Patterns of growth and decline in the Montreal metropolitan region, 1991-2011

Magda Barrera

Supervised Research Project submitted to the School of Urban Planning at McGill University in partial fulfillment of the requirements for the degree of Master of Urban Planning

December 23, 2014

Abstract

This report presents trends in neighborhood decline and advancement in the central city, the inner suburbs, and the outer suburbs in the Montreal metropolitan region. The common image of North American cities as characterized by prosperous, homogenous suburbs surrounding an impoverished central city has been increasingly challenged by structural changes in employment, the spatial distribution of poverty, and demographic diversity. Research on neighborhood decline, particularly in the United States, has tended to focus on inner cities. Given the changing dynamics of suburban areas, there is a compelling need for greater focus on processes of decline in the larger metropolitan region. Older inner suburbs in many US cities have been particularly prone to neighborhood decline. The most salient trend from the analysis of neighborhood decline and advancement in the Montreal region is that there are significant differences between the central city, the inner suburbs and the outer suburbs. Inner suburbs tend to be most affected by decline and have the lowest proportion of neighborhoods experiencing advancement. The growing concentration of declining neighborhoods in the inner suburbs has become a pressing concern that merits greater policy consideration. Socioeconomic decline and increasing poverty in the inner suburbs present specific challenges for municipal policies, given that suburban areas are harder to reach through targeted services and programming than central city neighborhoods.

Résumé

Ce rapport présente les tendances dans le déclin et l'avancement des quartiers dans le centre ville, la proche banlieue et la grande banlieue de la région métropolitaine de Montréal. L'image commune des villes nord-américaines comme caractérisée par banlieues prospères et homogènes entourant un centre-ville appauvrie a été de plus en plus contestée par les changements structurels dans l'emploi, la répartition spatiale de la pauvreté, et la diversité démographique. La recherche sur le déclin des quartiers, en particulier aux États-Unis, a eu tendance à se concentrer sur les centres-villes. Compte tenu de l'évolution dynamique des zones suburbaines, il y a un besoin de se concentrer davantage sur les processus de déclin dans la région métropolitaine. Les banlieues proches dans de nombreuses villes américaines ont été particulièrement prédisposés au déclin des quartiers. La tendance la plus saillante de l'analyse de déclin des quartiers dans la région de Montréal, c'est qu'il y a des différences significatives entre le centre-ville, la proche banlieue, et la grande banlieue. Les banlieues proches ont tendance à être les plus touchés par le déclin et ont la plus faible proportion de quartiers en avancement. La concentration croissante du déclin des quartiers dans la proche banlieue est devenue une préoccupation urgente qui mérite plus de considération. Le déclin socioéconomique et la pauvreté croissante dans les proches banlieues présentent des défis spécifiques pour les politiques municipales, étant donné que les zones suburbaines sont plus difficiles à atteindre par les services ciblés et de la programmation que les quartiers centraux de la ville.

Acknowledgements

I would like to express my gratitude to my supervisor, Dr. Richard Shearmur, whose expertise, understanding, and engagement made such a crucial contribution through the learning process of this research project. I would like to thank Dr. Raphael Fischler for introducing me to the topic and providing valuable comments and guidance on the way. I would like to acknowledge my friends and classmates at the School of Urban Planning from whom I have learned so much over the past two years and whose exchanges of knowledge and experiences helped enrich my studies. And, as always, I must express my deep gratitude to my wonderful family and friends for their unwavering support in this and many other endeavors.

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1. Introduction

1.1 Problem definition

This report presents trends in neighborhood decline and advancement in the central city, the inner suburbs, and the outer suburbs in the Montreal metropolitan region. The early literature on neighborhood decline, particularly in the United States, tended to focus on inner-city areas (Bourne 1978; Nathan and Adams 1976; Hall 1977; Bradbury, Downs and Small 1982). Inner-city neighborhoods in North American metropolitan areas were associated with decline and decay, while suburban neighborhoods were viewed as prosperous and growing. More recently, research in US cities has identified increasing poverty, population loss, and other symptoms of decline in suburban areas (Lucy and Phillips 2001; Jargowsky 2003; Kneebone and Berube 2013). These current trends point to the need for research on processes of decline in the greater metropolitan region. The objective of this research project is to identify trends in neighborhood decline and advancement in the Montreal region and reflect on the implications for policies to address and potentially reverse processes of decline.

Older inner suburbs appear to be at particular risk of decline in many US cities. While studies of income distribution in Canadian cities are comparatively few, there is some evidence that Canadian cities are also experiencing a more dispersed pattern of poverty and growing income inequalities. The distribution of neighborhoods in decline, particularly whether suburban areas are experiencing processes of decline, has important policy implications. In many cities, services and support for low income populations remains centered in inner cities, creating a policy vacuum in declining suburbs that may well aggravate processes of decline.

1.2 Literature review

1.2.1. What is neighborhood decline

Although there is no universally-accepted definition of urban decline, it is generally described as a process of transformation resulting from a combination of economic, social, and physical factors. The OECD has stated that "Urban decline is thus defined as the spatial concentration in large cities of social, economic and environmental problems such as high levels of unemployment and poverty, housing deterioration and decay of the urban infrastructure"(OECD 1983, p.52) Symptoms of decline include decrease in household incomes, significant reductions in population, increased turnover of residents, low occupancy rates for home ownership, increased crime rates, abandoned or neglected houses, contaminated land, and broken infrastructure (Hoekveld 2014; Savitch 2011; Schilling and Logan 2008; Cullen and Levitt 1999; Rybczynski and Linneman 1999; Schilling, 2002). Neighborhood decline differs from urban decline in terms of scale. Neighborhood decline takes place when the symptoms of decline are concentrated in particular neighbourhoods. A city may have a number of declining neighborhoods without experiencing urban decline overall. Neighborhood decline constitutes a reinforcing process; residents who can afford to move leave the neighborhood and there is overall population loss, leading to higher vacancy rates and resident turnover. The withdrawal of investment in a neighborhood is a critical component of neighborhood decline, leading to neglected houses and inadequate infrastructure. In some cases, the withdrawal of investment in the built environment can precede the signs of physical decay and demographic changes and set the stage for the more visible change (Smith 2001). Because shifts in investment take place several years before the more visible signs of decline, they can pass unnoticed until the process of decline is well underway.

There has been significant debate in the literature as to the causes of neighborhood change, and more specifically neighborhood decline. An important theme emerging from the literature on neighborhood decline is that there is no single trigger or starting point that leads to decline (CHMC 2001; Downs 1997). Instead, decline is the result of a variety of factors and circumstances that change from city to city. While no single factor can be indicated as the starting point of decline, once the process is underway it becomes self-reinforcing so that the symptoms of decline become causes for further decline (CHMC 2001). For instance, abandoned houses are a symptom of decline as well as one of the main contributors to neighborhood decline since in addition to constituting health and safety hazards, they lower property values and discourage investment in nearby properties (Morckel 2013).

The human ecology approach sees neighborhood decline as a long-term process of filtering down of housing stock resulting from ageing housing structures. In the filtering down process, housing values decrease over time while the original higher-income residents move to find newer or larger housing, or to seek more fashionable neighborhoods. The vacant housing units are now affordable for lower-income households. Filtering down can therefore cause neighborhood decline by replacing high-income residents with lower-income residents (Kim 2013; Bond and Coulson 1989). In addition to housing age and lack of upkeep of older properties, filtering down can be affected by neighborhood characteristics such as poverty rates (Weicher and Thibodeau, 1988). If an increase in poverty rates encourages higher-income households to move out, filtering becomes a reinforcing process. As housing ages its price will be reduced, leading to a higher concentration of low-income households, which further incentivizes higher-income households to move out of the neighborhood. This in turn further reduces property values and increases neighborhood decay (Ding and Knaap 2003; Schill 1991). A behavioral approach to

neighborhood change posits that decline is not an inevitable process but instead can be offset by people's actions and the strength of the social networks in the neighborhood (Somerville et al 2009). According to a behavioral approach, processes of neighborhood decline and rise will be the result of interactions between ecological, institutional, and sub-cultural factors. Place attachment has been identified as a potential factor in preventing neighborhood decline, since residents may choose to stay even when they could afford to leave (Livingston 2008).

1.2.2. Patterns of decline in North American cities: from central cities to suburbs

Evolving trends and patterns in neighborhood decline in North American cities will be examined in this section. Although North America is understood as including the United States and Canada, the bulk of the literature on neighborhood decline, spatial distribution of poverty, and income stratification comes from research on cities in the United States. This section will first focus on cities in the United States, and then examine some important differences that apply to Canadian cities.

Urban decline in North American cities has usually been associated with neighborhoods in the central cities, characterized by high social and physical needs, limited resources, high crime rates, and depopulation (Orfield 2002; Kneebone and Berube 2013; Jargowsky 1996). However, decline has increasingly been observed in suburban areas, accompanied by a rise in suburban poverty. This growing trend runs counter to the prevailing image of the suburbs in North American cities as prosperous and growing, in contrast with the impoverished central city.

There is no universally accepted definition of central cities and suburbs in the literature. Unless otherwise stated, the term central city will be used in this literature review to describe the county or municipality at the core of the metropolitan area as defined by the US Census Bureau or

Statistics Canada; suburbs are the remainder of the metropolitan area outside the central city (Kneebone and Berube 2013).

In the post-war period, rapid growth at the metropolitan level was accompanied by population decline in the central cities as the suburbs experienced a dramatic expansion. This massive growth of the suburbs changed the spatial, social, and economic fabric of metropolitan areas and has been called "the most important economic and social trend of the second half of the twentieth century in America"(McDonald 1984). Suburbanization in the United States exploded in the post-war period due to a combination of factors. The main cause of suburbanization was population growth in metropolitan areas, with the accompanying demand for housing; in addition, rising prosperity contributed to demand for newer and larger houses. The need for new housing was particularly pressing given the backlog in housing construction resulting from the war and the great depression (McDonald 1984). The demand for new living spaces was cheaper and easier to accommodate at the edge of urban areas where land was abundant and inexpensive. A combination of other factors fueled the massive growth of the suburbs. To begin with, economic growth and consumer preferences drew urban residents to the suburbs. In addition to the demand for bigger and better homes, the postwar economic boom resulted in increases in car ownership. Massive housing construction and increased prosperity meant that the American dream ideal of the single-family home with a yard was now within reach of middle-class families relocating to the suburbs. Meanwhile, the rise in car ownership, which more than doubled between 1950 and 1970, made the suburbs accessible (Jackson 1985).

Government policies played a critical role in fostering suburbanization. Federal government policies encouraged home-ownership, particularly in suburban areas. Government programs underwrote mortgages for single-family homes in suburban areas, and insurance companies

provided favorable rates for these types of neighborhoods. Federal Housing Administration policies supported development in the suburbs and promoted disinvestment in central cities by encouraging lenders to avoid, or "redline", inner city areas that were seen as likely to decline(McDonald 1984; Harris 2004). The Highway Act of 1956 was another federal policy that promoted rapid suburbanization, by bulldozing housing in central areas in order to build the new highways and by making land outside the central city much more accessible. The Highway Act called for a system of 41,000 miles and provided that the federal government would pay 90% of the cost of construction. Construction of highways has been linked to declining populations in central cities as residents moved to fast-growing suburban areas. One new highway passing through a central city has been estimated to reduce its population by about 18 percent (Baum-Snow 2007).

Post-war suburbanization was also a racialized phenomenon, characterized by "white flight", with white residents seeking to distance themselves from racially-mixed inner-city areas with a high proportion of African-American residents and move to racially-homogenous suburban areas (Crowder 2000; Frey 1979; Wurdock 1981). Racial segregation in metropolitan areas was already present by 1950. Suburbanization preserved and, in many cases, increased racial segregation. Large-scale South-North rural to urban migration of black residents into the central cities in the post-war period meant that "black" neighborhoods could not absorb all newcomers and some settled in "white" neighborhoods (Massey and Denton 1988). From 1950 to 1970, many neighborhoods in the central city experienced racial transition, described as the change from white to black occupancy after reaching a certain "tipping point" or level of black occupancy that leads to the outmigration of white residents (Schelling 1971). The tipping point for racial transition has been found to range from 5 to 20% in terms of the non-White share of

the population (Card et al, 2007). As white residents moved to the suburbs, black residents were segregated in central city areas with relatively low quality of housing stock and relatively high rents (McDonald 1984). Minorities and lower income populations were largely left out of the suburban housing boom. Redlining and restrictive zoning practices prevented black residents from pursuing home ownership and preserved the racial homogeneity of suburban areas (Massey and Denton 1988). The result of suburbanization patterns was a continuing racial segregation of American metropolitan areas, particularly in regards to black residents, who experience higher levels of residential segregation than other racial/ethnic minorities even with higher levels of income and education (Logan et al 2002)

Two of the theories that have been commonly used to explain the fast growth of the suburbs in North America are natural evolution and flight from blight. The natural evolution theory follows the principle that a city grows around a central business district where most are employed and to which they commute (Mieszkowski and Mills 1993). The preferences of higher-income households for larger, newer housing lead them to move to suburban areas where there is a supply of this type of housing, while highways and car ownership facilitate transportation from suburban locations. Meantime, lower-income households will remain close to the CBD. The flight from blight theory views suburban development as the result of households seeking lower taxes, higher quality schools, and greater safety, contrasting suburban areas with the "blight" of the central city (Kim 2011; Mieszkowski and Mills 1993). The phenomenon of "white flight" with middle-class white residents seeking to avoid racially-mixed neighborhoods that are perceived as dangerous and crime-ridden constitutes an important example of the flight from blight mechanism (Krysan 2002).

In metropolitan areas with fast-growing suburbs, poverty became concentrated in the declining central cities. The rapid suburbanization of metropolitan areas resulted in "donut cities", impoverished and shrinking central cities surrounded by prosperous and growing suburbs. A study of US cities found that the share of central city residents declined rapidly, from 43 percent of the total metro population in 1970 to 35 percent of the total metro population in 1997 (Leichenko 2001). Between 1970 and 1990, the aggregate population of central cities in the United States declined by 17 percent while metropolitan areas as a whole grew by 72 percent in metropolitan areas (Baum-Snow 2007). The rise of the suburbs encouraged filtering down processes as higher-income households moved to the new suburban residential developments, further decreasing property values in the downtown core (Kim 2013). Shrinking central cities became characterized by zones of concentrated poverty which increased in size between 1970 and 1990 (Jargowsky 2003). The concentration of poverty in central cities has been extensively researched; explanations for this phenomenon include the move of higher-income households to the suburbs, the decentralization of employment opportunities as the suburbs became important employment centers, and the segregation of racial and ethnic minorities (Lee 2011; Jargowsky 1996; Kasarda 1989; Quillian 1999; Strait 2000).

The well-known pattern of central city poverty and suburban prosperity has been undergoing significant changes. Continuing decentralization processes have led to greater variance in suburban areas, resulting in a more complex metropolitan form than the simple dichotomy of urban-suburban. Metropolitan areas include multi-ring suburbs, prosperous sectors, and suburban employment centers (Lee 2011). The extent of suburbanization means that a wide range of areas are included under the label of “suburban”. The prevailing image of the suburbs as homogenous

and prosperous is no longer accurate, and was probably exaggerated to begin with; suburban areas are increasingly heterogeneous, characterized by diversity in socioeconomic groups, races, and ethnicities, and in some cases evidencing high levels of poverty (Teaford 2007; Sharp et al 2007; Holliday and Dwyer 2004). The longstanding notion that suburban areas continue to attract residents in greater numbers at the expense of the central cities does not necessarily apply to a large number of suburbs. An analysis of the 2000 Census found that more than one-third of the suburbs of 35 metropolitan areas have either experienced no population growth or are actually losing residents (Lucy and Phillips 2001). Suburbs are increasingly home to a diverse population, challenging the assumptions that they are characterized by homogeneity of residents. Orfield 's study of more than 6,500 suburban communities in the 50 largest metropolitan areas found that by 2010, just 39% of suburban residents in these metropolitan areas lived in "traditional" suburbs (defined as predominantly white communities or developing exurban areas) compared to 51% of suburban residents in 2000 (Orfield 2013). Population loss, economic downturn, employment decline and growing poverty have made suburban decline in certain areas an observable phenomenon (Audirac 2012). Many suburbs are now facing economic and social challenges traditionally associated with central cities; meanwhile, many central cities experience renewal and prosperity (Mikelbank 2004).

