THE DIVIDED CITY: INCOME INEQUALITY AND HOUSING DISADVANTAGE IN CALGARY

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Bachelor of Architecture and Urbanism, Centro de Ensino Superior de Juiz de Fora, 2014

A Thesis
Submitted to the School of Graduate Studies
of the University of Lethbridge
in Partial Fulfilment of the
Requirements for the Degree

MASTER OF ARTS

Department of Geography
University of Lethbridge
LETHBRIDGE, ALBERTA, CANADA

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Date of Defence: September 7, 2018

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ABSTRACT

Income inequality and income polarization have risen sharply in many Canadian Metropolitan Areas, especially in the Calgary CMA which is Canada's second most unequal city. Housing affordability is a concern for a growing share of the population who faces housing disadvantage in a free market private rental housing. The purpose of this thesis is to better understand the geography of housing disadvantage at a neighbourhood scale in Calgary. A mixed method approach is used to identify the social characteristics and perceptions of housing disadvantage. Overall, eleven unique dimensions are identified while in Calgary a 7 components model seems to better explain HD. The study reveals that the owner vs. renter divide is one of the most important aspects in predicting housing disadvantage in Canadian cities, as the literature suggests. It then briefly provides policy suggestions and discuss the general outcomes of housing disadvantage in Canadian cities.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank my family for their encouragement and support that undoubtedly made all this possible. I would also like to acknowledge my friends, that were there for me in so many ways. Many of those who are physically distant but also the true friendships I have found at the University of Lethbridge, especially the ones in the Geography Department that were going through the same steps as I were in the past years of work.

I would like to express the deepest appreciation to my instructors and supervisory committee. Dr. Tom Johnston whose door was always open to me and has provided me with insightful conversations and encouragement. Dr. Wayne Davies who was fundamental in giving me a better understanding of the city of Calgary and some of the challenges it is going through. I am especially grateful for my supervisor, Dr. Ivan Townshend, who advised me throughout this thesis development, by offering guidance and countless meetings but also challenging me towards completion of my work. I would also like to thank the Parkland Institute for the generous funding to this research and its continuous focus on political and economical changes that affects social Alberta, and to the Neighbourhood Change Research Partnership. It is through initiatives like those that we can collectively aim to mitigate social disparities towards a more just society.

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CHAPTER 1: INTRODUCTION

1.1 Contextual Foundations

The spatial separation of groups is an ongoing issue that has long occupied the attention of urban geographers in Canada and elsewhere, as noted by a growing number of commentators (Balakrishnan 1982, Boal 2008, Bourne and Rose 2001, Driedger 1999, Fong and Shibuya 2000, Galabuzi 2006, Harris and Wahba 2002, Johnston et al. 2007, Knox and Pinch 2010, Marcuse 1993, Morril 1991, Peach 2009, Peters 2001, Walks and Bourne 2006). There is an increasing concern that the social transformation of the past 30 years has produced new and intense forms of segregation between minority groups in the society that sow the seeds of social unrest and instability. These new forms of segregation are representative of increasing income inequality in the post-industrial city.

The theoretical underpinning of this research can be found in the Divided Cities literature (e.g. Marcuse 1993, Van Kempen 2007, Hulchanski 2010) and in research on the globalization of income inequality (Massey 1996), focusing on the period from 1970s on. This work posits that new urban forms and patterns of urban sociospatial inequality have emerged in the past quarter of a century. The increasingly Divided City is one in which extreme levels of income inequality at a societal level is being manifest in new forms of partitioning and polarization, at the same time that neoliberal forces have exacerbated this problem and encouraged the erosion of the role of the state in moderating the outcomes of inequality (e.g. the increasing withdraw of the state in the provision of public housing), and the

increasing shift to private sector rental housing markets (both linked to increasing urban inequalities) (Tsenkova and Witwer 2011). While income inequality has always created sociospatial differentiation in cities, the Divided Cities idea suggests that we are now seeing the reversal of a trend toward more equitable wealth distribution in society that took place in many industrialized countries, such as Canada, in the post-war boom. Income inequality has increased remarkably in Canada (Walks 2013), and has risen sharply in most Canadian metropolitan areas producing new intra-urban geographies. It is within this context that, scholars suggest we are witnessing unprecedented evidence of "housing affordability stress (HAS)" and "housing disadvantage" (Bunting et al. 2004, Paradis et al. 2014). However, it is important to note that housing disadvantage is not limited to renters, as the recent literature suggests, and homeowner disadvantage (e.g. overcrowding, housing affordability, and substandard quality) is increasingly a reality for many.

1.2 Research Purpose

This study integrates quantitative and qualitative methods to investigate housing disadvantage (HD) at a neighbourhood scale in the city of Calgary, Canada. The advantage of using a mixed method approach is to be able to compare both mathematical empirical findings to the actual reality (residents' perception in this research) in the sudy area. Following the idea that there is a housing affordability crisis in many Canadian Metryopolitan Areas (CMAs), where income inequality and polarization has risen sharply across the country, Calgary rises on the top of the list (Townshend and Coppola 2016) and it is chosen as the case study site for this

research. Calgary is one of Canada's most income unequal cities, with both income polarization and inequality rising sharply in the 1990s (Townshend et al. 2018). The thesis explores key concepts associated with or seen to be predictors of high levels of H.D., including characteristics such as income levels, educational attainment, visible minority rates and concentrations, recent immigrant's inflow, ethnic concentrations, the diversity of the housing stock within neighbourhoods.

1.2.1 The Knowledge Gap

To date, as demontrated in the review of the literature that follows in Chapter 2, there is a lack of research on the spatial patterns and the causes of the housing affordability issue in a Canadian context, and more specifically in the Calgary Metropolitan region. Perhaps this is due the fact that Canada is considered one of the best places to live and compared to other countries it does not seem to portrayt such issues. In order to better understand of Calgary as a "Divided City" -- with an increasing gap between rich and poor -- there is a need to investigate the driving forces of housing disadvantage as a way to prevent an aggravation of these issues in the future, that could lead to extreme residential segregation amongst groups and violence in unprecedented levels in Calgary's history.

1.2.2 Intellectual Merit

This thesis is an exploratory analysis of the geography and social ecology of HD in Calgary, and how the social dimensionality of Calgary's neighbourhoods explain or predict the geography of HD. This study is the first of its kind to use a custom crosstabulated data set produced by Statistics Canada for eight CMAs in Canada

(including Calgary) in which renter and owner characteristics at the CT scale can be crosstabulated with dozens of social characteristics. This data set provides detailed crosstabulated information of the social characteristics of households and neighbourhoods by income levels and other demographics. These data were used to generate a model that attempts to explain or account for the housing affordability issue in relation to its socio-spatial characteristics.

1.2.3 Objectives

This study has three objectives derived from the need to better understand the current situation of Calgary as a Divided City: Firstly, to map and describe the ecology of housing disadvantage in Calgary. Secondly, to identify and assess the social dimensional structure that empirically explain the spatial distribution of HD in the city. As a counterpoint to this quantitative analysis, the last objective is to carry out a qualitative analysis of perspectives of HD in selected neighbourhoods that were identified (from objective 1) as having high levels of HD. This will provide a more nuanced understanding of the reality of HD from an individual perspective rather than an ecological perspective.

1.2.4 Research Questions

This work focuses on five specific research questions:

1. What are the characteristics and spatial pattern of housing disadvantage in Calgary? Further, does this pattern seem to correspond to the evolving geography of income inequality and income change in an increasingly “divided city”?

2. What does the literature identify as key variables or sets of variables of social life and neighbourhood characteristics that seem to correlate with or explain housing disadvantage, or are considered to be potentially unique or separate predictors of HD?

3. What is the empirical dimensionality of these variables in Calgary?

4. Which, of these social dimensions explain or predict the geography of HD, and how well do they account for it?

5. Does the qualitative experience of residents in high HD neighbourhoods parallel the findings on question number 4 above? If not, what are the differences?

1.3 Thesis Structure

This thesis begins with an overview of the literature to provide a context prior to approaching the research objectives. Thus, Chapter 2 starts with a general overview of the "housing disadvantage" topic in Canadian society, and the context behind the increasing segregation of certain groups. It then reviews the literature for potential causes and predictors of HD in order to identify the key variables of influence, and ways in which these have been operationalized by others. Together, these reviews provide the conceptual framework of the research. Chapter 3 outlines and describes the research design and methodology, as well as an overview of the study area. Both the quantitative multivariate methodology used to explore the structure of HD and the explanatory factors, as well as the qualitative methodology are dissected in this chapter as a way of explaining their usefulness in approaching the research

questions in this study. Chapter 4 presents the empirical results for this research and is an interpretation and discussion of the findings, and the ways in which they are linked to the theoretical bases of this study. Chapter 5 concludes the thesis with a summary of the key findings, an outline for future research, and it briefly suggests some planning strategies to be considered regarding the issue of affordable housing.

CHAPTER 2: BACKGROUND TO THE RESEARCH AND CONCEPTUAL FRAMEWORK

2.1 Introduction

Chapter 2 provides a background to the research problem addressed in Chapter 1, through a literature review relevant to the objectives and questions previously identified.

It starts with a description of what Housing Disadvantage (HD) means, and the context behind this issue. Next, it establishes a conceptual framework used in this research and an overview of the kinds of social and neighborhood factors that have been identified as potential drivers of HD. This chapter concludes by summarizing the main conceptual issues around the HD.

2.2 Housing Disadvantage (HD)

Starting from the point that social transformations create uneven geographies in our cities, new urban realities of population change inflate the urban housing prices, putting homeownership status out of reach for some groups (Harris 1986). Examples of this would be the east-west flow of people to western provinces, the progressive urbanization trend as people leave rural areas resulting in more geographically concentrated metropoles, the residential flow to suburbs, and the inner-city gentrification (Bourne and Rose 2001), to mention a few.

The profile of people who fall into the so called “housing disadvantaged” group is in reality a description of those people that are more likely to experience vulnerability status in the housing market. The socially disadvantaged groups in

Canada have changed in the past few decades (Bourne and Rose 2001). Most of the evidence in the literature point to visible minorities as the most affected (or most vulnerable) group. While related to affordability issues and income inequality, this is a key group associated with forms of cleavage in so called "divided cities". Indigenous, single parent families, and elderly women, have also been the focus of different studies regarding housing affordability (Hulchanski 2002).

A dominant theme considered among the housing disadvantaged group is the idea that these people are becoming increasingly spatially or residentially segregated in urban Canada (Buning et al. 2004, Mararanen 2015, Suttor 2015). With exclusion and less opportunities of succeeding, scholars have argued that this can lead to extreme situations – such as the violent cases we can see in the USA amongst excluded groups – leading to a more unjust society.

2.3 Context for Housing Disadvantage

To contextualize the importance of HD and how it is increasingly becoming a problem in our cities, I present some of the structural change s in Canadian society that have contributed to HD.

Theoretically, the literature suggests that this problem has become worse or intensified, and is manifested in new ways because it is a particular form of inequality surrounding issues of income inequality. In other words HD, and often patterns of income inequality, are integral features of what some authors refer as the "divided city" (Marcuse 1983, van Kempen 2007, Hulchanski 2010, Townshend et al. 2018), and in Canada the divided city is also linked to the change in the

demography and the racial and ethnical composition of Canada.

In recent years disadvantage groups have become more segregated in Canadian society. As a consequence, new spatial forms have been emerging -- more segregation is seen as a manifestation of the increasing divided cities which is driven by income inequality. Recent empirical evidence shows that those two major forces – segregation through the divided cities idea and income segregation – together produce new expressions of housing disadvantage (See sections 2.3.1 to 2.3.7). This makes the study of HD in metropolitan regions such as Calgary very significant, in order to understand the forces that are producing such a social and spatial divisions in Canadian cities.

2.3.1 Spatial Separation of Groups in Contemporary Societies

As Morril (1991) once argued, segregation is related to physical and social processes that culminate in the spatial separation of groups and is an ongoing issue within Canadian cities. A group is considered geographically segregated -- the most well-known segregation outcome in a society – if it involves situations where a minority group has its members distributed unevenly across the residential space of a city, in relation to the distribution of the rest of its inhabitants.

Segregation is manifested in many different ways, such as language, ethnicity, race, income, gender, age, and social class to mention a few, revealing deep insights about a society. If a specific society (or city) presents a high degree of segregation, it probably means that there are some social structural problems with that group of people that may have been caused by a combination of different internal (within

group) and external discrimination factors, creating unique spatial outcomes (Knox and Pinch 2010). It could be, for example, the inability of some group to assimilate with the majority of the society, and intensified by the presence of discrimination towards them. In urban geography, it is known that geographical inequality is a spatial outcome of other social forces that need to be analyzed in detail for a comprehensive understanding of a social organization. Thus, segregation is often being described as a spatial outcome of social structural issues.

There is an increasing concern that the social transformation of the past 30 years (i.e. social structure change) has produced new and intense forms of segregation between minority groups in the Canadian society, articulating the relevance of social and income inequality in the post industrial city. In most cases minorities are segregated from the charter group, and studies show that the socio-economic status of these minorities is not the only reason for these high levels of residential segregation (Balakrishnan 1976). Surveys have consistently shown that segregation is a consequence of intentioned behavior and not a mere accident.

An example in the Canadian context, concentrated urban poverty has been related to the spatial agglomeration of visible minorities (Balakrishnan 1976, Galabuzi 2006, Kazemipur and Halli 2000, Smith and Ley 2008), term used in the Employment Equity Act of 1986 and, according to Statistics Canada (Statistics Canada 2017c), defined as “non-Caucasian in race or non-white in color and who do not report being Aboriginal”. The lack of integration of these minorities into the labor market (also referred to as “vertical segregation”), complemented by the fact

that they have less housing opportunities—a matter of affordability—contribute in these groups being spatially constrained or "horizontally segregated". Sometimes this is intensified by the discrimination from the charter groups -- in Canada it is English and French descendants (Fong 1997), culminating in a higher income inequality.

There are different schools of thought about the causes of segregation in a society, since it is known they might differ for the type of segregation experienced – such as ethnic, racial, income, age or religious segregation (Fong and Chan 2011). The causes or reasons for segregation may also differ according to location. Among the numerous factors that cause segregated groups in different cities, there is a general agreement that globalization and deindustrialization are the main causes of income inequality, which is one of the strongest drivers of segregation. This is reinforced by the racialization of the poor, as well as neo-liberal policies (Walks 2015). On the other hand, racial and ethnic segregation are usually caused by internal and external factors related to the degree of assimilation that a minority group has in relation of majority portion of a society (Knox and Pinch 2010).

Some authors (Fong 1997, Knox and Pinch 2010, Bourne and Rose 2001) have identified external factors, characterized by the charter group attitudes towards the minority group and institutional discrimination. One example is what is called "social closure" (or exclusionary closure), which is the ability of a majority group to exclude a second one from spaces and resources. Another factor that can be highlighted is racism: the intentionally (or not) division of groups of people by race

(Galabuzi 2006, Kobayashi and Peake 2000, Kobayashi and Preston 2015, Teixeira, 2008). This can politically and economically affect a society, producing consequences that, in a wider context, could affect the housing system, as we can see with institutional discrimination in the U.S. where discrimination in the housing market is adopted by builders, landlords, estate agents, and mortgage companies. This tends to intensify non-resiential segregation, such as schools and recreational facilities, thus affecting entire neighborhoods. In Canada, black immigrants, for example, have difficulties in finding affordable housing in Toronto because of their skin color, while other groups have more chances in finding it in their own choice of neighborhood, resulting in residential segregation among immigrant groups into low-income neighborhoods (Teixeira, 2008).

On the other hand, other authors have identified internal factors that tend to produce congregation based on social and cultural group cohesiveness. These factors can be subdivided in four main categories as suggested by Knox and Pinch (2010): Defense, support, preservative, and attack. In terms of defense, some groups cluster as a defense mechanism against the charter group. That would be the case of the city of Belfast, where the type of social and political behavior in combination with religion characteristics provide a severe urban division that culminates in extreme violence (Boal 2008). Clustering together may also be for support, when some communities tend to create ethnic institutions, such as religion institutions like synagogues or mosques in specific neighborhoods, as a form of embracing its local inhabitants, what Kobayashi and Preston (2015) refer to as “ethnic enclaves”.

Preservation is when a group congregates to achieve preservation of their culture in order to maintain their identity, instead of completely assimilating with the host society. This characteristic is usually intensified by the marriage preference among these minorities, as a way to preserve their culture in future generations, as sometimes found among Jews and Chinese in some Canadian metropolitan areas (Knox and Pinch 2010). The last reason that explains voluntary clustering is the "attack function", where minority groups tend to cluster together as a form of gaining voice (i.e. political power) in the society they are inserted in An example of that would be a minority group trying to get political space to have some representation in order to attend their necessities, once they are commonly left behind from the majority portion of the population.

It is also right to say that different forms of segregation could have voluntary and involuntary origins. Driedger (1999) presents two processes in which ethnic groups cluster in an urban landscape: voluntary retention and involuntarily segregation. The first being focused on the importance of maintaining cultural identity and group cohesion, and the second centralized on social and political stratification culminating on residential segregation.

When studying Canadian cities it is inevitable to mention immigration as a component of social change. According to the Citizenship and Immigration Canada's 2014 data, an average of 230,000 people permanently immigrated to Canada per year in the last decade. "Canada is made up of many ethnic regions, forming a multiethnic Canadian mosaic" (Driedger 1999). The Canadian metropolitan areas attract a vast number of immigrants who contribute to the expansion of the labour

force and the country's "economy, community morphologies, and multicultural identities" (Hutton and Vinodrai, 2015). The vast majority of academic works on segregation comes from sociological studies related to ethnic groups, probably because of Canada's immigration policies that facilitate a large number of immigrants to settle in Canadian cities creating a diverse social interaction. "Race, ethnicity, and class have always formed the basis of inequality in Canadian cities, and from the earliest days inequality was associated with immigration" (Kobayashi and Preston 2015).

There was an abrupt change in the Canadian scenario of the 1960s, when a modification in immigration laws facilitated the arrival of groups from different origins than the ones who consisted of the so called "charter group" (Porter 1965). What before was a bilingual and bicultural society developed to be a more heterogeneous multicultural society. International migration used to be a one-way trip but nowadays it is seen as transitional, meaning that immigrants tend to maintain a relation with their country of origin, in a social, economic or political aspects (Kobayashi and Preston 2015). This directly affects the immigrant's relation between ethno cultural groups and the charter group, and transforms the urban landscape in residential and commercial contexts.

