre of the site. The goals for this plan include creating a mix of uses on the arterial streets and increasing the employment and residential density in the area in order to better utilize existing transit infrastructure.

Section 2.3 states that the “mixed use areas [should] contain a mix of retail, service commercial, office and residential uses with the highest commercial concentration to be focused on the intersection of Yonge St. and Eglinton Ave. with its proximity to the subway station” (p. 1). Section 2.8 promotes designs for new developments in the city which encourage travel through walking, cycling and transit use (p.2).

Other transportation related policies are discussed in section 4.2., which outlines a need for transit-oriented style developments that enhance the TTC facilities already in the area and the inclusion of transit stations in new developments, such as station access in the basement of new buildings (p.5).

The secondary plan ensures that growth in this centre is consistent with the policies and guidelines laid out in the Growth Plan. The plan creates a cohesive document to guide growth in this section of the city. The focus is clearly on increasing employment and residential densities and connecting these new developments to the subway network.

Yonge-St. Clair Secondary Plan (2010)

The Yonge-St. Clair Secondary Plan outlines policies and guidelines for the area surrounding the intersection of Yonge St. and St. Clair Ave., and the St. Clair subway station. This plan puts more emphasis on neighbourhood design and streetscapes than on transit-oriented development and the integration of the subway system with development.

There is mention of the importance of the subway infrastructure that exists in the area and the significance of connecting pedestrians and residents to it. Section 5.5a states that “commercial buildings will be located in close proximity to the intersection of Yonge St. and St. Clair Ave. and conveniently accessible to the St. Clair subway station” (p. 4). The secondary plan also states that all new development, wherever possible should provide below grade access to the subway station (p. 5).

Although the goal of this plan is not entirely focused on transit integration in the area, there is still a clear indication that it is high on the priority list of elements to consider in new development in the corridor.

Downsview Area Secondary Plan (2006)

The Downsview Area Secondary Plan focuses on the national parkland located to the west of Downsview and Wilson subway stations. The goals of this plan focus on the integration of the park and open space with new, surrounding residential development. Heritage preservation, public art, schools and public parking take precedence over the transit in the area and the surrounding land uses.

Section 7 of the secondary plan is really the only instance where transit is discussed in this plan. This section states the importance of having a variety of transportation options for residents and visitors to the parkland (p. 4). This section also mentions the extension of the Spadina subway line to Vaughan and the creation of a multi-modal hub in Vaughan which is outside of the plan's boundaries.

There is discussion, in Section 10, of density increases and the desire for mixed use within the secondary plan area. This secondary plan focuses more on the importance of integrating these densities with the parklands and natural feature than the subway network. Priority in this plan is not given to transportation networks that are adjacent to these lands.

Lawrence-Allen Secondary Plan (2011)

The Lawrence-Allen Secondary Plan is the most recent of all the policy documents being reviewed in this section. This plan area is bound to the north by Highway 401 and to the south by Lawrence Avenue, with the Allen Expressway and the Spadina subway line through the middle. This neighbourhood has been designated as an at-risk neighbourhood in need of revitalization. The Lawrence Heights neighbourhood is a social housing community owned by Toronto Community Housing Corporation and houses 3,500 rent-geared-to-income residents.

This plan focuses on the importance of quality housing and improving the services available to the residents of the area. It also looks at creating mixed income neighbourhoods to help reshape the surroundings and build a sustainable community. The four themes of the plan include: reinvestment, mobility, liveability and place-making (p. 3-4).

Discussion of transit-supportive development can be found in Section 3.1 which states that “transit supportive principles direct the most intensive development in the focus area to locations in close proximity to subway stations” (p. 13). Section 3 also calls for a mix of mid- and low-rise residential buildings. The density expectations are lower for this area. In Section 4.3, the secondary plan calls the Allen Expressway a barrier that divides the community and recommends an environmental assessment to determine future opportunities for development.

Similar to the Downsview Area Secondary Plan, it is clear from analyzing this plan that its intention is not specific to improving the lands surrounding the subway stations. The goals here are more about revitalizing a struggling community that, until now, has seen little investment from the city.

Key Findings

The goal of this section is to show the difference in policy provisions that impact these two study sites. There is a wealth of planning policy at a variety of scales, driving towards intensification, TOD and mixed-use development. The secondary plan level provides much more focused policy documents. In particular, the strength of the North York Secondary Plan compared to the others reviewed helps to explain why the development of these areas is so different.

4.8 Regulatory and Economic Incentives

In order to encourage sustainable, transit-oriented development, municipal officials need to ensure supportive policy conditions. This section provides a review of past zoning regulations from the early 1990s and compares them to current zoning maps from the city of Toronto. There is also a comparison of floor space index allowances in each of the study sites. This section also provides a summary of a study that included interviews with Toronto developers and municipal officials to obtain their perspectives on policies that hinder sustainable development and economic strategies that can be used to encourage TOD.

4.8.1 Zoning Maps 1990s

The Toronto archives of zoning maps presents an opportunity to compare zoning regulations from the past to current policy to determine differences in planning frameworks. Each map displays the types of uses that were permitted to be developed along the subway network. Not only are there differences between the maps from the past and the current regulations, there are differences in zoning allowances on each of the subway lines studied.

For the most part, lands were zoned mostly for single uses in 1991 and 1992 in both study sites. On the Yonge Line, lands with frontages to Yonge St. were mainly zoned as C1, General Commercial use. Away from the main intersections and off the arterial roads, most land surrounding the Yonge subway line was zone R4, Fourth Density Residential, which was comprised of single detached, one family homes. This zoning is pretty standard all along Yonge St. and the local streets.

Analyzing the zoning on the Spadina line is slightly more complicated because the route travels underneath various neighbourhoods. The lands surrounding the Spadina line are zoned M1 and M2, Industrial Zones and MC, Industrial Commercial Zone. There are also surrounding residential communities that are zoned R3, R4 and R5, Single detached, one family units. There are also buffer zones on either side of the Allen Expressway zoned as open space to shield nearby homes from noise. Examples of the zoning maps can be found in **Appendix G**.

4.8.2 Zoning Maps 2010

Between 1992 and the most current zoning maps available, regulations for land uses have changed. Along the Yonge St. corridor, lands that used to be zoned strictly commercial are now designated as mixed-use, residential commercial with frontages on Yonge St. Behind these zones are residential only zones but the density allowances have been increased from what they were in 1992. There is some land zoned ON, Open Space Natural south of York Mills and Sheppard stations, but for the most part the corridor is zoned CR, Commercial Residential.

On the Spadina side, the same analysis challenges exist due to the alignment. The areas surrounding the stations are mostly zoned CR, Commercial Residential. Some stations, like the Yorkdale station are located in C, Commercial. The subway line itself runs under several neighbourhoods zoned RD, Residential Detached. There are also spaces zoned O – Open Space on either side of the Allen Expressway as there were in 1991 and 1992. Little has changed in terms of the zoning in this study site, especially when compared to the evolution of zoning along the Yonge line. Examples of current city of Toronto zoning maps are included in **Appendix H**.

4.8.3 Floor Space Index

Floor space index (FSI) is an element of zoning regulations that specifies the size of a building's footprint that can be built on a parcel of land. The current Toronto zoning maps outline the FSIs for different parcels along the subway routes. According to the 2010 zoning maps, the Yonge corridor generally has higher FSIs than the Spadina corridor. Along Yonge, the lowest FSI is 3.0 for all CR buildings with frontages to the main road. As the proximity to a major intersection increases, the FSI increases. For instance, at the corner of Yonge and Eglinton, the FSI for buildings is 5.0. Moving away from the intersection the FSI drops back to 3.0. The FSI decreases along the east-west corridors as well, with the highest density allowance closest to the stations.

On the Spadina subway route, the FSIs are comparably lower. The maximum FSI for CR zoned land near Lawrence West and Eglinton West stations are 2.5 and the lowest FSI is 1.0. This means that the density allowance for any building along the Spadina line is half the floor space allowed along the Yonge line. Toronto zoning maps with FSI regulations can be seen in **Appendix I**.

4.8.4 Stakeholder Interview Review

Examining the implication of existing policies on development in the city can be researched through interviews with members of the planning and development community. In 1995, Andrejs Skaburskis and Ray Tomalty, professors at Queen's University's planning school,

conducted interviews to obtain these points of view. Developers and municipal officials were asked about the land taxation process, their views on development charges and the impacts they have on projects. The following subsections provide a summary of the findings from these interviews.

4.8.5 Developer's Perspectives

Ten out of the 13 developers interviewed felt that a shift to land value taxation would make greenfield sites less attractive to purchase and develop. They felt that this strategy would reduce the value of vacant lands but would cause a certain amount of chaos in the development process and reduce development activity long term.

Seven of the developers were quick to point out that land owners do not want to hold on to vacant land while waiting for allowable densities in the surrounding area to rise. They also stated that the market and the planning process have a significant impact on the rate at which the land is developed and that owners prefer to develop their properties at the earliest opportunity. The developers also expressed the importance of market forces on the decision to develop. They develop when “a market for the product is evident, when services are in place and when planning approvals have been obtained,” (1997, p.409).

Developers felt that raising the carrying costs of a piece of land would cause increased risk for a developer holding on to a property and could lead to negative outcomes like bankruptcy or a simple need to ‘walk away’ from certain projects. The developers also felt that

increasing taxes on properties would cause them to buy small properties one at a time, and large-scale development projects would become more risky and rare.

The developers noted that a land value tax would allow a vacant piece of land to be taxed at the same rate as a developed parcel, even though it does not generate any revenue. Six out of the thirteen developers felt that the change in taxation would increase the densities in new projects while two respondents thought it would have no impact at all. These two developers claimed that market forces are the most important indicator they use for proposing new projects. If they do not feel that the units they are building are sellable, they will not build higher-densities to simply capitalize on the full value of the land (1997, p. 410).

Market value assessment of land was consistently favoured over land value taxation by developers because it was believed to be a more equitable and efficient way to tax properties. All of the developers interviewed were unanimous in their desire for a general break in property taxes and were in favour of other forms of monetary incentives like tax abatements and reduced development charges.

When asked about development charges, all of the developers interviewed admitted that they “affect their decisions on building type and lot size,” (2000, p. 318). Ten out of 11 Toronto developers felt that development charges were partially to blame for low project densities, while one felt that development charges do not impact densities. The Toronto developers explained that in the city, development fees are established based on dwelling units. The

revenue potential for each piece of land is determined by the length of the frontage of lots. By increasing the frontage of a lot, developers can pay less development charges. This is encouraging more decentralized communities with large lots. They explained that although development charges are actually lower for high-density units, the difference is “not enough to offset the gains from increasing frontages,” (2000, p. 319).

According to those interviewed, the timing of the fees also impacts the form and density of development. The Toronto developers explained that development charges are paid at the time a development application is made, so essentially ‘up-front’. Developers reported being able to use the system to their benefit in low density projects by presenting applications in stages in order to utilize revenues from stage one to cover the development charges for subsequent phases. These upfront costs increase the risk associated with high-rise residential buildings.

4.8.6 Municipal Official’s Perspectives

In terms of property taxation, the municipal officials interviewed (23 finance officers and city planners) were split in their opinions. Those who worked in a suburban community felt that market value assessments were the best way to tax properties. In contrast, the officials who worked in the city of Toronto felt that land value tax was a better strategy than the existing system of land taxation. Both urban and suburban municipal officials recognized that land

value tax would reduce the length of time a property was vacant and would encourage infill projects.

Toronto officials pointed out that a lot of the vacant land in the city is zoned for industrial use and soil contamination also makes developing on them difficult. Some officials interviewed were concerned that if land value taxation was instituted the urban vitality of the city would be compromised as high-density cookie cutter buildings are built on vacant properties.