While suburban areas have been experiencing new challenges, many central cities have experienced revitalization as the result of a "back to the city" trend (also termed "central city rebound" or "downtown rebound"), with higher-income households moving back to the inner city (Sohmer and Lang 2001; Kennedy and Leonard 2001; Haughey 2001). Explanations for the "back to the city" trend and inner-city revitalization include the increase in dual-earner households and a reduction in the length of time people expect to stay in one job, which makes a

central location with good transportation accessibility more valuable. At the same time, decreasing household sizes increase the demand for the types of smaller dwellings found in existing central city housing (Skaburskis and Moos 2008). Inner-city transformation has been characterized by new residential development and increased property values, infrastructure investments, and land use changes. As a result, central cities are experiencing a filtering process for economic activity and socioeconomic status of residents as revitalized inner- city neighborhoods have tended to attract a young and well-educated population(Pavlic and Quian 2014; Thompson 2013). Property values have followed these trends towards inner city advancement. In the US, the median home value increased 266% in downtown Chicago and 581% in Manhattan between 1980 and 2000 (Hyra 2012).

Changes in the spatial distribution of poverty

One of the key components of changing trends in decline has been a shift in the spatial distribution of poverty in metropolitan areas. Globalization, economic restructuring, demographic shifts, and government policies on metropolitan areas have led to important changes in the location of poor neighborhoods as well as residents living in poverty across metropolitan regions (Seguin 2012). One important trend has been the growth in inequalities between neighborhoods, which has accompanied a rise in overall income inequality over the past four decades. Income inequality in Canada declined from the mid 1970s until the mid 1990s and then experienced a sharp increase over the next ten years (Osberg 2012) The US, which had always had greater income inequality than Canada experienced an even more pronounced trend towards increases in inequality (Osberg 2012). Between 1979 and 2000, the share of income held by the bottom 20 percent of families in the US fell from 5.4 to 4.3 percent, while the share of family income held by the top 5 percent increased from 15.3 to 21.1 percent (Swanstrom et al,

2004). Growing residential segregation by income means that high- and low-income families have become increasingly less likely to live near one another. Neighborhoods with a mix of household income levels have become less common, and higher-income and low-income neighborhoods have become more frequent. The percentage of the population living in either low-income or high-income neighborhoods has more than doubled since 1970, while the percentage of families living in middle-income neighborhoods decreased from 65 to 44 (Reardon and Bischoff 2011). Similar patterns have been observed in Canada, with growing divides between low-income neighborhoods and affluent neighborhoods (Hulchanski 2010; Rose 2013)

The trend towards income segregation has been experienced in surburban areas as well as the overall metropolitan regions. The proportion of poor and affluent suburbs to middle-income suburbs increased rapidly in the 1980s and leveled off during the 1990s. As a result, only just over 60 percent of suburban residents lived in middle-income suburbs in 2000 compared to nearly 75 percent in 1980 (Swanstrom et al 2004). Along with increasing segregation by income levels, there is a growing presence of poverty in the suburbs. While earlier research on urban poverty focused largely on the central city, more recent research has examined the suburbanization of poverty. There is ample evidence that low-income populations are increasingly concentrated in certain suburban areas, while many central cities benefit from growth and investment (Seguin 2012). Metropolitan areas in the United States experienced an overall decline in poverty rates during the 1990s. This reduction in the number of people living in neighborhoods where the poverty rate is 40 percent or higher was experienced mostly in central cities, while suburban poverty increased or remained stable (Jargowsky 2003; Berube and Frey 2002). While the absolute number of people living below the poverty line increased by 8

percent in cities in the US, the number of people living in poverty in the suburbs grew by nearly 21 percent (cities defined as the core city or county in a metropolitan region and suburbs defined as the remainder of the metropolitan region). Forty-nine percent of all poor people in the US resided in the suburbs in 2000, up from 46 percent in 1990. This trend was the result of faster population growth in suburban areas as well as poverty rate increases in a number of large suburbs (Berube and Frey 2002). During the 1990s, 22 of 50 central cities in the US improved their income relative to the suburbs, compared with 16 of 50 during the 1980s (Swanstrom et al 2004).

The rise of suburban poverty in the US has continued since 2000. Research by the Brooking Institute found that between 2000 and 2008, suburbs in large metropolitan areas had the largest and fastest-growing poor population in the country, with a growth rate that was almost five times faster than that for the urban cores (Kneebone and Garr 2010). By 2011, for the first time, the number of poor people in major metropolitan suburbs surpassed the number in central cities. Between 2000 and 2011, the poor population in suburbs grew by more than twice the rate of growth in cities (64 percent compared to 29 percent). Over the same period, poverty rates rose by nearly equal degrees in central cities and suburbs (more than 3.5 percentage points), although the poverty rate in central cities remained almost 10 percentage points higher than the suburban rate on average (22 percent versus 12 percent, respectively). As well as increasing, poverty became more concentrated. By the end of the 2000s, more than one-third of the suburban poor population lived in neighborhoods struggling with poverty rates of at least 20 percent (Kneebone and Berube 2013).

Which suburbs are experiencing decline?

Suburbs have traditionally been seen as growing at the expense of central cities by attracting both population, particularly higher-income households, and jobs. This line of thought has been characterized as "obsolete", given the growing presence of neighborhoods in decline in suburban areas (Lee 2007, p.148). Neighborhoods in decline are increasingly found in older, inner suburbs, contrasting with both the central city and outer suburbs. Recent dynamics in metropolitan areas in North America have resulted in revitalization and gentrification of many central cities and the continuing growth of outer suburbs, accompanied by decline in older inner ring suburbs. These inner suburbs no longer attract new development or new residents and in many cases experience the type of decline that characterized central cities in the 1960s and 1970s (Sharp et al 2007).

Socioeconomic decline that was previously perceived as a central city problem can increasingly be found in inner suburbs. Symptoms of decline observed in inner suburbs include an increase in poverty rates, loss of higher-income population, and lack of new development (Jargowsky 2003; Short et al. 2007). During the 1990s, poverty rates increased in the inner-ring suburbs of many metropolitan areas, even those that experienced a decline in poverty concentration for the metropolitan region. The concentration of poverty in these inner-ring suburbs followed the opposite trend to that of central city neighborhoods and outer suburbs (Jargowsky 2003). During the 1990s and 2000s, inner suburbs experienced an increase in poverty, lack of population growth, diminished economic status of residents, an aging population and housing stock, and an uncompetitive labor force (Leigh and Lee 2005; Orfield 2002; Puentes and Warren 2006). Comparisons between inner suburbs and newer suburbs found that inner suburbs became home to a more diverse population, with greater numbers of immigrants and elderly population, and experienced declining incomes and rising poverty levels during the 1990s (Puentes and Warren

2006). A study of spatial differentiation in Atlanta, Cleveland, Philadelphia, and Portland from 1970 to 2000 found that inner-ring suburbs were increasingly vulnerable to socioeconomic decline, while outer-ring suburbs attracted most of the new population and housing development, and the downtown areas showed a gradual recovery from patterns of decline (Lee 2007). Socio-economic and health indicators in inner suburbs (educational achievement, unemployment rates, low birth weight rates) were often similar to those of low-income neighborhoods in their central cities (Murphy 2007).

The main characteristic of inner suburbs at risk of decline is the presence of post-war housing. Hanlon's index of suburban decline found a general pattern of decline between 1980 and 2000 in certain older, inner suburbs, especially those with housing built between 1950 and 1969 (Hanlon 2008). Inner suburbs were defined as those that are contiguous to the central city. More than two-thirds of the suburbs in crisis, defined as experiencing a dramatic decline between 1980 and 2000, are older, inner suburbs. Nationally, 3 in every 22 older, inner suburbs are categorized as suburbs in crisis, compared with 3 in every 43 newer suburbs (Hanlon 2008). In contrast, Hanlon found that suburbs with housing built before 1939 were experiencing socioeconomic gains, which would indicate that older properties with a certain style and historic appeal can attract homebuyers.

Lucy and Phillips' study similarly found that neighborhoods where housing was constructed in the 1950s and the 1960s showed decreases in relative average family income as compared to the metropolitan average in the 1990s. The study found important income differences between "middle-aged" suburbs (where housing was built between 1945 and 1970) and those suburbs with housing built before or after that time. These middle-aged suburbs were characterized by

income decline and lack of reinvestment compared to either older or newer suburbs (Lucy and Phillips 2006). Middle-aged inner suburbs, which tend to have housing built in the 1950s and 1960s, have become less attractive for homebuyers, just as central cities did at one time and are consequently experiencing similar processes of decline. Kim's study of the Greater Columbus area found that older inner suburbs are losing repeat homebuyers who often move to outer suburbs seeking newer housing (Kim 2011). The small size of housing built between 1945 and 1970 constitutes an obstacle to housing reinvestment. Housing quality is another obstacle, since this housing was built during the rapid expansion phase and is often of low building quality. The average house size has increased dramatically in recent decades and metropolitan residents are avoiding inner-ring suburbs because of their small, outdated, and deteriorated housing stocks (Lucy and Phillips 2006). Demand for larger housing units fosters the construction of new residential and commercial buildings in the outer suburbs (Sharp et al 2007). Meanwhile, capital disinvestment in buildings in the inner suburbs contributes to the neglect and aging of the housing stock.

The greater appeal of pre-war housing compared to post-war buildings fits in with the notion that central city revitalization has been facilitated by the presence of older housing stock. It has been observed that the presence of diverse architectural styles combined with better access to transit, services, and amenities makes older neighborhoods in central cities more likely to experience advancement than neighborhoods with newer post-war housing in the inner suburbs (Pavlic and Qian 2014).

In addition to an aging and sometimes deteriorating housing stock, older inner suburbs are characterized by lack of investment in infrastructure. In many metropolitan areas, substantial public investment in infrastructure such as new schools, roads, and water and sewer systems

disproportionately favored outer suburbs while the infrastructure of inner suburbs deteriorated (Hudnut 2003; Puentes and Warren 2006). Furthermore, as higher income households move out of the inner suburbs, services such as parks, schools, and garbage collection, that are funded by property taxes, are likely to become worse in the areas they leave behind.

1.2.3 Explanations for suburban decline

The decline of inner suburbs has been influenced by three distinct trends. The first is the spillover effect as problems considered characteristic of the central city spread to the inner suburbs through neighborhood transition and the filtering process (Lee 2007; Bier 2001). The second trend is the ongoing decentralization from the central city and inner suburbs to outer suburbs. The outer-ring suburbs continue to gain population, employment, and public investment at the expense of the inner-ring suburbs; with a strong housing market and fewer social problems, the outer suburbs remain attractive for higher-income households (Lucy and Phillips 2001; Orfield 2002). These ongoing decentralization processes leave inner suburbs with a smaller economic and employment base (Sharp 2007). Finally, the third trend is the rising back-to-the city trend, which has seen higher-income households moving back to the inner city (Sohmer and Lang 2001; Kennedy and Leonard 2001; Haughey 2001). Inner city regeneration and the concomitant appreciation for accessibility, architectural mix, and urban amenities act as a pull force for middle and high income households towards the central city, and as a push force for lower-income households out of the central city due to gentrification.

The growth of suburban poverty has been the result of both long-time suburban residents experiencing reductions in income, and an increase in low-income residents moving to suburban

areas (Kneebone and Berube 2013). Long-time residents of suburban areas that are struggling with structural economic changes have experienced decreased income levels as traditional manufacturing located in the suburbs has contracted since the 1980s. The recession in the late 2000s has taken a greater toll on industries located in the suburbs (defined as areas located at more than 10 miles from the city centre); for instance, manufacturing and construction, the two major industries that lost the most jobs between 2007 and 2010, were also among the most suburbanized (Kneebone and Berube 2013) In addition, many of the small retail streets in the inner suburbs have suffered with the expansion of big box retailers. During the 2000s, jobs continued to sprawl outwards within metropolitan areas. However, job growth in lower-paying occupations outpaced middle-class job creation, making it unlikely that new jobs in the suburbs would counter the growth of suburban poverty (Kneebone and Berube 2013). The crisis in the housing market in the 2000s also played a role in the suburbanization of poverty. A housing boom over the preceding ten years was fueled by subprime loans that included mortgages to people with insecure credit histories, for amounts they could not really afford. Suburban areas were the recipient of the majority of subprime loans. Within US metropolitan areas, 73 percent of the subprime loans between 2004 and 2008 were made in suburban areas (Kneebone and Berube 2013). When the housing market collapsed as it became evident these mortgages were not going to be repaid, the resulting financial and foreclosure crisis consequently hit suburban areas harder.

The changes in poverty rates and income among suburban areas have also been the result of changes in the locations of higher-income households that are leaving the older inner suburbs (Madden 2003). Neighborhoods with older housing stock lacking in sufficient investment and maintenance will experience a decrease in housing prices, which will allow in-migration of low-

income households and produce further outmigration of higher-income households (Kim 2013; Bier, 2001). Lower-income households that have been pushed out of inner city areas due to rising property values are moving into the inner suburbs where they can find lower-priced housing, which leads to rising poverty rates and declining household incomes in inner suburbs (Pavlic and Qian 2014; Hudnut 2003).

Inner suburbs have neither the growing employment, good schools, and new housing of growing outer suburbs nor the historical employment centres and appeal of revitalized downtown areas characterized by urban amenities. While outer suburbs attract investment for new developments and central cities receive significant public and private funding for redevelopment, inner older suburbs ‘‘are caught in the middle’’ (Hanlon and Vicino 2007 p.271). Land use planning policies encourage sprawl and lower density development in the outer suburbs that further draws employment opportunities and residents from the inner suburbs (Lucy and Phillips 2006). When it comes to public funding, inner suburbs do not qualify for most federal and state funding because they are less poor than the central cities; at the same time, they tend to lack large-scale new development that can receive public funding (Kim 2011). Limitations in government structures in the inner suburbs have also aggravated patterns of decline. Governments in declining inner suburbs tend to lack the resources to foster revitalization and prevent a downward spiral (Lucy and Phillips 2006).

1.2.4. Implications of suburban decline

The growing proportion of poverty in the suburbs has important policy implications. Poor suburbs lack public policies attuned to their special needs since many of the programs targeting

poverty were designed for inner city areas. The more dispersed pattern of poverty in suburban areas presents a different set of challenges for policies targeting the needs of the poor (Lucy and Phillips 2000). Lack of attention to the unique challenges of addressing poverty in the suburbs means that many suburban municipalities are not prepared to deal with the rising needs of their growing low income population (Orfield 2002; McGirr 2012). Meanwhile, the need for social services and support in suburban areas continues to grow. For instance, the number of students receiving free and reduced-price lunches grew faster in suburbs than in cities during the 2000s, straining resources in many districts (Kneebone and Berube 2013).

The decentralized structure of suburban areas presents additional challenges for the poor. Suburban areas are generally characterized by limited transportation systems and require use of cars to work, attend school, or shop. Lower income populations are less likely to own a car and are more reliant on public transportation, which has implications for access to job and education opportunities, and further promotes the rise in poverty in the suburbs (McGirr 2012). Inadequate public transportation presents an important obstacle to employment and economic mobility. For many urban residents, transit is the only way to access employment opportunities (Blumenberg 2002). Research in cities in the U.S. found that lack of access to good quality transit can lead to reduced employment participation and long-term cycles of poverty (Sanchez et al 2004). The poor living in suburban areas also face challenges in gaining access to needed services. The greater prevalence of low birth weight in poor suburbs than in central cities with similar poverty rates has been attributed to challenges for poor women in accessing health care (Murphy 2007).