Driedger (1999) confirms the idea that residential segregation patterns in Canada have been completely influenced by social and historic factors such as the large number of immigrants in the metropolitan centres. In his work he was able to analyse the different urban segregation patterns in Canadian metropolitan areas, by comparing what he calls the 'Big Three' (Montreal, Toronto and Vancouver) – the

largest Canadian metropolitan areas – finding that they represent distinctive segregation types: Montreal has a dominant French charter group while Toronto – that used to have a British charter type – presents a visible minority type since the turn of the century probably in response to the large number of recent immigrants, and Vancouver that is more multicultural. Then he analyses, through factorial analyses, the prairies metropolitan centres and find a relation between Winnipeg and Vancouver, and Calgary and Toronto, highlighting that in this Canadian central region the cities are still quite unique because of the indigenous low socio-economic features.

If we look into the Canadian evidence of the past 35 years, scholars like Driedger have shown that the levels of segregation drastically differ between different cities, although in general, some particular ethnic groups tend to have on average much higher levels in a national context (Driedger 1999). The Dissimilarity Index (D) is a simple measure of the spatial unevenness of one group relative to the remainder of the population. It is the most common measure of segregation, and varies from 0.0 (no segregation) to 1.0 (complete segregation). To illustrate it, Jews constitute of an ethnic group that has had high levels of D in Canada (Balakrishnan 1976), caused mainly by voluntary reasons. Jews are grouped as ethnicity and religion segregation and, even though they are usually very wealthy, historically they tended to be segregated as a product of centuries of persecution and discrimination, and to be physically closer to synagogues (Hiebert, 1993). That proves how ethnicity is an independent dimension in a social structure that reflects

more than socio-economic status. Even among well represented groups, there is still the existence of a significant segregation aspect, as appointed by social-economic status researches (Balakrishnan 1976). Balakrishnan (1982) defends that the Jewish segregation in North America is a result of what is called "self-identity hypothesis", being the self-identity of this group so strong that more likely they will be segregated.

Walks (2015) shows how Canadian cities are becoming more global due to immigration. He also documents how recent immigrant's income have declined in the past 35 years in comparison to the native-born Canadians. In the beginning of this century, recent immigrants earned on average 58 per cent of the native-born Canadians incomes, while in the 1980s this number was as high as 85 per cent. Other studies have shown how the earnings gap between visible minorities and people from the so called charter group grew during the 1990s (Pendakur and Pendakur 2002, Walks and Bourne 2006).

Some scholars name the scenario of racial segregation the "Canadian Apartheid" – referencing the "American Apartheid" by Massey and Denton (1993) -- in which low paying occupations are largely represented by racial groups, and as Massey and Denton (1993) note, "along with racial discrimination, unequal labour force participation, occupational segregation, age distribution of the population, unemployment rates, and educational levels are often cited as contributing factors [for poverty among racialised communities]". Such segregation and earnings inequality is also product of the non-recognition of foreign credentials and the

inability to transfer skills, but also years of racial discrimination supported by governmental policies that impact society beyond the vertical segregation matter (Galabuzi 2006, Walks and Bourne 2006).

As mentioned earlier, ethnic residential segregation can arise from personal factors or macro-factors that can directly influence the inability of members of minority groups to assimilate into a major social structure. This process of absorbing information and experiences, adapting to a different culture, also called 'Assimilation Theory', shows the degree of assimilation of some group in relation to the host country. The degree of assimilation of some minority group is what will dictate the high levels of social and structure segregation, that can also be intensified—but not exclusively—by the low-socioeconomic status of the minority in question (Knox and Pinch 2010). Places like Canada that have a high level of immigration usually have a vast ethnic diversity that can generate different patterns of ethnic concentrations, depending if an ethnic group has a rapid assimilation or a weak social cohesion in comparison to the majority group.

Among the reasons for residential segregation of an ethnic group to happen, is the fact that it can be determined by cultural characteristics (personal factors) due to language difficulties, lower occupational skills, religion, and discrimination by the majority group or even for voluntarily reasons as an attempt to maintain the group identity. It can also be caused by ecological factors: the larger the size of the ethnic group, it is more likely that they have some specialized institutions such as churches and newspapers particular to this certain group. Also known as "institutional

completeness", the need for minority groups to organize themselves in order for them to be represented and effectively participate in the society.

Walks and Bourne (2006) use the term "ethnic communities" to suggest that a new pattern of cultural pluralism is arising in Canadian cities, caused by high concentration of visible minorities in urban areas, but at the same time without compromising the assimilation of these groups with the Canadian society. Some people would argue that the levels of segregation should decline after a group has been into the society for a long time. The period of immigration is also relevant. For example, East Indians came to Canada in big waves in the 1970s, when they used to cluster together in order to maintain their culture and feel more welcomed when in a different country. Nowadays, even with new immigrants coming and settling in clusters just like before, there are third generations of the immigrants from the 1970s that are more dispersed in to the city because they have assimilated more with the host society.

In such a vast country, ethnic segregation has been analyzed in different aspects according to different cities, as we can see in Teixeira's (1997) analyses of the influence of Portuguese immigrants in the Toronto housing market, and multiple studies about the increasing Chinese immigration in Vancouver. Different ethnic groups have different degrees of segregation varying by country of origin. In Canada, Italians have more levels of segregation in some cities than the other. While in St. John they have a value of D of 0.75, in Calgary for example it is 0.35 (research based on Statistics Canada 1991 data). One possible explanation could be that in places

where they are part of a very small number of the city's population, they tend to be extremely concentrated and as a consequence, the values of D are really high. It is a fact that in French Canadian cities, Chinese and East Indians tend to be extremely segregated. Based on the same work by Townshend, it was found values of D as high as 0.73 for Chinese in Chicoutimi and 0.75 for East Indians in the same city. The Quebecois' nationalism added to issues as language barriers contribute for these extreme levels of ethnic segregation, the opposite that can be seen in the prairies, for example. This shows how recent shifts have influenced ethnic residential patterns. Post-war immigrants are less likely to assimilate quickly into Canadian society than the previous immigrants. One reason for this is their origin of migration and different background from the charter group (Balakrishnan 1982). For instance, the early significant influx of immigrants coming from European countries is now substituted by a large number of migrants coming from Asian countries.

Even within minority groups it is possible to notice internal differences that may affect the measurements of these groups. In some cases, for example, outsiders consider some specific groups arranging themselves in the same area (e.g. Indians, Pakistanis and Bangladeshis) while they are intentionally separated into smaller different communities, not easily noticeable. Nevertheless, what is clear is that most minorities groups are inclined to be segregated in high levels from the majority group (Knox and Pinch 2010).

In the sociological literature the term "social distance" describes traits, such as skin colour, that show how people stand apart. A high level of social distance

between two people would occur when they are of different races and skin colour and speak different languages, meaning that their visible difference is high. Some researchers use this term when referring to visible minorities, affirming that there are high levels of social distance in relation to the charter groups in the Canadian society. Balakrishnan for example, analyses in 1976, the hypothesis that "the greater the social distance of an ethnic group from the majority group, the greater will be its residential segregation" and ten years later he proves the relation between residential segregation and social distance by finding that Western and Northern European groups are less segregated, followed by Eastern Europeans and finally Italians and Asians, the most segregated in the 1980s (Balakrishnan and Hou, 1999).

Using a period of ten years from the Canadian census data between 1981 and 1991, Balakrishnan and Hou (1999) confirms that the relation between residential segregation and social distance is more intense than the socio-economic integration, when comparing visible minorities to the charter group. During the period of analyses, occupational segregation has declined while residential segregation among visible minorities has persisted, even with an increasing share of recent immigrants with higher education levels and job skills, and with the government's incentive on job and language training. Therefore, they conclude that these minorities groups' occupation status on the labour market is not as a strong factor as social distance is in defining residential segregation.

Physically, racial differentiation from the charter group (i.e. social distance) can also be problematic, as we can see in the American context. Although concepts

such as “American Apartheid” have been used by Massey and Denton (1993) to describe the extreme segregation of blacks - a residential segregation based on racial injustice where the racially oppressed are excluded from the experiences accessible for most whites -- research shows that blacks are more likely to be residential isolated in the US than in Canada (Fong 1997), suggesting that Canadian neighbourhoods are more racially integrated.

Massey (1993) shows how racial segregation is rapidly changing through the years in the U.S. While the segregation among black people is gradually reducing, the Hispanic segregation is increasing and they are becoming the new underclass in America, being the dominant ethnic minority group and more economically marginalized through time. The rapidly growing Latinization is a result of legal and illegal immigration and a high rate of fertility than any other groups (Box 8.1, Knox and Pinch 2010).

Another relevant topic when mentioning racial and ethnic segregation in Canada concerns the indigenous population. Even though they are not treated as visible-minorities, they are considered an ethnic minority, and even though they present relatively low levels of residential segregation in general, they tend to have a lot of other social problems that end up influencing their geographical locations within cities. Poverty, for example, is an important factor in their spatial location, based on demographic and socio-economic characteristics (Balakrishnan and Wu 1992, Galabuzi 2006, Peters 2001). The concentration of this population in the prairies and Northern territories brings some challenges to their local municipalities

governments in order to fight poverty among this group of people and to soften their future social issues.

The Percentage of Visible Minorities in the population of Calgary has increased from 8.2 percent in 1981 to 33.7 percent in 2016, according to the Statistics Canada data, being the third biggest change within eight CMAs and behind only Toronto and Vancouver. The visible minority population change is even more significant from 2006 to 2016 (11.4%)(Table 2.1).

Table 2.1: Percentage Visible Minority Population

	1981	2006	2016	Change 1981-2016	Change 2006-2016
Halifax	3.5	7.5	11.4	7.9	3.9
Montreal	5.2	16.5	22.6	17.4	6.1
Ottawa-Hull/Gat.	5.2	16.1	21.6	16.4	5.5
Toronto	13.6	42.9	51.5	**37.9**	8.6
Hamilton	3.8	12.3	19.0	15.2	6.7
Winnipeg	6.1	15.0	25.6	19.5	10.6
Calgary	8.2	22.3	33.7	**25.5**	**11.4**
Vancouver	13.9	41.8	48.9	**35.0**	7.1

Source: Based on Statistics Canada Data.

A common theme in Canadian studies has been the well-known idea of "racialization of poverty" manifested as the increasing earnings gap amongst vulnerable groups and the credentialization issue with immigrants, for example. Galabuzi (2006) goes even further in suggesting the "Canada's Economic Apartheid", an emerging concept that deals with the idea of Canada becoming racially separated by low and high incomes, a scenario where poverty is more associated with race, producing new ecologies of visible minorities within the "Divided City".

For a diverse country such as Canada, religious groups have a minor influence in residential patterns (Fong and Chan 2011), which makes this topic truly relevant once it goes beyond the socioeconomic, racial and ethnic causes of

segregation. The social class differences merged with religion contrast can significantly impact the urban structure, like we can see in Belfast. The deep social and political divide of two "ethno-national population" can be clearly seen in the geographical urban space (Boal 2008).

Residential segregation between religion groups in Canada presents similar levels such as racial and ethnic segregation, showing levels of D varying from 0.39 (Conservative Protestant and Catholic) to 0.62 (Jews), in which these variations are related to socioeconomic differences and differences between the immigrant population among the religious groups analyzed (Fong and Chan 2011). Assuming that every religion has its own institutions that contribute for the community's self-identity and promote behaviors that end up shaping the residential patterns of these groups, Fong and Chan (2011) articulated four different behaviors by these religious institutions that they judge more relevant in the influence of the urban space of the cities: (1) Religious community services that promote social integration of different social groups within their community; (2) Subcultural Identity, maintaining boundaries that provide moral guidelines and secure their member to feel inserted in their cultural group. This ends up creating higher levels of segregation between the groups that provides it. It is the case of Conservative Protestants in Canada; (3) Religious-Ethnic Identity that says that if a group has strong religious-national identity the less likely it is to assimilate to the host society, thereby creating more clusters; (4) Discrimination among religious groups that intensify residential segregation, as the case of Muslim segregation.

In the case of the Jewish community in Canada, religious law provides code behaviors such as eating kosher foods, respecting the Sabbath and circumcision. These are perpetuated by conservative practices through different institutions presented in the city's space like synagogues, schools and organizations.

Spatial separation among religious group interferes in groups' relations and have an important role in forming social structures with social implications by affecting residential choice according to religious affiliation, and political implications by influencing in election results according to conservative or liberal behaviors experienced among members of a determined religious group, for example (Fong and Chan 2011). Through exploring residential segregation among different religious groups in Canada, it was found that socioeconomic differences between cities in combination with basic differences between religious groups within the immigrant population, help to implement community development in the neighborhood scale. Also, the coexistence of religious groups in the society help the relationship between different groups, collaborating to a more integrated society.

2.3.2 Age Segregation

Human geographers have recently become interested in age segregation: a social dimension that was less explored than income and ethnic segregation, in the last century. The rising age segregation in Canadian cities gained strength since the 1970s when data started to be studied, with a focus on the increasing share of elderly population. For example, Okraku's (1987) data analysis that shows numbers of the degree of elderly segregation increased dramatically between the 1970s and

the 1990s in places like Edmonton (from 0.27 to 0.37) and Regina (from 0.26 to 0.37). He presents the trend of the social isolation of the elderly, a process that started around 40 years ago with exclusive retirement communities and still is a current issue among seniors, exposing the necessity of planning policies to guarantee accessible communities for all generations, from the younger to the elder securing affordable housing market, recreational opportunities and providing accessible transportation (Moos 2015). Differences between cities are very specific and shows in part the destination decisions made by the young and old populations of Canadians as we can see with these increasing numbers of retirement centres in Canada.

As people move through different phases of the life course they encounter different needs for housing, amenities and services. Urban landscapes are affected by generation's decisions, giving this issue a relevant role in the urban geography studies. "Age defines us socially, for instance by placing us into specific generations that are believed to have different values, preferences and lifestyles" according to Moos (2015). Knowing that housing needs changes according to the family life cycle and influences the decision on where to live, Okakru (1987) helps us comprehend part of the age segregation situation of the present century. In general, it means that people tend to agglomerate in areas where they feel more comfortable, usually leading to a case where families want to be surrounded by people at the same life stage as them, ending up to put some limitation on the diversity in an area or neighborhood as we can see with the increasing number of housing developments

for retired people in the market, for example.

Another common feature of Canadian cities is the reality of inner cities being often occupied by a young adult generation, and the increasingly "youthification" of central cities (Moos 2015). The growth of the concentration of young professionals can indicate the social distance between different age groups in a society where there is a preference for millennials to choose these dynamic and restructured areas of the cities to settle, where they are attracted by housing and recreational opportunities like newer accommodation, facilities (restaurants, shopping malls, bakeries), job market and nightlife. Moos (2015) shows that public transit and more walkable neighborhoods are also important in attracting young adults seeking inner city housing, something not seen in the past with this nor other age groups. Therefore, gentrification can result in lifestyle changes within the urban space. This significantly changes the urban context of the cities once it provides a large number of newer housing choices and at the same time with a higher value in the market. At the same time, in suburban areas we have an aging population that has relatively high income, even though there is a recognition of an elderly migration to downtown areas in some medium sized metropolitan cities (Moos 2015).

Although age segregation is stronger between groups of young adults and seniors in the CMAs, the degree of age residential segregation is never as high as the ones found with income or immigration (Moos 2015). Age segregation tends to be a reflection of either in-situ aging (aging in place) or lifestyle choices rather than inequality itself, whereas lifestyle trends impact directly on the differentiation and

marketing of the new buildings and developments in cities, attracting specific market segments. By creating a schema based on the 'Theory of the Third Age' by Laslett (1987), Townshend and Walker (2015) discuss the four major 'ages' in a life course and explain how they affect people's decisions on where to live at, what sort of amenities they are attracted by, and how diverse these preferences can be expressed in terms of socio-spatial characteristics, such as household sizes or the prevalence of conjugal relationships in some areas.

Since the turn of the century scholars have begun to study other forms of lifestyle segregation, as we can see on a preference of gay people wanting to live in communities or villages in North America, or in the Castro neighbourhood in San Francisco or in the gay downton of Toronto. The origins for that type of separation are diverse, but in general it is a product of a history of persecution of this group, and a desire to live among equals for protection reasons and for the seeking of a similar lifestyle, where they can find amenities where they are more welcomed than the ones where they feel excluded and discriminated. Spatial lifestyles is a concept related to voluntary behavior supported on everyday life practice (Schnell and Benjamini 2002).

Further studies related to different forms of lifestyle segregation are necessary to understand the reason why some groups feel the need to relate themselves exclusively with their equals, withdrawing from the general society.

2.3.3 Vertical vs. Horizontal Segregation

Segregation can be conceptualized in two basic different ways that deal with the affordability issues literature: The first is in the labor market, which is also called vertical segregation — when there is an unequal distribution of employment across different employment sectors or between genders. The second is in the residential space or neighborhood — spatial patterns of inequality through the cities' physical space. This is known as horizontal segregation (Knox and Pinch 2010) and it is often caused by spatial constraint due to affordability issues, manifesting an outcome of unequal social processes (E.g. neighborhood filtering).

The concept of spatial segregation is also commonly related to racial inequality and income discrimination, although it can have different origins and multiple ways of manifestation. That explains why over the years, residential segregation in urban Canadian society has been a topic of interest for many researchers.

2.3.4 Structural Change and Income Inequality

Worldwide, income segregation is a major source of concern at the moment. The post WWII era, and rise of the Welfare State was a time of decreasing inequality in general. But this changed in the 1980s: Since then inequalities have risen sharply, and there is a growing interest by scholars in the changing roots of income inequality and social behavior in western cities. Some argue that the increasing levels of inequality and polarization emerged due to the economic situation that restructured cities back then (Walks 2015,Dinca-Panaitescu and Walks 2015, Hall

2015). Other says that it happened because of the increasing need for skilled workers in a postindustrial economy and the lack of training and education of some low income groups, creating a huge income gap between classes (Wessel 2002).In spite of these different explanations, there is universal agreement that the socio-economic structure has changed since the 1980s, creating unprecedented levels of inequality, fragmenting the social status, and having less government intervention in a period of neoliberal governance. These new changes in cities and society lead us to most of inequality problems found nowadays (Wessel 2002).