Toronto officials also noted that some residents are against high-rise complexes out of fear of congestion among local services and amenities. They fear that high densities will change the ‘social character’ of neighbourhoods (2000, p. 411).

In terms of the impacts of development charges, municipal officials were less convinced that they have an impact on densities compared to the opinions of the developers interviewed. Most of the municipal officials from urban and suburban communities in Ontario felt that “density decisions were based on zoning and neighbourhood response to higher density proposals,” (1997, p. 319). The municipal officials interviewed did not appear to have knowledge about the effects of timing of payment on the development process. They did not see the link between paying costs up-front and completing projects in stages.

More than half of the respondents reported that the creation of development charges eased the development process, an opinion with which the developers strongly disagreed. The municipal officials felt there is simply no better option for paying for infrastructure and

services, especially for greenfield sites, that the government simply could not afford otherwise (1997, p. 320). Many of the officials interviewed also questioned the integrity behind the belief that high-density projects are less expensive from an infrastructure perspective. They believe these buildings are more expensive to maintain long term with increased costs for policing, fire, recreational and social services.

Key Findings

From a regulatory perspective, zoning dictates what is permissible. Although the analysis period in this study is only the past 20 years, the evidence remains the same. When examining zoning maps it is clear that policies have evolved on one side with little change occurring on the other side. From an economic perspective, both public and private sectors agree that DCs and land value taxation have impacts on how the city evolves (although there may be disagreement on appropriateness and suitability).

4.9 Summary

Through a variety of avenues, the findings of this research have resulted in a number of important insights that will be analysed in the next chapter. **Table 4.5** provides a summary of the key points to be taken from each section of this findings chapter. Each method utilized to inform this study yielded information that can be linked to the literature in order to determine the overall relationship between transit and land use in the city of Toronto. The importance of themes researched in the literature review such as location selection, natural momentum,

TOD principles and supportive policies is echoed by these findings. Along with an analysis of findings, the next chapter will provide recommendations to the city of Toronto and other municipalities with higher-order transit systems.

Table 4.5 – Summary of findings for each section of Chapter 4.0

Section	Key Findings
4.1 Census Data Analysis	<ul style="list-style-type: none"> • Similar patterns of population density but with higher rates of growth along the Yonge line after 1996 • Similar patterns of growth but more pronounced when considering units constructed, with growth in apartments 5+ storeys around the Yonge line
4.2 Employment Location Selection	<ul style="list-style-type: none"> • General decentralization of employment from the city to the ‘905’ • Difference in types of employment, more office and retail along Yonge, more industrial and manufacturing along Spadina • This likely has transportation demand impacts
4.3 Photographic Analysis	<ul style="list-style-type: none"> • Images are telling of transformations in land use along each line • Easy, direct way to compare the built forms around each study site
4.4 Property Value Assessment	<ul style="list-style-type: none"> • Small sample size • Despite equal transportation proximity there is market momentum on one side and not on the other
4.5 Transit Ridership Analysis	<ul style="list-style-type: none"> • Dominance on the Yonge side, but less uniformity in ridership • Indicates the intensity on the Yonge side in certain areas vs. the Spadina side
4.6 Archive Newspaper Article Review	<ul style="list-style-type: none"> • There was a serious public debate occurring about transportation investments in the GTA • General movement away from desire for highways and thoughtful placement of stations to promote intensification
4.7 Planning Policy Context	<ul style="list-style-type: none"> • There is a wealth of planning policy driving towards intensification, TOD and mixed land uses on a variety of scales • Secondary plan level – much more focused document • The emphasis and strength of the North York plan compared to the others can help to explain why the development is so different
4.8 Regulatory and Economic Incentives	<ul style="list-style-type: none"> • Regulatory – zoning dictates what is permissible • The analysis period is only the past 20 years but the evidence remains the same • When looking at the zoning maps, there is clear evolution on one side and little evidence of evolution on the other • Economic - both public and private sectors agree that DCs and land value taxation have impacts of how the city would have evolved

5.0 Analysis and Recommendations

This section uses evidence of success and underperformance obtained through the research methods of this thesis to inform future decisions that will result in sustainable style developments using the principles of TOD to make full use of transit infrastructure already existing in the city. This section also provides recommendations for the future of the city of Toronto that can be incorporated in to planning policy to capitalize on transit assets.

5.1 Application of Findings to Current Conditions

The following sections describe the state of development and location choice for residential and employment in the two case study sites over the study period. Links are made to the literature to help explain the findings.

5.1.1 Residential

The intention of the preliminary stages of this research was to determine that there is in fact a phenomenon to be studied in the land uses surrounding the two subway routes. The examination of demographic and built form data for the two routes provided insights on existing conditions and their evolution. From the density data gathered it is clear that there are significant discrepancies in people per km², with the Yonge side having higher population densities from the beginning of the study period. It is important to note that not only does the Yonge line have higher density values, the rate that the population density increased over

time was significantly more dramatic than the population densities surrounding the Spadina line.

In contrast, the Spadina line was an almost fully developed neighbourhood by 1980 and saw little in the way of new units to 2005. From 1980 to 2005, only 7,200 new residential units were added to the areas surrounding the subway. The subway extended to Wilson station by 1978, so for there to be little change in the number of units illustrates that the new subway stations on their own have little impact on the development of surrounding neighbourhoods in the absence of supportive policies, natural momentum for growth and accessibility.

According to the literature, growth could be expected with new investments due to increased demand for a residential area with easy access to the rest of the city (Richardson, 1977; Yang & Lee, 1997; Ben-Akiva & Bowman, 1998; Handy, 2005). These Toronto case studies prove this to be too simplistic of a relationship. The connection between transit and land use appears to be more complicated than simply building new infrastructure and expecting development to follow.

From these results it can be ascertained that substantial increases in population density do not automatically follow investments in higher-order transit as is often reported in the literature (Huang, 1996; Ingram, 1998; Belmont, 2002; Handy, 2005; Banai, 2010; Pacheco-Raguz, 2010; King, 2011). Two branches of a subway line are located in the same municipality with similar regulations on land use and development. Over time significant differences in

community make-up have evolved that influence the impacts of transit systems and adjacent land uses. Investments in new transportation infrastructure are part of a larger relationship.

Statistics Canada census data on dwelling type and the period they were constructed helped to establish what the built forms looked like along each route. It was the expectation that the areas with higher population densities would have fewer single-detached homes and an increased number of apartments over 5 storeys tall. The data compiled confirmed this hypothesis.

Residential location theory suggests that demand for housing close to transit should be high.

Travel costs (both monetary and time) can be offset by proximity to higher order transit.

Archive newspaper articles also indicated that the belief of politicians and journalists mirrored the theories of the literature (New Apartments Need Space, 1963; Barber, 1994b; Little, 1995). Many believed that development would be an easy sell near transit because, despite higher property costs, the benefits were greater. The results from this section of the study indicate that the neighbourhood itself plays a key role in location decision making. If the Yonge side is significantly denser despite the same proximity to transit stations, the conclusion can be made that there are other factors that are influencing public behaviour. These other factors are explored through the remaining sections of this analysis chapter.

5.1.2 Employment

The review of employment location selection within the study sites generates interesting findings. The city of Toronto has struggled to maintain its hold on employment opportunities, as over time companies have chosen to move out to the 905 region in favour of cheaper land and close proximity to the pool of employees (The Choice Is Up To Us, 1993; Barber 1994b; Velocci, 1994; Miller, et.al, 2011). This is evident from the data presented by the Canadian Urban Institute in their report on office location throughout the GTA. They argued that there are more incentives for companies to locate where their property taxes are cheaper and their employees are not required to travel to the heart of the city to get to work (Miller, et.al, 2011). This parallels findings in the literature which make similar arguments for businesses locating outside the boundaries of the city (Bartik, 1985; Lee, 2007). An externality of these location decisions is that they do not encourage active transportation modes for employees. If companies choose to locate outside the transit network in areas served only by highways, their employees are limited in their commuting options and mostly rely on automobiles.

The majority of the employment opportunities that have remained around Toronto's transit networks are a combination of office jobs, manufacturing opportunities and retail positions. For the most part, the Yonge St. corridor is home to office jobs including government offices, banking and insurance companies as well as retail positions (TES, 2010). Forces of agglomeration are at play here where the literature shows that like businesses locate near one another (Hamilton, 1982; Bartik, 1985). North York Centre station's location below Mel

Lastman Square led to other government buildings and offices for the service sector locating there. Mel Lastman Square was City Hall for the city of North York prior to the amalgamation of Toronto in 1998 and the buildings are currently used by the Toronto District School Board.

The same can be said for all the major intersections along the Yonge St. corridor. There is a large number of office towers and government buildings south of Finch Ave. The street is also lined with retail businesses that are mostly clustered around intersections but can be found at many points along the route. The implications of this are that if more of these businesses exist in the neighbourhood, they could foster a more vibrant and lively community. In turn, people will want to live in that space and the natural momentum for growth would take over until there are no available properties left to develop. The growth seen through the demographic analysis show that the rate of growth was significantly higher around the Yonge line. This is true for both residential and employment and did not occur on the Spadina side to the same extent.

On the Spadina line, forces of agglomeration have influenced the built form as well. In this case, the businesses are from the industrial and manufacturing sectors and there are fewer office jobs. The Toronto Employment Survey Data (2010) reported that while there are a large number of office jobs, they tend to be related to the manufacturing, transportation, utilities and construction industries where head offices are located next to or within larger plants. These businesses tend have larger lots with low employment densities. As stated in

the literature, these types of businesses also seek locations with physical assets like access to major highway and rail networks for shipping goods and receiving materials (Shukla & Waddell, 1991; Pivo, 1993; Grinspun & Miller, 2004).

The stations on the Spadina side are close to the Allen Expressway and Highway 401. For location selection for manufacturing and industrial companies, these sites provide excellent access to a variety of transportation modes for shipping goods. Access to these networks is more limited from Yonge St.

These types of businesses locate along the Spadina route because past zoning permitted these land uses, and zoning regulations have not been updated to attempt to reshape the neighbourhoods. The prime real estate, located within 400m of the subway cannot be developed into residential density, or even higher density employment because the zoning does not support it. Large amounts of land, zoned for low-density residential use on the Spadina side, hinder development potential. Since the network runs through already established, single-detached residential communities, redevelopment is difficult. There is also a certain amount of land surrounding the Allen Expressway that has been zoned as open space to act as a noise barrier pushing development farther away from the stations.

Along Yonge St., zoning has been conducive to retail development even in the early 1990s when separating land uses was still common practice (Toronto Zoning Maps, 1992). This form of development was more easily adapted to mixing uses as growth continued in the

area. Street level retail remained a characteristic of the corridor, but residential was added above or behind pre-existing businesses, evident in the photograph comparison conducted in **Section 4.3**. Overall, from analyzing the data collected through the census and employment information taken from the Toronto Employment Surveys and the CUI Office Space in the GTA report two main conclusions can be made:

- 1) The types of businesses located on each side of the Yonge-University-Spadina line are different based on zoning, forces of agglomeration and overall built form of the neighbourhoods; and
- 2) Many businesses once located within the city boundaries have chosen to relocate to the suburbs in favour of cheaper land and better proximity to their workforce.

5.2 What Caused These Differences?

The next stage of this study is to define what circumstances have led to the differences in land use. The goal of this thesis is to explain the different land use and built form conditions in the two study sites. Drawing on the themes from the literature as well as the previously presented research this section determines the relationship between various factors and the built form of the study sites.

5.2.1 The Impact of Policies

The policy framework created by planners and politicians has a significant impact on the built form of the city (Neuman, 1998; Alfasi, Almagor & Benenson, 2012). The purpose of policy document is to shape the city into a community that meets the needs of residents but

also takes into account the importance of building sustainably (Neuman, 1998). As outlined in **Section 4.7**, there are a number of policy documents that contain regulations for the two study sites. One of most interesting points is that both study sites fall under the same jurisdiction and policies, other than existing secondary plans.