Public perception of poverty as a central city issue contributes to the ongoing lack of policy action targeting suburban decline (Kneebone and Berube 2013). Federal programs and national policies for urban revitalization in the United States do not address suburban decline; state and

local policies are not truly relevant to the inner suburbs and lack effective enforcement (Hanlon 2010). Part of the reason for the lack of policy action on suburban decline is the fact that suburbs often lack the political visibility of central cities. Poverty and general decline in the suburbs are invisible to the majority of the population since few people other than residents actually visit these neighborhoods. As a result, their problems are more easily disregarded(Swanstrom et al 2004).

1.2.5. Canadian cities in the North American context

The preceding sections have discussed North American cities in general since most of the literature on neighborhood decline and stratification of poverty comes from research in the United States. It is generally assumed that trends and patterns found in cities in the United States will be similar to those found in Canadian cities. This section will examine some significant limitations to this assumption.

Canadian metropolitan areas experienced a similar process of suburban transformation after the 1950s to US cities, facilitated by standardized housing construction and increased financing options (Harris, 2004). Government policies similarly promoted suburban development. The federal Dominion Housing Act and the National Housing Act provided longer borrowing periods and lower down payments for housing mortgages, favoring new housing that was more likely to be found in suburban areas (Harris 2004; Pavlic and Qian 2014). However, unlike metropolitan areas in the United States, the issue of race was not a significant factor in suburbanization in Canada, and there was no observable "white flight" to the suburbs (Harris 2004). Daniel examines how the notion of an urban-suburban divide in Canada is heavily influenced by

depictions of American metropolitan areas in the media. The prevailing image of the urban and the suburban as portrayed by the media and understood in public perception is therefore very different from the reality of Canadian metropolitan areas. (Daniel 2010). While generalities are likely to be imprecise, since cities within each country vary widely, some important differences between metropolitan regions in Canada and the US can be noted.

Canadian cities differ from the image of the North American metropolitan region in several fundamental aspects. Canadian metropolitan regions tend to be more compact and have higher densities than cities in the US. Transit use and highway coverage point to Canadian metropolitan areas being more compact and less dominated by car use (Goldberg and Mercer 1986). The greater density of Canadian cities can be observed particularly in the inner city and inner suburbs. This difference in density is partly due to the fact that inner cities in the U.S. have been more affected by demographic decline due to suburbanization (Filion et al. 2004). However, during the 1970s and 1980s lower density styles of suburban development increased in Canada leading to greater convergence between Canadian and US metropolitan regions (Filion et al 2004).

An important contrast between the suburbanization process in Canadian and US cities has been the difference in the urban-suburban divide; the social status gradients have been less high in Canadian cities, with central cities and suburbs remaining roughly equal in social status. (Goldberg and Mercer 1986). This has been partly the result of a more stable spatial distribution of high-income households in Canadian cities. While in the United States higher income households tended to leave the central cities, in Canada upper-income neighborhoods remained relatively stable (Ley 1993). Similarly, Canadian inner cities were not as negatively affected as

cities in the US by rapid suburbanization from the 1940s to the 1970s. The smaller scale of urban renewal and highway development projects in Canada prevented the same level of suburban growth and middle-income out-migration from the central city. While there was suburban growth in Canadian metropolitan regions, the central cities did not experience the same level of decline as they did in many US cities and there was no flight from blight push for middle-class households to leave the central cities. Furthermore, while Canadian cities are also very ethnically diverse, they have not experienced the level of racial segregation that has characterized many American cities and suburbanization was not characterized by "white flight" from the central cities. In addition, the continuing arrival of immigrants to inner city neighborhoods in Canada counteracted population decline. Canadian inner cities therefore did not experience the racial tensions, fiscal crises, and rise in crime rates that afflicted many US inner cities during this time period (Ray and Moore, 1991; Ley, 1993; Filion et al 2004).

The characteristics of Canadian metropolitan regions remain relatively under-researched, with limited literature examining the distribution of poverty and deprivation in Canadian cities (Seguin 2012). Studies conducted from the 1970s to the early 1990s showed a higher concentration of low-income population in the inner city, wide variations in the concentration of low-income populations between seven inner cities, and a widening gap in unemployment between upper- and low-income areas (Broadway 1992;Broadway 1998; McLemore 1975; Ray 1976). More recent studies have found that the distribution of low-income neighbourhoods varies for different cities in Canada. Some cities, such as Winnipeg and Vancouver, have a cluster of low-income neighbourhoods in the downtown core. Other cities, such as Toronto and Montréal, have clusters of low- income neighbourhoods surrounding a more affluent downtown (Heisz and McLeod 2004). Trends in population growth seem to support the notion of revitalized downtown

cores. Research in the Greater Toronto Area has found that population growth in the downtown core has accelerated, and in 2006–2011 exceeded growth in the surrounding regions of Peel, York-Durham and Halton for the first time (Thompson 2013).

The distribution of poverty and low-income neighborhoods in Canadian cities has undergone significant changes since the 1980s. Poverty is becoming increasingly concentrated in poor neighbourhoods, and the distribution of areas of deep poverty has become more fragmented (Walks 2006; Ley and Smith 2000). Changes in the spatial distribution of poverty have been accompanied by a growing income gap between richer and poorer neighborhoods that reflects growing income inequality (Heisz and McLeod 2004). Between 1981 and 2001 there has been an increase in the presence of low-income neighborhoods in the inner suburbs and a lower presence in the central city (Heisz and McLeod 2004). This trend has continued, with Toronto and Montreal experiencing growing divides between low-income neighborhoods that are increasingly concentrated in the inner suburbs and affluent neighborhoods, including formerly poor inner city neighborhoods (Hulchanski 2010; Rose 2013). Property prices have shown similar trends, with the greatest transfer of wealth found from the older suburban ring to the inner city and the newer suburbs (Skaburskis and Moos 2008). The proportion of poverty in suburban neighborhoods has grown significantly, as gentrification projects within the city lead to the displacement of lower income populations to suburban areas (Daniel 2010). In Toronto, low-income neighborhoods are now concentrated in the inner suburbs while formerly poor inner city neighborhoods have gentrified and are now home to affluent residents (Hulchanski 2010). The City of Toronto recently identified 13 neighborhoods, concentrated in the city's inner suburbs, as priority areas with high levels of poverty and lack of social services (Pavlic and Quian 2014). Suburban areas are also increasingly becoming home for immigrants. The rising cost of housing in the central

city pushes the immigrant population to the suburbs or to small pockets within the city (Sassen 2000).

1.2.6. Patterns of urban decline and growth in Montreal

During the 1960s the collapse of Montreal's inner city industrial base and the move of residents and employment to suburban areas led to an increase in urban deprivation and a decline in population on the Island of Montreal. The former industrial core of the city such as the south-west region near the Lachine Canal was particularly affected. Between 1959 and 1988, 21 000 jobs disappeared and over a 25-year period, the population of the district fell by over 50 000 (Ley, 1996). Population loss to the growing suburban areas continued during the following decades. Between 1972 and 1996, the population of the Island of Montreal fell by 260 000 while the off-Island suburbs grew by 700 000. The out-migration was largely undertaken by young families and middle-class professionals, largely Francophone, drawn by greater employment opportunities, lower taxes, and more attractive housing (Langlois 2001).

The distribution of low-income neighborhoods in Montreal experienced an important shift between 1980 and 2000. The revitalization of central city neighborhoods that took place in many Canadian cities from the 1980s also affected some areas of Montreal (Ley 1993) Montreal's inner city had been deeply affected by deindustrialization in the postwar period and was targeted by the Operation 10,000 logements in 1979 with the intention of repopulating these neighborhoods with young and middle income families (Ley 1996) As mentioned earlier, old elite neighborhoods in Canadian cities remained spatially fixed to a large extent. The gentrification of inner city neighborhoods that started in the 1980s was closely linked to proximity to old elite

neighborhoods. In Montreal, gentrification started in the areas surrounding old elite neighborhoods such as Westmount and Outremont (Ley 1993). Between 1980 and 2001, with the revitalization of certain inner city neighborhoods, two important areas shifted from "low-income" to "not-low-income": (1) the east–west corridor of neighbourhoods adjacent to Saint-Denis and Saint-Laurent streets; and (2) a large group of neighbourhoods further to the east on the St. Lawrence (Heisz and McLeod 2004). Instead of being concentrated in the central city, areas of increasing poverty between 1986 and 2006 were located in former suburban municipalities that were amalgamated to the city of Montreal in 2002, or in the inner suburbs (Seguin 2012). Urban deprivation remained most visible on the Island of Montreal, especially in the central and eastern parts; however, it was not limited to the inner city, with some of the most deprived neighborhoods located outside the central city and others in the off-Island suburbs (Langlois 2001). Other studies have similarly found that while certain central city neighborhoods have experienced stability or an increase in poverty since the 1980s, there has also been a relative increase in poverty in certain inner suburbs as well as gentrification of certain central city neighborhoods (Ades, Apparicio, and Séguin 2012; Sénécal, Tremblay, and Teufel, 1990). Rose's study of income disparity in the greater Montreal region between 1970 and 2005 found that the number of middle-income census tracts on the Island of Montréal decreased, while census tracts where the average income of the population fell by more than 15 percent relative to the growth of the metropolitan average income were largely located in postwar inner suburbs (Rose and Twigge-Molecey 2012).

2. Methodology

2.1 Research Questions

The common image of North American cities as characterized by prosperous, homogenous suburbs surrounding an impoverished central city has been increasingly challenged by structural changes in employment, the spatial distribution of poverty, and demographic diversity. Research on neighborhood decline, particularly in the United States, has tended to focus on inner cities. Given the changing dynamics of suburban areas, there is a compelling need for greater focus on processes of decline in the larger metropolitan region. As explored in the previous sections, the past two decades have seen a trend towards increasing poverty in suburban areas, while many central cities experienced revitalization and income growth. Older inner suburbs in many US cities have been particularly prone to neighborhood decline. Suburban decline has specific challenges and implications for municipal policy that are currently neglected. The following research questions observe trends in neighborhood decline and advancement over a twenty year period in the Montreal metropolitan region, and examine the demographic and built environment characteristics of neighborhoods experiencing decline or advancement:

1. Where are processes of decline taking place in the Montreal region? Are neighborhoods in decline increasingly found in the inner suburbs as found in the literature on cities in the United States or does Montreal show different patterns of decline?

2. What are the characteristics of neighborhoods in decline in terms of income, housing age, and demographics,?

3. What is the relationship between neighborhoods at risk of decline and accessibility to public transit?

4. What are the implications of patterns of decline in the Montreal region for urban policy?

To answer these questions, this section will present two different methods used to identify trends in neighborhood decline, and an accompanying analysis of neighborhood characteristics.

2.2 Measuring decline

Researchers have used a number of variables to measure neighborhood decline, with a particular focus on cities and suburbs in the US. Commonly-used variables include median and average income, the percentage of residents below the poverty line, the percentage of residents receiving welfare benefits, average value of dwellings, and population numbers (Leigh and Lee 2005; Madden 2003; Orfield 2002; Puentes and Warren 2006) In addition, studies have examined the demographic and built environment characteristics of neighborhoods in decline, using variables that include housing age, housing condition, transportation accessibility, and the prevalence of immigrant population and racial/ethnic minorities (Lucy and Phillips 2006). Income-based indicators have been one of the main indicators used to assess decline. Lucy and Phillips measure suburban decline by comparing a suburb's median income level to that of the metropolitan area. This measure was expressed as a ratio, greater or lower than 1. Madden used median income in one area relative to the median income for the metropolitan area.

While most of the literature on processes of decline uses individual variables to examine patterns of decline, some efforts have been made to develop a comprehensive measure of decline. Hanlon applied an index of decline to 3,428 U.S. suburbs (Hanlon 2008). The variables employed to construct this index measure changes in population size, median income, and poverty rates from 1980 to 2000 from the U.S. Department of Housing and Urban Development (HUD) dataset. These three variables are combined to build a comprehensive measure of neighborhood progress

or decline, with neighborhoods characterized as “advancing”, “stable”, or “in crisis”. The combination of different variables has the advantage of taking into consideration the multifaceted nature of processes of decline and advancement.

2.3 Data preparation

This project used census data at the census tract level on the socio-economic status of the population and on the value and quality of the housing stock (need for repairs) to map trends of decline in the Montreal region. Census tracts are used as the closest approximation to neighbourhood units in statistical terms; the words 'census tract' and 'neighbourhood' will therefore be used as synonyms. Census data for 34 variables measuring income, demographics, and housing for the Montreal metropolitan region was downloaded from the CHASS centre for the 1991 and 2011 census years. Data were analyzed over a 20 year interval to capture longer-term trends in neighborhood development. In order to compare the selected variables over the 20 year period, census tracts for 2001 and 2011 were aggregated to correspond to the 1991 boundaries. Since the 2011 Census did not include a variable for incidence of low income, the percentage of government transfer payments was used to measure low income prevalence. The percentage of government transfer payments and low income incidence were found to be highly correlated (correlation coefficients of 0.786 and 0.84) for the 1991 and 2001 census years.

Neighborhood change was assessed based on the change observed in 20 variables that measure indicators commonly used in the literature to assess neighborhood decline. The additional 16 variables were used at a later stage to examine neighborhood characteristics(please see Appendix 1 for a full list of all variables used). The 20 variables used to assess decline included median

income, population, percentage of owners, percentage of renters, percentage of movers, percentage of immigrants, language spoken at home, age of construction of dwelling, percentage of dwellings needing major repairs, percentage of dwellings needing regular repairs, average value of dwelling, unemployment rate, percentage of population with a university degree, and percentage of government transfer payments. These variables were measured over a 20 year period, using data from the 1991 and 2011 census.

Data for all variables from the 2001 and 2011 census years were aggregated to the 1991 census tract boundaries. In some cases, variables had to be combined to account for changes in variable definitions between census years. For instance, the 1991 census defines variables for year of construction as "before 1946" and "between 1947 and 1960". These two variables were combined to correspond to the 2011 variable of year of construction as "before 1960". Variables for age of housing were grouped into three variables indicating housing built before 1960, between 1961 and 1980, and after 1981. Variables were also combined when they were highly correlated. Variables for household income, individual income, and family income were therefore combined into one median income and one average income variable. All variables were capped at 2 standard deviations from the mean to prevent extreme values from affecting the results. Variables were normalized to produce numbers between 0 and 1.

2.4 Data analysis: Trends in decline and advancement

The 20 variables used to assess trends in decline and advancement were selected because they can all be used as indicators of socio-economic well-being. As mentioned earlier, the literature does not provide a clear guideline as to which type of measure is most relevant for assessing

neighbourhood advancement and decline, and researchers have used different combinations of measurements. These 20 variables often measure very similar elements of neighborhood change. Therefore, I have reduced these variables from 20 to 9, by combining (in a straightforward arithmetic way) normalised variables that measure similar elements. I have thus constructed 9 new variables that measure the following socio-economic phenomena: income level, population with a university degree, unemployment, government transfer payments, value of dwellings, condition of dwellings, population number, home ownership, and mobility from one neighborhood to another. These 9 new variables have furthermore been sorted into three broad dimensions that essentially function as indices of advancement or decline: socio-economic indicators, housing indicators and population/demographic indicators. These 3 broad dimensions are used to assess whether a neighbourhood is declining, static, or advancing. This approach is similar to Hanlon's work on building an index of decline by combining a number of variables to produce a multidimensional analysis of neighborhood advancement or decline (Hanlon 2008). In assessing advancement or decline across three dimensions composed of a number of different variables, this analysis seeks to take into account the fact that neighbourhood change is a complex and multifaceted process that cannot be evaluated by examining any single factor.