In a North America context, the key force of segregation is income inequality. This has always been a feature of the North American city, but since the neoliberalism governance from the 1980s it has reached unprecedented levels – and that combined with a growing class segregation, have produced a spatial concentration of affluence and poverty on a world scale. This type of inequality is characterized by an uneven distribution of income in a region, affecting a wide range of social participation such as political, health, and educational niches. With an increasing share of impoverished citizens, cities start to have issues like exposure to crime, diseases, violence and family disruption growing with the same proportion (Gibson 2012, Massey 1996). If in the future the income inequality issue in Canadian cities shifts in a dramatic way and have numbers of rich population getting more wealth and the poor population poorer, it would lead to a significant reduction of the middle-class, creating an alarming situation of income polarization (Gibson 2012, Walks 2015).

It is important that we remember that, historically, cities have always been divided. From ancient villages to more complex human agglomeration forms, the organization of its inhabitants have consisted in a stratification of the urban fabric (Mumford 1961). This has often been based on class differences, such as the slave quarters in Athens and Rome--outside the limits of the fortified citadel--and the ghettos of medieval cities (Marcuse 1993), or on civic and legalistic basis, such as the ancient Roman concept of the pomerium. The spatial clustering, segregation, and poor living conditions of working classes have been the focus of numerous studies. For example, Engels (1887) documented, street by street, the appalling living conditions, squalor, and the "social misery" of the working poor in Manchester and other English industrial towns. Charles Booth, an influential social reformer of the late 19th century, also carried out detailed studies of poverty and inequality in England. In this influential work, titled *Inquiry into the Life and Labour of the People in London*, undertaken between 1886 and 1903, Booth provided insights into the geography of inequality and disadvantage in London. Based on extensive fieldwork and meticulous documentation, house by house, and street by street, Booth also collected data on numerous social indicators that could be linked to inequality and disadvantage (Booth 1893). But of particular note was Booth's efforts to synthesize these characteristics, and to portray the geography of social conditions in London. His influential descriptive map of London poverty, which was one of the first recorded efforts to map such inequalities was a pioneering work that seems to have gone unnoticed by urban geographers until much later (Davies 1978). Booth was also instrumental in developing the first composite index of poverty and social

conditions at a neighbourhood scale. His "Index of Social Condition" captured many of the many correlates of poverty, which included features such as poverty and crowded dwellings.

Income inequality and poverty has also long been recognized in Canadian cities. For example, Woodsworth (1909; 1911), who did missionary work in the slums of Winnipeg documented the injustices that were emerging within Winnipeg's industrial society. As a social reformer, he was also an important advocate for social services, and is a key figure in the development of Social Work in Canada. Others have studied issues of income segregation (Townshend and Walker 2002), as well as the possibility of areas of concentrated urban poverty (Kazemipur and Halli 2000).

Despite evidence that cities have always exhibited residential stratification based on class or income, some authors have suggested that since the 1970s we are beginning to see a fundamentally new expression of inequality in cities. The so-called "Divided Cities" literature attempts to understand the "new spatial order" that is emerging (Marcuse and van Kempen 2000). The new spatial order is one of increasing differentiation, based on rising polarization and inequality, and one in which more unique residential clusters are emerging. For the affluent, these may include the citadel, middle class suburbs, gentrified communities, edge cities, and exclusionary enclaves such as gated communities. In contrast, the poor are increasingly spatially marginalized into ethnic enclaves, ghetto communities, and public housing neighbourhoods. A key idea behind the Divided Cities literature is that the new spatial order is a product of a post-industrial economy and in particular, late capitalism and neoliberal governance which has weakened the role of

the state in income redistribution and housing affordability. Marcuse (1993) argues that the Divided City represents invidious differentiation, a process that has implications for social stability and the social contract. It reflects positions of power and wealth, and exploitation and domination of subordinated groups. The "new" spatial order suggests that the structure of spatial divisions has strengthened and became more unequal. Marcuse and Van Kempen (2000) affirmed that divisions are increasing in the context of globalization. An example of that would be the new divisions with walls and commodities that make the interaction from those within the walls and those beyond the walls less desired (e.g. gated neighbourhoods with recreation commodities such as Lake Bonavista in Calgary). The argument is that in a context of a post Fordist city, some divisions are not only different than seen before, but the contemporary urban situation is a reflection of recent causes derived from the so called turning-point (cities based on a service economy, globalized, in post-welfare state) (Marcuse 1993). Therefore, the causes of new divisions are new.

As an example of the recent Canadian literature related to the divided cities, "The three Cities within Toronto" report first published in 2007, we can see how the neighbourhoods of Toronto have become segregated into three different groups related to their income change levels in the past 35 years, leading to a situation of increasing income concentration into two extremes (high income neighborhoods and low income neighborhoods), declining the concentration of middle income neighborhoods. It seems clear that there is a trend in Canadian cities to become polarized between wealthhy neighborhoods and largernumbers of poor neighborhoods. Different groups of communities are constantly changing, and the

difference between neighborhoods income are getting even more drastic. The same situation can be seen in Calgary over the past forty years, where income inequality has increased exponentially (Figure 2.1), leading to a situation of income polarization (Figure 2.2) (Townshend and Coppola 2016, Townshend et al. 2018).

There is a need for successful public policies that can slow down the polarization issue, such as making more affordable housing, or expanding access to transit in low income neighborhoods. It is understood that if there is no intervention to try to reverse this new trend the city would become completely polarized into two types of neighborhoods, creating a scenario where the disparities between the wealth and the poor are extreme, and generating all sorts of other social problems. The current social polarization issue has attracted an increasing number of scholars interested in income segregation. Recent research often shows how income residential segregation has increased in the past thirty years, characterizing one of the major factors related to inequality in North America.

It is well known that the urban social structures of the city can be analyzed according to social variables and spatial patterns, as suggested by a factorial ecology approach leading to an interpretation of the city's social mosaic (Townshend and Walker 2002, Davies 1984, Townshend 2002, Davies and Murdie 1993). Older railway and industrial lands in the inner cities, in places like Vancouver and Toronto, have given place to the migration of the higher income households from the suburban areas, characterizing an important structural change of the cities in the past century (Skaburskis and Moos 2015). With the gentrification phenomenon,

what once was characterized by a central business district, turned to present high-rise condominiums after the 2000s that are affordable to a specific class in the society (Grant and Filion 2015).

There is a new tendency in geopolitical order called "ecology of inequality", termed by Massey and Eggers (1990), that affirms that poverty has been concentrated at high levels, separating neighborhoods between the poor and the rich. This existing trend in urban Canada is towards an increasing number of neighborhoods with high rates of poverty (Kazemipur and Halli 2000), with growing income inequality, being one of the causes of this type of segregation. Fong and Shibuya (2000) found that in Canada there are high levels of spatial separation of poor ethnic groups—visible minorities—which support the idea of an existing correlation between visible minorities and neighborhood levels of poverty, characterizing a concentration of social injustice. In 1991, for example, between the poor ethnic groups and the non-poor in major Canadian cities, Asians and blacks were the most spatial separated, when compared to Europeans and French, presenting high levels of D such as 0.79 for poor Asians in Dartmouth (NS) and 0.79 in Kitchener for blacks (Fong and Shibuya 2000, see Table 1). At the same time that social injustice produces the rise of spatial outcomes among poor visible minorities, directly affecting the housing stock, it is suggested that there are some other factor besides low income affluence that influences minorities' neighborhoods choices of living (Kazemipur 2000). Some ethnic groups, for example, cluster together even though they present higher average incomes than locals (i.e. Jews in Canadian cities).

Thus, the current issue in Canadian metropolitan areas is among poor visible minority groups, that usually cluster in disadvantaged neighborhoods in response of the few housing choices they have, as suggested by Fong and Shibuya (2000).

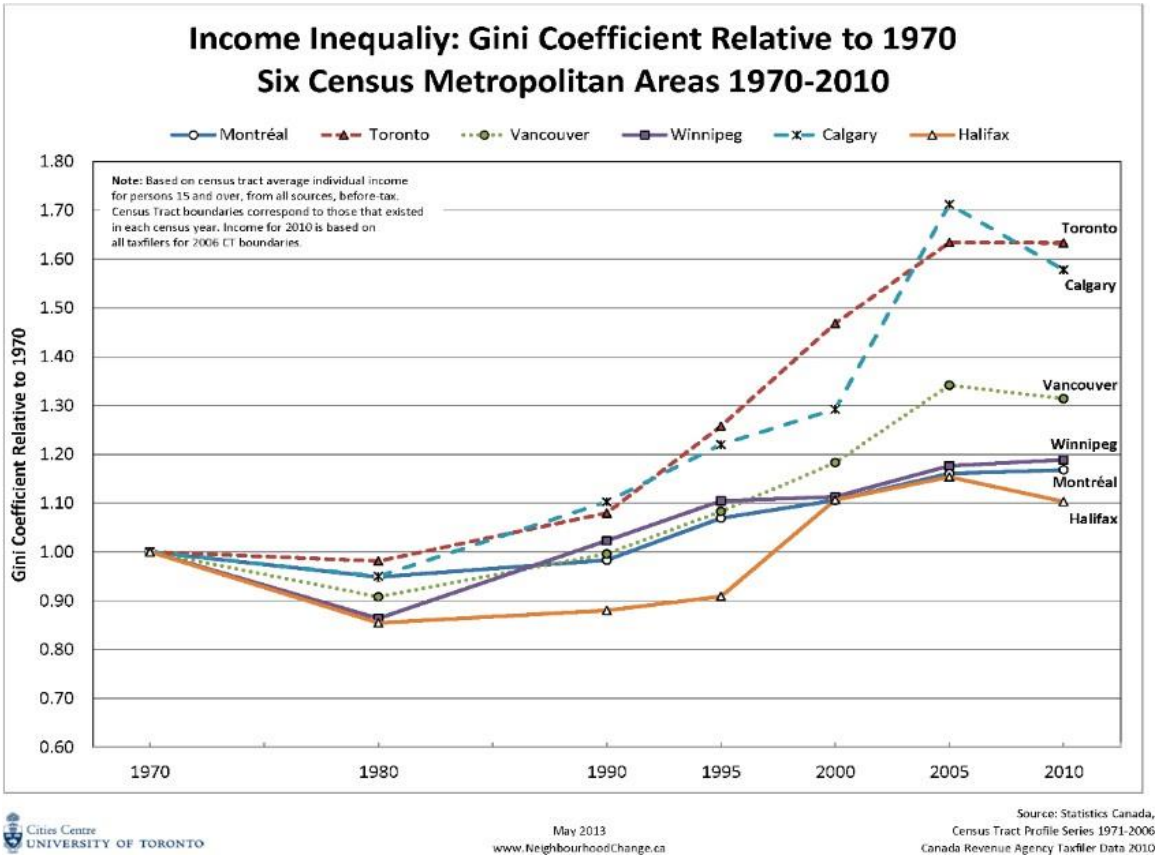


Figure 2.1: Income Inequality Six CMAs from 1970-2010.
Source: Townshend and Coppola 2016.

All the issues regarding increasing segregation leads to the fact that it is a form of spatial injustice as a product of social injustice (Gibson 2012). This can culminate in spatial outcomes like colonies—frequently seen in a Canadian context—that present a more temporary stage of spatial segregation or, in more drastic situations, in enclaves and ghettos that usually have a high internal cohesion and difficulty in assimilation with the charter group.

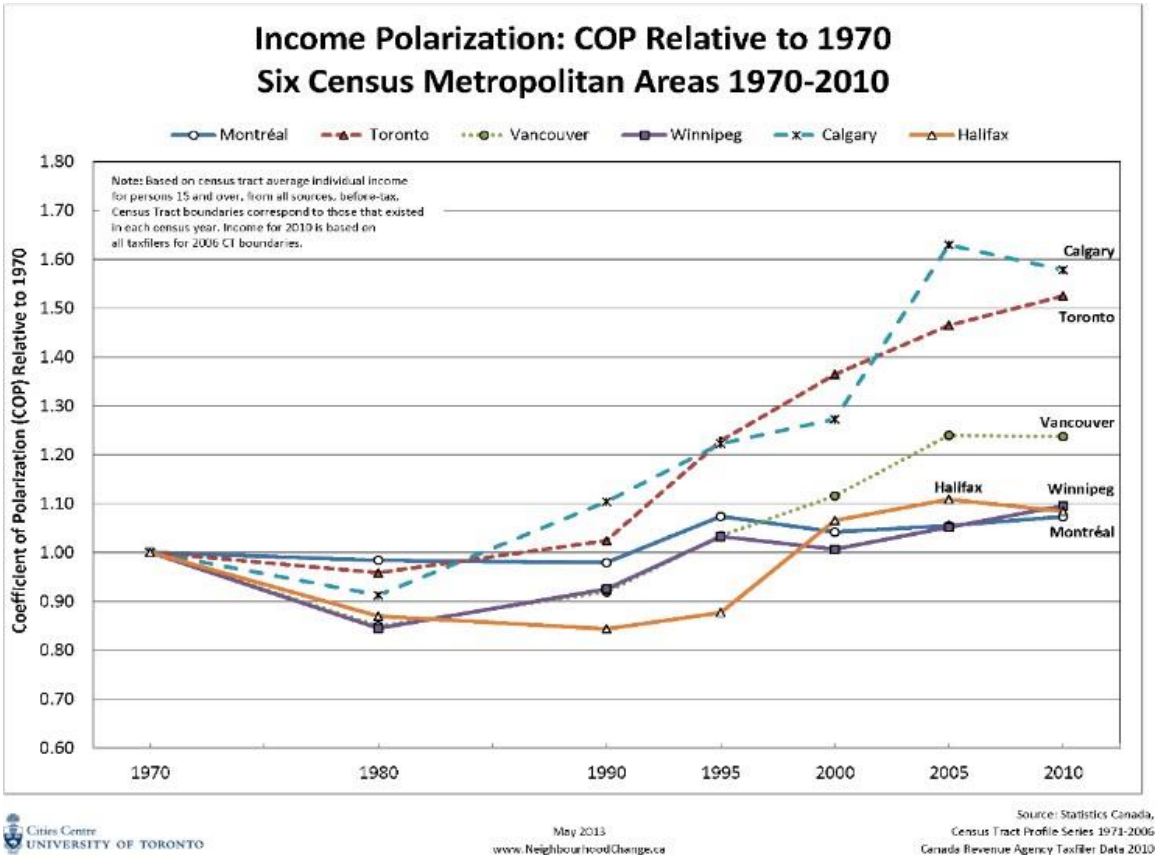


Figure 2.2: Income Polarization Six CMAs from 1970-2010.
Source: Townshend and Coppola 2016.

The formation of ghettos is a product of external forces, usually with racial, ethnic and poverty roots, as pointed by Walks and Bourne (2006). Although, in the Canadian context, it is common to have polarized neighborhoods with higher income levels than those with more mixed population, creating an opposite context than what is seen in the U.S. where there is more ghetto formation. The authors also suggest the need for more studies that specifically emphasize the neighborhood dynamics and the housing stock changes over the years, considering how diverse visible minorities' social changes in Canadian urban areas are. In Canada it is very common to see ethnic enclaves with immigrants and their descendants living in it, as a voluntary decision to live among people from the same ethnocultural group than

by an involuntary product of exclusion as seen in ghettos. (Kobayashi and Preston 2015).

Some urban areas have high concentration of visible minority groups as the well-known “Chinatowns” in many North-American cities. Recently, scholars have noted a shift towards a new pattern of ethnic settlement -- away from the inner-city which historically were new immigrants reception areas -- also known as “ethnoburbs” (ethnic suburbs) (Li, 1998). Alongside with the shift of these ethnic peripheral communities, new ethnic-oriented institutions (e.g. churches, mosques, temples, etc.) and commerce such as ethnic restaurants and markets emerge in certain areas of the city, changing not only the landscape of these suburbs, but also the everyday practices of those people that inhabited these areas (e.g. new living arrangements such as multi-generational or multi-family households start to be more common). Scholars might say that ethnoburbs and the different array of immigrants they attract, contributes to uneven suburban geography of acute housing need and poverty if they go after low rent dwellings (e.g. blocks of apartment buildings surrounded by areas of single family homes and the “illegal” occupation of basement suites). The presence of ethnoburbs in many CMAs also interfere with what used to be a “white” suburbia, generating conflict between some groups and political decisions towards these suburban areas, and discrimination towards visible minorities (Kobayashi and Peake 2000).

Even with social injustice being a current topic in Canadian studies, poverty, homelessness and racial segregation are still less significant in Canadian cities when

compared to the United States. The resources provided by social programs and government assistance in Canada effectively reduce this sort of social problems (Broadway 1989).

2.3.5 New Housing Affordability Crises

The increasing gap between rich and poor Canadians has been geographically manifested in the housing system (Hulchanski 2002). The increasing numbers of impoverished in a society, combined with the increasing concentration of income of the wealth among the richest, and rapid rise of income shares among those with high income, have fed the inequality issue of Canadians metropolitan areas over the recent years (Walks 2015).

Housing affordability issues are a worldwide problem, and there is an extensive literature on this topic. In Canada this is frequently referred to as "Housing Affordaility Stress" or a "Housing Affordability Crisis" (Bunting et al. 2004, Galabuzi 2006). There is a trend towards increasing housing affordability stress in Canadian cities, and it is most often experienced by selected vulnerable groups (e.g. visible minorities), as a reflection of a continually increasing income inequality, where severe affordability problems are often associated with physically inadequate housing and clustering in areas with high concentration of poverty (Moore and Skaburskis 2004).

Some of the factors that have contributed to the increasing impoverishment of metropolitan areas creating a demand for affordable housing, include: globalization, fast metropolitan areas growing and as a result inflating housing

prices culminating in increased numbers of households spending high amounts of their income on rent, escalation of housing costs relative to incomes (Bunting et al. 2004, Miron 1995) and lack of affordable housing due to the withdrawal of the State in the 1990s -- when the CMHC (Canada Mortgage Housing Corporation) stopped providing affordable public housing, opening space for the private rental sector to gain strength. In general, housing affordability crises are caused by three different streams: economic change, social/demographic change, and policy change (Figure 2.3).