The provincial Growth Plan singles out two areas along the Yonge corridor as growth centres, meaning that intensification is expected to be greater within their boundaries than other areas of the city. The plan does not recognize any sites along the Spadina route as possible growth centres despite the existence of higher-order transit. The results of the density review suggest that there is sufficient opportunity to develop and intensify the Spadina corridor. Currently the corridor presents an opportunity for inward growth. It is likely that some of the decentralized growth in the suburbs could have been steered towards these areas and outward growth in the 905 region could have been minimized.

The city of Toronto OP provides little in terms of direction for growth above what is written in the Growth Plan. For the most part, this planning document is general in its nature and avoids detailed descriptions for policies to fight decentralization and keep employment in the city. This is in line with the finding of the literature review that stated that the OP should be used in conjunction with other policy document. The lack of impact the statements in Toronto's OP have had on development around the Spadina line demonstrates that on its own, the OP is not a catalyst for change. There is a failure to translate the statements and visions from the OP into more tangible, physical results. This research has shown that there

is a need for more specific policy documents, like secondary plans to reinforce the statements in the OP and ensure that they are implemented in key areas of the city. This study recommends that the city of Toronto create secondary plans that mirror the ones reviewed on the Yonge line.

Through the policy review conducted for this study, it is clear that the most apparent difference between the Yonge corridor and the Spadina corridor is the existence of secondary plans and the objectives stated in them. A primary inconsistency is that the Yonge St. corridor has three secondary plans with transit oriented development at their core. Along the Spadina corridor there are two secondary plans with different foci. Even the OP itself recognizes the strengths and importance of a secondary plan (p. 2-14).

The North York Centre Secondary Plan, Yonge-Eglinton Secondary Plan and the Yonge-St. Clair Secondary Plan all set out to intensify the study sites around existing transit station. These plans require developments incorporating the principles of TOD to improve access to the city for residents and employees. These secondary plans establish density targets (in line with those laid out in the Growth Plan), and outline design guidelines for new developments proposed for the area. The secondary plans provide detailed guidelines for ways these centres can and should grow. These recommendations cannot be found in the OP.

The Downsview Area Secondary Plan and the Lawrence-Allen Secondary Plan do not share these goals. Each one of these sites has distinct challenges that, for the most part, do not

include the subway stations within their boundaries. Downsview Park is a large area of natural parkland that has been in the process of being redeveloped for years (Loures & Panagopoulos, 2007). The plans for this former army base and airport are to turn it into a residential and commercial neighbourhood with a large urban park at the centre. These proposals are the heart of this secondary plan. There is minimal mention of the Downsview station area and the future plans for development around it.

A similar argument can be made for the Lawrence-Allen Secondary Plan which is a revitalization plan for a neighbourhood considered to be a priority neighbourhood (Priority Areas, 2012). The goal of this secondary plan is to redevelop a blighted neighbourhood currently home to many low income families and experiencing large amounts of crime (Lawrence Heights Priority Area Profile, 2006). Although the boundaries of this plan include Yorkdale and Lawrence West stations, they are not the focus of this document. Priority is given to the development of the residential communities located off the arterial roads. Transit-oriented development design guidelines and integrating existing transit infrastructure with surrounding communities are noticeably absent from this policy document.

Higher-order transit infrastructure is viewed in the literature and by the public to be an asset that improves accessibility and increases property values throughout the city (Bowes & Ihlanfeldt, 2001; Hess & Almeida, 2007; Lee, 2010). As far back as the 1960s, people in Toronto felt that investing in extensions of the subway network would intensify growth

within the city and would encourage residents and businesses to locate near the new stations (Campbell, 1963; New Apartments Need Space, 1963; Little, 1995).

The Spadina line is a missed opportunity on the part of the city of Toronto and the Province for development and increased density. For a city that is fighting the effects of decentralization, Toronto planners and policy makers need to prioritize intensification along the Spadina line. There needs to be equilibrium on each side with regards to zoning and allowable densities. Major intersections in the city that have access to subway stations should have the same maximum FSIs and density allowances. If the goal is to create transit-oriented communities that encourage a higher transit mode share, existing stations should be looked at as potential sites for development. If this were the case, development could be more evenly spread along the system and demand on the infrastructure would be more balanced.

5.2.2 The Importance of Natural Momentum

The momentum of an area is its ability to grow naturally leading to a desire to locate there for both residential and employment uses. This is a cyclical relationship that eventually causes certain areas within a city to be in higher demand than others. When transit infrastructure is introduced into these environments, they are believed to impact the momentum of growth as the access to other parts of the city is improved.

Based on the empirical data collected, there was a slight increase in population density in both study sites between 1986 and 1996. This ten year period is the first where growth was

experienced around both subway lines. After this increase, the two sites reacted differently. Between 1996 and 2011 the rate of growth is significantly different. The Yonge line experienced a 40% increase in population density while the Spadina line only saw a 9% increase.

The desire to live on the Yonge line over the Spadina line is also confirmed by the higher property values found in the property value analysis. Higher costs per square foot for similar size units with comparable amenities show that there is a greater demand for units on the Yonge side. Property owners and developers can afford to charge more for these units because people are willing to pay a higher premium to live in the 'desirable' neighbourhood. This influx of residents leads to an increased demand for services and retail options causing businesses to move into a neighbourhood with a guaranteed customer base. This will continue until all available land has been developed and then property values will continue to rise.

If transit infrastructure is added to this equation it can increase the desire to be in certain neighbourhoods over others. What is interesting about the sites selected for this study is that they both experienced the introduction of a subway line and reacted very differently to its existence. The ridership analysis conducted in this study shows that the demand throughout the system is not uniform.

The ridership data collected indicates that there is more demand on the Yonge line at almost every station when compared to the Spadina line boardings. This is a trend that has not changed since the two lines were constructed. Finch station has the highest number of boardings (a large majority are likely residents from the 905 commuting to the subway network by an alternative mode and then continuing their trip on the subway). These numbers show that the Yonge corridor is a clear backbone to transit within the city with demand that the Spadina line cannot compete with.

The Spadina line has a more even distribution of ridership throughout the day, but the overall boarding numbers are lower. This may be a reflection of the lower density that exists along the network, however, it shows that there is room for growth and the system would be able to handle an influx of riders along that route should densities increase.

The introduction of the Sheppard Subway Line in 2002, connecting North York Centre station to the north-east end of the city has also impacted the desire to live along the Yonge line, and is a connection the Spadina line does not have. Increased accessibility to more areas of the city is a pull factor when choosing where to live or work. The Sheppard line allows for more variety for residential choices and employment location selections. This is another asset that the Spadina line cannot provide to riders and those who choose to live in the surrounding areas.

Although difficult to decipher what particular factors lead to natural momentum it is clear, in the city of Toronto, that its influence has been felt in the two study sites. Whether route alignment choices, station location decisions, public opposition or lack of services led to the lack of desire to locate along the Spadina line, there are clear differences in the settlement patterns. There is a possibility now that the Yonge line is approaching capacity, with the right policy measures, that the Spadina side can experience similar growth.

5.2.3 Station Location Decisions

The success of a system and its ability to spur surrounding development is predicated on well-chosen alignment and station locations. The Yonge line was an easy selection as a major transit corridor within the city as it is a linear corridor that previously had streetcar service (Deweese, 1976). The line also has positive attributes for construction and is conducive to transit-oriented development (Cervero, 2002). Due to the linear route and the cut and cover method used in the 1970s when the Yonge line was extended from Eglinton station to Finch station, the entire extension was built at one time (Build Spadina Project Later, 1962; Barrier to Progress, 1963; Barber, 1994). These conditions are favourable for creating lively, walkable streets where residents and workers view the subway system as just one of many assets the neighbourhood possesses. There is greater potential for street level activity when riders have the option of walking the distance between stations.

In contrast, the locations selected for stations along the Spadina route had pre-existing challenges when they were selected. One of the largest mistakes was placing some of the stations in the middle of the Allen Expressway. Despite being an incredibly cost efficient decision, these location decisions limit a riders ability to walk to the station, makes conventional feeder transit more difficult and the large buffers added create even greater access distances (May & Osman, 1980). This decreases the walkability in the area and these barriers cut the neighbourhoods off from Lawrence West and Eglinton West stations.

The motivation behind station selection was different according to some of the archive news reports. One important factor in the decision making process for extending the Spadina line north to Downsview was the ability to extend in incremental stages. It was argued that the city was trying to avoid paying for a large project at one time and wanted to spread construction costs over several years (McInnes, 1992b). Archive articles from *The Globe and Mail* newspaper also suggest that Bathurst St. would have been a much better fit for the line but would not have been an appropriate choice for incremental change (Barber, 1995).

Not only does a lack of connectivity affect the success of the Spadina line, but stations were put in locations that each have some form of impediment to development. The current end of the line, Downsview station is location on the Downsview Park National Park grounds. As John Barber wrote in *The Globe and Mail* in 1995, the station was built at the south-east corner of a 400 hectare piece of land scheduled for redevelopment. Not only that, it is “on the wrong side of the airport, kilometers away,” from any redevelopment that might be built.

There are many difficulties with developing around this site and the location selection makes little sense from a transit-oriented development perspective.

Having Downsview station as the end of the line made this subway a line that essentially ends in the middle of nowhere (Barber, 1995). For decades the plans have been proposed for a subway extension that connects York University (located north-west of Downsview station) to the CBD. Until November 2009, these plans never moved forward (Construction Underway, 2010). Transit systems are best when they connect major centres or destinations to one another (Vuchic, 2005, p. 186). This was not the case with the Spadina line and Downsview station.

Other stations that present development problems include Yorkdale station, located in Yorkdale Mall and immediately surrounded by parking lots, not residential or office development. While initially this location selection seems like a positive one, connecting a major retail destination to the core of the city, the integration of this station to the surrounding area is lacking. Yorkdale Mall is surrounded by parking lots without any residential development within 400m of the station.

The story around St. Clair West station is one of public refusal for new development in their community because of the historic nature of St. Mike's College School. Land was originally purchased in 1959 by the city from St. Mike's College School and rezoned for high-rise housing. In the 1980s residents fought with the city to halt the development plans and

maintain the campus grounds. In the end, the public won out over the commercial interests but the subway station was already in place (St. Mike's Private School, 1994). This neighbourhood is another example of poor station location selection, as prime lands are not able to be redeveloped to support transit usage.

Station location obviously cannot be changed moving forward, but planners and policy makers can learn from the mistakes made with the Spadina route and not recreate them. The linearity of a network to encourage walkability and corridor development is important. This leads to a street life that simply cannot be replicated based on the conditions of the Spadina line. With new transit infrastructure consistently at the forefront of planning discussions, station location choices need to be made wisely and informed by not only best practices but from selections that have been unsuccessful in the past.

5.3 What are the Implications for the Future?

Yonge St. has been and will likely always be the backbone of transit in the city of Toronto. Trying to establish the route of the Spadina line in a similar manner would be difficult. That being said, lessons can be gathered from what has been successful along Yonge St. and applied to other settings.

Recently there have been numerous reports and articles in Toronto newspapers that have argued that the Yonge subway line is reaching maximum capacity and the system simply can no longer support the demand (Gillis, 2012a; Gillis, 2012b; Hume, 2012; Scallan, 2012).

More and more residents from the 905 areas are utilizing the system, and the increased densities in areas surrounding the stations play a role here as well. If intensification continues and new infrastructure investments are limited, the city of Toronto and its commuters will face increased transit congestion on the subway. From the ridership analysis conducted, there is a simple solution that can help evenly distribute trips along the Yonge-University-Spadina line.