The socioeconomic dimension included: relative income, population with university degree, population receiving government transfer payments, unemployment. Most of these variables are commonly used to explore decline and advancement. While many studies of decline use relative income as the main socioeconomic measure, Hanlon adds a poverty variable since a neighborhood could be a high- income neighborhood with a low percentage of people living in poverty and still be declining in income (Hanlon 2008). Likewise, variables measuring education

levels and employment status are correlated to income and provide a more nuanced examination of socioeconomic status.

The housing dimension included two variables: average value of dwelling and condition of dwellings (measured as percentage of dwellings in need of average repairs only). These variables were selected due to the great importance of decreasing property values as a symptom of decline as discussed by the literature on filtering down processes, as well as the connection between decaying, run-down buildings and decline.

Finally, the population dimension included population numbers, percentage of owners, and percentage of 'non-movers' (defined as individuals who lived in the same residence as he or she did five years before). Population loss has been amply discussed in the literature as a key component of population decline; however, population loss alone is an inadequate measure of decline. Lucy and Phillips (2006) found that population loss was more likely to occur in neighborhoods where income was increasing rather than in neighborhoods where income was decreasing. In this case, it might be that lower-income residents are moving out of neighborhoods in greater numbers than higher income residents. Smaller household size and larger residential area per person are also associated with rising incomes and can lead to population decline. Population loss must therefore be combined with other measures to examine decline. This study therefore adds two variables that are also associated with neighborhood decline: a decrease in home-ownership rates as houses become less attractive to buyers, and an increase in turnover rates as people move out of the neighborhood. The population dimension combines these three variables to provide a more precise view of the type of population loss that forms part of decline.

The socioeconomic, housing, and population dimensions included 9 variables that were identified as having a positive or negative relationship to neighborhood decline or advancement.

Table 1: Dimensions of decline/advancement

Dimension	Variable	Relationship
Socio-economic	Income ratio	(-change =decline, +change= advancement)
	Government transfer payments	(-change= advancement, +change=decline)
	Unemployment	(-change= advancement, +change=decline)
	Population with a university degree	(-change=decline, +change= advancement)
Housing	Average value of dwellings	(-change =decline, +change=advancement)
	Regular repairs	(+change= advancement, -change=decline)
Population	Population numbers	(-change =decline, +change= advancement)
	Home ownership rates	(-change =decline, +change= advancement)
	Non-movers	change =decline, +change= advancement)

The percentage change between 1991 and 2011 for these nine variables was normalized to produce a number between 0 and 1, and the various scores combined into the dimensions mentioned above. Variables were combined into a single measure of decline or advancement by calculating the average value for all variables included in each dimension. The values for the three dimensions were coded to indicate advancement, decline, or no change (1 indicated advancement, 0 indicated no change, -1 indicated decline). Change equal to or larger than half a standard deviation from the mean was coded as advancement or decline, while change within half a standard deviation from the mean was coded as stable. Change across census tracts was mapped using ArcGIS 10.1 to examine the spatial distribution of patterns of growth or decline.

The results of coding were classified into profiles and labeled according to whether they indicated advancing, declining, or static neighborhoods. For the purposes of readability, most of the tables only present results for trends in decline or advancement resulting from changes in two or three dimensions. Different combinations of decline and advancement in two categories are therefore included under the label "decline/advancement". Change in census tracts where there was no predominant trend across the three dimensions was labeled as "unclear". Since the variables are normalized, decline and advancement represent a change with respect to the average for the Montreal region. This measurement therefore measures decline/advancement for each neighborhood relative to the region as a whole.

Table 2: Profiles of decline/advancement

Profiles	Label
0,0,0	Static
1,1,1	Advancement in all categories
1,1,0	Advancement in at least two categories
1,1,-1	Advancement in at least two categories
1,0,1	Advancement in at least two categories
1,-1, 1	Advancement in at least two categories
0,1,1	Advancement in at least two categories
-1,1,1	Advancement in at least two categories
1,0,0	Socioeconomic advancement
0,1,0	Housing advancement
0,0,1	Population advancement
-1,-1,-1	Decline in all categories
-1,-1,0	Decline in at least two categories
-1,-1,1	Decline in at least two categories
0,-1,-1	Decline in at least two categories
1,-1,-1	Decline in at least two categories
-1,0,-1	Decline in at least two categories
-1,1,-1	Decline in at least two categories
-1,0,0	Socioeconomic decline
0,-1,0	Housing decline
0,0,-1	Population decline
1,0,-1	Unclear
1, -1, 0	Unclear
-1,0,1	Unclear
-1,1,0	Unclear
0,1,-1	Unclear
0,-1,1	Unclear

2.5 Examining neighborhood characteristics

Once neighborhoods had been coded according to the three categories of 'advancing' or 'declining', neighborhood characteristics were added to the analysis to examine in more detail the relationship between different types of neighborhoods and patterns of decline or advancement over the past twenty years. The neighborhood characteristics examined included median income, home language, percentage of immigrants, age of housing, and geographic location. Home language and percentage of immigrants were examined both as the percentage in 1991 and 2011 and the change between 1991 and 2011. Neighborhood characteristics variables were coded to indicate whether each census tract had a high percentage or a significant increase in that characteristic (1 indicated a high percentage or a significant increase, 0 indicated no presence of high percentage or no significant increase). A number equal to or larger than half a standard deviation from the mean was coded as a high percentage or significant increase.

In terms of neighborhood location, census tracts were categorized as central city, inner suburbs, and outer suburbs. The literature provides various ways to categorize inner suburbs. One of these is by a high proportion of post-war housing, usually identified as housing built between 1950 and 1970. Because of the way data is aggregated in the Canadian Census this was not possible as a measure of older suburbs. Another two options relate to the location of suburbs with respect to the central city. Geographic location was examined using ArcGIS 10.1. In order to examine differences between central city, inner suburbs, and outer suburbs, buffers were constructed with 5km and 15km distance to the city centre where the CBD is located. This followed a similar methodology to that employed by Kim and Morrow-Jones whose study established 3-mile and 15-mile rings from the CBD (Kim and Morrow-Jones 2011). This approach may present

particular limitations given the island geography of Montreal. Therefore, in order to test the robustness of this strategy for identifying the inner and outer suburbs, decline and advancement trends were also examined using a methodology employed by the Canadian Housing and Mortgage Corporation that differentiated between on-island and off-island locations in the Montreal region. Following this methodology, inner suburbs were categorized as census tracts outside the central city and located on the Island of Montreal; outer suburbs were categorized as outside the central city and off the island.

Transportation accessibility is critical to ensuring access to employment, education, health services, and participation in social and community life. In order to examine transportation accessibility as a neighborhood characteristic, shapefiles for the Montreal metro lines were added to the neighborhood decline/advancement map on ArcGIS. Service areas of 1km were established around each metro station and census tracts within these zones were coded as having good access to the metro system. The incidence of decline and advancement for these census tracts coded as having good access were compared to the incidence of decline and growth for all other census tracts. Using the metro network to analyze transportation accessibility leaves out the bus network that extends further than the metro system, and so may underestimate the accessibility of some areas that do not have a metro station. However, bus connections tend to be much more frequent in the areas around the metro system, with bus lines often running similar routes to the metro lines. The use of a relatively large service area around metro stations also allows this analysis to capture the many shorter bus lines that connect neighborhoods to metro stations.

2..6 Index of decline

In addition to the analysis of categories of decline and advancement, an index of decline was constructed to provide a single measure of decline/advancement. This index of decline followed a similar methodology to that employed by Hanlon in a 2008 study on decline across 3,428 suburban areas in the United States (Hanlon 2008). Hanlon's index of decline used three variables: changes in population size, changes in relative income, and changes in the percentage of the population living below the poverty line to produce a single measure of growth or decline. The first two variables were used in this study. As mentioned above, this study used the percentage of government transfer payments as a poverty measure since information on the percentage of the population living below the poverty line was not available. The three variables were normalized to produce numbers between 0 and 1 and combined (by calculating the average of the three variables) to produce an index score with all three variables weighted equally. The index scores were coded as declining, stable, or advancing, based on their deviation from the mean. The results of the index of decline were mapped using ArcGIS 10.1 to examine the spatial distribution of decline and advancement trends.

3. Findings

This section will present the results of the dimensions of decline/advancement analysis and the index of decline analysis described above, as well as examine the characteristics associated with neighborhoods experiencing decline or advancement.

3.1 Number and distribution of neighborhoods in decline

3.1.1 Dimensions of decline/advancement

The first step in the analysis of neighborhood decline/advancement was to examine the distribution of census tracts experiencing decline/advancement according to the three dimensions identified in section 2.

Table 3: Neighborhood advancement and decline 1991 to 2011

	Number of census tracts	Percentage of census tracts	Percentage of CMA population in 1991	Percentage of CMA population in 2011
Overall decline	58	8	9	7
Decline at least two categories	211	29	30	25
Overall advancement	50	7	6	8
Advancement at least two categories	173	22	18	21
Only socioeconomic decline	49	7	8	7
Only housing decline	40	5	6	5
Only population decline	42	6	7	7
Only socioeconomic advancement	11	2	1	1
Only housing advancement	24	3	4	5
Only population advancement	26	4	3	3
Housing decline and population decline	30	4	4	3
Socioeconomic decline and housing decline	57	8	7	6
Socioeconomic decline and population decline	66	9	10	9
Socioeconomic advancement and housing advancement	36	5	4	5
Socioeconomic advancement and population advancement	72	10	7	6
Housing advancement and population advancement	15	2	1	2
Unclear	80	11	9	8
Static	76	10	13	13

Table 1 provides an overview of trends in decline and advancement for all 731 census tracts in the Montreal metropolitan region. Census tracts having different results for each of the three dimensions were grouped together because these combinations happened very rarely. There are

relatively few census tracts with decline and advancement in all three categories, and the number of these census tracts is fairly similar, with a slightly higher number of census tracts experiencing decline in all three dimensions (58) than advancement in all three dimensions (50). Looking at trends of decline and advancement on at least two dimensions, we can see a greater difference between decline and advancement. There are more census tracts with decline in at least two categories (211) than there are with advancement in at least two categories (173). This indicates that overall, more census tracts in the Montreal region have experienced decline than advancement between 1991 and 2011. There were a significant number of census tracts, 80, that had no clear trend, meaning that each dimension had a different result in terms of advancement, decline, and static. This points to the fact that decline and advancement are complex processes with multiple factors taking place at the same time. It is therefore often difficult to discern specific trends.

Looking at the percentage of the overall population in the CMA across different trends, we can see that a slightly lower percentage of the population lived in neighborhoods experiencing both overall decline and decline in at least two categories in 2011 (7% and 25%) than in 1991 (9% and 30%). Similarly, a slightly higher percentage of the population lived in neighborhoods experiencing advancement in all categories or in at least two categories in 2011 (8% and 21%) compared to 1991 (6% and 18%). Neighborhoods that declined lost population while neighborhoods that experienced advancement gained population.

Table 1 also shows trends in the combinations of advancement and decline across different dimensions. Examining which types of decline and advancement occur together, we can see that socioeconomic and population decline occurred together in the highest number of census tracts (66), followed by socioeconomic and housing decline (57); instead, housing and population

decline rarely occurred together without accompanying socioeconomic decline (30 census tracts). Similarly, socioeconomic advancement accompanied by population advancement or by housing advancement occurred in a higher number of census tracts (72 and 36) than the very uncommon pairing of housing and population advancement without accompanying socioeconomic advancement (15 census tracts). This would seem to indicate that trends in socioeconomic status tend to accompany trends in other dimensions, while trends in housing or population are more likely to take place independently.

When it comes to census tracts with change in only in one dimension, there are many more census tracts showing decline in only one dimension than advancement in only one dimension (131 census tracts have experienced decline in only one dimension compared with 61 census tracts that have experienced advancement in only one dimension). This may reflect the larger number of census tracts showing decline, overall; another possible explanation may be that advancement is more difficult to achieve without involving a number of aspects of urban life that will affect more than one dimension. Table 1 shows that there are more census tracts showing only socioeconomic decline and fewer showing only socioeconomic advancement than is the case for either housing or population. It would seem that socioeconomic decline is more likely to be a stand-alone phenomenon and one that has been a greater problem in the Montreal region than either housing or population decline. Another potential explanation might be that housing decline and population decline take more time to become significant; the slower reaction of housing and population variables creates a time lag between socioeconomic decline and decline in the other two dimensions.

Tables 4 and 5 examine the location of neighborhoods experiencing advancement and decline. As mentioned previously, the literature provides a number of options for how to identify inner

suburbs. During this study, both the geographic distance from the city centre and the location on the Island on Montreal were used. As can be seen in the following tables, identifying inner suburbs as a certain geographic distance from the city centre and identifying them as neighborhoods located on the Island of Montreal led to very similar results. For ease of presentation, these tables focus only on growth and decline across at least two categories or across all categories.

Table 4: Location of neighborhoods and advancement/decline trends

	Downtown	5-15km (inner suburbs)	>15km (outer suburbs)
Advancement in at least two categories	52%	12%	19%
Decline in at least two categories	16%	35%	28%
Static	1%	12%	15%
Other	31%	41%	38%

Table 5: neighborhoods by location with respect to Island of Montreal

	Downtown	>5km on the Island (inner suburbs)	Off the Island (outer suburbs)
Advancement in least two categories	48%	12%	17%
Decline in least two categories	16%	36%	29%
Static	3%	10%	15%
Other	33%	42%	39%

According to these tables, we can see that the city centre has the highest percentage of neighborhoods experiencing advancement and the lowest percentage of neighborhoods experiencing decline from 1991 to 2011. In this sense, Montreal seems to be following similar patterns as identified in cities in the United States where the downtown area has been experiencing income and population growth. In contrast to the downtown core, the inner suburbs have the greatest percentage of neighborhoods experiencing decline and the lowest percentage of neighborhoods experiencing advancement. Once again, this is congruent with research from other urban centres that has found increasing evidence of decline in the inner suburbs relative to the downtown core and the outer suburbs. The outer suburbs have experienced less decline than the inner suburbs but more than the downtown core. There is a similar difference between the inner suburbs and the outer suburbs when it comes to neighborhoods that have experienced advancement from 1991 to 2011. In sum, the outer suburbs have a lower percentage of neighborhoods experiencing decline and a higher percentage experiencing advancement than the inner suburbs. There is a marked difference between decline and advancement in the outer suburbs and in the downtown core. In many studies in the literature, the outer suburbs were shown to have experienced greater advancement and less decline than the downtown core. However, these studies are most often of cities in the United States where the difference between downtown and suburbs has historically been much more prominent, and where inner cities suffered more dramatically from rapid suburbanization. It would appear that Montreal has not experienced the same trend towards continuing advancement in the outer suburbs in contrast to the rest of the metropolitan region. At least in the past two decades a higher proportion of neighborhoods in the inner city have experienced advancement.