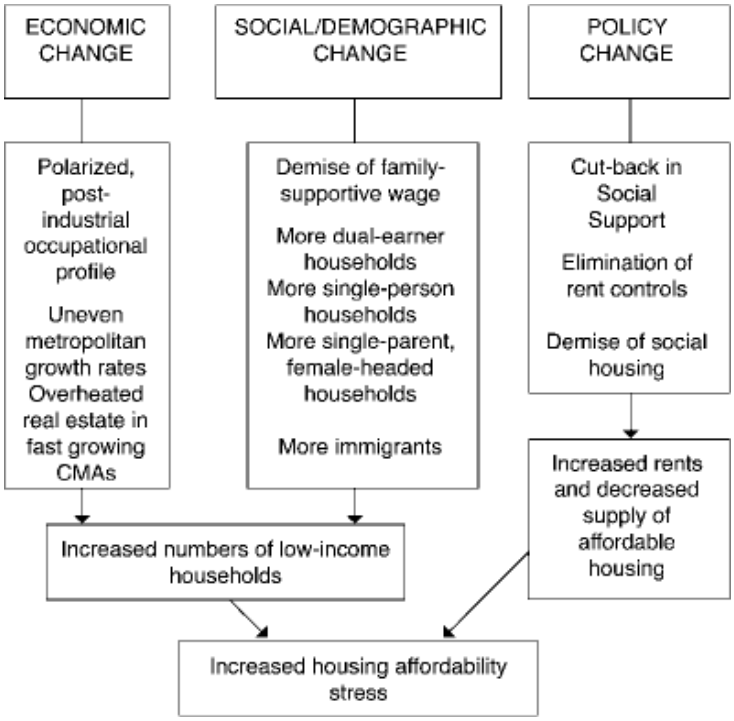


Figure 2.3: Factors Accounting for Housing Affordability Stress
Source: Bunting et al. 2004, p. 365.

2.3.6 Measurement Issues

Researchers have adopted different indices to measure segregation and by the mid twentieth century there was a confusing array of segregation measurements. Duncan and Duncan (1955) analyzed some of the different indices used in the field

and put them into order. The Duncans pointed out two measures that were more precise when measuring segregation: The Gini Index and the Dissimilarity Index. The first better used for measuring economic inequality (Gibson 2012), and the second for spatial unevenness. They concluded that, inequality and spatial distribution are concepts that involve a wide number of variations, arguing that a rationalization of these concepts is not the best approach in trying to measure the degree of segregation. At the same time there is a need to quantify the degree of segregation, thus the most suitable way of measuring segregation was the Dissimilarity Index. This index compares the proportion of individuals of two distinct groups in a city (Peach 2009), and produces theoretical values of the degree of segregation varying from 0—when some region is not segregated at all—to 1—highly segregated. That being said, in the coming years there was an almost unanimous preference in using this index in studies related to segregation.

Parallel to the segregation issue, scholars have focused on specific indicators to describe changes related to affordability stress (the impact of income inequality) like percentage of renters and owners in a neighborhood, the presence of women household maintainers, number of earners per household and the share of housing stock needing major repairs. Amongst it all, it is known that households that spend more than 30 per cent of before-tax income on shelter can be seen as a standard measure of housing affordability (Moore and Skaburskis, 2004).

2.3.7 Lack of studies related to income segregation and housing affordability with a Canadian focus

For a long period of time segregation in North America was studied in a wide context which led to recent scholars suggesting that key factors such as gender, class, immigration status, and ethnicity distinguish cities within North America, as we can see in "The Myth of the North American City" (Goldberg and Mercer 1986) that explains how cities in the U.S. and Canada differ, further inspiring other researchers to focus on a more contextualized research in urban and social Canadian geography. Fong and Shibuya's work (2000) affirm that there is a "limitation of the existing literature on the segregation of the poor (…) since it is based largely on American data". They add that Canada has a different immigration policy and socioeconomic structure which completely affect the segregation of the poor, for example, when compared to the U.S., creating a necessity of exclusive methods of segregation methods.

Acknowledging that Canadian cities are different spatially, structurally, socially, and economically than American cities due to the cities' size and government policies, such as land regulations -- much more intense in a Canadian context – are important tools in shaping cities' urban structures once they determine where the residential areas are, where the commercial "pockets" should be, and where they should have community urban spaces spread over the neighbourhoods, producing different cities morphologies than the ones seen in the U.S. -- (Johnston et al. 2007, Stelter and Artibise 1986). Thus, it makes it necessary to study segregation and affordability issues in a Canadian context, since there are significant

peculiarities in the country's socioeconomic and spatial organization that directly affect its segregation patterns (Fong and Shibuya 2000).

In Canada, the work on ethnic and racial segregation has been extensively explored by scholars such as Balakrishnan in the past half century. On the other hand, there is an increasing need for more studies on the linkage between income inequality/income segregation and housing affordability concerns, especially in the private sector rental housing market where the most vulnerable groups (not homeowners) are increasingly struggling to find suitable and affordable housing. In general, there is a need for urban planners and government authorities to minimize the drastic inequality issues that are occurring in the Canadian metropolitan areas, where social-spatial divisions are being produced by age, class, gender and ethnic differences (Moos 2015).

2.4 Conceptual Framework and Casual Linkages

Through an extensive literature review that included social demographic issues surrounding rental markets and housing affordability, followed by a content analysis of ideas in this literature, a range of influential variables can be identified. These are summarised within eight broader groups that represent main conceptual linkages or drivers of housing problems. Aiming for an easier interpretation of the material, the literature review was organized in a spreadsheet that summarize the title of the paper, book, article or report, followed by the key ideas, objectives of the research or paper, the findings and the variables used in case of an empirical study. In Figure 2.4 I

presented how this spreadsheet was orginized by showing an example of one paper and its most important ideas, objectives, findings, and the variables used by the author.This methodology was replicated with a great number of other academic papers that are part of this literature review.

Each group of variables represents a set of characteristics that seem to be covariates and/or predictors of housing disadvantage at both a household and a neighbourhood scale. They can be described as: (A) Tenure characteristics and Mobility; (B) Age, Family, and Household Characteristics; (C) Primary Household Maintainer (PHM) Characteristics (similar to Head of Household); (D) Aggregate Neighbourhood Income Characteristics; (E) Neighbourhood Costs and Housing Affordability Stress; (F) Housing Stock Characteristics; (G) Education and Occupational Characteristics of Neighbourhood and PHMs; and (H) Ethnic and Racial Characteristics of Neighbourhood and PHMs. In the organizational spreadsheet, each one of the 8 groups was attributed with a different colour for a better visual understanding and classification (Fig. 2.4).

DESCRIPTIVE GROUP: (A) (B) (C) (D) (E) (F) (G) (H)				
PAPER	KEY IDEAS	OBJECTIVES	FINDINGS	VARIABLES
HULCHANSKI, J. D. (2002) HOUSING POLICY FOR TOMORROW'S CITIES. CANADIAN POLICY RESEARCH NETWORKS	. housing, .homelessness, . housing policy, . affordable housing, . social housing . Ottawa's potential roles	. The paper explores the federal role in promoting access to affordable housing in Canada's major urban centres as well as the policy implications.	. Shortage of affordable housing . Gap: highest and lowest income levels shows (groups excluded from the housing market)	**most vulnerable:** . single-parent families . indigenous people . recent immigrants . visible minorities . elderly women . disabled . median income of the nhood in relation to the city average . median income of renters x owners in the nhood

Figure 2.4: Literature Review Organization: An example of key indicators suggested in the lit.

2.4.1 Group A: Tenure Characteristics and Mobility

The literature suggests that homeownership has been a more difficult status to achieve in Canada, which is emphasized by the idea that renters are struggling now more than ever. (Luffman 2006) for example, focuses on non-subsidized renters when measuring housing affordability. To express the idea that the marginalized in Canada society are associated with people who are renters in the housing market, Group A encapsulates the aspects of "Tenure Characteristics and Mobility" and the literature has dealt with these themes in different forms.

In mid-70s, Bourne (1976) discussed on how developers tended to avoid certain areas in the city that have a negative image, for instance the older built-up areas and the sub-urban margin of bigger cities. He also links these "buildings and housing stock" ideas to the difference between the percentages of owner-occupied dwellings vs. the tenant occupied dwellings at a neighborhood scale. When analyzing the occupancy turnover (i.e. mobility) the author explored how length of residence (5 categories) was associated with land development rates (high or low rates of land use change). He found out that, in aggregate with other land use change variables, occupancy turnover variables are significant in explaining the variations in land development rates once they are embedded in previous development decisions, even though they are not acknowledged by developers as decision factors for location selection for residential development. Following the same line of thought, based on interviews with government, the private sector, and universities informants, Crook (1998) found that one third of all dwellings belonged to private landlords, and in

metropolitan areas more than half of newly constructed apartments fall into the market renting. The author also highlights the fact that renters disproportionately come from low income groups once the tightening of rental markets leads to rent increases and consequently to affordability issues.

An important work on tenure and mobility issues in Canada is a study by Choko and Harris (1990). Their study examined comparable tenure trends between Montreal and Toronto. They found that homeownership varied by class, ethnicity and from place to place, and concluded that owner-occupation reflects constraints rather than pure choice. By analyzing the percentage of homeownership level and the percentage of renters of Montreal in comparison to other CMAs of similar size they found that in Montreal homeownership is very rare.

Harris (1986) has traced changes in the relationship of the tenement house system to class structures in the industrial capitalist society. He finds that there are class differences in homeownership by Canadian region, and from his analysis of private/public rental and homeownership rates he identified a new pattern of class polarization between owners, managers and middle class vs. middle class and self-employed.

Other researchers have focused on policy aspects of tenants. In a case study of rental housing policy in Ontario, Bryant (2004) examined the connection between tenant evictions and share of rental housing in neighbourhood. Similarly, Pomeroy (2001) interviewed people at risk of homelessness to know if they had ever suffered eviction or if they had temporarily lived with finds or relatives. His

study showed that the majority of households in need are renters. Miron (1995) paid special attention to the private rental housing and housing policies in Canada by analyzing the rental housing stock and accommodation. He found that around twenty years ago almost 3 persons in 10 were renters in the private sector and that the private rental housing market outcomes are a direct consequence of shifts in demand and supply related to policy initiatives.

In more recent years, Randolph & Holloway (2005) have looked at social disadvantage based on tenure and location for case studies in Sydney and Melbourne. In an Australian context, where there is public housing available, they evaluate the extent in which it is associated with the socio-spatial disadvantage and if there is a relationship between housing tenure and social disadvantage. In their findings, disadvantage is found not only in the private rental market but there is evidence that they are spatially constrained in middle suburban areas. For this study, one of the variables used in the ABS Index of disadvantage -- based on 20 variables -- is related to the inverse of the concept of mobility: households that have stayed in the same address 5 years earlier.

Mobility is also considered in a broader way, such as Bourne and Rose's (2001) discussion of provincial migration rates and uneven geographies of population and social change. They acknowledge a change in the family forms and living arrangements alongside population growth as affecting both the social fabric and urban landscapes. That means that in cities such as Calgary that experience economic boom and bust cycles, the intense migration of people to the city from out

of province in times when the economy is booming leads to an inflation of the housing market and high competition for accommodation which considerably inflate the prices.

The issues behind variables in Group A are essential in understanding the currently affordability crisis. Understanding the situation of renters in the overheated private housing market as opposed to the owners seems to be one of the key predictors of the so called housing disadvantage in Canadian cities (Suttor 2015).

2.4.2 Group B: Age, Family and Household Characteristics

Group B is a set of ideas pertaining to household characteristics and their connection with housing affordability issues.

Recent researche indicates that there is a relation between affordability and household composition (e.g. persons living alone, non-family persons, and lone parent) and also marital status (married, widowed and single – both men and women—and in particular divorced women) in the private rental housing market in Canada (Miron 1995). By dealing with the geographic dimension of housing affordability stress, (Bunting et al. 2004) find changes in household composition based on gender, age and tenant household type - one family, single person non-family, lone-parent and multi-person non-family -- to be associated with the profile of "new poverty". Carter and Osborne (2009) also focused on household composition (e.g. size, age, percentage of children) and refugees experience with housing and neighborhood. Importantly, they found that affordability is the number

one attraction in why new refugees – and indigenous people – in Winnipeg tend to go to the inner city where there is poor quality but affordable housing. Ray and Moore (1991) focused on household structure and age among immigrant groups in Canada and their access to homeownership, and showed that the housing experience of 1 person households and single parents family are different than the rest of immigrants. Those groups are more likely to be renters -- although these go with other factors such as their economic status, their country of origin and the size of the city they are going to.

Single-parent families or households are amongst the most vulnerable in Canadian society (Hulchanski 2002, Pomeroy 2001). These are followed by one-person households, which also have a great tendency to fall into the category of severe shelter-cost burden (Luffman 2006). Moore and Skaburskis (2004) for example, find affordability problems with smaller households and non-family households -- also influenced by the number of income recipients in the household -- and look for an age structure and the household type (including gender).

Other authors focus on renters -- not necessarily one person household -- that are young, singles, divorced and widowed, as well as family and non-family. Crook (1998) for example, showed that one key factor in housing disadvantage is younger age groups and the number of households they form. Millennials are showing up to be a population increasingly associated with housing affordability stress. Stressed groups by age are also sensitive from place to place. For instance, Randolph and Holloway (2005) found that in Sydney the social disadvantage group is amongst people aged 25-44 years old, while in Melbourne it relates to people

aged 45-64.

Age structure is another important change to Canadian demographics. As an example, a currently aging population overall, facilitated by low fertility rates and higher life expectancy (Townshend and Walker 2015). For instance, seniors and children, also called the "dependent population" once they are not part of the working force, and are both generally dependents on welfare. This arise questions regarding the future of Canadian cities and how they would be able to sustainably support not only the different lifestyles these changes bring (e.g. New housing needs, recreational amenities and infrastructure) but also the new volume of demand these groups might require provided by the government, such as health care. Special attention should also be given to vulnerable households including people with addiction and with mental problems and large families when talking about affordable rental housing (Tsenkova and Witwer 2011).

2.4.3 Group C: Primary Household Maintainers

Apart from household composition, Group C explores the ideas behind the primary household maintainers (PHM). A PHM is defined by Statistics Canada as the "First person in the household identified as someone who pays the rent or the mortgage, or taxes, or the electricity bill and so on, for the dwelling" (Statistics Canada 2016b).

While studying housing affordability, (Moore and Skaburskis 2004) note that income is not the only important thing. People who spend 30% or 50% of their income on housing costs and the number of employment income recipients, added to

the age of cohort they fall in, are decisive factors for this type of problem. The authors also note that women that are household maintainers are more likely to experience affordability issues. In particular, single females, elderly women and disabled are amongst the most vulnerable population (Hulchanski 2002). Evidence for that can be seen in Pomeroy's (2004) work: Households in core housing need are constituted of 1/5 being seniors and 28% single females.

But the age of the primary household maintainer in rented units is not only a problem when they are not in labor force anymore. As discussed earlier, scholars such as Crook (1998) gives a special attention to the young population, especially millennials, in issues of housing affordability.

2.4.4 Group D: Neighborhood Income Characteristics

When talking about housing affordability stress – or crisis -- and poverty it is impossible not to talk about income. Group D involves the idea of the neighborhood income characteristics as parts of the neighbourhood "contextual milieu" (Davies and Herbert 1993). The prevalence and severity of affordability problems has worsened due to an increasing income inequality (Moore and Skaburskis 2004, Bunting et al. 2004). There is a gap between the highest and lowest income levels showing that some people are excluded from the housing market.

Household income is a traditional standard used in Canada to identify affordability problems (Carter and Osborne 2009). Average household income, median income of the neighborhood in relation to the city average, median income of renters vs. owners in the neighborhood, percentage of households

characterized as low income, are usually common ways to measure the income level of a certain neighborhood (Harris 1986; Hulchanski 2002). Severe shelter-cost burden can also be analyzed according to the proportion of renters dependent on government transfers as their main source of income (Luffman 2006, Bryant 2004) such as can be seen with refugees in Winnipeg and their high dependency on social assistance (census transfer payments) resulting in 35% of households dependent entirely in government transfers (Carter and Osborne 2009).

Tsenkova and Witwer (2011) mention the growth of households in core housing need and that vulnerable households are related to the low-income people. Pomeroy (2004) goes even further on that matter while looking at low income households and analyzing the average income of renters, finding that renters are more likely to experience an affordability problem in Canada. However, low income is really the key feature that leads to housing affordability, core housing need is a combination of the following: adequacy, suitability and affordability. According to Bryant (2004) in a study on how ideology affects rental housing in Ontario, people are constrained spatially once their options for securing accommodation are reduced and intensified by landlords' actions to screen potential tenants based on their income levels,

2.4.5 Group E: Neighborhood Housing Costs and Housing Affordability Stress

Some key ideas can be highlighted as predictors of the housing problems in metropolitan areas and this is what Group E concerns. It includes factors such as

the low rental vacancy rates in a city, annual expenditure per household (shelter cost), percentage of affordable units in the neighborhood, and the percentage of high rental are some of them, and relates them to the current housing affordability crisis. Vacancy decontrol -- as opposed to rent control -- for example, allow landlords to increase their rent when the apartment is vacant (Bryant 2004), leading to situations in which the percentage of renters and owners spending 30% or more on shelter costs – moderate affordability problems and an important indicator of measuring housing affordability (Luffman 2006) -- are quite often concentrated in certain regions of the city. In more extreme situations, households are spending 50% or more of their total income on rent, what is seen as extreme housing affordability stress (Bryant 2004, Bunting et al. 2004, Miron 1995, Pomeroy 2004). Moore and Skaburskis (2004) point out that housing affordability is not only related to people who spend 30% or 50% or more of before tax income on total shelter or rent paid, but who are also considered poor. In that situation, these people are not simply poor renters. Both owners (with or without mortgage) and tenants would fall into the LICO (Low Income Cut Off) category.

Tsenkova and Witwer (2011) provide an overview of affordable housing in Alberta. Their focus is on families with affordability problems in a province where high rent increases in the past few years, and which has seen rapid increase in house prices. More specifically, Miron‘s (1995) work looked at the average gross rent in Calgary and the new house price index, and complemented by Luffman‘s (2006) work on the average shelter cost Calgary, show that the city has higher odds of

affordability problems than other Canadian Metropolitan areas.

With a different approach, Harris (1986) looked at homeownership and social class distinction, average house prices, and house rents, while Carter (1990) investigated the connection between housing affordability and residential segregation, and social distance. The same author returns to the issue of housing affordability and refugees, pointing to the linkage between average value of dwelling (housing costs and median selling prices way below the city's average in neighbourhoods where they live) and the percentage of households living below the LICO and the proportion of renter households with affordability problems in comparison to the city's renters (Carter and Osborne 2009).