U-shaped networks are formed to balance the volumes on two corridors. In a U-shaped transit network, trains travel from the end of the line on one side to the end of the line on the other, and then back again (Vuchic, 2005, p. 204). If twelve trains leave Finch station each hour, the same frequencies can be accommodated from Downsview station. This means that, realistically, the Spadina line could handle the same number of boardings per day as the Yonge line. If 18,000 people board each morning at Finch station, 18,000 could board at Downsview and the current frequency should be able to manage the demand.

If the number of available residential options decreased on the Yonge line, people would search for comparable alternatives, which currently do not exist along the Spadina line. If suddenly options were available for housing close to transit stations on the Spadina side, there would be a balancing out of population density and ridership equilibrium would follow (Vuchic, 2005, p.191).

5.3.1 Supportive Policies

Encouraging this type of growth along the Spadina line can be successful with the introduction of supportive policies and the provision of incentives for the developers. The success of the North York Centre Secondary Plan, Yonge-Eglinton and Yonge-St. Clair Secondary Plans are a testament to the importance of specific, small scale policy documents that provide more insights than the OP. If secondary plans were created for the station areas on the Spadina line, with a focus on creating transit-supportive communities that incorporate the design guidelines of transit-oriented development, the land uses in the area could experience significant changes.

These plans need to highlight the importance of building high density, close to transit stations and reduce densities as distance from the station increases as recommended by the principles of TOD. They should encourage residents to rely less on their private automobiles and stress the importance of using active modes like walking, cycling and transit for their travel. This is not to say that the urban revitalization that is stressed in the existing plans is less important, only that there needs to be more emphasis put on the positive impacts of transit-oriented development.

Zoning regulations should also be changed along the Spadina line in order to facilitate more intensified development projects. Land uses should be diversified and more opportunities for mixed-use projects should be introduced into the area. Efforts should be made to make this

corridor as comparable to Yonge St. as possible. By increasing maximum densities the city would provide more freedom to developers who do not necessarily have to build to the maximum but can decide what types of projects fit with the current market and build to that.

Rejuvenating the employment opportunities in these corridors is also important. The study sites need to be more competitive in order to attract businesses back to the transit-oriented submarket discussed in the CUI report (2011). The asset of being close to transit and near new stocks of employees can pull business back to the city. This study recommends a narrowing of the gap between residential and commercial tax rates in order to make properties in the city more attractive. The city should also utilize land use policies to encourage high-density office development along the existing network, with a focus on properties within 400m of stations. Finally, this thesis recommends that the development approvals process be simplified to encourage developers and employers to commit to locating their companies in the study sites instead of choosing the 905 region.

5.3.2 Economic Incentives for Developers

A final strategy for encouraging development around the Spadina line is the introduction of economic incentives for the development community. The risks associated with being one of the first to build high-density mixed-use development in an area of mainly single-detached residential homes are taken on by the developers. There are a number of options that can minimize risk and spur development in targeted areas. Strategies like TIF, tax abatements,

reduced development charges and land value taxation can be employed to motivate sustainable development and help ease some of the costs. These are all strategies that affect the monetary costs associated with projects in the city.

From the interviews conducted by Skaburskis and Tomalty (1997, 2000, 2003) it is clear that developers need to be motivated to build anything different than what they perceive to be market demand. If people want single detached homes, and they will sell quickly, a developer will build that type of community because of its low risk and quick return. These types of developments can also be built in stages so a developer can spread out costs of development charges and recoup their costs much faster (Watkins, 1999; Needham, 2011).

Another common complaint from developers was the absence of supportive policies and the numerous policy barriers that complicate the approvals process. Developers want supportive planners and politicians who are willing to back their proposals and ease the process so that projects can commence faster and at lower costs (Watkins, 1999; Skaburskis & Tomalty, 1997, 2000, 2003; Needham, 2011). From the interviews it is clear that developers are not interested in holding onto a property and waiting for the market to shift. They want to build as soon as possible and move onto the next project. Large upfront expenditures can be a hindrance to high-density development.

The city of Toronto should implement strategies like reducing development charges on high density projects in the areas immediately surrounding subway stations along the Spadina line.

The creation of secondary plans that incorporate these strategies will help to shape a community that mirrors development around the Yonge line. The onus falls on the planners and politicians because the developers will continue to build low density communities.

5.4 Summary

This study demonstrates the differences in the land-use patterns between the areas surrounding the Yonge and Spadina subway lines. Demographic data point to differences in population density, built form, age of construction and types of employment. Shaping development on the Spadina line can be completed through the use of supportive policies and incentives for the development community to curb low density development along the Spadina corridor and encourage new, high-density neighbourhood design that is supportive of the existing transit infrastructure. A summary of the analysis conducted in this study is provided in **Table 5.1**.

Table 5.1- Summary of Key Analysis Points

Key Findings	
Conditions	<ul style="list-style-type: none"> • Higher density and greater growth in density along the Yonge line • Higher ridership demand along the Yonge line • Employment leaving the city for the 905 due to lower costs and proximity to workforce
Explanation	<ul style="list-style-type: none"> • Existing land use and built form conditions more conducive to growth along Yonge compared to Spadina before the introduction of the subway network • Secondary plans on the Yonge line promote TOD around existing station locations • Zoning regulations have been altered from the designations of the early 1990s along the Yonge line but not along the Spadina line • FSIs around stations on the Yonge line are significantly higher than the allowances on around stations on the Spadina line • Station location and alignment decisions have impacted the surrounding built forms
Implications	<ul style="list-style-type: none"> • Spadina line is an underutilized transportation asset in the city of Toronto • Without supportive policies, the built forms of the two study sites will continue to develop differently • Businesses will continue to locate outside the city unless provided with incentives to return
Recommendations	<ul style="list-style-type: none"> • Change existing policies to support mixed land uses and higher densities • Provide economic incentives for developers to build TODs • Target specific nodes along the Spadina corridor and try to intensify them first

6.0 Practical Application, Limitations, Future Research and Concluding Remarks

This final chapter will present the practical applications for the results of this study and outline how they can be used by planners, policy makers and developers in order to facilitate sustainable, transit-oriented communities. A brief discussion of the limitations that affected this study is also presented along with recommendations for ways to build on this research for the future. Finally, some concluding remarks are made to summarize the findings of this study and what was learned from the study process.

6.1 Practical Application

The results of this study can be applied to the planning field in several ways. First, the city of Toronto could review the findings and recommendations provided in this thesis to shape the policy context within the city. This thesis calls for changes to zoning by-laws and the institution of secondary plans for the areas surrounding stations on the Spadina line. There is currently an opportunity for the city of Toronto to alter development and capitalize on existing assets. The study also suggests an introduction of economic incentives as a means of encouraging more sustainable development.

The extension of the Spadina line to the Regional Municipality of York (located north of the city of Toronto) is currently underway. This means that York Region has the opportunity

now to alter their policies and ensure that sustainable, positive change follows this new infrastructure investment. Planning provisions need to be established to ensure that transit-oriented principles are incorporated into any new proposals for development in the area. Land-uses and FSIs should all be adapted to reflect the shift occurring in the community from a suburban built form of big box stores and spread out residential neighbourhoods. The Region can also implement legislation for economic incentives. The findings of this study can also be applied to other cities with existing and proposed higher-order transit systems or extensions.

6.2 Limitations

This study was subject to some limitations that impacted the study findings. The first was the age of the data compiled from Statistic Canada. Statistic Canada conducts the national survey every five years, with the most recent survey completed in 2011. Unfortunately, the data from that study is in the process of incrementally being released to the public. The only usable data for this study was the 2011 census tract population information. This thesis relied on data from the 2006 census. Changes that have occurred since that time are not accounted for in the findings.

The scale of the data compiled was also a limitation to this study. Some of the census tracts selected stretched beyond the 400m buffer zone from station sites. This was the case more along the Spadina line as those areas have lower densities and tracts are not split until the

population grows. Another limitation mentioned in the methods section was the inclusion of divided tracts in order to obtain historically accurate data. This stretched the study sites even further beyond 400m.

A final limitation to this study was the availability of opinions, documents and photographs from the past. This study covers a 50 year time period where the city experienced many changes (or in some cases did not experience changes). Obtaining archive data from journal articles, the Toronto Archives and past newspaper articles helped to provide some perspective but are not as strong as conducting primary research at the time.

6.3 Future Research

Future research could build on the work completed for this study by using the updated census data to determine whether the trends found continue or if development slows on the Yonge side and increases around stations of the Spadina line. The updated data would also provide knowledge of whether or not the built forms of either of the study sites has changed since 2006.

A similar study could also be conducted using the Bloor-Danforth subway line which stretches east-west across the city. The outer branches of this line could be examined through census data, policy documents and compared to the findings of this study, or compared to the core of the Bloor-Danforth line to see if similar results are found. If the results were

compared to those of this study, a full picture of the status of transit and land use in the city of Toronto could be developed.

The methods of this study can also be applied to other cities to determine where development is most prominent along an existing system and where the discrepancies lie in creating equal development along a transit network.

6.4 Concluding Remarks

Often the image that is publicised of Toronto is that of a city that has successfully created transit-oriented communities with high densities around the subway system, especially when compared to other North American cities (Filion, McSpurren & Appleby, 2006). This is true for Yonge St. which is frequently presented as the case study used to formulate this argument. Most studies leave out the Spadina line and fail to mention the large amount of potential for redevelopment and intensification that exists. The goal of this study was to present the conditions of the built environment on both sides of the subway and determine ways the city of Toronto can make better use of developable land and transit infrastructure.

Debate over the connection between transit and land use has transpired for decades. There is a ‘chicken and egg’ relationship between the two. Which should be built first and is the expectation that the other will automatically follow? This study of the city of Toronto highlights some of the flaws associated with this theory. This thesis places focus on some of the other variables with a role in this relationship.

The preliminary research in this thesis proves that there are dramatic differences in the physical make-ups of the two corridors surrounding the Yonge and Spadina subway lines.

The Yonge line has high residential densities in apartment buildings over 5 storeys, while the Spadina side has lower densities in apartment buildings less than 5 storeys and single detached homes. The employment uses also differ from one side to the other with mainly office towers located along the Yonge line and manufacturing and industrial companies along the Spadina line.

This thesis addresses the causes for these differences and establishes that there are a number of variables in the transit and land use relationship. Policies and regulations play a key role in the results. Having permissible zoning guidelines and specific secondary plans has shaped the built form of the Yonge St. corridor and can be used to do the same for the Spadina corridor. Allowing for mixed land uses promotes better street life and can deter automobile use.

Although unchangeable at this stage, station location plays a key role in the success of a transit network and also in the ability to develop around it. Linear systems like the Yonge line are favourable compared to non-linear routes that travel under low density residential as the Spadina line does.

There also needs to be a desire from the public, both residents and businesses, to locate in certain areas. A natural momentum, as defined by this study. New transit infrastructure does

not automatically mean that densities and development will follow. This study used property value information, TTC ridership data and demographic information to prove that there is a greater desire from the public for land surrounding the Yonge line than the Spadina line. Less demand for land means greater risks for developers who may want to build higher-density projects along the Spadina line.

To encourage developers and alleviate some of the risk, the city can offer economic incentives. Strategies such as tax increment financing, reducing development charges, tax abatements and land value taxation can be implemented relatively easily to encourage sustainable development in neighbourhoods in need of redevelopment or revitalization.

Creating a successful community around transit infrastructure is a complicated process that requires the right circumstances in order to thrive. **Table 6.1** presents a comparison summary of the conditions on the Yonge line versus the Spadina line.