Figure 1: Trends in decline and advancement

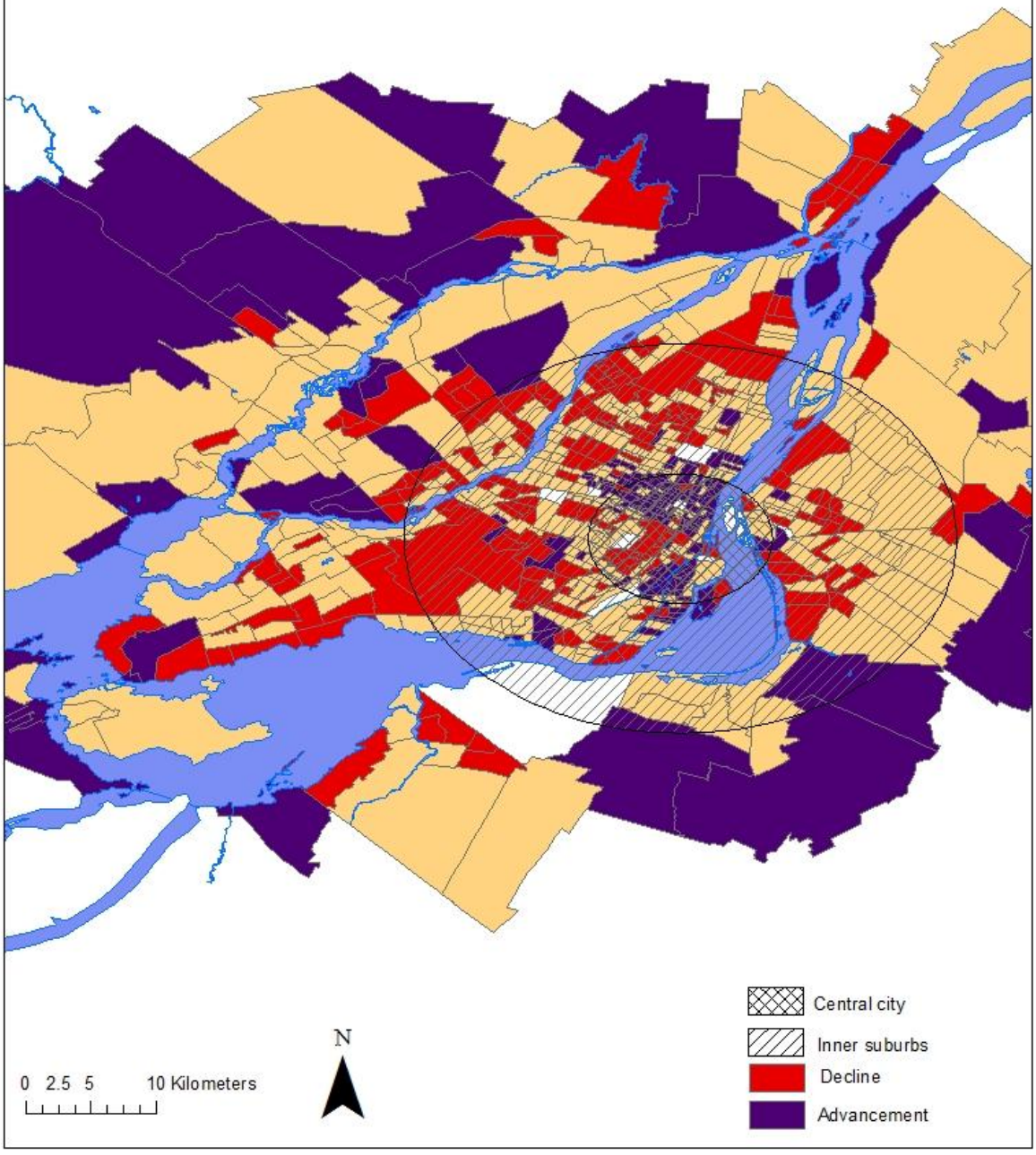


Figure 1 allows us to observe the spatial distribution of census tracts experiencing advancement or decline in all three dimensions. Reflecting the results shown in table 1, the map shows a cluster of census tracts around the city centre that have experienced advancement. However, we can also observe that while the downtown core has a relatively high concentration of census tracts with advancement in all categories, there are some census tracts to the northwest of the city centre that have experienced decline. When it comes to the inner suburbs, the map shows that census tracts experiencing decline are fairly dispersed. While there are a few clusters of census tracts experiencing decline, there is no prevalent pattern of decline to the east or west of the island. We can also see that there are almost no neighborhoods experiencing advancement across all categories within the inner suburbs. In contrast, we can see several census tracts with advancement across all categories in the outer suburbs. Similarly, census tracts showing decline across all categories in the outer suburbs are fairly dispersed and do not cluster in any specific area or direction from the central city.

3.1.2 Index of decline

In addition to the analysis of the socioeconomic, housing, and population dimensions of advancement and decline, an index of decline was constructed using three variables (population, income, government transfer payments). Table 6 presents the results of this index.

Table 6: Advancement and decline between 1991 and 2011 according to the index of decline

	Census tracts
Decline	252 (34%)
Static	273 (37%)
Advancement	206 (28%)

Since the index of decline includes a single dimension resulting from three variables, it is unsurprising that more census tracts are coded as experiencing either advancement or decline. Two hundred and fifty-two census tracts (34% of the total number) experienced decline and 206 (28% of the total number) experienced advancement. Similarly to the results from the dimensions of decline analysis, overall more census tracts experienced decline than advancement.

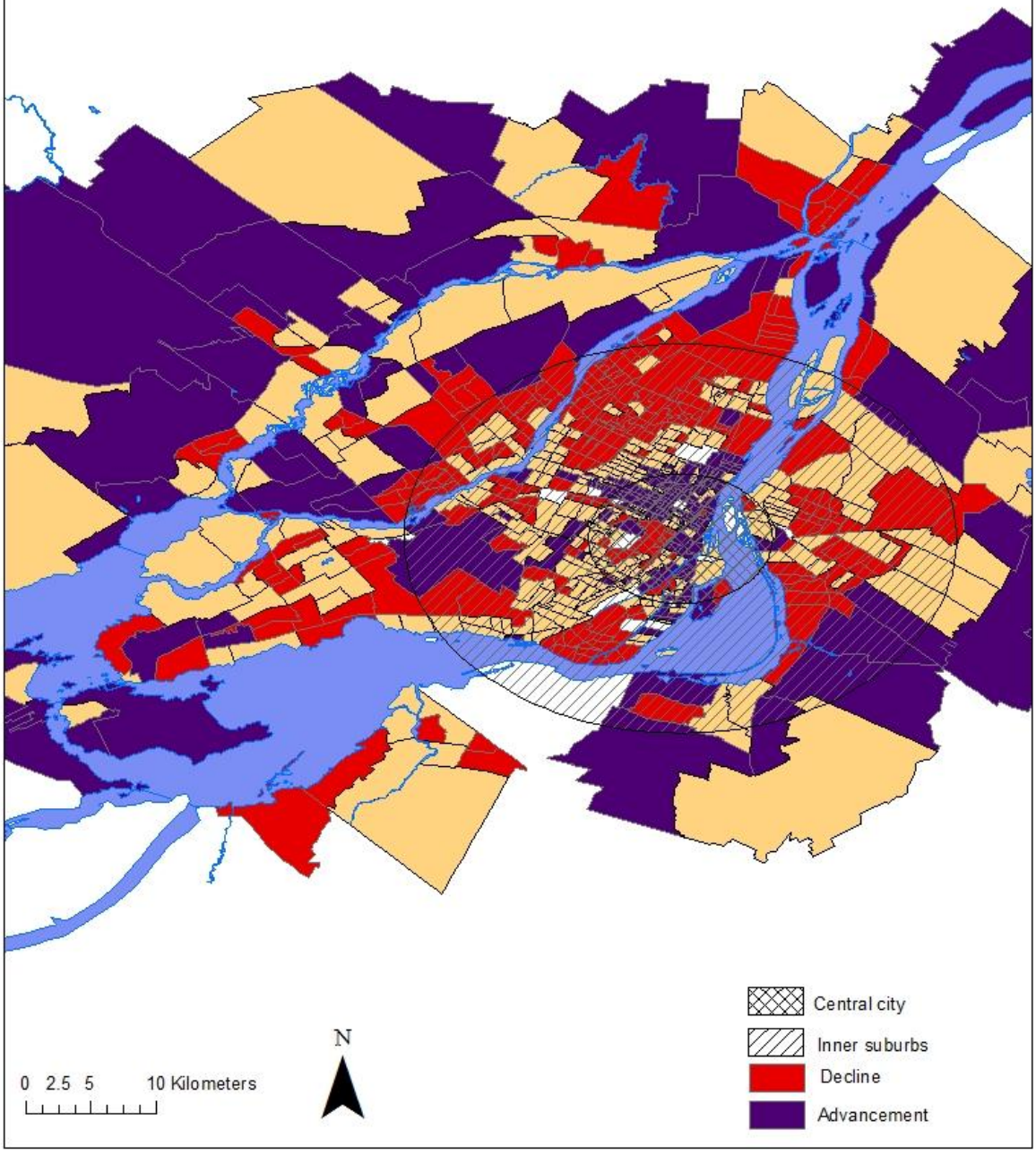
Table 7: Neighborhood location and index of decline

	Downtown	5-15km (inner suburbs)	>15km (outer suburbs)
Advancement	62%	16%	24%
Decline	10%	48%	37%

In terms of the relationship between trends in decline and neighborhood location, the results of the index of decline match those of the previous analysis. In the central city, 62 % of neighborhoods in the central city experienced growth and only 10 % experienced decline. This is a much lower frequency of decline and a much higher frequency of advancement than in either the inner suburbs or the outer suburbs. The index of decline analysis shows an even more pronounced difference between the central city and the suburbs than the previous analysis, with the central city having a greater percentage of neighborhoods experiencing advancement and a lower percentage with decline using this methodology. The inner suburbs once again have a higher frequency of decline than either the central city or the outer suburbs, with 48% of neighborhoods having experienced decline and 16% having experienced advancement.

The map showing the spatial distribution of neighborhoods experiencing advancement or decline according to the index of decline (Figure 2) illustrates the greater prevalence of decline in the inner suburbs and the greater prevalence of advancement in the central city, as well as a group of neighborhoods that have experienced advancement in the outer areas of the metropolitan region. Comparing it to Figure 1, which shows trends in advancement and decline according to the analysis of three dimensions, we can see that some neighborhoods change between advancement and decline. This may be because of the additional variables used in the dimensions of decline analysis. For instance, while population may have increased in one census tracts to indicate advancement, other factors added in the dimensions analysis such as home ownership rates and non-movers may indicate decline instead.

Figure 2: Index of decline



3.2 Neighborhood Characteristics: Income

In examining the neighborhood characteristics associated with frequency of decline or advancement, one of the potential determining factors is neighborhood income. Examining neighborhood income allows us to see whether decline is taking place mostly in low-income neighborhoods or whether high-income neighborhoods are also experiencing decline.

Table 8: Trends in decline/advancement and neighborhood income

	High income 2011	Low income 2011	High income 1991	Low income 1991
Advancement in at least 2 categories	38 (21%)	66 (25%)	19 (10%)	112 (44%)
Decline in at least 2 categories	45 (25%)	82 (31%)	77 (41%)	31 (12%)
Static	28 (15%)	28 (10%)	26 (14%)	17(7%)
Other	71 (39%)	91 (34%)	68 (36%)	93 (37%)
Total	182	267	190	253

Table 8 examines the distribution of neighborhood decline and advancement for high-income and low-income neighborhoods according to median income levels in 2011 and median income levels in 1991. It might be assumed that low-income areas in 2011 would have a greater frequency of neighborhood decline given that the presence of lower-income households is one of the factors of decline. However, as can be seen from Table 8, this is not necessarily the case. Low-income neighborhoods in 2011 do have a higher percentage of neighborhoods exhibiting decline in at least two categories than high-income neighborhoods (31% compared to 25%). But there is no difference between the percentage of neighborhoods experiencing decline in all categories for low-income compared to high-income neighborhoods. The picture is further complicated by looking at advancement and income levels in 2011. High-income neighborhoods have a slightly higher percentage of neighborhoods experiencing advancement across all

categories than low-income neighborhoods (10% compared to 8%). But low-income neighborhoods have a higher percentage of neighborhoods experiencing advancement in at least two categories than high-income neighborhoods (25% compared to 21%).

These findings suggest that decline and advancement are found in neighborhoods with different income levels, and that income levels alone are an insufficient indicator for potential risk of decline. Since decline is a complex process that includes a number of factors and reinforcing symptoms, a middle-class neighborhood may be experiencing decline but remain with relatively high median income levels. Similarly, a neighborhood may be experiencing advancement across different categories while median income levels remain low.

Looking at neighborhood income in 1991 and trends in decline and advancement, we see that neighborhoods with low income in 1991 experienced advancement across all categories in the following twenty years at a greater frequency than neighborhoods with high income (11% compared to 5%). The difference was even greater when looking at advancement in at least two categories. Forty-four percent of low-income neighborhoods went on to experience advancement compared to 10% of high-income neighborhoods. Similarly, neighborhoods with low income in 1991 experienced decline in all categories with a lower frequency than neighborhoods with high income (4% compared to 14%). Once again, the difference was even more marked for change across two categories, with 40% of high-income neighborhoods in 1991 experiencing decline in at least two categories compared to 12% of low-income neighborhoods.

These results suggest that there were significant improvements in neighborhoods that were low-income in 1991 over the following twenty years. As other research has shown, the revitalization of many central city neighborhoods resulted in rising income levels in formerly low-income

areas. Similarly, the decline of formerly middle-income suburbs has been part of the process of increasing poverty in suburban areas. Additionally, many traditionally higher-income neighborhoods may be experiencing decline as their population becomes older.

3.3 Neighborhood characteristics: Demographic

A number of demographic characteristics have been associated with neighborhood decline. This section will examine immigration and home language, two important demographic characteristics of neighborhoods in Montreal.

Immigration

A high percentage of immigrants has been associated in the literature with neighborhoods in decline.

Table 9: decline and percentage of immigrants 2011

	High immigration 2011	Non-high immigration 2011	High immigration 1991	Non-high immigration 1991
Advancement in at least two categories	17 (8%)	156 (30%)	69 (32%)	145 (28%)
Decline in at least two categories	99 (46%)	112 (22%)	90 (42%)	121 (24%)
Only socioeconomic advancement	1 (0.5%)	10 (2%)	2 (1%)	9 (2%)
Only housing advancement	7 (3%)	17 (3%)	6 (3%)	18 (4%)
Only population advancement	4 (2%)	22 (4%)	5 (2%)	21 (4%)
Only socioeconomic decline	31 (14%)	18 (3%)	26 (12%)	23 (5%)
Only housing decline	8 (4%)	32 (6%)	8 (4%)	32 (6%)
Only population decline	12 (6%)	30 (6%)	13 (6%)	29 (6%)
Static or unclear	35 (16%)	121 (23%)	39 (18%)	116 (23%)
Total	214	518	217	515

Table 9 shows trends in growth and decline for neighborhoods that had a high percentage of immigrants (determined as census tracts where the percentage of immigrants was equal to or larger than half a standard deviation from the mean) and neighborhoods that did not have a high percentage of immigrants in 2011 and in 1991. The results show that a substantially higher percentage of neighborhoods with high immigration in 2011 had experienced decline in at least two dimensions in the previous twenty years than was the case for neighborhoods that did not have a high percentage of immigrants (46% compared to 22%). The differences between high-immigrant neighborhoods and non-high-immigrants neighborhoods were even more pronounced when it comes to experiencing advancement in at least two dimensions over the previous twenty years (8% compared to 30%). A much higher percentage of high-immigrant neighborhoods had experienced only socioeconomic decline (14%) compared to housing (4%) or population decline (6%). Interestingly enough, when looking at decline in only one category, the difference between high-immigrant neighborhoods and non-high-immigrant neighborhoods was only present for socioeconomic decline (14% compared to 3%). For housing decline as well as for population decline, percentages were very similar between the two groups.