It is important to note that the focus on non-subsidized renters (Luffman 2006) requires a solution through a rent regulation in order to protect an affordable rental housing stock in the private rental housing market – what used to be encouraged by some governments until 1995 (Bryant 2004). Added to that, the government should also focus on providing incentives to developments that privilege affordable rental housing, since developers tend to avoid it due to high costs that do not generate any significant profit. (Tsenkova and Witwer 2011).

2.4.6 Group F: Housing Stock

Group F incorporates the idea of housing stock being associated with social disadvantage. The geography of low income settlements is usually associated with areas with precarious housing and areas with public housing (Harris and Wahba 2002). Part of that comes from the idea that developers tend to avoid location that

have negative images as places to live. Some of the developer's decision factors include: neighborhood quality zoning permission, age of building stock and diversity of local services (Bourne 1976). They also look at the existing buildings and housing stock: percentage dwellings crowded, percentage old housing, needing major repairs, and median house value.

In relation to the values of dwellings, another relevant aspect concerns their taxation system: cheaper houses are usually over assessed which usually favors the suburbs. Taxes inequities have been found by researchers, showing an inverse relationship between property values and assessment ratios (e.g. London, Ontario) (Harris and Lehman 2001).

In trying to find a relation between the housing stock morphology and affordability issues, some have examined the characteristics of the rental housing stock – for instance, if it is single detached, duplex and semidetached, row, apartment, or other type (Miron 1995). Randolph and Holloway (2005) for example, noted a relation between disadvantaged groups in Sydney and living in flats. Parallel to that is the size of the dwellings. Harris (1986) traced homeownership and households living in large homes (6 or more rooms) while those with affordability issues tend to go for smaller and consequently cheaper units.

Although the morphology of the housing stock can be related to the groups considered disadvantaged in a society, attention also needs to be paid to the between relation disadvantage and the age of the housing stock. Bunting et al. (2004), for example, examined this connection across four different metropolitan

zones.

Some groups may be attracted to certain types of dwelling, such as the pre-war housing stock "preference" by refugees. Carter and Osborne, (2009) looked at the condition of these dwellings in regards to unit type, number of bedrooms, their satisfaction with design, and also the relationship between the household composition and the number of bedrooms in accordance to the National Occupancy Standards (NOS) developed by CMHC -- a maximum of two persons per bedroom (Statistics Canada 2013) . The study found that in regards to neighborhood, refugees live in areas where a high percentage of dwellings need major repairs, a high percentage of them live in apartments and in 1 or 2 bedroom units, and a high percentage live in the inner city. These findings emphasize the idea that refugee groups prioritize affordability when looking for accommodation, and tend to live in areas such as in the inner city where rents for older units are cheaper. This type of study is relevant in the sense that it shows that some groups do not only have a preference for certain typology or area in the city, but that due to affordability reasons they are constrained into those regions.

2.4.7 Group G: Education and Occupation

Segregation related to social class is not a new thing (Davies 1984). Historically, workers have always been living in specific areas of the city and the contemporary city is not different. Usually, this is not due to voluntary segregation, but is an outcome of the other decision factors such as developers choosing which areas to build in, and looking for characteristics such as employment density in a

neighbourhood (Bourne 1976). Variables in Group G exemplify how education and occupation carries an important weight in the housing stress idea.

Homeownership is strongly associated with class (Harris 1986). When analysing overtime homeownership and class in Canada, England and Wales in the Twentieth Century, owners/managers, "new" middle class (professional and supervisory employees), and self-employed and small business people have higher shares of homeownership than the working class (unskilled workers), although differences might be visible according to the city size and across the countries. As an example, the middle class in England and in Wales has fared better than in North America where home owner aspirations were more present amongst the worker class in the 1950s (Harris and Hamnett 1987). Researchers have discussed this topic world-wide. Harris and Wahba (2002) produce an index of segregation by occupational groups in Cairo, Egypt while Randolph and Holloway (2005) uses the ABS index of disadvantage to identify high unemployment, unskilled occupations and low education levels associated with affordability issues in Australia.

Further discussion centres around the labor force circumstances of refugees (Carter & Osborne 2009). For instance, things such as occupation (especially related to unskilled positions), unemployment (with the exception of health problems or attending university), the percentage of households with at least one person employed full time, the presence of people working in their field of expertize, and job satisfaction amongst refugees or new immigrants should be studied in more detail, given that the recent literature shows these groups as being

part of the disadvantaged. In their Winnipeg study, Carter and Osborne (2009) found that 80% of refugees in Winnipeg were working in sales and services occupations, 15% in construction and manufacturing, and that a very small percentage were in professional positions. This issue might have to do with many things such as studying opportunities in their country of origin, but increasing attention should be payed to around the credentialization problems these people run into when coming to Canada (Galabuzi 2006, Pendakur and Pendakur 2002).

2.4.8 Group H: Ethnic and Racial Characteristics

Recent literature points to poverty and housing affordability being disproportionally linked to recent immigrants and refugee status (Carter and Osborne 2009). Visible minorities, immigrants groups (their birthplace, and their period of immigration), refugees and the previous years in refugee camp, language proficiency, job experiences and references in Canada, credential recognition are some of the indicators covered in Group H that deals with ethnic and racial characteristics of neighbourhoods.

There is a lot of focus on segregation amongst recent immigrant and ethnic groups but little attention to their residential life. In a global perspective, Randolph and Holloway (2005) show evidence that both Sydney and Melbourne have disadvantage amongst people born overseas, but in Sidney it is worse and complemented by lacking fluency in English.

Many researches have shown that in general in Canada immigrants -- especially recent immigrants that fall into the visible minority category -- have low

rates of homeownership (Ray and Moore 1991). In Alberta, Tsenkova and Witwer (2011) also relate the housing affordability issue with the immigrant population. However, it is important to note that in Canada housing affordability is an issue that affects not only vulnerable groups like recent immigrants and visible minorities in general, but also the indigenous population (Hulchanski 2003).

2.5 Conclusion

To conclude, it is evident that there is a need for more studies on the linkage between income inequality/income segregation and housing affordability concerns. This chapter has provided a broad overview of segregation, and housing disadvantage, and how these are contextualized and are a significant issue in contemporary Canadian Society. As a bridge between the literature review and the methodology chapter, this chapter has discussed eight sets of ideas or 8 "Groups of Influence" related to housing affordability and housing disadvantage, setting a conceptual basis for the following empirically analysis.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter provides the rationale for research design and methodology for this study. It begins with a brief description of the philosophical assumptions that the research is based on, then an overview of the study area, followed by a description of the dataset used in this work. The fourth section outlines the mathematical procedures and the qualitative approach used to obtain the objectives sought. Further in the chapter, I outline some limitations related to the data and I finally present a conclusion to the research design and methodology section.

3.2 Philosophical Stance

In order to comprehend the work proposed with this research, it is important to highlight some concepts and techniques in the field. The social composition of urban areas have been systematically studied throughout the years by many scholars in urban geography and this idea of mapping should be recognized as Booth's work (1889) on the use of social indicators in order to define areas of deprivation in London (Davies 1978; Dinca-Panaitescu and Walks 2015).

The rationale behind this research lies in the "the divided city" concept and how contemporary cities in the Western world present new forms of division (Marcuse 1993) that have never been seen before, or that have become increasingly problematic in the past three decades (See 2.3.4). Recently, other studies have been produced regarding The Divided City theme (Hulchanski 2010, Townshend et al. 2018). The considered turning-point in history relates to a

scenario of the postwar period, when a postfordist society emerge, focused on a globalized service economy, and in a post-welfare state. How the urban patterns of our cities reflect these changes in history, and the consequences of these changes, are some of the ideas behind this work.

As mentioned in the previous chapter, in Western countries income inequality has risen since the 1980s. In Canada – and more specifically in Calgary -- the issue of income polarization – where income is concentrated into two extremes -- is unfolding into new forms of segregation on the ground.

This nomothetic positivist research – a research that is seeking for law or generalizations and is based on scientific evidence--proceeds as a mixed method research, further classified into a multivariate quantitative part with a few different approaches – including Factor Analysis (Principal Component Analysis), and Multiple Regression Analysis -- and a qualitative part, based on a grounded theory approach (which is a methodology that involves the analysis of data that contributes to the construction of theory).

3.3 Overview of the Study Area

As the fourth largest CMA in Canada, with 1,392,609 people in 2016 (Statistics Canada 2017), Calgary enjoys a strategic location in the south end of the Calgary-Edmonton corridor, in the Canadian Rockies foothills, and in the prairies. For decades, the city has been known for its role in the oil and gas industry that culminated in multiple years of an economic boom, although, due to economic shifts and volatility in the oil sector, the unemployment rate grew more than three times in

the past ten years, according to Statistics Canada (2017). Between 2004 and 2014 the city population increased by 33.6%, the highest growth between Canadian CMAs, while from 2011 to 2016, the population growth rate was of 14.6% in a span of 4 years, still being the highest growth between CMAs (Statistics Canada 2017b) with intense immigration partially responsible for that. In 2016, 32.3% of the population was characterized by a visible minority group (Statistics Canada 2017).

Recent municipal initiatives to increase the inner city's density has opened space for new developers' investments, heating up the economy and attracting more residents to the city. Calgary's increasing growth resulted in high demand for real-estate, elevating housing prices and worsening affordability parameters. The combination of an unstable wealthy economy in the last decade together with rapid population growth has produced unique spatial outcomes never seen before in the region. Understanding the social ties behind the spatial distribution of low income groups at an early stage is essential in order to prevent a worsening of these issues in the future.

3.4 Research Method

The research structure proceeds in a descriptive method at first and it was divided in 5 phases (in a combination of methodologies) that can lead us to a more accurate analysis of the current socio-geographical situation of the Housing Disadvantage (HD) issue in Calgary. During the first four phases (nomothetic phases), a custom cross-tabulated database of Calgary from Statistics Canada in the year of 2006 was analysed regarding the issues of housing, using the detailed

statistics at the Census Tract Scale – i.e. the census surrogate for neighbourhood. Mapping out this latest phenomenon will be essential to identify a city-wide target population related to the housing disadvantage issue in the city of Calgary.

During the fifth phase, interviews were executed with individuals from the most acute regions in Calgary found in the first phase – the CTs with highest levels of HD that fall into a certain criteria. Subsequently, the data collected from the aforementioned phases were triangulated in order to find evidence that support the affordability stress related to the so called "divided cities".

3.4.1 Data Collection Procedures and Sample Frame

This thesis relied on one quantitative and two qualitative data collection methods to seek the objectives of this research: Dataset from Statistics Canada, Literature Review Analysis and Interviews.

3.4.1.1 Cross-tabulated dataset from Statistics Canada

Examining housing disadvantage in Calgary requires accurate and well organized data. Data collected by the Federal government through the census has been wide-spread used through the country in many studies, as well as government planning institutions. When the topic is analyzing income inequality, for example, the Census is the most reliable and complete data once it covers information from large and small geographic areas as well as data from various spectra of the income scale (Dinca-Panaitescu and Walks 2015). It consists in gathering demographic, social, economic and housing units characteristics information in a 5 year release schedule (Statistics Canada 2011). The data collection involves the

mandatory completion by all households of either the short form or the long and more detailed form received by one in every 5 households (Statistics Canada 2011).

Most of the quantitative data used in this research derived from the Census. Prior to the beginning of the thesis, the most recent data available containing a wide array of variables that includes neighborhood social characteristics to morphological characteristics, was The National Household Survey (NHS) dated 2011. The voluntary Statistics Canada's 2011 NHS -- done under the Conservative government -- represented a change from the previous surveys in the sense that the previously mandatory long-form census questionnaire distributed to 20% of the households – that included a more complex set of questions than the short questionnaire distributed to 100% of households in 2011 – was abolished. The NHS methodology was criticized by many scholars due to its voluntary aspect (Dinca-Panaitescu and Walks 2015, Hulchanski 2014, Voices-Voix 2011). With this, the accuracy of the represented groups cannot be precise, once the results are drawn based on the predisposition in answering the survey, what was reassured by the low response rate pointed out after the release of the 2011 data. StatsCan itself acknowledged in a footnote of a report on Immigration and Ethnocultural Diversity based on 2011 data that some of the results were different than the data collected by the Department of Citizenship and Immigration Canada once "the 2011 NHS estimates are derived from a voluntary survey and therefore subject to potentially higher non-response error" (Statistics Canada 2016). Low response rate is not only

important problem with the NHS, non-response bias since it does not account for the answer from those who chose not to participate in it. Besides the fact that it produce information gaps, the 2011 data is harder to use as a comparison to previous data collected in the past. Said that, the dataset chosen to be used in this research was the one released in 2006,once it was the latest mandatory censusand it can be considered representative enough.

Another reason for using the 2006 dataset is the availability of the cross-tabulated data purchased by the Neighbourhood Change Research Partnership (NCRP) initiative based at the University of Toronto. It is understood that much has changed since 2006 but the essence of the work and its relevance since no other research has been done in this level for the city of Calgary can lead us to the current issues that have been intensified through the years.

The dataset is organized geographically by census tract (CT). The CT is the Census equivalent or "surrogate" for neighbourhood. Each CT is given a unique identifier. A three digit code identifies the Calgary CMA (825). Another numerical code with a six digital name is used to identify each census tract, which count in total sum up to 201 CTs identified in Calgary for the year of 2006 (See Figure 3.1). This geographical organization of the dataset in a CT scale allows for a refined examination in a neighborhood level. Although CTs are often assumed to be socially homogenious, there are many situations where CTs exhibits high levels of social heterogenity. However, since the CT is the statistical unit of neighbourhood used here, the problem of internal heterogenity cannot be addressed in this thesis.

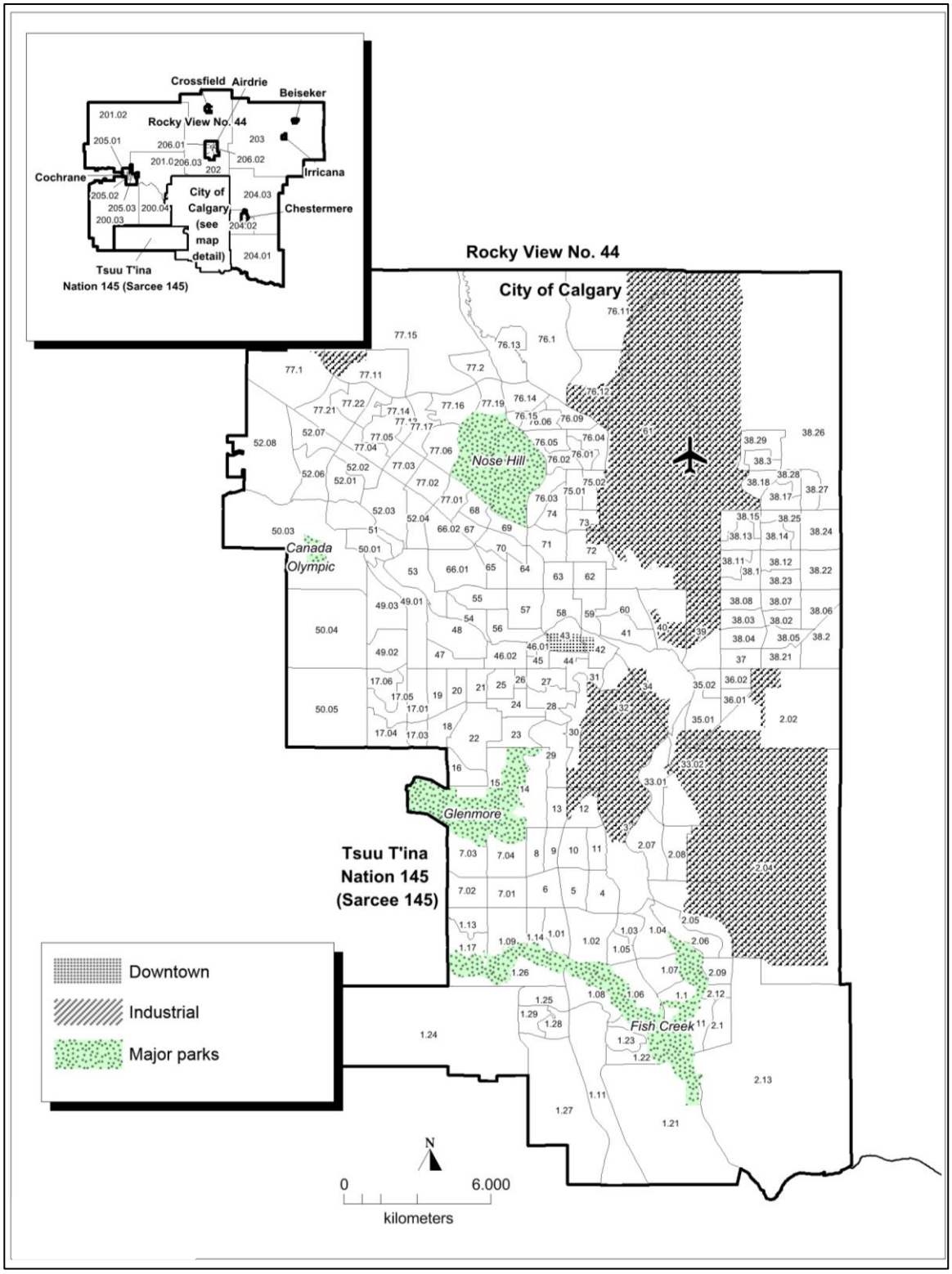


Figure 3.1: Calgary CMA Census Tract (CT), 2006

3.4.1.2 Groups of Influence

Another set of data used in the quantitative part of this research derives from the literature. As previous mentioned in Chapter 2, variables identified in the literature associated with housing affordability and housing disadvantage were identified in order to use as basis for the mathematical procedures.

The eight key groups discussed in Chapter 2 were used to operationalize a set of key indicators or variables that tap into the core meaning of the group. These variables were chosen as potential predictors of housing disadvantage. They were derived from the cross-tabulated dataset purchased by the NCRP (See 3.4.3).

3.4.1.3 Qualitative data

Data derived from interviews realized in 12 CTs selected according to a certain criteria according to their levels of HDI (See 3.4.2 and 3.4.6).