Table 6.1 – Summary table of study findings

	Yonge	Spadina
Places to Grow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Toronto Official Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Transit Supportive Secondary Plans	<input checked="" type="checkbox"/>	
High FSIs	<input checked="" type="checkbox"/>	
Mixed-Use Zoning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Built Environment Conducive to TOD	<input checked="" type="checkbox"/>	
Economic Incentives		

The motivation behind this study was not meant to point out the shortcomings of the Spadina line, but rather to highlight the opportunity that remains for the city to take full advantage of existing, underutilized infrastructure and land. Yonge St. will always be the backbone and core of transportation in Toronto, but the Spadina corridor presents an interesting opportunity to deal with an increasingly congested transit system. A lack of new transit infrastructure means that planners need to provide an alternative for those looking to work and live in the city. The most obvious solution, made apparent from this study, is to promote transit-oriented development around stations on the Spadina line and utilize a branch of the subway with available capacity.

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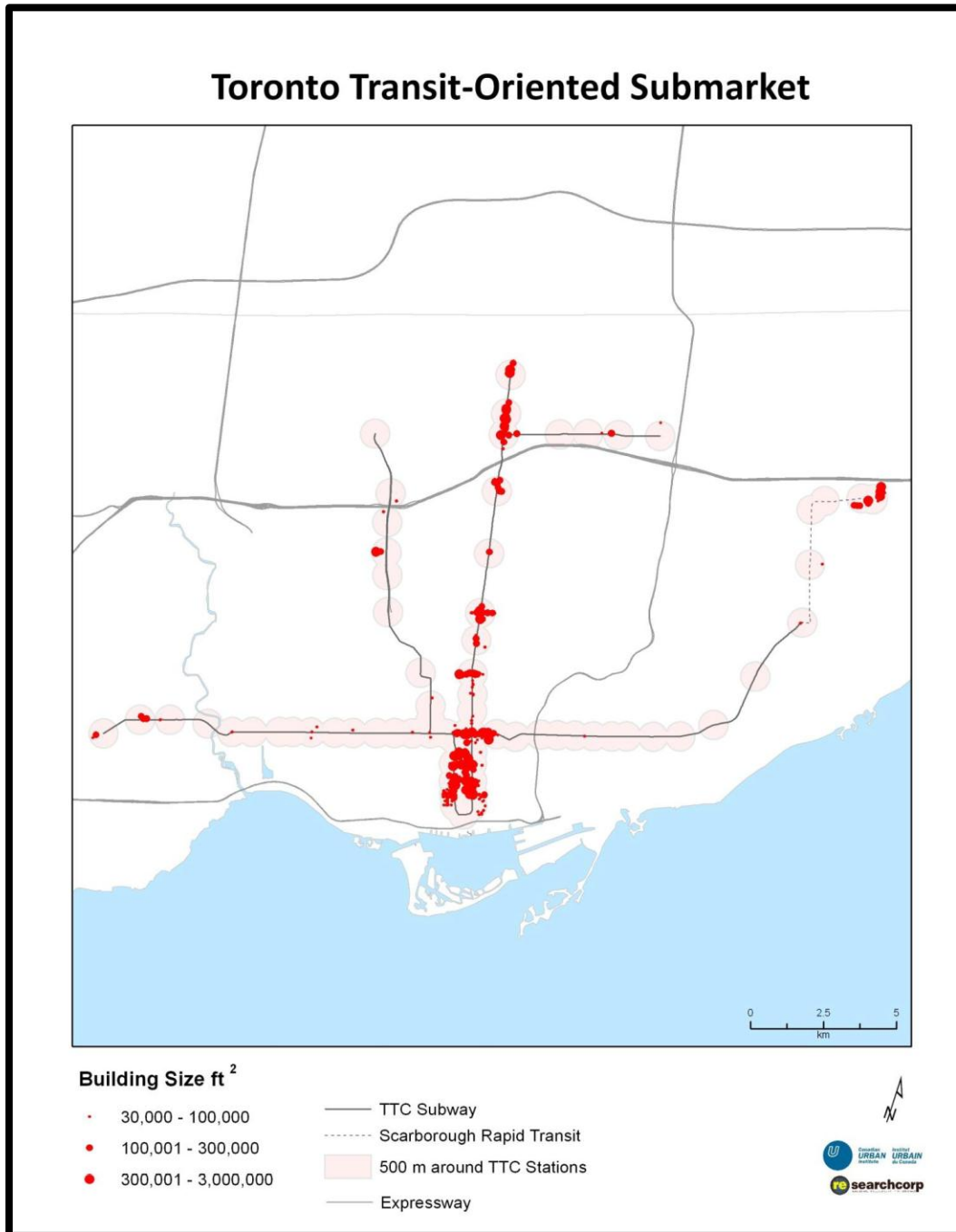
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Appendix A – TTC Important Dates

- ⊙ 1954, March 30 - Yonge Subway opened from Eglinton to Union stations.
- ⊙ 1963, February 28 - University Subway opened from Union to St. George stations.
- ⊙ 1966, February 26 - Bloor-Danforth Subway opened from Keele to Woodbine stations. Integrated subway operation commenced for a six-month trial period.
- ⊙ 1966, September 4 - Separate subway operation commenced.
- ⊙ 1968, May 11 - Bloor-Danforth Subway extended to Islington and Warden stations.
- ⊙ 1968, June 23 to 1978, Jan. 27 - Yonge-University Subway operation cut back from St. George to Union stations at 10:00 p.m. on weekday and Saturday evenings and all day Sundays and holidays. Service resumed at all times on University Avenue with the commencement of Spadina Subway operation on January 28, 1978.
- ⊙ 1973, March 31 - Yonge Subway extended to York Mills station.
- ⊙ 1974, March 30 - Yonge Subway extended to Finch station.
- ⊙ 1978, January 28 - Spadina Subway opened from St. George to Wilson stations.
- ⊙ 1980, November 22 - Bloor-Danforth Subway extended to Kipling and Kennedy stations.
- ⊙ 1985, March 23 - Scarborough RT opened from Kennedy to McCowan stations.
- ⊙ 1987, June 18 - North York Centre station opened.
- ⊙ 1996, March 31 - Spadina Subway extended to Downsview station.
- ⊙ 2002, November 24 - Sheppard Subway opened between Sheppard-Yonge and Don Mills stations.

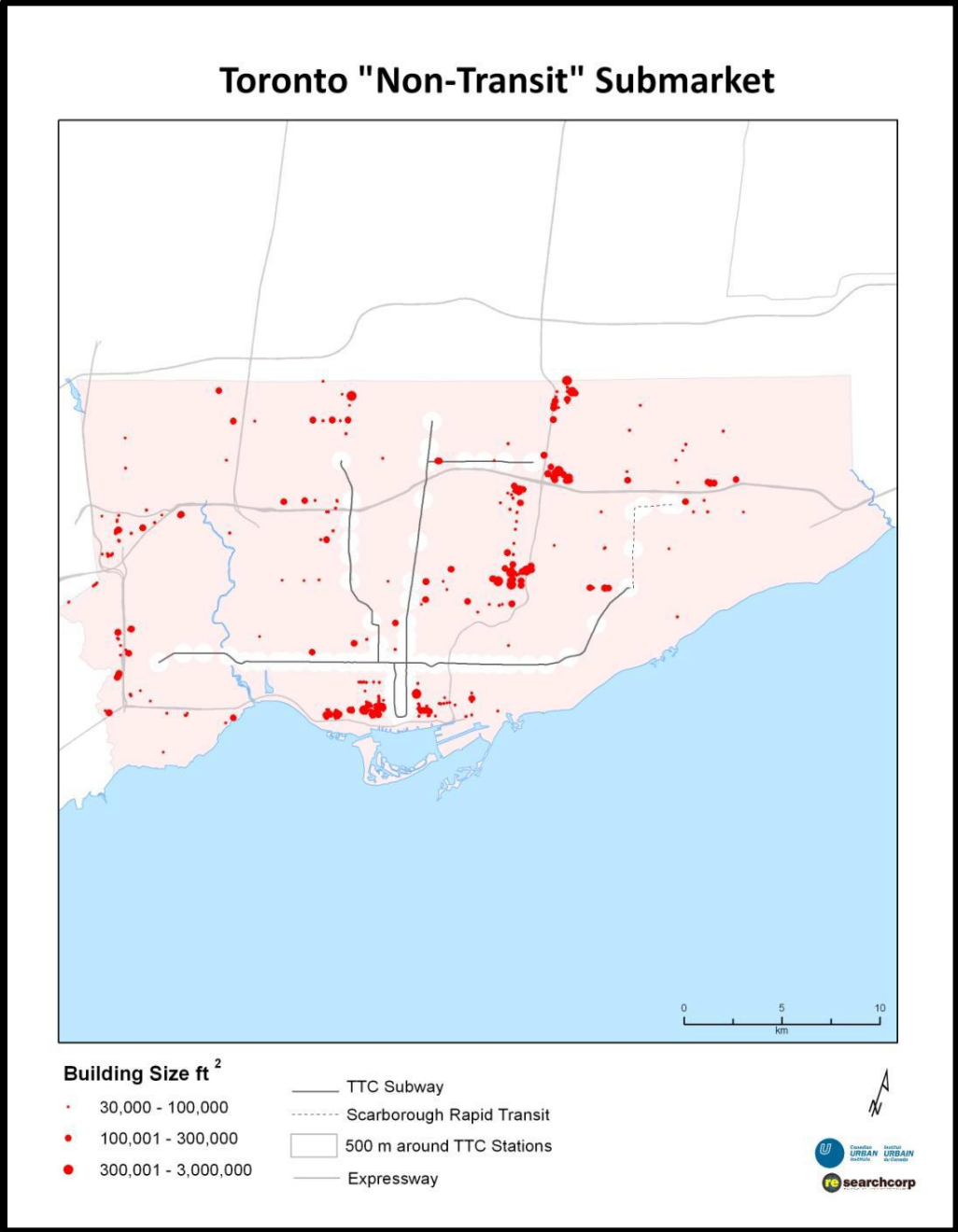
Appendix B- Toronto Transit-Oriented Office Space Submarket

From the CUI Report (2010)



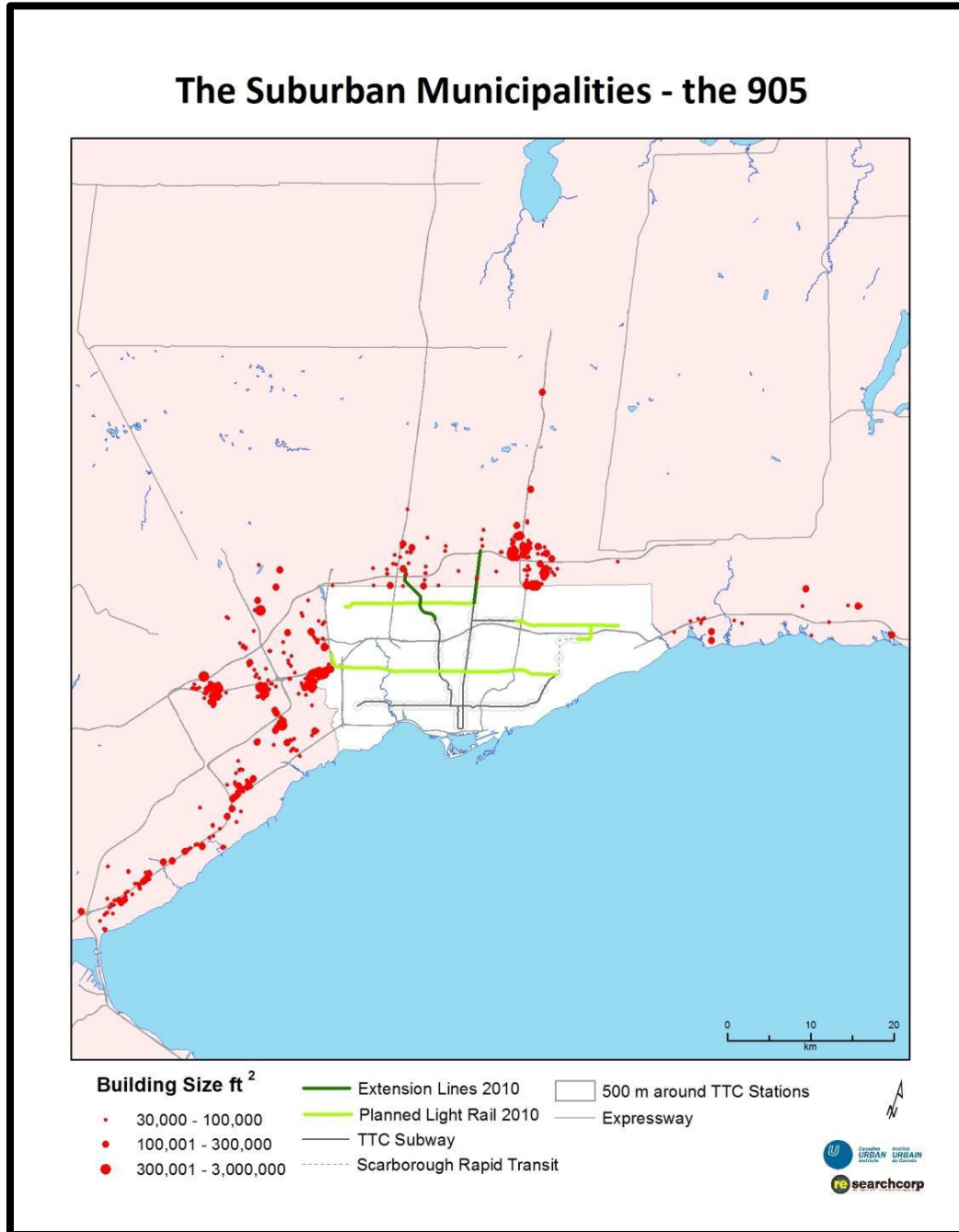
Appendix C - Toronto "Non-Transit" Office Space Submarket