Looking at the trends in decline and advancement for neighborhoods with a high percentage of immigrants in 1991, there are some interesting differences. Neighborhoods with a high percentage of immigrants in 1991 were more likely to experience decline in the following twenty years than neighborhoods without a high percentage of immigrants (42% compared to 21%). However, high-immigrant neighborhoods in 1991 were also more likely to experience advancement over the next twenty years than other neighborhoods (32% compared to 28%). Perhaps these high-immigrant neighborhoods in 1991 were also low-income neighborhoods in the central city that as explored in preceding sections had a greater frequency of advancement

between 1991 and 2011. Similarly to the results for 2011, when looking at trends in a single dimension, the only difference between high-immigrant neighborhoods and non-high-immigrant neighborhoods appears to be in socioeconomic decline. This would suggest that the presence of a high percentage of immigrants is linked to decline through their lower levels of income and employment than those of native-born Canadians.

Table 10: Increase in immigrants between 1991 and 2011 and trends in decline and advancement

	Increase in immigrants	No increase in immigrants
Advancement in at least two categories	35 (16%)	138 (27%)
Advancement in socioeconomic	1 (0.5%)	10 (2%)
Advancement in housing	6 (3%)	18 (4%)
Advancement in population	8 (4%)	18 (4%)
Decline in at least two categories	75 (34%)	136 (27%)
Decline in socioeconomic	27 (12%)	22 (4%)
Decline in housing	12 (5%)	28 (5%)
Decline in population	8 (4%)	34 (7%)
Static or unclear	48 (22%)	108 (21%)
Total	220	512

Table 10 examines the change in percentage of immigrants across all census tracts. Unlike the previous table, it identifies census tracts where the percentage of immigrants increased between 1991 and 2011 (determined as census tracts where the increase in percentage of immigrants was equal to or larger than half a standard deviation from the mean). Similar to table 9, neighborhoods that experienced an increase in the percentage of immigrants have a higher percentage of decline (34%) than neighborhoods that did not experience this increase (26%),

although the difference is narrower. The difference between the two groups is more marked when it comes to the percentage of census tracts experiencing advancement (16% compared to 27%). Once again, these results follow a similar pattern than the results shown in table 9, but the difference between the two groups is narrower. When it comes to decline in a single category, table 8 also shows that a higher percentage of census tracts have experienced socioeconomic decline (12%) than either housing (5%) or population (4%) decline; similarly, socioeconomic decline has been more frequent for census tracts with increase in immigrants than for census tracts that experienced no increase. However, housing decline has been similar for both groups, and population decline has been more frequent for census tracts that did not experience an increase in immigrant population.

These results seem to corroborate other studies that found that immigrants tend to live in neighborhoods experiencing decline due to various factors, including lower incomes and lower housing costs. The differences between table 9 and table 10 indicate that the presence of a high percentage of immigrants in a neighborhood is a greater characteristic of decline than whether this percentage has increased or decreased. Furthermore, these differences may reflect the fact that immigrants are increasingly moving to neighborhoods that have not traditionally been considered as locations for new arrivals. Therefore the percentage of immigrants may be changing significantly in census tracts that, however, still have a low overall percentage of immigrants.

Table 11: Location of neighborhoods with high percentage of immigrants in 2011

	Central city	5-15km	>15km
High percentage of immigrants	37 (22%)	152 (42%)	25 (12%)

Table 11 shows the percentage of neighborhoods in the downtown core, the inner suburbs, and the outer suburbs that had a high percentage of immigrant population in 2011. The inner suburbs had the highest percentage of census tracts with a high immigrant population, followed by the central city, and the suburbs. This distribution reflects two trends: the growing movement of longer-term immigrants to suburban areas and away from traditional cultural enclaves, and a change in the destination of new arrivals to the city; traditionally, immigrants have tended to locate in downtown areas, but they have increasingly been moving to suburban areas. Table 12 reflects this same trend, with the inner suburbs having the highest percentage of census tracts with growth in immigrants, followed by the central city and the outer suburbs.

Table 12: Location of census tracts with high increase in percentage of immigrants 1991-2011

	Central city	5-15km	>15km
High increase in percentage immigrants	42 (25%)	151 (42%)	27 (13%)

Language

French and English are the main languages in Montreal, with non-official languages becoming increasingly important. Linguistic divides have long been part of socioeconomic and spatial distribution patterns in the metropolitan region. This section will examine trends in advancement and decline against both the percentage of English and French as home language in 1991 and 2011, as well the change in use of English and French between 1991 and 2011.

Table 13: decline and high percentage of French and English as home language 2011

	High percentage French 2011	High percentage English 2011	High percentage French 1991	High percentage English 1991
Advancement in at least 2 categories	93 (31%)	24 (14%)	88 (28%)	19 (12%)
Decline in at least 2 categories	53 (18%)	67 (38%)	67 (21%)	65 (40%)
Other	151 (51%)	86 (48%)	158 (51%)	78 (48%)
	297	177	313	162

This table presents trends in advancement and decline and neighborhoods with high percentage of French and English as home language in 2011 and in 1991. These results are strikingly similar for both census years. Countering the common assumption that neighborhoods with high percentage of English are particularly prosperous, we can see that English-speaking areas both in 1991 and 2011 have a higher proportion of census tracts that have experienced decline and a lower percentage of census tracts that have experienced advancement. Of course, given that we are examining decline and advancement in relative terms, these areas may still be prosperous. It means, however, that French-speaking areas have tended to experience greater advancement between 1991 and 2011, confirming the continued socio-economic rise of francophone neighborhoods over the last 20 years. The similarity between both sets of numbers suggests that the overall linguistic patterns of neighborhoods in Montreal have remained relatively stable. That is to say, traditionally French-speaking neighborhoods have retained a high percentage of French speakers, and traditionally English-speaking neighborhoods have retained a high percentage of English speakers.

Table 14: location of neighborhoods with high percentage of French and English as home language in 2011

	Downtown	5-15km	>15km
High French	62 (36%)	115 (32%)	118 (57%)
High English	55 (32%)	68 (19%)	54 (26%)

While there is a greater overall number of census tracts with a high percentage of French than English as home language (295 compared to 177), these are not distributed evenly throughout the Montreal region. As table 12 shows, the central city has a fairly even distribution of French-speaking and English-speaking areas. The inner suburbs and the outer suburbs have a higher percentage of French-speaking neighborhoods, with a particularly large difference in the outer suburbs.

Table 15: decline and change in percentage of French and English as home language 1991-2011

	Increase in French	Increase in English	Increase in non-official languages
Advancement in at least 2 categories	67 (32%)	82 (48%)	22 (11%)
Decline in at least 2 categories	52 (25%)	32 (19%)	65 (33%)
Other	88 (43%)	57 (33%)	111 (56%)
Total	207	171	198

Unsurprisingly, census tracts that experienced an increase in the percentage of households with non-official home language had a greater frequency of decline. This matches the results of the patterns of decline and percentage of immigrants explored in the previous section, since

immigrants are far more likely to speak a non-official language at home. A more interesting comparison is between the increase in French and English as home languages. Comparing French and English as home languages, census tracts that experienced an increase in the use of French as a home language had a greater frequency of decline than census tracts that experienced an increase in the use of English. This pattern persists with a larger difference when looking at advancement, with census tracts that had an increase in use of English as home language having double the proportion of census tracts experiencing advancement in all categories than census tracts that had an increase in the use of French as home language. This is the opposite of the results from the previous tables, where French-speaking neighborhoods had experienced a greater proportion of advancement and lower proportion of decline. What may be taking place is an improvement in traditionally French-speaking neighborhoods that is attracting new households, including English-speaking households. Traditional linguistic divides on the Island of Montreal are becoming less distinct and gentrifying neighborhoods particularly downtown attract Anglophone young professionals.

Table 16: Location of neighborhoods with increase in percentage of French and English as home language

	Downtown	5-15km	>15km
Increase in French	52 (30%)	95 (26%)	60 (29%)
Increase in English	91 (53%)	40 (11%)	40 (19%)

3.4 Neighborhood Characteristics: Housing age

Numerous studies of neighborhood decline have examined the age of housing as a characteristic of neighborhoods in decline. Several studies have focused on "middle-age" housing, defined as housing built in the post-war era when large scale suburban expansion took place. This section will present trends in decline and advancement for neighborhoods with a high percentage of housing built before 1960 and a high percentage of housing built between 1960 and 1980.

Figure 3: Housing built before 1960

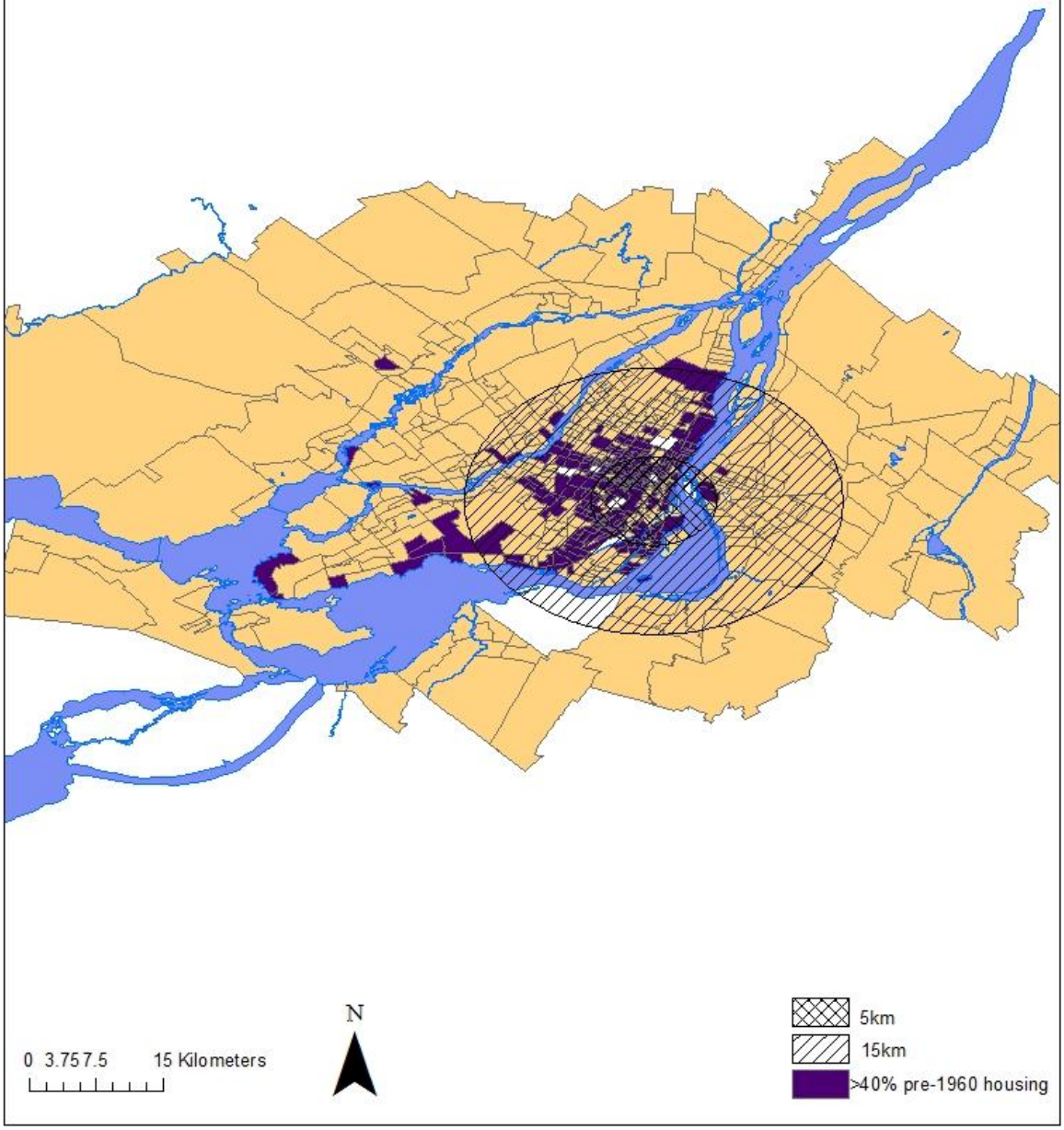


Table 17: Location of housing built before 1960 by distance to city centre

	Downtown	5-15km	>15km
Over 40 percent	125(74%)	141(40%)	12 (6%)
40 percent or under	45(26%)	215(60%)	191 (94%)

Table 18: Location of housing built before 1960 by location on the Island

	Downtown	>5km on the Island (inner suburbs)	Off the Island (outer suburbs)
Over 40 percent	140(76%)	118(40%)	20 (8%)
40 percent and under	44(24%)	175(60%)	232 (92%)

Table 17 and table 18 show that census tracts in the downtown core have a high percentage of neighborhoods with high proportion of pre-1960 housing. This is to be expected since the downtown core constitutes the older part of the city, which was largely built before 1960. As can be seen in figure 3, census tracts in the inner suburbs that have a high proportion of older housing tend to be those closer to downtown or located in clusters, pointing to patterns of urban expansion before 1960. Also as expected, the outer suburbs have a very low percentage of neighborhoods with older housing.

Table 19: Trends in advancement and decline and old housing

	Over 40 percent housing before 1960	40 percent and under housing before 1960
Advancement in at least 2 categories	116 (34%)	57 (15%)
Decline in at least 2 categories	67 (20%)	144 (37%)
Only socioeconomic advancement	8 (2%)	3 (1%)
Only housing advancement	10 (3%)	14 (3%)
Only population advancement	13 (4%)	13 (3%)
Only socioeconomic decline	19 (6%)	30 (8%)
Only housing decline	22 (6%)	18 (5%)
Only population decline	10 (3%)	32 (8%)
Static or unclear	76 (22%)	80 (20%)
Total	341	391

Table 19 shows that census tracts with a high percentage of older housing, categorized as housing built before 1960, have a lower incidence of decline and a higher incidence of advancement that census tracts with newer housing. These results can be expected, given the location of census tracts with a high percentage of older housing, concentrated in the downtown core of the city, which as presented earlier has experienced less decline and more advancement than the rest of the metropolitan region. While older housing has often been mentioned as a characteristic of neighborhoods experiencing decline, this tends to refer to housing built in the postwar decades rather than all housing built before a certain time period. Older housing can instead be highly valued for aesthetic reasons, location, or as part of renewal processes in older neighborhoods. The pre-1960 buildings in Montreal include older buildings in traditionally

wealthy neighborhoods as well as areas that have been the focus of gentrification in recent decades.

The decrease in housing value associated with neighborhood decline is more likely to occur for middle-aged housing. Researchers have noted that this housing has a tendency to be smaller and less aesthetically pleasing. As can be seen in Figure 4, housing built between 1961 and 1980 is concentrated in the inner suburbs of the Montreal region. This housing was largely built as the result of urban expansion into the suburbs during this time period. During the twenty year time period of this study, this housing has become older and less attractive to homebuyers.