3.4.2 Step 1: Housing Disadvantage Index

For research question 1, a customized cross-tabulated Data Set from Statistics Canada (2006 data) at a census tract scale was used in order to verify some of the acute characteristics of the most stressed regions in the city of Calgary. Thus, the first phase of Objective 1 consists in developing a composite Housing Disadvantage Index (HDI). The HDI (for all housing) was operationalized based on the literature and following a similar approach to Hulchanski and Maaranen's (2015) discussion paper on housing disadvantage. Based in similar concepts as the Core Housing Need defined by CMHC "an unsuitable, inadequate or unaffordable dwelling that also

spend 30 percent or more of its total before-tax income to pay the median rent" (Canada Mortgage and Housing Corporation 2018), the HDI developed here is a composite measure of income, crowding, affordability stress, and substandardness. As a way to integrate these four aspects or attributes of HD, the following four variables were used: (V1) Average household income; (V2) Average number of persons per room (a measure of crowding); (V3) % of households paying 50% or more of income on housing cost (a measure of housing affordability stress or burden); and (V4) % dwellings requiring major repairs (a measure of substandardness). Because there is no a priori basis to differentiatly weight these attributes, I therefore assign equal weights (i.e. 1.0) to the four variables.

In order to create the HDI, all 4 variables used were standardized to standard normal scores (z-scores=Z), summed, and then averaged out to produce the composite for housing disadvantage. Conceptually, this is a similar approach to what Booth did in the 19th century but in this case producing a measure of social condition (Davies 1978). The composite index (HDI) is a sum of the four parts, in which part (V1) is inversely negative, since it deals with average household income:

$$HDI = \frac{[-1(ZV1)] + (ZV2) + (ZV3) + (ZV4)}{4}$$

It is also important to note that, unlike other Canadian CMAs, Calgary presents an unique situation which requires us to deal with both renters and owners, creating an index that is applicable for both spectra. Due to the uniqueness of the Calgary CMA, I included in this study an analysis of HD specifically focused

on renters (HDIRENTER) and owners (HDIOWNER) in addition to the HD for all housing (HDIALL).

After identifying the pattern or geography of the Housing Disadvantage Index and explaining the reasons behind the HDI, the first phase of Objective 1 will be to focus on the most problematic areas of the city, so that can be explored in greater depth in a subsequent section. In order to further explore the relation between the geographical pattern found in Objective 1 and the socioeconomic characteristics of the people in the neighborhoods and the physical fabric they are attached to, a subset of neighbourhoods were chosen for a qualitative study.

Prior to the selection of these neighbourhoods a few things were observed: Firstly, that when analyzing the Z Scores for HDIRENTER, it was noted that there is almost no variability in the disadvantage of renters in Calgary (with the exception of a few outliers) -- This is can also be observed in Hulchanski and Maaranen's (2015) study—meaning that renters are not more likely to face housing disadvantage than owners in the city of Calgary. Secondly, HDIOWNER seems to be worse than HDIRENTER in some CTs, which is the opposite of what the literature suggests for Canadian cites (see Chapter 2). Thus, the best approach to proceed with the process of focusing on the most stressed CTs (with high HD) so I can narrow down the focus for the following steps, and guarantee that a mix of tenure (owners and renters) were included in the research – which seems to be a unique characteristic of the Calgary CMA. I selected a threshold that included neighborhoods that satisfied the following criteria: HDIALL>1, HDIRENTER >0, and

%RENTED>25. By doing this I intend to select neighbourhoods in which at least one quarter of its dwellings are occupied by renters and who live in areas with high levels of housing disadvantage (HDALL) and with disadvantage amongst renters (positive).

3.4.3 Step 2: Key Groups of Influence

According to the literature, there is or one would expect a relation between the pattern of the housing disadvantage in a city and a series of indicators that can be subdivided into categories including the socioeconomic characteristics of the people in the neighborhoods and the physical fabric they are attached to. Therefore, for research question 2, with the objective of identifying different indicators that are potentially correlated or are causal predictors of HD, I carried out a literature review of housing affordability stress and housing disadvantage. A set of 52 indicators discussed in the Chapter 2 were developed. These vary from social characteristics, housing characteristics, owner versus renter differences, types and characteristics of primary household maintainers, to ethnic and other factors (Table 3.1).

Table 3.1: Selected Variables

V.	Group	Variable Code-Name	Meaning
1	A	Av1-PERCRENTED	Percentage Rented Dwellings
2		Av2-PERCPHMMOVER5	Percentage of Primary Household Maintainers that are Movers (< 5 years)
3	B	Bv1-AVPPH	Average Number of Persons per Household
4		Bv2-PERCFEMLPF	Percentage Female Lone Parent Family
5		Bv3-PERCCHILDLESSCOUP	Percentage Childless Couple
6		Bv4-PERC65PLUS	Percentage 65 Plus
7		Bv5-PERC1PERSHHLD	Percentage 1 Person Household
8		Bv6-PERC1PERSHHLDRENTER	Percentage 1 Person Household Renter
9		Bv7-PERCALLCHILDRENINRENTAL	Percentage All Children in Rental
10		Bv8-PERCMILLENNIAL2534	Percentage Millennial (Aged 25-34 years old)
11	C	Cv1-PERCYOUNGPHM	Percentage Young Primary Household Maintainer
12		Cv2-PERCOLDPHM	Percentage Old Primary Household Maintainer
13		Cv3-PERCFEMPHM	Percentage Female Primary Household Maintainer
14		Cv4-PERCRENTERSFEMOLDHM	Percentage Renters Female Old Household Maintainer
15	D	Dv1-PERCHHINCLT50MED	Percentage Household Income Lower than 50% City Median
16		Dv2-PERCHHINCGE150MED	Percentage Household Income Greater than or Equal to 150% City Median
17		Dv3-AVHHINCRATIO	Average Household Income Ratio
18		Dv4-RATIOMEDRINCTOMEDOINC	Ratio Median Renter Income to Median Owner Income
19		Dv5-LOWINCOME06	Low Income Households
20		Dv6-GINIGCR	Gini Concentration Ratio (Income Inequality)
21	E	Ev1-AVRENTRATIO	Average Rent Ratio
22		Ev2-PERCLOWRENTAL50	Percentage of rented dwellings paying less than 50% of the metro average
23		Ev3-PERCHIGHRENTAL150	Percentage of rented dwellings paying more than 150% of the metro average
24		Ev4-PERCLOWOWNERCOST50	Percentage of owned occupied dwellings paying <50% of the metro average
25		Ev5-PERCHIGHOWNERCOST150	Percentage of owned occupied dwellings paying >150% of the metro average
26		Ev6-PERCLOWINCRENTERTHATAREF	Percentage of Low Income Renters that are Families
27		Ev7-PERCLOWINCRENTERGE30	Percentage Low Income Renter paying 30% or more on shelter
28		Ev8-PERCLOWINCRENTERGE50	Percentage Low Income Renter paying 50% or more on shelter
29		Ev9-PERCRENTERGE30	Percentage Rented Greater or Equal to 30
30		Ev10-PERCRENTERGE50	Percentage Rented Greater or Equal to 50
31		Ev11-AVVALDWEL06	Average Value of Dwelling in $ (Owner occupied Private non-farm and non-reserve)

Table 3.1: Selected Variables: Continued

32	F	Fv1-PERCOLDHSG	Percentage Old Housing Stock
33		Fv2-PERCNEWHSG5	Percentage New Housing Stock
34		Fv3-AGEDIVHSG4CAT	Age Diversity Housing Stock divided into 4 Categories
35		Fv4-PERCAPARTMENTS	Percentage Apartments
36		Fv5-STUCTYPEDIV6	Structure Type divided into 6 Categories
37		Fv6-AVRMDWEL	Average Room Per Dwelling
38	G	Gv1-PERC2564DEGREE	Percentage 25-64 years old with a Degree
39		Gv2-OCCUPDIVERSITY10	Occupation Diversity divided into 10 Categories
40		Gv3-PERCLOWEDUC	Percentage Low Education
41		Gv4-PERCUNEMPLOYED	Percentage Unemployed
42		Gv5-PERCSALESSERVICE	Percentage Sales and Service
43	H	Hv1-PERCRECIMMIG	Percentage Recent Immigrant
44		Hv2-PERCPHMVISMIN	Percentage Primary Household Maintainer that are Visible Minority
45		Hv3-PERCHMABORIGIDENTITY	Percentage Household Maintainer Aboriginal Identity
46		Hv4-PERCRENTERPHMBLACK	Percentage Renter Primary Household Maintainer that are Black
47		Hv5-PERCRENTERPHSASIAN	Percentage Renter Primary Household Maintainer that are South Asian
48		Hv6-PERCRENTERPHMCHINESE	Percentage Renter Primary Household Maintainer that are Chinese
49		Hv7-PERCRENTERPHMSEASIAN	Percentage Renter Primary Household Maintainer that are South East Asian
50		Hv8-PERCRENTERPHMFILIP	Percentage Renter Primary Household Maintainer that are Filipino
51		Hv9-PERCRENTERPHMARABWASIAN	Percentage Renter Primary Household Maintainer that are Arab or West Asian
52		Hv10-PERCRENTERPHMLATAMERIC	Percentage Renter Primary Household Maintainer that are Latin American

3.4.4 Step 3: Principal Component Analysis

As part of question 3 and part of Objective 2, a Principal Component Analysis (PCA)--which is a form of factor analysis – was applied to a data matrix of 201(n) cases by 52 variables (indicators), in order to determine the underline structure of these potentially casual variables in the Calgary CMA.

PCA is a data reduction technique, therefore it reduces the complexity by identifying a small number of dimensions -- or factors if you will – representing components of correlated variables, and also identifies the underlying structure in the data, being a common used method in such studies (Davies 1984).

Within the decision to use PCA in this research, it was specified to use the Direct Oblimin rotation (oblique rotation) algorithm that allows the interpretation of partially correlated axes instead of the Varimax (orthogonal rotation) that identify mathematically distinctive dimensions, after both methods were investigated using the default extraction criteria (i.e. Eigenvalue >= 1). The later presented 3 single variable components – and therefore against the objective of data reduction. The Oblimin (oblique) rotation method produced more interpretable results than the Varimax solution.

3.4.5 Step 4: Multiple Regression Analysis

The last quantitative step (question 4) in this nomothethic approach (in search of law) was to employ stepwise multiple regression to explore the efficacy of these empirical structures/dimensions of housing disadvantage correlates in predicting, or accounting for, the geography (Macro-scale patterns) of HDI in Calgary. There are two main objectives with this procedure: 1) To see which dimensions are the key predictors of HDI -- the key (significant) independent variables -- and 2) to assess the power of the model -- the level of explanation (e.g. R^2). Therefore, the extent to which these factors matter for HDI and which ones are the key predictors of the disadvantage, were measured. In addition, a spatial analysis and mapping of

residuals was carried out in order to explore the patterns of error, and where within Calgary the model was over-predicting or under-predicting actual HDI values.

Regression techniques are procedures that can be used when in a data set there are independent variables (IV's) correlated with one another or with the dependent variable (DV). Since the main goal of question 4 is to investigate the relationship between the DV and the various IVs as a prediction of how strong the relationship is, and the importance of each IV to the relationship, the best approach was to choose stepwise regression, a choice that simplifies the multiple regression equation by the way in which the variables enter the equation (Tabachnick and Fidell 1989).

A stepwise linear multiple regression model facilitated the visualization of the significant predictor variables and Groups that have more influence in explaining the HDI and to which extent each set of the explanatory variables affects the Housing Disadvantage in the City of Calgary. This technique is a suitable approach to analyse this relationship regresses the component scores of the 11 dimensions (as IV) with the HDI (DV).

A few limitations are present with the use of the regression analysis that should be mentioned. In a theoretical point of view, it is important to note the casual relationship among variables once they have been manipulated, and when adding IVs check the relevance of these variables through theory and observation. In a more practical way, give attention to the number of cases selected – in general

a ratio of 5 cases to each IV should be sufficient in a standard multiple regression while in the stepwise regression the ratio goes up to 40 cases to each IV – which in this particular case a strategy of using composite IVs was used to counterbalance this problem. Special attention should be also given to outliers – that have a strong impact in a regression model and should be checked on the residuals – and verify issues of singularity, multicollinearity and normality (Tabachnick and Fidell 1989).

Special attention should also be given to missing data, since some variables were not present in some CTs. One of the possible ways would be to calculate the average of the surrounding cells and use in the missing data. Although, in this particular case I opted to substitute the missing data for the mean of the CMA instead of allowing the CT to not being computed due to one or more variables being missing,

3.4.6 Step 5: Conducting a Survey

Finally, a Qualitative Approach focused on the lived experience of the people residing in acute areas of housing disadvantage, and the ways in which income inequality, polarization, and vulnerability have produced housing affordability stress in the lives of local residents in these regions in Calgary (The 12 CT selected).

The methodology of this approach consists in a sample of approximately 10 households in each one of the selected case study areas by the criteria mentioned above. Another possible solution would be a stratification of the sample in which each CT would have a proportion number of respondents to its levels of HDI, although it would require a apriori hierarchy in the levels of importance of the

census tracts which I am not aiming for.It is assumed this sample size will be sufficient in reaching data saturation and a semi-structured interview questionnaire was designed based on the literature, in which respondents were solicited through a convenience sampling (a non- probability sampling technique). This is not an inferential model but gives selected individualistic perspectives, different than the nomothetic structure that focused on an ecological scale. One of the objectives of this step is to help determine if there is an association between these qualitative themes and the nomothetic patterns/predictors/findings.

The survey phase of the research was divided into two main categories and aimed to tap into the following types of questions (see Appendix A): One, focused on general demographic questions and another focused on housing stock and urban morphology questions. In order to facilitate data analysis, the first part is subdivided into four different sections (A: Age, family, household characteristics and primary household maintainer; B: Ethnic and racial characteristics; C: Education and occupation; and D: Income) and the second part subdivided into two sections (E: Tenure characteristics, mobility and housing stock; and F: Neighborhood characteristics).

3.5 Data Limitations

In this section I would like to acknowledge some of the limitations associated with the data used in this research.

3.5.1 Quantitative Data

First of all, the gap between the quantitative data (2006) and the qualitative data (2017) needs to be noted. Ideally, it would be interesting to see the change overtime, since between 2006 and 2016, Calgary CMA increased its population from under the 1 million mark to a 50% increase (1,392,609 people) (See other changes on 3.3). Even acknowledging these changes in the past decade, due to the limited time of this research and the availability of the material – the 2006 crosstabulated data set purchased by the NCRP project (See Chapter 2) rather than the 2011 data – this was not possible with this study. Also, the 2006 data can provide deep insights about these changes in Calgary, since it has never been deeply explored, and it can serve as base for further research.

Another issue regarding the quantitative data worth mentioning is the issue with rounding numbers in the software used to analyse this data (SPSS rounding form 5 to either 0 or 10), although it does not significantly affect the research results.

3.5.2 Interview Process Limitations

Potential participants would be any person aged 18 and older who is a resident of one of the 12 Census Tracts selected (See Figure 4.2). The recruitment of participants was done based on selected open spaces where people congregate in each one of the 12 CTs. These included: grocery stores, public squares, bus terminals, and so on. As previously mentioned, a convenience sampling strategy was used in which respondents were approached in the proximity of the open

spaces mentioned, and invited to participate. Interviews took place between November 23rd to 29th, 2017, between the hours of 8:00-10:00am, 12:00-2:00pm, and 4:00- 7:00pm with a minimum of 5 minutes elapsed time between interviews.

According to the University of Lethbridge *Application for Ethical Review of Human Subject Research's* guidelines, participants in this research were invited to voluntarily participate in this work. Prior to the start of the interview, people were informed of the right to withdraw from the study and also informed about general details of the questionnaire -- in which were wrote down respondents' answers -- in order to clarify what the research is about, what kind of questions to expect, and to proceed with verbal consent (see Appendix B for more information). Respondent data was treated and reported in aggregate and anonymity was fully protected (no participant names were collected). There were no anticipated risks or discomfort for participants involved in this research and questions regarding ethnicity and race, and income were careful placed in a way to not cause any discomfort.

One aspect that should be pointed out is regarding the target group in some of the regions that the interviews happened. It was noted that a large share of the people who agreed to participate were not in labor force age, especially those interviews that had place during the mornings.

Another important thing to highlight is that a large portion of the people interviewed did not rely on the use of private transport on daily bases, especially the ones approached close to public transport stops (bus stops and C-Train stations). Although, in some cases a small number of people affirmed to have parked their

vehicles in the proximity of the public transit stops to facilitate their way to downtown areas that lack parking and/or are expensive.

Lastly, I would like to take attention to the fact that some groups were excluded to the interview due to their inability of speaking English. More than once I had the experience of approaching people that would claim they could not speak English, whilst in three of those cases the interviews had to be done in Spanish, since I master the language.

3.6 Conclusion

This chapter outlined the research design and methodology implemented in order to achieve the objectives of this study.

It presented an overview of the studied area, and the methods used to collect data. It then outlined the analysis methods: First a PCA is required to identified the underline dimensionality of the 52 indicator variables. From these results, the study will use multiple to examine how much of HD in the ecology of Calgary is accounted for by these different dimensions. To close the discussion regarding the methodology, I listed the issues regarding the data limitations. The next chapter will deal with the findings.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Introduction

This chapter reports the empirical evidence of this research. First, it presents the empirical results and discussion from the quantitative analysis associated with two main objectives of this study. It then focuses on the results of the qualitative interviews derived from the findings of objective 1. The chapter concludes with a summary of all findings.

4.2 HDI in Calgary

4.2.1 Research Question 1: The Ecology of HD in Calgary

Given the nature of the housing stock and the high incomes in Calgary relative to other Canadian metropolitan areas, the HDI pattern is only partially associated with the patterns of income changes and concepts such as the Three Cities model (Hulchanski 2010, Townshend et al. 2018).

This thesis focus primarily on the analysis of HD among all households (combined renters and owners) in Calgary. The HDI was computed for all CTs in Calgary for 2006. Summary descriptive statistics of the HDI are shown in Table 4.1 below.

Table 4.1: Descriptive Statistics

	N	Min.	Max.	Mean	Std. Deviation	Notes
HDI ALL	201	-1.65	2.86	0	.69	See Figure 4.1

In order to understand and describe the ecology or spatial pattern of HDI across Calgary's neighborhoods the HDI values were mapped. Figure 4.1 shows that

HDI values exhibit a great deal of spatial variation through Calgary. However, the pattern does not appear to be random. Rather, some generalizable pattern is evident in Figure 4.1.