From the CUI Report (2010)



Appendix D- The Suburban Municipalities – the 905 Office Space

From the CUI Report (2010)



Appendix E - Additional photos from the photographic analysis – Spadina line

Figure E1 was taken in 1960, on Dalehaye St. at Wilson Ave. looking north towards Wilson Ave. On the right side of the photo, a 3 storey residential building is visible, with some recently planted trees in front. On the left side a strip plaza is visible with surface parking located in front of the shops. In the forefront, on the left side is the entrance to the gas station that was visible in **Figure 4.9**.

Figure E2 was taken from the same spot on Dalehaye St. looking north at Wilson Ave. in 2012. Full-grown trees block the view of what is the same residential building photographed in 1960. The strip plaza on the left of the photo has a new façade but the overall structure has not changed. Surface parking still remains in front of the stores. The changes to this streetscape have been minimal in the 50 year period.

Figure E1 - 1960 – Wilson Ave. looking north from Dalehaye St.



(Source: Toronto Photo Archives)

Figure E2 - 2012 – Wilson Ave. looking north from Dalehaye St.



(Source: Author Photo)

Figure E3, taken in 1963 shows the Spadina ditch, the right-of-way being built for both the Allen Expressway and the Spadina Subway line extension down the middle. This photograph looks north from the overpass at Lawrence Ave. There are what appear to be residential buildings of 4 or 5 storeys on either side of the highway, but little development otherwise.

Figure E4 was taken in 2012 looking south towards the Lawrence overpass seen in the background of the photo. The same 4 or 5 storey buildings are visible on the left side of the photo and little other development is visible over the almost 50 year period.

Figure E3 - 1963 – Spadina Expressway looking north at Lawrence Ave.



(Source: Toronto Photo Archives)

Figure E4 - 2012 – Spadina expressway looking south to Lawrence Ave.



(Source: Author Photo)

Appendix F - Additional photos from the photographic analysis – Yonge line

Figure F1 is a photo taken at the intersection of Yonge St. and Avondale Ave. located south of Sheppard Ave. but north of Highway 401. This picture was taken in 1963, and the surrounding area consists of some single-detached houses on the east side and small business and a plaza on the west. There are two lanes of traffic travelling in each direction.

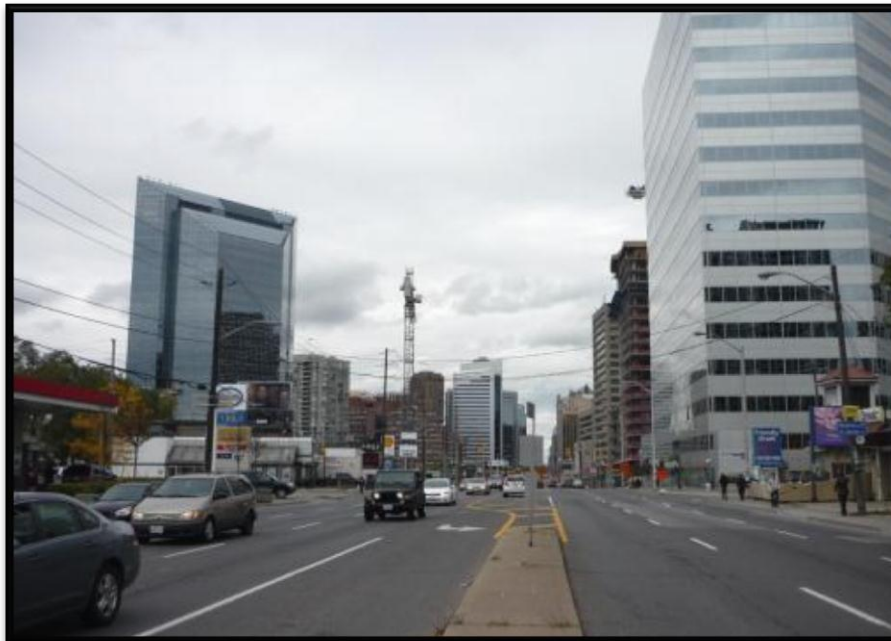
Figure F2 illustrates the built form of this intersection in 2012. There are numerous high-rise buildings that are both office space and residential buildings. There are several currently under construction just south of the intersection. Yonge St. has also been widened to three lanes of traffic in each direction. Elements from the archive image have disappeared almost 50 years later.

Figure F1 - 1963 – Yonge St. looking north at Avondale Ave.



(Source: Toronto Photo Archives)

Figure F2 - 2012 – Yonge St. looking north from Avondale Ave.



(Source: Author Photo)

Figure F3 is an archive photograph from 1966 taken on Elmwood Ave. looking north-west along Yonge St. This intersection is located 160m south of the North York Centre subway station on the Yonge Line. There appears to be a significant amount of open space on the left side of this photo with little in terms of residential, commercial or office space development. Yonge St. appears to have three lanes of traffic in each direction.

In **Figure F4**, taken in 2010, it is clear that a significant amount of intensification and growth has occurred in this area since the 1960s. There are several high-rise office or residential buildings, and street level retail. The 6 storey gray building in the left of the photo is the head office of the Toronto District School Board. Just north of that building is Mel Lastman Square and the entrance to the North York Centre subway station. There are still three lanes of traffic in each direction along Yonge St.

Figure F3 - 1966 – Yonge St. looking north-west at Elmwood Ave.



(Source: Toronto Photo Archives)

Figure F4 - 2010 – Yonge St. looking north at Elmwood Ave.

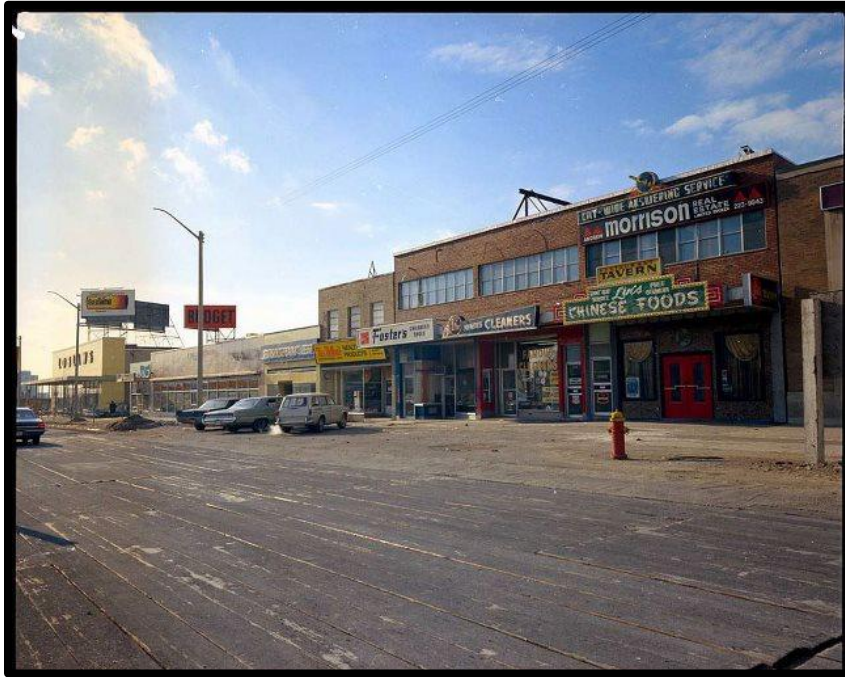


(Source: Vintage Toronto Facebook Group)

Figure F5 and **F6** look south-west from the intersection where a two story retail strip plaza is located with surface parking in front. In **Figure F7**, 37 years later, there is a massive amount of high-density development surrounding this plaza. The area experienced some major changes in built form by 2009 but most of the original buildings remain at street level. It appears as though Yonge St. has been widened because the setbacks of the buildings are narrower. The surface parking has been replaced by on street parking.

Looking south-west in **Figure F6**, the branch of the Canadian Imperial Bank of Commerce is visible in the beige building. **Figure F5** provides a closer view of the same strip of stores just south of the intersection in 1972. In **Figure F7** the beige building on the corner as well as most of the buildings originally located on the south-west corner have been preserved. The vacant land west of the intersection has been filled in with high-density residential buildings. From this perspective it also appears that Yonge St. has been widened from what was likely two lanes each direction to three.

Figure F5 - 1972 – Yonge St. south of Finch Ave. looking south-west



(Source: Toronto Photo Archives)

Figure F6 - 1972 – Yonge St. at Finch Ave. looking south-west



(Source: Toronto Photo Archives)