Figure 4: Housing built between 1960 and 1980

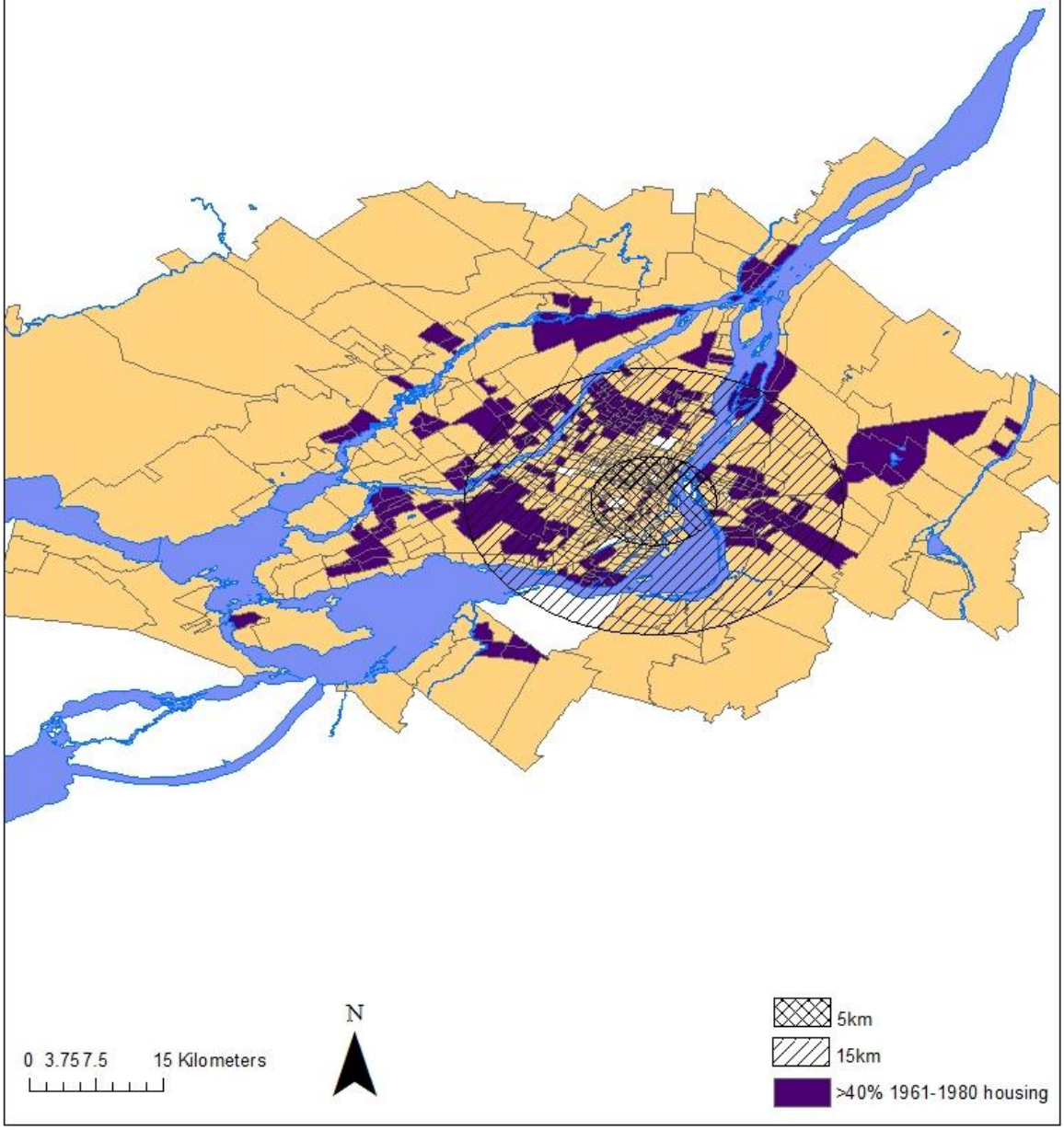


Table 20: Location of middle-aged housing (housing built between 1961-1980) by distance to city centre

	Downtown	5-15km	>15km
Over 40 percent	15 (9%)	127 (35%)	61 (30%)
40 percent and under	156 (91%)	232 (65%)	145 (70%)

Table 21: Location of middle-aged housing (housing built between 1961-1980) by location on the Island

	Downtown	>5km on the Island (inner suburbs)	Off the Island (outer suburbs)
Over 40 percent	13(6%)	103 (35%)	87(30%)
40 percent and under	173(94%)	192 (65%)	178(70%)

As can be seen in table 20 and table 21, the inner suburbs have a higher proportion of census tracts with a high percentage of housing built between 1961 and 1980, followed by the outer suburbs. As can be seen in figure 4, outer suburbs that have a high proportion of housing built between 1961 and 1980 tend to be those that are closest to the inner suburbs. The downtown core instead has a very low proportion of neighborhoods with high percentage of housing built during this time period.

Table 22: Trends in advancement and decline and housing 1961-1980

	Housing 1961-1980 over 40 percent	Housing 1961-1980 40 percent and under
Advancement in at least two categories	4 (2%)	168 (34%)
Decline in at least two categories	137 (57%)	61 (12%)
Static or unclear	34 (14%)	121 (25%)
Other	66 (27%)	141 (29%)
Total	241	491

Census tracts characterized by middle-aged housing have a much higher proportion of neighborhoods experiencing decline than census tracts without a high percentage of middle-aged housing. They also have a strikingly low proportion of neighborhoods experiencing advancement. In fact, only one census tract was coded as having advancement in all categories and a high proportion of middle-aged buildings. It would appear that similarly to other cities in North America, trends in neighborhood decline in Montreal are associated with housing age, with middle-aged housing being a characteristic of neighborhoods in decline.

3.5 Neighborhood Characteristics: Transportation accessibility

One of the potential problems of increasing poverty in the suburbs is that these neighborhoods are also characterized by limited public transportation accessibility. Transportation accessibility has been linked to employment and health outcomes as well as growth and general wellbeing (Bocarejo 2012; Kenyon S et al. 2002).

Table 23: Trends in decline/advancement and access to the metro system

	Census tracts within 1 km of metro station	Census tracts >1km from metro station
Advancement at least two categories	37%	13%
Decline at least two categories	19%	36%
Other	44%	51%

Table 24: Trends in decline/advancement by location and access to the metro system

	Census tracts within 1km of metro station			Census tracts >1km of metro station		
	Central city	Inner suburbs	Outer suburbs	Central city	Inner suburbs	Outer suburbs
Advancement at least two categories	50%	23%	0	78%	5%	19%
Decline at least two categories	16%	22%	0	17%	43%	28%
Other	34%	45%	100%	5%	52%	53%
Total	153	142	1	18	217	205

As we can see in table 23, there seems to be some merit to the notion that neighborhood decline and poor accessibility to public transportation are linked. In general, census tracts within 1km of metro stations have a much higher likelihood of experiencing advancement in at least two categories (37%) than census tracts outside the 1km service area (13%). The reverse is the case for census tracts experiencing decline in at least two categories, with 19% of census tracts within the metro service areas affected by decline compared to 35% of census tracts outside the 1km service areas. This may be the result of the higher advancement and lower decline experienced by the downtown core, which as can be seen in the map, is well-covered by the metro system. However, this is unlikely to be the only explanation since as figure 5 shows, the metro system

goes beyond the downtown core and covers a number of neighborhoods in the inner suburbs. As can be seen in Table 24, the vast majority of census tracts in the central city have good access to the metro system; in the inner suburbs, there is a greater division in access. When it comes to the inner suburbs, census tracts with good access to the metro system have a much higher percentage of advancement than census tracts without good access (23% compared to 5%). Similarly, a much lower percentage of neighborhoods in the inner suburbs that have good transit accessibility have experienced decline (22% compared to 43%). These results might be indicative of the higher desirability of neighborhoods with good transit accessibility. Another possible explanation may be that census tracts in the inner suburbs with good access to the metro system tend to be closer to the central city and therefore may be part of the overall advancement of the central city.

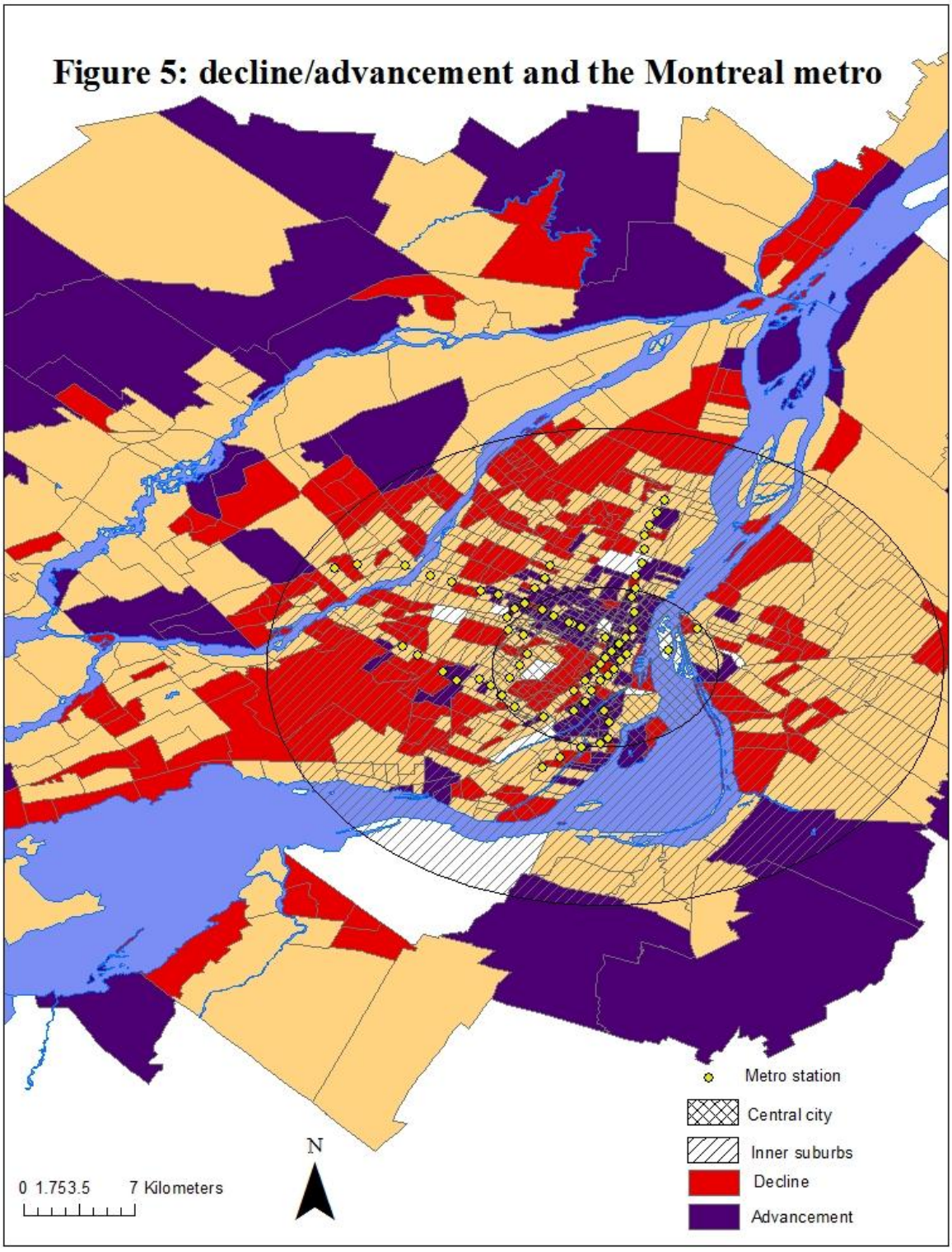


Figure 5: decline/advancement and the Montreal metro
Metro station
Central city
Inner suburbs
Decline
Advancement
N
0 1.753.5 7 Kilometers

4. Policy implications

4.1 Observations about patterns of advancement and decline in the Montreal region

The most salient trend from the analysis of neighborhood decline and advancement in the Montreal region is that there are significant differences between the central city, the inner suburbs and the outer suburbs. Inner suburbs tend to be most affected by decline and have the lowest proportion of neighborhoods experiencing advancement. This was the case when examining decline/advancement across three dimensions as well as when using an index of decline. These results are consistent with research from cities in the US and Canada conducted over the past decade. While earlier research in North American cities focused on decline in the central city, more recent studies have found that the inner suburbs are increasingly experiencing decline. It would appear that in this respect Montreal follows patterns that are becoming more prevalent across North American urban areas.

While inner suburbs have experienced decline, central city revitalization has continued to be very much a reality in Montreal. This finding is congruent with research that found that many Canadian inner cities experienced increase in status and gentrification starting in the 1980s, and that neighborhood advancement was closely linked to proximity to old elite neighborhoods in the central city (Ley 1993). The central city has a much higher frequency of advancement and a much lower frequency of decline than either the inner suburbs or the outer suburbs. Once again, this trend can be observed in the results of both the dimensions analysis and the index analysis. The move of middle-income residents into the inner city beginning in the 1970s has transformed formerly poor industrial areas such as the Plateau Mont Royal and Little Burgundy. The results of this research project point to a continuing process of advancement in Montreal's inner city

neighborhoods. In a comparison of six metropolitan areas in Canada, Montreal was found to have the largest number of census tracts around the CBD in the top quintile of social status gains (Ley 1996).

While the outer suburbs are doing considerably better than the inner suburbs, a higher proportion of central city neighborhoods than neighborhoods in the outer suburbs have experienced advancement over the past twenty years. A partial explanation may be that this reflects the lower starting point of many inner city neighborhoods relative to suburban areas. The outer suburbs may in fact have faster growth rates than the central city, however, outer suburban advancement seems to be concentrated in a smaller proportion of census tracts. This seems to contradict research from US cities that finds the outer suburbs continue to have greater advancement and lower decline than the central city, even when the central city has experienced revitalization. The dimensions of decline analysis includes a broad range of indicators of decline/advancement. It could be that focusing on a single indicator such as population or average income results in the outer suburbs experiencing greater improvements than the central city. However, the results for the Montreal region were the same when looking at decline/advancement trends with an index composed of only three variables. It would seem that central city advancement and revitalization in Montreal has outpaced the continuing growth of the outer suburbs.

Decline is far from being uniform in its nature or its distribution. While we can see some overall trends in advancement and decline, there is also a significant amount of variation in the types of decline that have taken place. For instance, several neighborhoods have declined in one category but remained static or even experienced advancement in the other two dimensions. Some patterns do seem to be more or less prevalent than others. For example, population and housing decline occur together much less frequently than other combinations of dimensions. The same holds true

for population and housing advancement. When it comes to decline in a single dimension, socioeconomic decline by itself has a greater presence in neighborhoods in the Montreal region than housing or population decline. Meanwhile, socioeconomic advancement has a much lower presence by itself than advancement in either of the other two categories. It would appear therefore that reductions in income and levels of education, and growth in poverty are a more frequent concern across a variety of neighborhoods that have not experienced declines in housing values, population numbers, or occupancy rates, or where these effects have not been felt yet. The distribution of decline is also dispersed. While there is a greater frequency of decline in the inner suburbs, these neighborhoods are spread out and not clustered in a specific area. Patterns of decline therefore seem to be scattered, not concentrated in a specific area. This makes addressing challenges more difficult since it will be harder to target a specific area.

Patterns of advancement and decline can also be observed more frequently in neighborhoods with certain characteristics. One of the most consistent patterns is that neighborhoods with both a high percentage of immigrants and an increase in the percentage of immigrants have greater frequencies of decline and lower frequencies of advancement. While Canadian cities do not have the same patterns of ethnic and racial segregation that characterize many US cities, high-immigrant neighborhoods do seem to show different patterns of advancement and decline. Overall, immigrants seem to be more likely to live in neighborhoods experiencing decline. The association between high levels of immigration and patterns of decline can most likely be explained by the lower average income of immigrants than native-born Canadians (Walks and Bourne 2006). The presence of cheaper housing in neighborhoods in decline will make them more appealing to newly arrived immigrants. Contrary to common perceptions of suburban homogeneity and historical patterns of settlement in the city of Montreal, immigrants are

increasingly living in a wide range of suburban neighborhoods. Many of these are inner suburbs that are experiencing decline.

The relationship between housing age and neighborhood decline has been frequently examined. According to the view that decline is the result of the filtering down process that occurs as aging housing loses value and attracts lower income residents, neighborhoods with older housing should have greater frequency of decline. In Montreal, this does not appear to be the case for older housing, since neighborhoods with housing built before 1960 have low levels of decline and high levels of advancement. Neighborhoods with older housing include formerly poor neighborhoods that have gentrified (eg. Plateau Mont-Royal) as well as traditionally high-income neighborhoods (eg. Westmount). The older housing in these neighborhoods is valued for its aesthetic and heritage appeal, and may in fact encourage neighborhood revitalization. Montreal neighborhoods that have experienced growth in middle-class residents tend to be characterized by attractive older architecture rather than buildings resulting from later periods of mass construction (Ley 1996).