Although there are important neighbourhood differences in the HDI, there is no distinctive inner city vs. outer city bias. Positive HD can be found in suburban areas as well as in the central city.

In the inner city neighbourhoods of Calgary, many neighbourhoods have undergone gentrification. In these areas high-rise apartment residents cohabit in the same area as people who live in an old housing stock (from the beginning of last century) that has been intensely renovated. Housing prices in this area are relatively high due the proximity to the CBD.

On the other hand, the neighborhoods highlighted in the North area of the city seem to go through gentrification in a slower pace. Most part of the housing stock seem to be from mid-20th century and predominantly low rise buildings. The same is true of the ones in the Northeast and Northwest, although differences can be highlighted: In the Northeast we have a strong area of gentrification, with high influx and density of residents, while in the Northwest, due to the proximity to the university, these areas seems to be less evident where few high-rise buildings and a large number of houses seem to be the place of residency of transients students and seniors.

Overall, HDIALL seem to exhibit a weak sectoral pattern in the city (Figure 4.1), where sectors or corridors of low HDI are juxtaposed against sectors of high HDI. Given the sectoral nature of the pattern of HDI in Calgary, a pattern similar to socio- economic status gradients in the city, it is likely that SES will be a strong correlate of HDI.

In order to identify those neighborhoods where housing disadvantage might be considered most problematic, a subset of neighbourhoods were identified from the data. Based on the following criteria it was able to select the most stressed CTs in Calgary according to their HDIALL (See fig 4.1) (higher than 1, being the variation of Z scores in the city between -1.65 and +2.86), HDIRENTER positive and finally, %RENTED higher than one quarter of CT -- both stressing the literature affirmation about renters being more associated with the HD (See 3.4.2). Basically all four cardinal areas of the city seem to contain areas with high indices of HD: North (Highland Park, Greenview and Thorncliffe), Central/South (Beltline, Mission and Bankview), Northeast (Rundle, Marlborough, Penbrooke Meadows, Abbeydale, Red Carpet, Forrest Lawn, Meridian, Franklin, Albert Park/Radisson Heights), and Northwest (University Heights and University of Calgary).

The ecology of the HDI in Calgary defined by the aforementioned criteria fall into 12 CTs -- not necessarily spatially contiguous -- and the respective neighborhoods they fall into are (See Figure 4.1):

1. 66.01 (University Heights + University of Calgary)
2. 73 (Highland Park + Greenview + Thorncliffe)

3. 38.11 (Rundle)
4. 38.03 (Marlborough)
5. 38.05 (Penbrooke Meadows + Abbeydale)
6. 38.21 (Penbrooke Meadows + Red Carpet)
7. 37 (Forrest Lawn)
8. 36.02 (Forrest Lawn)
9. 39 (Meridian + Franklin + Albert Park/Radisson Heights)
10. 44 (Beltline)
11. 31 (Beltline + Mission)
12. 26 (Bankview)

4.3 Dimensionality of the Data

Initially, 80 variables were identified as potential drivers of HD (See Chapter 3). Before proceeding with the factor analysis, variables that had significant non-normal distributions or those highly correlated with each other were filtered out. Pearson Product Moment correlation coefficients were computed between all 80 variables, and normality tests (Kolmogorov-Smirnov tests) were carried for all variables. Scatter graphs and histograms were also used to visualise the data. Some tested as not significantly normal were still used upon further inspection of the scatter plots, since they appeared normal with the exception of a few outliers.

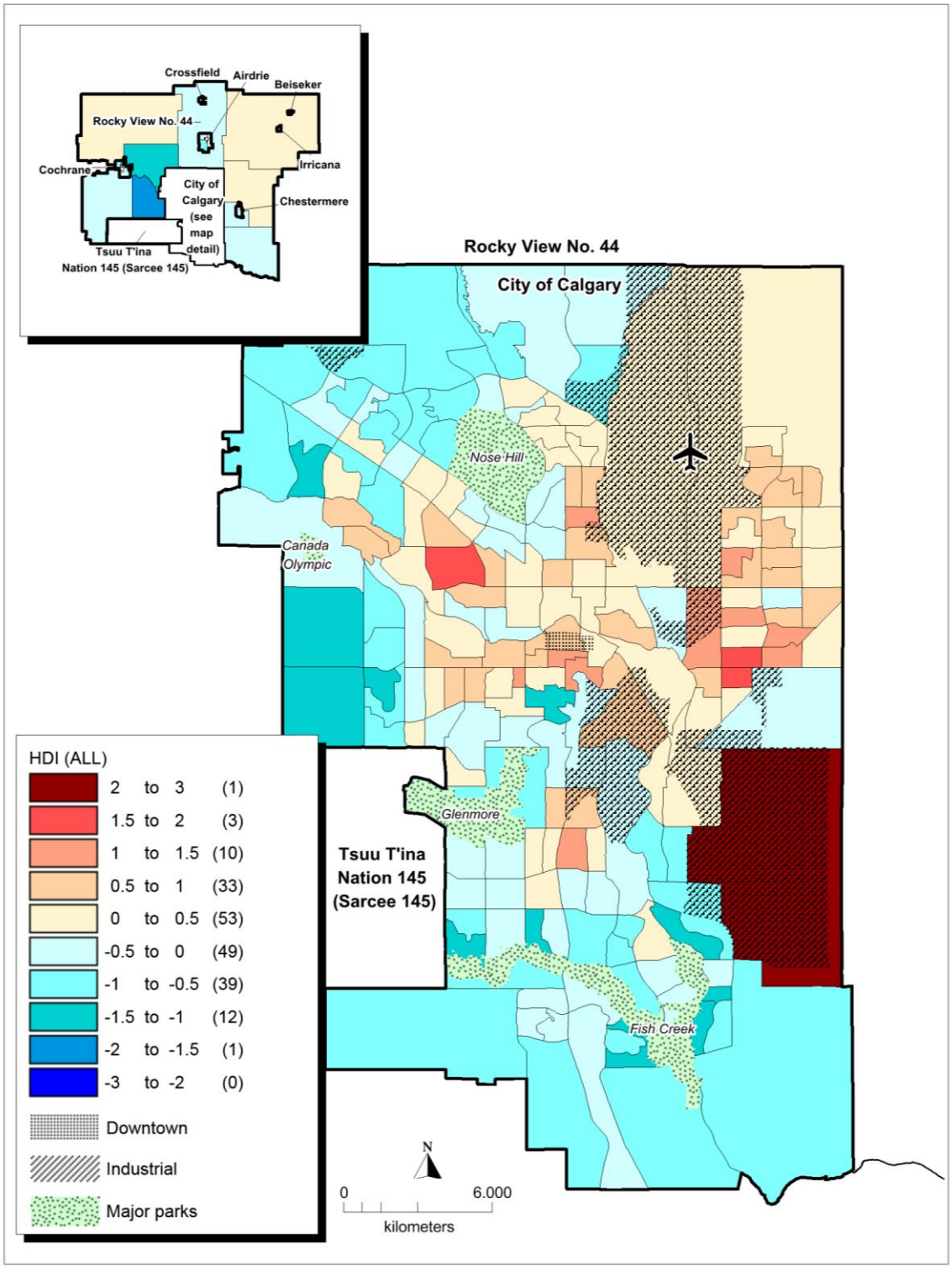


Figure 4.1: Housing Disadvantaged (All), Calgary CT 2006

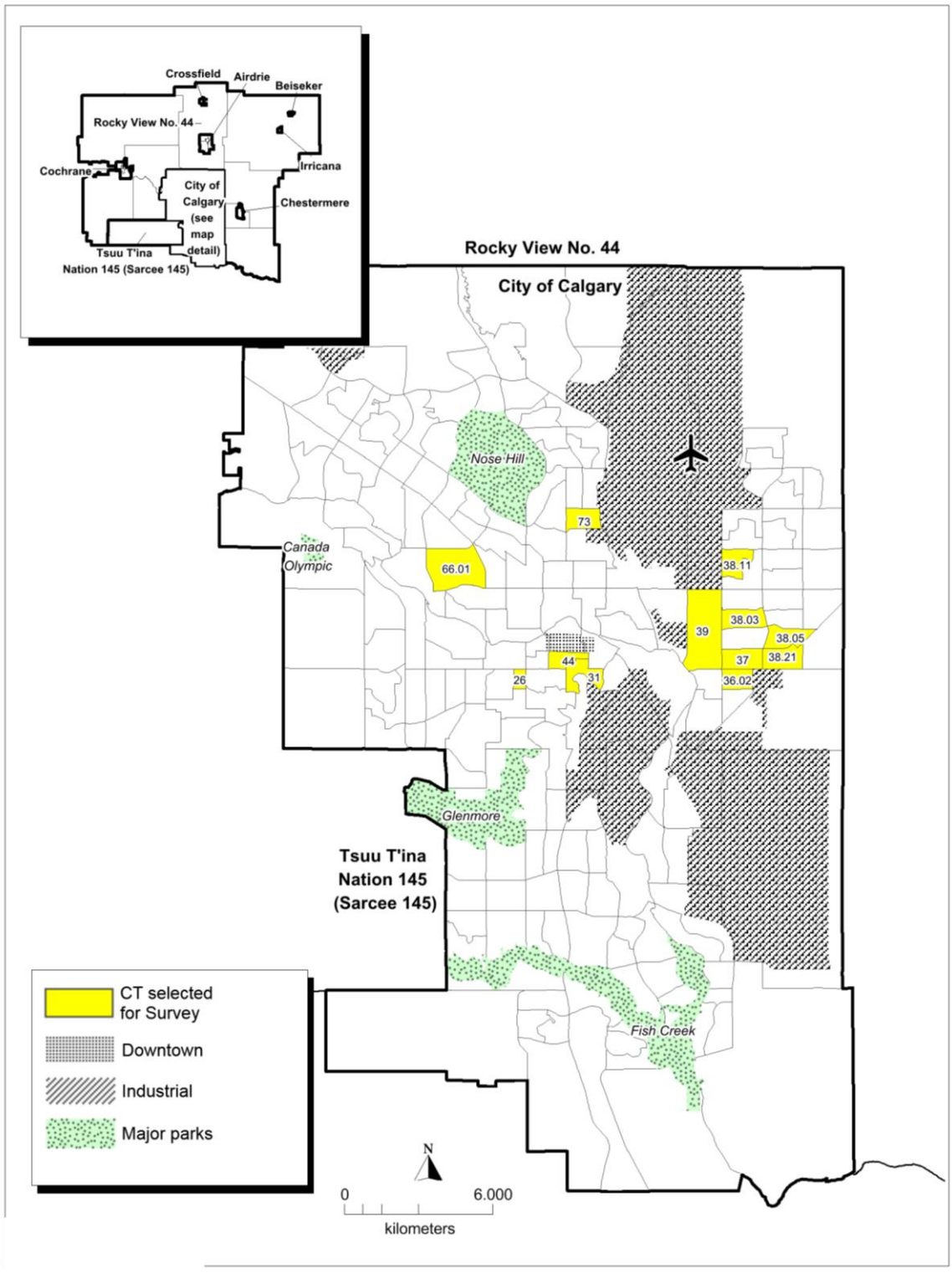


Figure 4.2: Twelve Census Tracts selected for Qualitative Analysis based on their HD levels, Calgary CT 2006

To illustrate, from Group A, four variables were initially identified as surrogate indicators (see Appendix C). However, it can be seen that some of these indicators were highly correlated, meaning that the essentially reference the same thing, and are potentially redundant when used together. For example, PERCRENTED was perfectly correlated to RATIORENTAL. This is not surprising, given the CMA base profile. This situation may be different in other CMAs where a higher proportion of dwellings are rented not as a consequence of an affordability constraint, but as a cultural preference (e.g. Montreal).

A similar process of exploring redundancies and conceptual overlap of the original set of 80 variables was carried out for the other seven Groups. Following this process, a set of 52 variables in total were retained for subsequent analysis (See Table 3.1).

4.3.1 PCA Results

The rationale behind the use of PCA (Principal component Analysis) methodology in this step of the research was presented in Chapter 3. In order to identify the dimensional structure that explains the housing disadvantage from a data set with 52 highly correlated variables, a principal component analysis (PCA) was carried out on a matrix of n=201 CTs x 52 variables. A range of extraction and rotation procedures were examined, including Varimax and Oblimin rotations, and also in terms of adjusting Eigenvalue cut-off values. The optimal solution, with a stable and interpretable result, was an eleven dimension solution with Eigenvalue cut-off of 1.0 and Direct Oblimin rotation. The solution produced dimensions that were not overly

correlated (all correlations <|0.3|) (see Table 4.3). Results are shown in Table 4.2 with the component loadings shown in Table 4.4. By using component loadings it was possible to see how different variables define the separate dimensions and show us the key characteristics behind the profile of each score. The eleven dimensions were given titles based on the interpretation and meaning of the component loadings.

The PCA reduces the complexity down to 11 dimensions that captures almost 80% of the variance in the 52 variables (see Table 4.4). Component scores for each dimension were computed for each CT in Calgary.

Table 4.2: Component Correlation Matrix

C	1	2	3	4	5	6	7	8	9	10	11
1	1.00	-0.13	0.02	-0.05	0.11	0.23	-0.04	-0.10	0.12	0.07	0.27
2	-0.13	1.00	0.13	0.00	-0.25	-0.05	-0.07	0.09	0.15	0.02	0.06
3	0.02	0.13	1.00	0.01	0.03	0.00	0.04	0.08	-0.12	-0.08	-0.01
4	-0.05	0.00	0.01	1.00	-0.02	-0.01	0.14	0.09	0.10	-0.04	-0.06
5	0.11	-0.25	0.03	-0.02	1.00	0.08	0.10	-0.02	-0.13	-0.12	-0.08
6	0.23	-0.05	0.00	-0.01	0.08	1.00	0.02	-0.05	0.03	-0.01	0.06
7	-0.04	-0.07	0.04	0.14	0.10	0.02	1.00	0.01	-0.08	-0.09	-0.05
8	-0.10	0.09	0.08	0.09	-0.02	-0.05	0.01	1.00	-0.01	-0.08	-0.13
9	0.12	0.15	-0.12	0.10	-0.13	0.03	-0.08	-0.01	1.00	0.05	0.10
10	0.07	0.02	-0.08	-0.04	-0.12	-0.01	-0.09	-0.08	0.05	1.00	0.08
11	0.27	0.06	-0.01	-0.06	-0.08	0.06	-0.05	-0.13	0.10	0.08	1.00

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
C = Component

Table 4.3: Total Variance Explained

Component	Initial Eigenvalues			% of Variance Oblimin (Rotated)
	Total	% of Variance PCA (Orthogonal)	Cumulative % PCA (Orthogonal)	
1	14.052	27.024	27.024	13.057
2	7.472	14.369	41.393	7.385
3	4.457	8.572	49.965	3.618
4	3.032	5.831	55.796	2.689
5	2.421	4.655	60.451	4.251
6	1.954	3.757	64.208	3.234
7	1.542	2.965	67.174	2.306
8	1.504	2.893	70.067	2.169
9	1.467	2.821	72.888	3.933
10	1.349	2.595	75.483	2.407
11	1.102	2.118	77.601	3.238
12	0.957	1.840	79.441	

Extraction Method: Principal Component Analysis.

In the unrotated PCA solution 2 out of 52 variables had low communalities (i.e. <0.5) meaning that less than half their variation is captured. In the Oblimin rotated solution 5 out of 52 variables had communalities less than 0.5. However, the advantage of the Oblique solution is a better interpretation of component meaning based on the rotated component loadings.