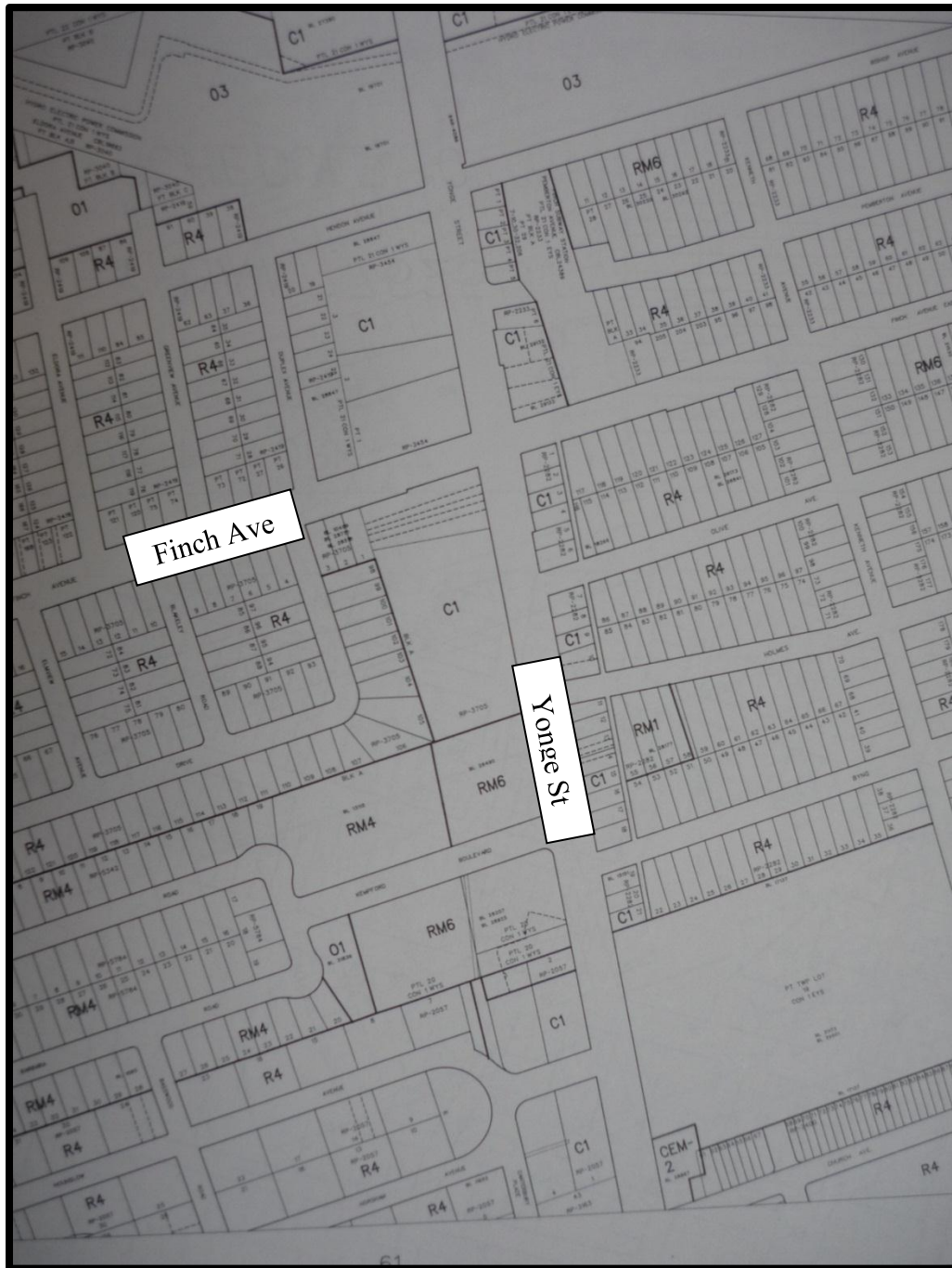
Figure F7 - 2009 – Yonge St. at Finch Ave. looking south-west



(Source: Vintage Toronto Facebook Group)