Neighborhoods with older housing are more likely to be found in the central city and therefore be part of the revitalization of the area. Older housing stock in Canadian metropolitan areas is increasing in value at a higher rate than newer housing. Rather than older housing, it is neighborhoods with middle-aged housing that seem to be characterized by higher frequency of decline. Neighborhoods with a high proportion of housing built between 1961-1980 are likely to experience processes of decline. Since middle-aged housing is more frequently found in the post-war inner suburbs, the fact that this type of housing is becoming less attractive for homebuyers may partly explain the decline of inner suburbs. Middle-aged housing tends to be smaller than

newer housing built in the outer suburbs while lacking the aesthetic appeal and location advantages of the older housing found in the central city. Analyses of property values have found that the inner city, new suburbs, and exurbs have gained value and that the losses are in the postwar suburban ring. In Montreal, there has been a clear and consistent increase in value in the inner city at the expense of the neighbourhoods 8 to 12 km from the centre (Skaburkis 2008).

Language is one of the traditional lines of division in the Montreal region, characterized by historically Francophone and Anglophone neighborhoods, along with a growing presence of non-official languages spoken at home as the result of immigration (Marois and Belanger 2012). Examining trends in decline and advancement has shown that neighborhoods with a high presence of English as the official home language appear to have experienced greater decline. However, neighborhoods with a large increase in English experienced greater frequency of advancement. These results may indicate that traditionally French-speaking neighborhoods have both experienced greater advancement and have attracted new Anglophone residents. As Anglophones in Quebec become increasingly bilingual there may be a greater propensity to reside outside traditionally English-speaking areas of the metropolitan region. At the same time, English-speaking neighborhoods have traditionally been some of the wealthier areas of the city. These neighborhoods may be experiencing reductions in household size as younger generations leave for university and new areas of residence. The finding that neighborhoods with an increase in English as home language have experienced a high percentage of growth may reflect the move of Anglophone Montrealers to French-speaking neighborhoods as well as suggest that these areas have also attracted out of province young professionals.

The examination of decline and advancement trends in low-income and high-income neighborhoods found that neither group had a particularly larger percentage of advancement or decline. This suggests that income levels alone may not be an indicator for potential risk of decline. Potential policies to address decline therefore cannot focus solely on low-income neighborhoods. Similarly, it cannot be assumed that neighborhoods that have experienced revitalization no longer have pressing poverty concerns. Some Montreal neighborhoods that have experienced revitalization such as the Plateau Mont Royal remain characterized by relatively low income levels (Rose et al 2012).

Transportation accessibility also seems to be associated with trends in decline and advancement. Neighborhoods within walking distance to a metro station have experienced higher frequency of advancement than neighborhoods without metro stations. Residents of neighborhoods without access to public transportation have to face the additional challenge of limited accessibility to employment and services. If, in addition, these neighborhoods are more likely to have patterns of decline, these problems are compounded. It is also possible that greater access to public transportation may represent an opportunity for growth for the neighborhood. Part of the appeal of the central city may well be the availability of transit and the ease of commuting to work, particularly for younger residents. Research in Toronto found that central city residents reported being close to work and public transit as their top reasons for living downtown (Thompson 2013).

4.2 What do these results mean for policies to address decline in the inner suburbs?

The growing concentration of declining neighborhoods in the inner suburbs has become a pressing concern that merits greater policy consideration. Socioeconomic decline and increasing

poverty in the inner suburbs present specific challenges for municipal policies. Neighborhoods in the inner suburbs are characterized by detached residential buildings and zoning that segregates residential functions from commercial and industrial functions, and have a heavy presence of highways and collector roads that can result in isolated neighbourhoods. These characteristics make suburban areas harder to reach through targeted services and programming than central city neighborhoods. In addition, due to more limited transportation accessibility, poor residents of declining neighborhoods in the inner suburbs may find themselves at a greater disadvantage than the poor in the central city. The scattered pattern of neighborhoods experiencing decline points to a growing challenge for municipal governments. If decline is becoming more dispersed rather than concentrated in one specific area, it will be harder to focus services and policies for any one specific area.

Reversing decline is a complex matter that cannot be undertaken by a single intervention or by targeting a single factor. Just as there is no single starting point or precipitating factor of decline, there is no single approach that can reverse the process. Reversing decline requires creating the conditions for urban revitalization through a variety of complementary policies that take into account the context of the specific city and neighborhood. Many of these policies have been used or suggested for central cities in decline, but could be adapted to neighborhoods in suburban areas that are experiencing decline. Furthermore, while large segments of the central city have experienced revitalization, it does not mean that all neighborhoods within the central city are growing and have no need for policy interventions. Sustaining or supporting ongoing revitalization efforts can be an important element in making the improvements sustainable. The majority of the inner suburbs are part of the city of Montreal, while the outer suburbs are

composed of a number of separate municipalities. The feasibility of policy interventions when it comes to, for instance, public transportation improvements will therefore largely depend on cooperation among different municipalities and between different levels of government.

The vast improvements experienced by central city neighborhoods are an important matter for policy consideration. To begin with, it would be extremely important to understand the driving forces behind the impressive concentration of neighborhood advancement in the central city. Successful revitalization of inner suburbs could learn from policies and programs adopted in formerly declining central cities, including revitalization processes in Montreal's central city. There is a need to understand what lessons can be drawn from these experiences and be potentially applied to other areas of the metropolitan region, particularly the inner suburbs. The applicability of any policy lessons will obviously be limited by the local context. The differences between the suburbs and the central city may well make policy transfers difficult or unsuitable. Inner suburbs face some disadvantages relative to central cities when it comes to potential revitalization initiatives. Suburban areas tend to lack buildings of architectural and historical significance that can often attract revitalization through opportunities for tourism and gentrification. Not having these assets will make revitalization efforts more difficult. Neighborhood improvement programs may be less effective in the suburbs, which tend to cover larger areas. Programs may also suffer from fragmented jurisdictions and the failure to build collaboration between different municipal authorities (Kneebone and Berube 2013). Nevertheless, a greater understanding of how central city neighborhoods reversed processes of decline should provide some valuable insights into policy options.

The advancement experienced by many central city neighborhoods has not been an unmitigated boon. Revitalization of formerly poor neighborhoods has brought along new concerns and challenges related to rising property prices and gentrification. Much has been written on the definition and impacts of gentrification, although as noted by Criekingen and Decroly "there is still no unanimously approved empirical delimitation of the concept of gentrification" (Criekingen and Decroly 2003, p.2451). Common definitions include physical and social upgrading of neighborhoods, improvements in the built environment, and the transformation of low-income neighborhoods into high income areas due to population change (Meligrana 2005). While gentrification can be seen in a positive light as part of an urban renewal process that leads to greater social mix by attracting middle income residents to a formerly poor area, concerns have been expressed over its impacts on low-income residents. Evidence has shown that gentrification can lead to declines in the level of social mix, ethnic diversity, and presence of immigrants in neighborhoods, while resulting in growing income inequality and social polarization (Walks and Maaranen 2008).

The process of gentrification removes lower-cost housing from the market, both for ownership and for rental, which leads to concerns about housing affordability (Hulchanksi 2005). Rental housing in particular has become increasingly scarce in gentrifying inner city neighborhoods, as construction of new buildings is heavily focused on condominium properties and even when new rental units are added, these are not affordable to lower-income residents. The dearth of affordable rental housing is particularly detrimental for lower income residents and is linked to rising social inequality (Hulchanski 2005). While this study does not focus on the impacts of neighborhood advancement, it is important to note that revitalization may well bring its own challenges and that policymakers need to be prepared to grapple with the new realities of

formerly declining neighborhoods in the central city. Absent effective policy interventions, the growth of middle class investment in inner city neighborhoods will have detrimental consequences for housing affordability and will fuel decline in the inner suburbs (Meligrana and Skaburskis 2005).

Inner suburbs are caught in a "policy blindspot" and suffer from a lack of policies designed for their specific needs. Hudnut (2003) identified a number of key factors for successful revitalization of inner suburbs, including political leadership, human and social capital, public participation, education, and social services, and emphasized the importance of land use planning and zoning regulations. Attention to these factors will require the type of targeted policy design and implementation that is currently lacking. Inner suburbs are often not poor enough to qualify for many government funded reinvestment programs that target central cities. In Montreal, low-income neighborhoods do not necessarily experience a much higher frequency of decline than higher-income neighborhoods. Many declining neighborhoods in the inner suburbs are not low-income but are facing decline across different dimensions. Characterized by older housing and infrastructure, inner suburbs are also not suitable recipients of policies focused on new infrastructure that target newer suburbs.

Inner suburbs are becoming increasingly diverse in terms of their population. An elevated concentration of declining neighborhoods can be found in high-immigration inner suburbs. Groups that already face lack of transportation accessibility are further restricted by linguistic barriers and challenges to labor market integration. Policies therefore need to target the specific concerns of the increasingly diverse population of the inner suburbs, particularly new immigrants. Policies should prioritize improved access in suburban areas to services promoting

language skills and job market integration, which constitute a valuable tool for new immigrants. When services are provided in the central city they should facilitate schedules for people who are dependent on limited public transportation services to suburban areas.

One of the central challenges in reversing decline is finding ways to reverse disinvestment in declining neighborhoods. Suburban decline has been observed in neighborhoods with middle-aged small houses lacking in aesthetic appeal, which no longer appeal to homeowners (Lucy and Phillips 2000). When property values in a neighborhood drop below the cost of renovation and/or construction, then conventional financing by private capital is no longer an option and decline is reinforced. The market gap problem means that disinvestment cannot be reversed purely by the private sector once it reaches a certain stage and that public policy interventions and funding will be required to attract investment (CHMC 2001). Different types of subsidies such as tax rebates, grants, and wage subsidies, can be employed to encourage businesses and homeowners to locate in declining neighborhoods. The move of public institutions to these neighborhoods could also have a beneficial impact, including by providing better access to services in the case of health and education institutions. Municipal tax rebates for owners in targeted neighborhoods who repair or purchase homes can address disinvestment by homeowners. Subsidies for housing repair can help prevent the physical deterioration of buildings that is part of decline. Policies to foster housing reinvestment would be extremely important in declining inner suburbs in Montreal, which are characterized by middle-aged housing and decreasing property values relative to the central city and the outer suburbs.

If policies can reduce the risks associated with investing in homes and property in targeted neighborhoods, then renewed investment can be part of revitalization efforts. Inner city revitalization in the US was facilitated by public policies providing federal funding, such as the Empowerment Zone (EZ) initiative and the Housing Opportunities for Everyone (HOPE VI) program. These initiatives channelled billions of dollars to cities to improve the built environment, stimulate business development and job creation, and replace distressed public housing projects with mixed income housing developments (Hyra 2004). In Montreal, public investment facilitated revitalization efforts through funding for redevelopment projects such as warehouse conversions in Old Montreal and investments in infrastructure such as the metro line connecting the Plateau Mont Royal to the CBD (Ley 1996).

Revitalization can also be fostered by investments in infrastructure such as roads, street lighting, parks, and recreational facilities, and institutional services such as schools and health centers. These investments improve the quality of life in neighborhoods for their residents and promote stronger place attachment that can counter patterns of out-migration. Quality of life improvements will also create a more positive external perception of the neighborhood, making it more attractive to potential new residents. In the case of inner suburbs, improvements in institutional services may address some of the concerns over limited accessibility to services, particularly for poorer residents.

Another important area for policy focus would be the improvement of public transportation accessibility in suburban areas. Accessibility is a vital component of quality of life in urban centres. The level of access to a range of activities such as work, health care, school, and

shopping greatly determines people's inclusion in the community and their general wellbeing. An insufficiency or inadequacy of means to travel will prevent people from taking part in the economic, political, and social life of their communities (Kenyon et al. 2002). Accessibility through public transport is also highly relevant for those concerned with equity. There will always be a segment of the population that does not own a car and will therefore continue to rely on public transport. This segment of the population is usually composed of lower-income population, the elderly, and youth, and therefore tends to be more vulnerable (Martin et al 2008). Given the relatively high proportion of members of vulnerable groups who are captive riders, and the limited accessibility to public transportation in suburban areas, public transport improvements can play an important role in promoting greater equity in neighborhoods in the suburbs.

Canadian federal policies have not targeted inner suburban decline, likely because the federal government has a very limited role in metropolitan centres. Canadian metropolitan centres are dependent on their provincial governments, since the powers and obligations of local governments are delegated from the provincial administration. The lack of independent political status of municipalities constitutes an impediment to the implementation of local policies to address suburban issues. The disparity on fiscal resources between affluent cities and struggling inner suburbs would require strong interventions by provincial governments or by regional bodies. Addressing these disparities would facilitate the type of improvements that could revitalize declining areas. One important example of a successful suburban revitalization plan was Baltimore County's Renaissance Development Initiative, a revitalization plan targeting aging suburban neighborhoods. The plan focused on addressing the challenges of a dilapidated housing stock and struggling commercial sectors in inner suburbs. The key features of Baltimore

County that made revitalization possible were its exclusive zoning and planning powers over the territory, and its ability to collect revenue from a broad tax base and redistribute resource to disadvantaged neighborhoods (Vicino 2008). The applicability of similar initiatives to inner suburbs in the Montreal region would be extremely challenging due to intra-regional conflicts of interest and administrative boundary issues. However, the existence of a regional institution such as the Communauté métropolitaine de Montréal could point the way for the type of regional planning and policymaking that would be needed.

Provincial governments would have to play a more active role in tackling suburban decline through programs to address growing inequalities and rising poverty in the inner suburbs. Provincial intervention would be certainly needed in the Montreal region, given the very limited role of cities in social policy. Political cooperation among different levels of government and different administrative areas would be necessary (Pavlic and Qin 2014). Changes in land use policies to limit sprawl and restrain the growth of outer suburbs could have positive changes for inner suburbs. Rather than provide support for maintaining and renovating existing buildings and infrastructure, current policies too often facilitate sprawl and undermine the inner older suburbs (Puentes and Orfield 2002). In this sense, the increasing attention to smart growth in policy discussions may prove to be an important factor in revitalization of inner suburbs.

While public policies have a key role to play in arresting decline and promoting urban renewal, partnerships among a broad range of organizations can be critical. Local community organizations such as churches, community housing groups, ethnic organizations, banks and credit unions, and private businesses can play a very useful role. The type of community organizations and public-private partnerships that contributed to the revitalization of central

cities could be crucial for inner suburbs (Lee 2007). The revitalization of many of the neighborhoods in the central city of the Montreal metropolitan region was facilitated by such partnerships; local organizations played a key role in successfully lobbying municipal authorities for inclusion in revitalization policies (Rose et al 2012). While these types of organizations and partnerships have usually been seen as more characteristic of inner cities, suburban areas can also have important instances of community building.

Appendix 1: List of variables

Decline	**Neighborhood characteristics**
Population	Number of immigrants
Number of occupied private dwellings	Households with French as home language
Non-movers	Households with English as home language
Movers	Households with non-official languages as home language
Owners	Dwellings built before 1960
Renters	Dwellings built between 1961 and 1980
Average value of dwellings	Dwellings built between 1981 and 1990
Dwellings in need of major repairs	Dwellings built between 1991 and 2000
Dwellings in need of regular repairs	Dwellings built between 2001 and 2005
Median household income	Dwellings built between 2006 and 2011
Average household income	Median household income
Median individual income	Average household income
Average individual income	Median individual income
Median family income	Average individual income
Average family income	Median family income
Unemployment rate	Average family income
Population with a university degree	
Percentage of government transfer payments	
Households spending over 30% of their income on rent	
Owners spending over 30% of their income on housing	

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