Appendix G— City of North York Zoning Maps

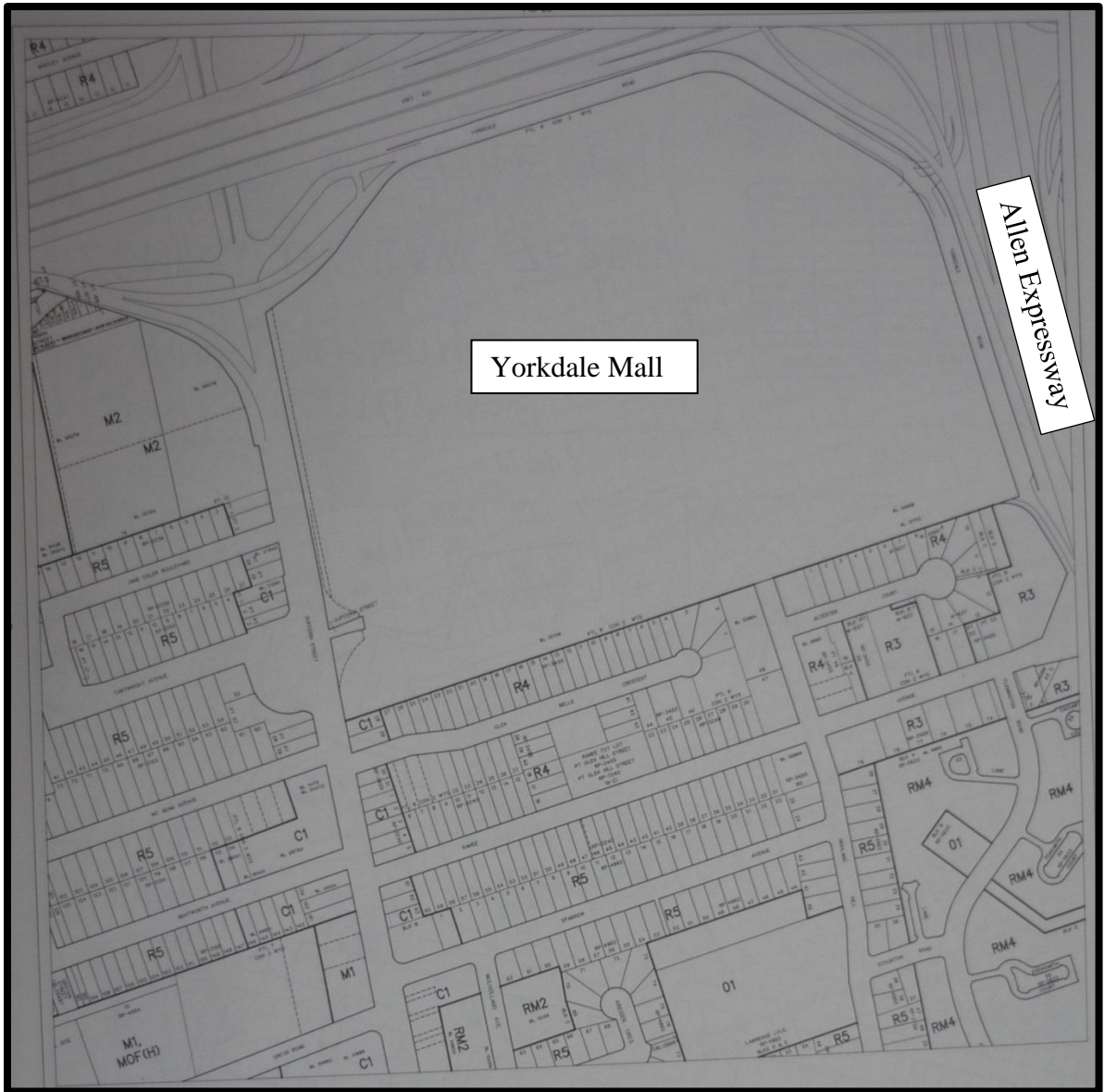
Dec 20, 1992



Nov 21, 1991



Oct 20, 1992

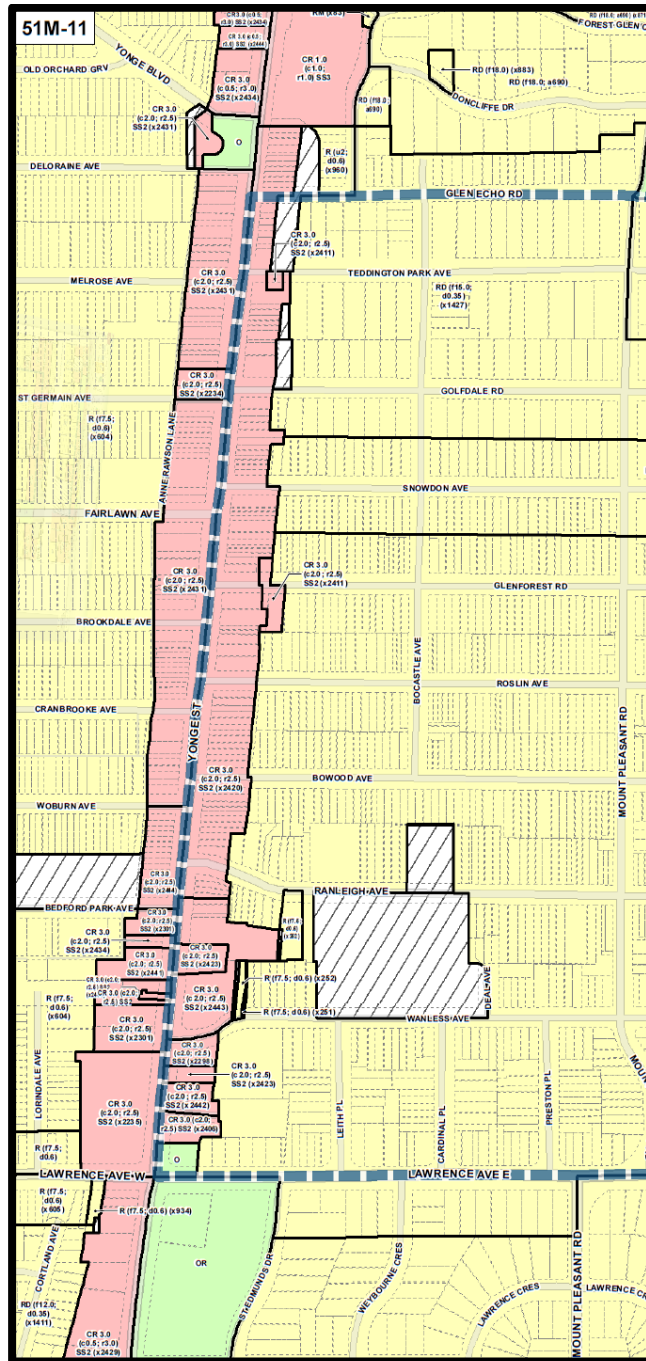


July 29, 1992

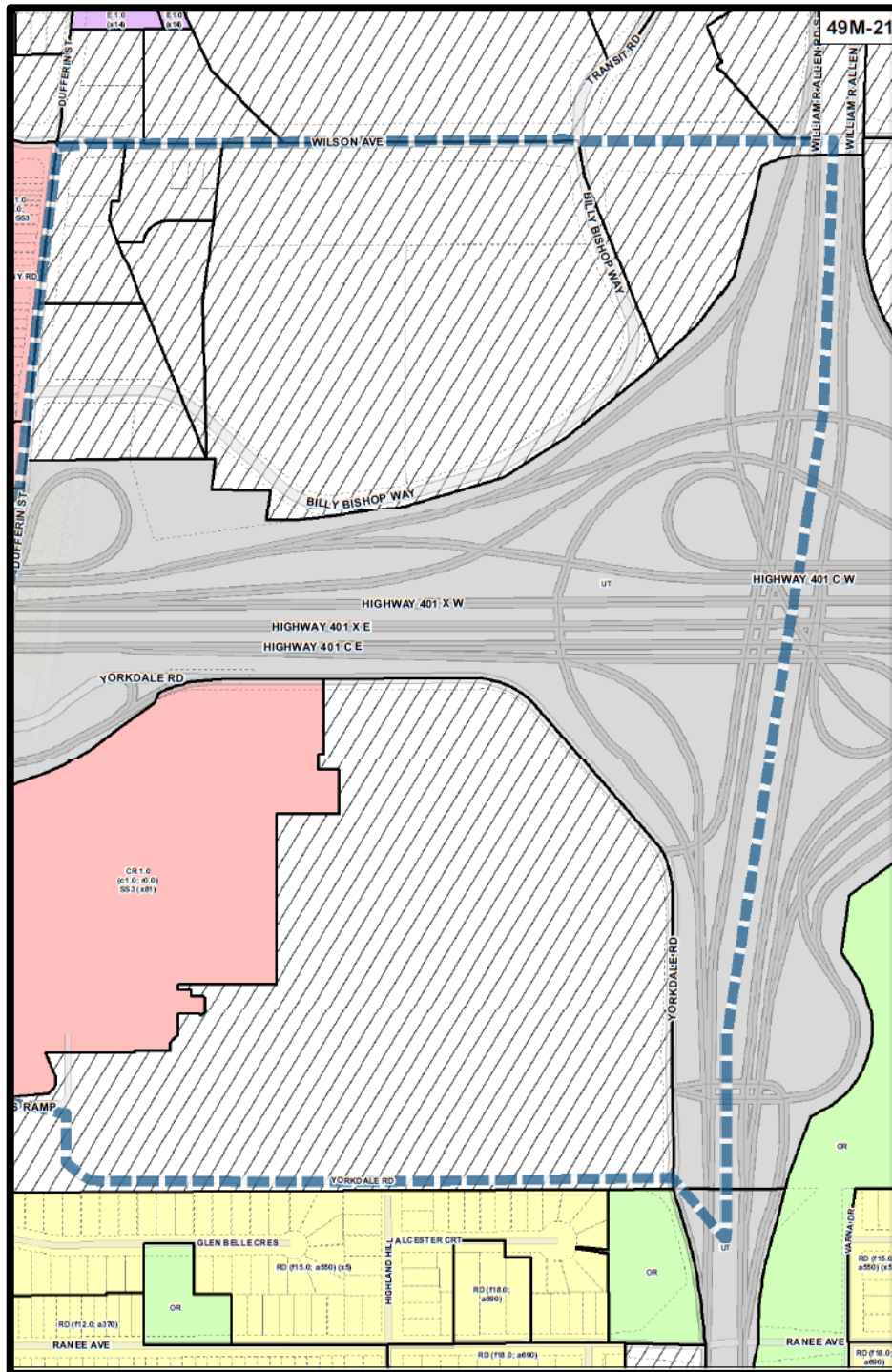


Appendix H- Current City of Toronto Zoning Maps

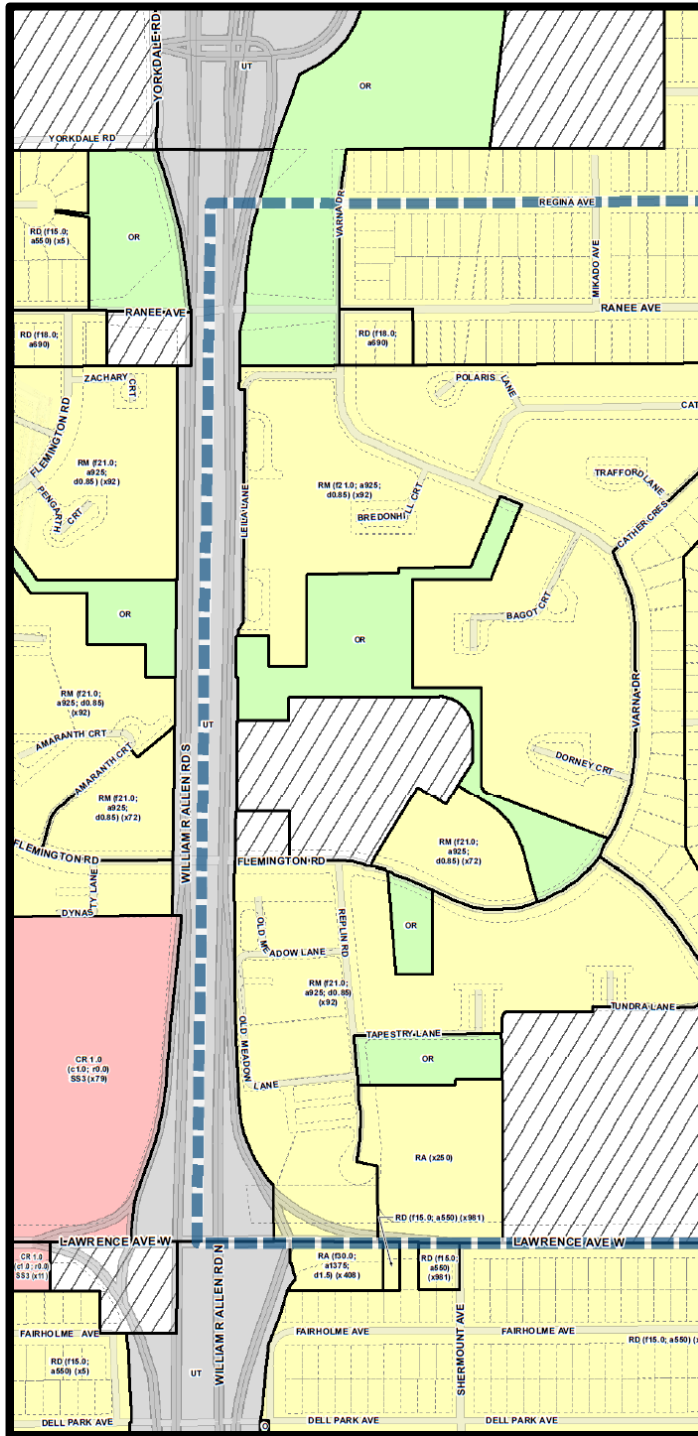
Yonge and Lawrence, 2010



The Allen Expressway at Yorkdale Mall, 2010

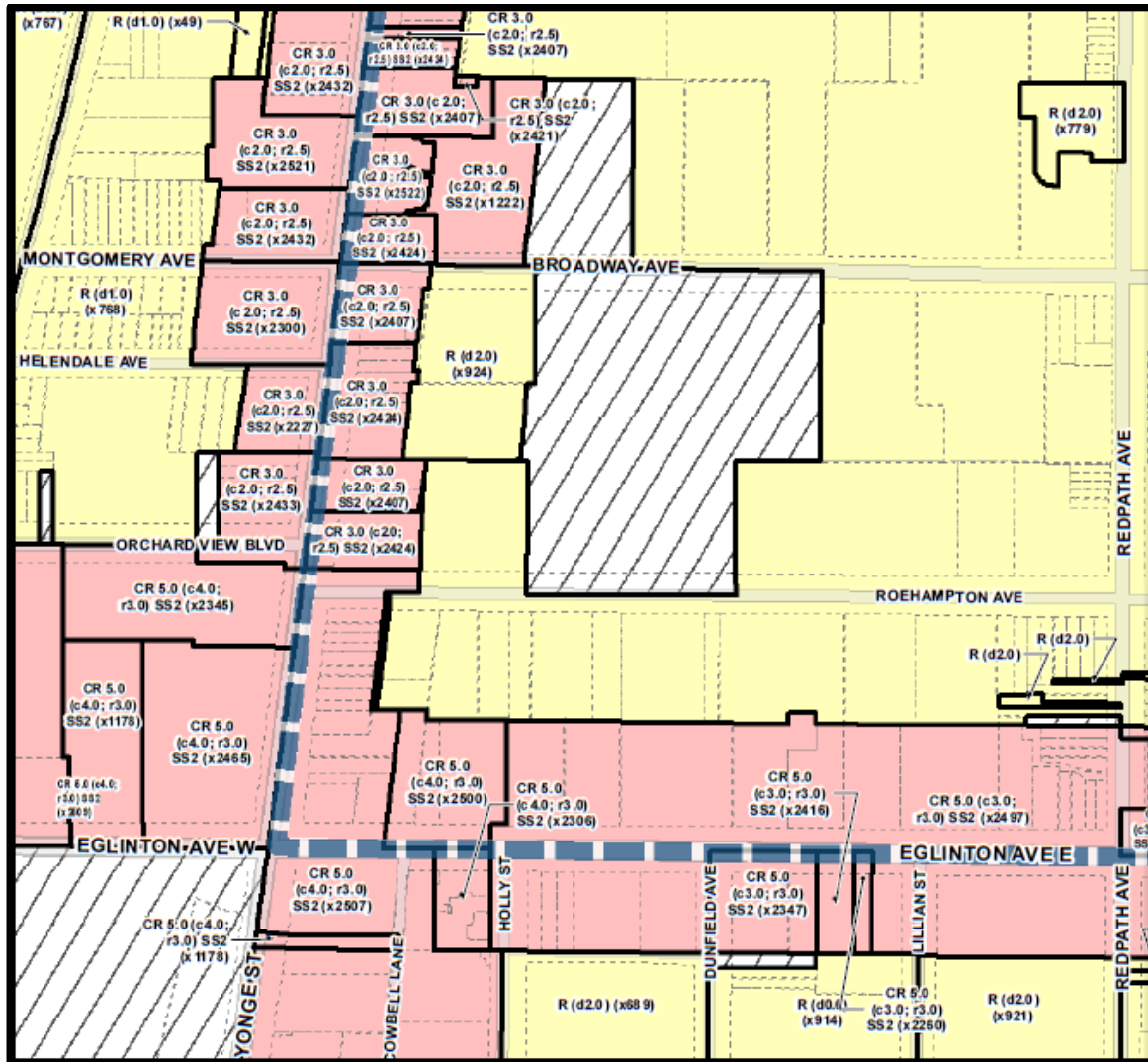


The Allen Expressway at Lawrence, 2010



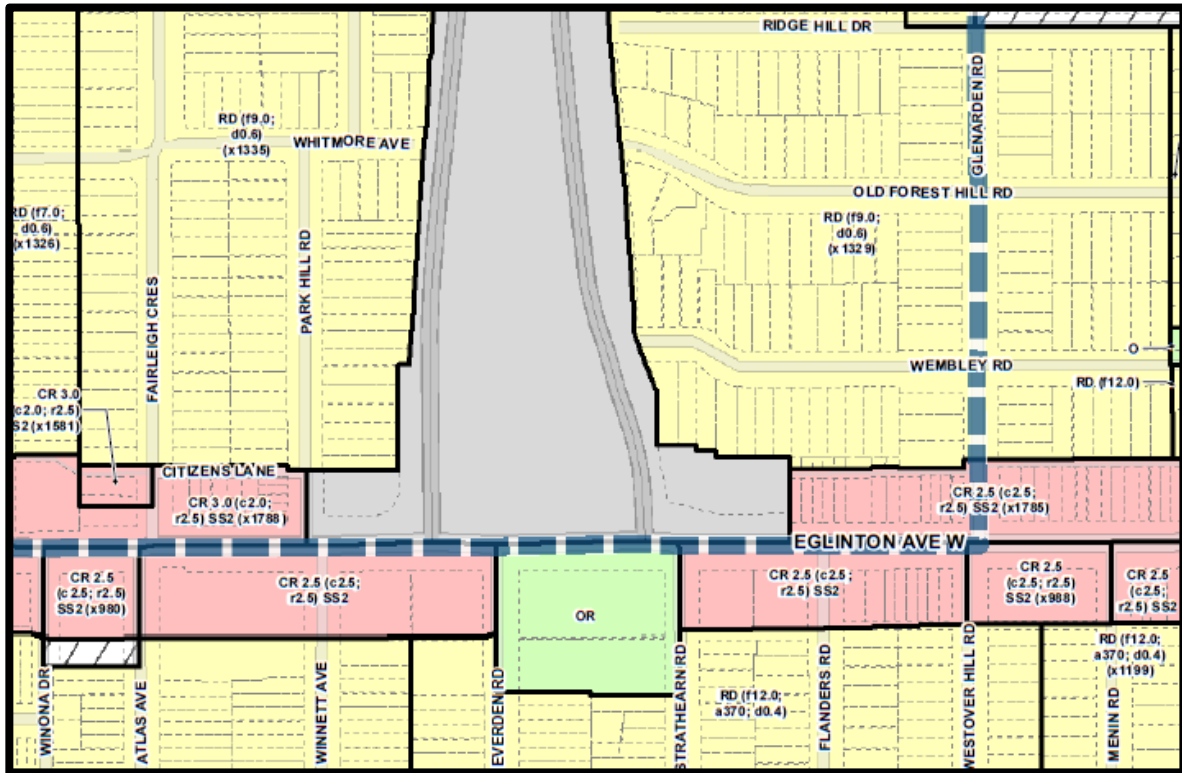
Appendix I- FSI allowances

Yonge Street at Eglinton, 2010



The FSI allowance is located next to the land use designation. CR 5.0 is Commercial Residential use with an FSI of 5.0.

Eglinton at the Allen Expressway, 2010



FSIs are lower here with land surrounding the station zoned Commercial Residential as well but with as FSI maximum of 3.0.