Table 4.4: Factor Loadings (Pattern Matrix[a])

	Component											Oblim Solution Communalities
	1	2	3	4	5	6	7	8	9	10	11	
Fv4PERCAPARTMENTS	.892	.228	.123	-.042	.019	.000	.021	.017	.154	-.106	-.052	0.90
Fv6AVRMDWEL	-.869	.186	-.249	-.044	-.063	.001	-.004	.015	-.096	.018	-.048	0.87
Bv5PERC1PERSHHLD	.865	.105	.058	.014	-.131	.003	-.040	-.033	.217	.020	.106	0.84
Av1PERCRENTED	.861	-.019	-.069	-.093	.015	.169	.037	-.068	.060	-.045	.085	0.80
Cv1PERCYOUNGPHM	.850	.106	.037	.078	.074	.039	-.029	-.010	-.162	.041	.080	0.78
Bv1AVPPH	-.831	-.110	-.002	-.026	.263	.095	.024	.038	-.189	-.175	-.126	0.87
Bv8PERCMILLENIAL2534	.769	-.005	.482	.075	.029	-.022	-.035	.045	-.257	.043	.055	0.90
Dv1PERCHHINCLT50MED	.768	-.164	-.045	-.055	.042	.124	.022	-.130	.295	-.060	.085	0.75
Bv6PERC1PERSHHLDRENTER	.708	.059	-.049	-.051	-.024	.294	-.015	-.043	.164	-.020	.124	0.64
Bv7PERCALLCHILDRENINRENTAL	.706	-.211	-.170	-.196	.071	.147	.096	-.020	-.057	.072	.029	0.66
Dv2PERCHHINCGE150MED	-.661	.567	.005	-.046	-.083	.015	.037	.034	-.014	-.098	-.053	0.78
Cv3PERCFEMPHM	.626	-.174	-.007	.048	-.041	.064	-.146	.010	.128	.311	.207	0.61
Dv5LOWINCOME06	.568	-.301	-.031	-.137	.314	.220	.111	-.070	.004	-.093	.022	0.61
Ev5PERCHIGHOWNERCOST150	-.564	.497	.410	-.100	-.086	-.014	.038	-.046	-.027	-.053	.029	0.76
Fv3AGEDIVHSG4CAT	.557	.067	-.246	-.086	-.215	.341	-.058	-.087	-.040	.136	.208	0.62
Fv5STUCTYPEDIV6	.390	-.254	-.010	.000	.096	.201	-.110	-.060	.053	.369	.262	0.49
Gv4PERCUNEMPLOYED	.358	-.192	-.085	-.153	.319	-.035	.046	.019	.043	-.033	.269	0.38

Table 4.4: Factor Loadings (Pattern Matrix[a]): Continued

	Component											Oblim Solution Communalities
	1	2	3	4	5	6	7	8	9	10	11	
Gv1PERC2564DEGREE	.151	.925	.013	-.022	.109	-.011	-.045	.166	-.025	.001	.104	0.93
Ev11AVVALDWEL06	-.234	.821	-.010	-.130	-.085	.248	-.005	-.003	-.010	-.027	.057	0.82
Gv3PERCLOWEDUC	-.140	-.768	-.106	.063	-.041	.125	.004	.012	-.070	.002	-.157	0.67
Dv3AVHHINCRATIO	-.475	.681	-.036	-.131	-.075	.222	.016	.033	.032	-.035	-.073	0.77
Gv2OCCUPDIVERSITY10	.019	.672	.048	-.014	-.215	-.028	-.146	.086	-.060	.177	.082	0.57
Dv6GINIGCR	.488	.627	-.131	-.006	.025	.295	-.084	.028	.064	.113	-.115	0.77
Bv2PERCFEMLPF	-.156	-.609	-.280	-.042	.135	.141	-.067	-.015	-.103	.298	.110	0.63
Hv3PERCHMABORIGIDENTITY	.191	-.556	.071	-.195	.014	.259	.090	-.175	-.119	.057	.171	0.54
Gv5PERCSALESSERVICE	.396	-.420	-.202	.098	.173	.057	.064	.124	-.355	-.182	-.077	0.60
Ev6PERCLOWINCRENTERTHATAREF	-.298	-.298	-.126	-.225	.247	.237	.041	.042	-.237	.138	-.224	0.49
Fv2PERCNEWHSG5	-.177	.031	906	.022	.036	-.164	-.066	.032	.096	.064	.012	0.90
Av2PERCPHMMOVER5	.478	.004	.801	.023	.087	-.004	-.027	.034	-.083	.086	.068	0.90
Ev4PERCLOWOWNERCOST50	-.334	.017	-.672	.134	-.083	-.378	-.081	.044	.125	.012	.042	0.76
Ev7PERCLOWINCRENTERGE30	.195	-.072	-.091	.782	.194	-.030	-.065	-.239	-.021	.190	.009	0.80
Ev8PERCLOWINCRENTERGE50	-.057	-.023	.046	.746	-.046	-.074	.143	.017	-.222	-.027	.017	0.64
Ev10PERCRENTEDGE50	-.050	-.043	.054	.697	-.109	.129	.233	.110	.084	-.183	.059	0.63
Ev9PERCRENTERGE30	.026	-.138	-.057	.574	.055	.350	.012	.179	.295	-.138	-.059	0.62
Hv2PERCPHMVISMIN	-.062	-.050	.105	.029	.772	.013	.047	.068	-.026	-.358	-.052	0.75
Hv9PERCRENTERPHMARABWASIAN	-.096	.246	-.015	.013	.746	-.098	.044	-.226	.063	.254	.081	0.76
Hv5PERCRENTERPHSASIAN	-.150	-.057	.027	.060	.671	.095	-.066	.111	-.016	-.133	.001	0.52
Hv1PERCRECIMMIG	.478	.070	.164	-.023	.615	-.035	.125	.154	-.116	-.123	-.205	0.75
Bv3 PERCCHILDLESSCOUP	-.198	.288	-.076	.141	-.397	-.360	.047	-.080	.192	.252	-.033	0.54

Table 4.4: Factor Loadings (Pattern Matrix[a]): Continued

	Component											Oblim Solution Communalities
	1	2	3	4	5	6	7	8	9	10	11	
Dv4RATIOMEDRINCTOMEDOINC	.086	-.422	.032	-.270	-.043	-.648	-.093	.082	-.223	-.016	.036	0.75
Hv4PERCRENTERPHMBLACK	.086	-.014	-.073	.008	-.023	.030	.919	-.052	-.023	.099	.026	0.87
Hv10PERCRENTERPHMLATAMERIC	-.017	.027	-.011	.104	-.026	-.032	.914	.061	.041	.105	.046	0.87
Ev3PERCHIGHRENTAL150	.232	.062	-.083	-.045	.019	.078	-.026	.876	.119	.118	.097	0.88
Ev1AVRENTRATIO	-.408	.029	.173	-.024	-.064	-.185	.121	.617	-.015	-.013	-.057	0.63
Bv4PERC65PLUS	.245	.056	-.365	.035	-.015	-.241	-.059	-.008	.746	-.014	.041	0.82
Cv2PERCOLDPHM	.124	.072	-.405	-.016	-.039	-.192	-.058	.062	.742	.095	.043	0.79
Cv4PERCRENTERSFEMOLDHM	-.097	-.030	.223	.083	.013	.254	-.079	.217	.736	.127	-.024	0.74
Ev2PERCLOWRENTAL50	.297	-.130	.098	-.221	-.003	.118	.109	-.269	.570	-.239	.099	0.65
Hv6PERCRENTERPHMCHINESE	.102	.249	-.149	-.022	.076	-.131	-.035	.064	-.061	-.754	.154	0.72
Hv7PERCRENTERPHMSEASIAN	-.082	-.185	.016	.080	.029	.131	-.100	-.142	.019	-.618	-.034	0.48
Hv8PERCRENTERPHMFILIP	.273	-.006	-.022	-.045	-.063	.060	-.044	-.057	-.004	.091	-.900	0.91
Fv1PERCOLDHSG	.243	.260	.063	-.010	-.238	.322	-.038	-.047	-.196	-.015	.389	0.48

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
Rotation converged in 32 iterations.

4.4 "11 Dimensions" and Interpretation

In this section a brief overview and interpretation of each of the eleven dimensions resulted from the PCA is provided

4.4.1 Dimension 1: Owner vs. Renter Divide

By analysing the component loadings for Component 1, it seems to be a dimension defined by the nature of the inhabitants and the size of property they live in.

Throughout the spectrum, it is negative in regards to large and wealthy owned occupied homes opposed to small and low income renter households (Table 4.5). These variables when conceptually put together they would indicate two extremes, which in this research is called "The Owner vs. Renter Divide".

As previously mentioned in Chapter 2, the recent Canadian literature shows a growing gap between those with high income and low income which has led to increasing polarization (the haves and have-nots) (Walks 2015). The empirical evidence found in this stage of the PCA supports the idea that the polarization between owners and renters appears to be not only a potential force in explaining HD, but also a unique force that captured most of the variation of this issue (See Table 4.3). It is a result that in part supports the idea of Calgary as the most polarized CMA in 2006 (See Figure 2.3).

The traditional pattern idea of a Owner (wealth families in large homes) vs. Renter (single households in small apartments) Divide through the suburb/inner city opposition is clearly emphasized on the concentric pattern of map of the geography of Component 1 (Figure 4.3), with more renters in the inner city and

owners in the suburbs. But obviously there are exceptions, such as the high renter and owner areas of Mount Royal in the inner city.

Table 4.5: Component Loadings and Interpretation of Dimensions Oblimin Component 1

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
1	Fv4	PERCAPARTMENTS	0.892	**Owner vs. Renter Divide**
	Fv6	AVRMDWEL	-0.869	
	Bv5	PERC1PERSHHLD	0.865	
	Av1	PERCRENTED	0.861	
	Cv1	PERCYOUNGPHM	0.850	
	Bv1	AVPPH	-0.831	
	Bv8	PERCMILLENNIAL2534	0.769	
	Dv1	PERCHHINCLT50MED	0.768	
	Bv6	PERC1PERSHHLDRENTER	0.708	
	Bv7	PERCALLCHILDRENINRENTAL	0.706	
	Dv2	PERCHHINCGE150MED	-0.661	
	Cv3	PERCFEMPHM	0.626	
	Dv5	LOWINCOME06	0.568	
	Ev5	PERCHIGHOWNERCOST150	-0.564	
	Fv3	AGEDIVHSG4CAT	0.557	
	Fv5	STUCTYPEDIV6	0.390	
	Gv4	PERCUNEMPLOYED	0.358	

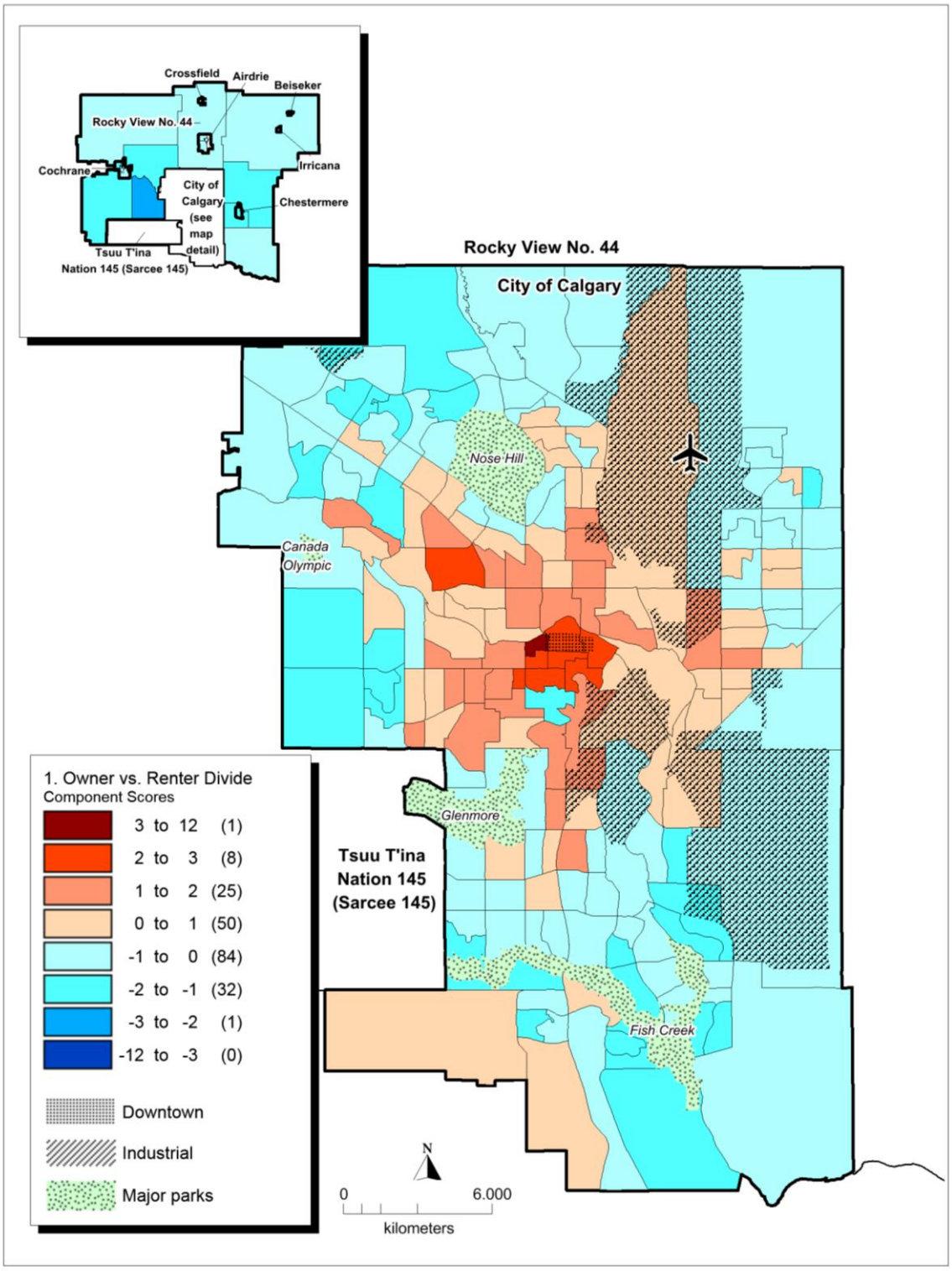


Figure 4.3: Component 1: "Owner vs Renter Divide" (Component Scores), Calgary CT 2006.

4.4.2 Dimension 2: S.E.S.

Dimension 2 is a bipolar axis. One end of the spectrum characteristics defined by low Socioeconomic Status (S.E.S.) (e.g. low education, female lone parent families, indigenous, and sale and service) and is opposed to high S.E.S. (e.g. high income levels) (See Table 4.6). According to the American Psychological Association (2018):

> "Socioeconomic status is the social standing or class of an individual or group. It is often measured as a combination of education, income and occupation. Examinations of socioeconomic status often reveal inequities in access to resources,plus issues related to privilege, power and control".

Due its nature, Component 2 -- that explains almost 15% of the variation of HD (See Table 4.3) – is highly related to HD, as one can expect.

It is interesting to see that the S.E.S.dimension broadly divides the Calgary CMA intoan East-West structure. Traditional neighbourhoods located in the west in areas with PHM with high levels of education and occupation status are opposed to neighbourhoods in the east with low values in the the proximity of the airport (Figure 4.4).

Table 4.6: Component Loadings and Interpretation of Dimensions Oblimin Component 2

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
2	Gv1	PERC2564DEGREE	0.925	**S.E.S.**
	Ev11	AVVALDWEL06	0.821	
	Gv3	PERCLOWEDUC	-0.768	
	Dv3	AVHHINCRATIO	0.681	
	Gv2	OCCUPDIVERSITY10	0.672	
	Dv6	GINIGCR	0.627	
	Bv2	PERCFEMLPF	-0.609	
	Hv3	PERCHMABORIGIDENTITY	-0.556	
	Gv5	PERCSALESSERVICE	-0.420	

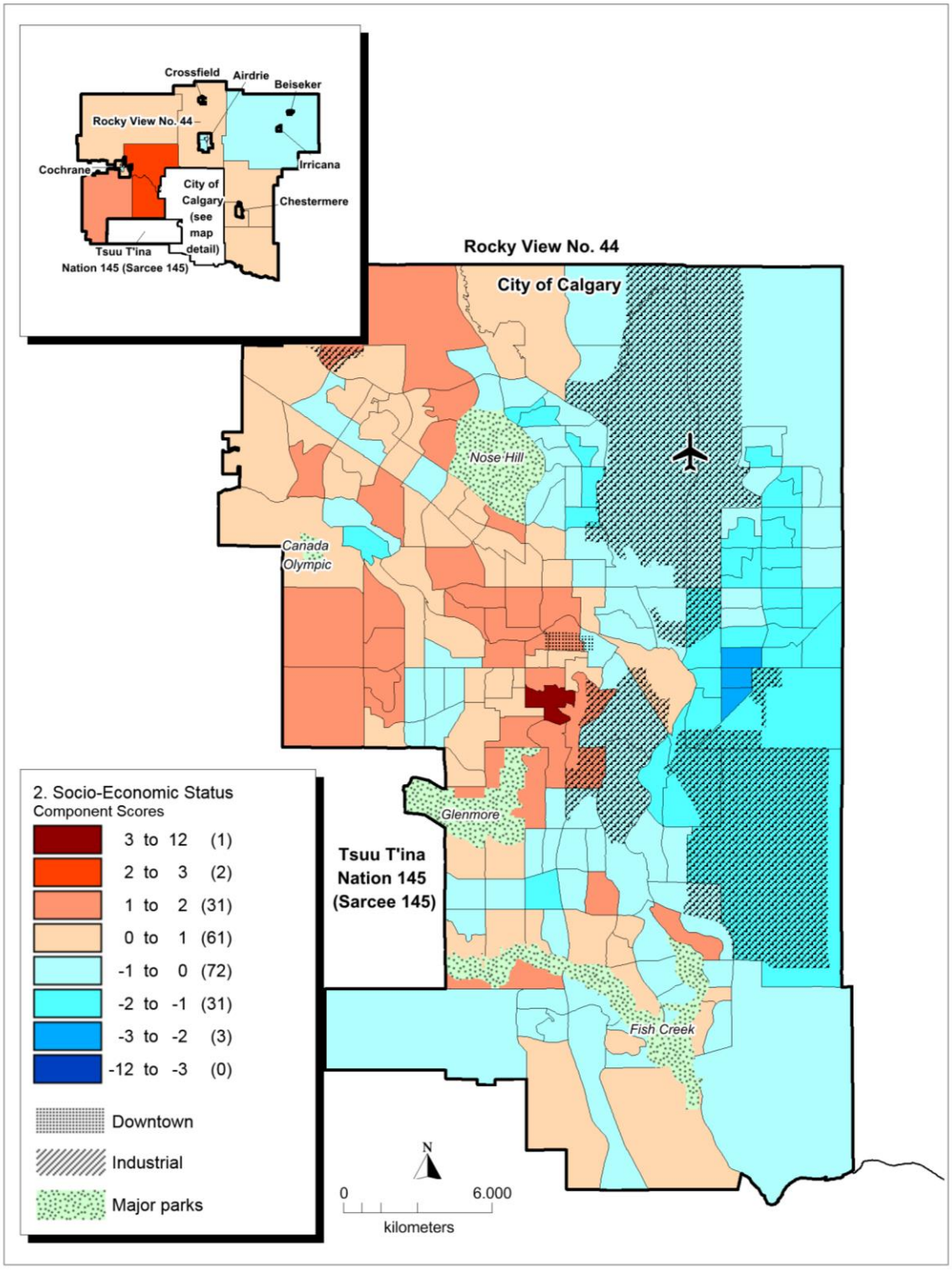


Figure 4.4: Component 2: "Socio-Economic Status" (Component Scores), Calgary CT 2006.

4.4.3 Dimension 3: New Suburbs vs. Mature Suburbs

The third unique Component in trying to explain HD is related to the the areas with new suburbs ccompared to mature suburbs. It is defined by the percentage of new housing in the neighbourhood and the percentage of primary household maintainers that have moved into or out the neighbourhood in the last 5 years, andis inversely related to the percentage of owned occupied dwellings paying less than 50% of the metro average.

This means that new neighbourhoods with a housing stock that has been built in the past recent years and that receive a high influx ofmigrants, present different housing situations compared to mature neighbourhoods where the housing stock is more likely to need repairs, probably with a concentration of owned occupied dwellings that have been settled in those places for more than 5 years. It is worth mentioning that in this case neighbourhoods in the downtown area do not appear to be in the middle of the spectrum once they have been place of many new apartments and ongoing gentrification (See Figure 4.5) although no evident linear relationship is visible.

Table 4.7: Component Loadings and Interpretation of Dimensions Oblimin Component 3

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
3	Fv2	PERCNEWHSG5	0.906	**New Suburbs vs.Mature Suburbs**
	Av2	PERCPHMMOVER5	0.801	
	Ev4	PERCLOWOWNERCOST50	-0.672	

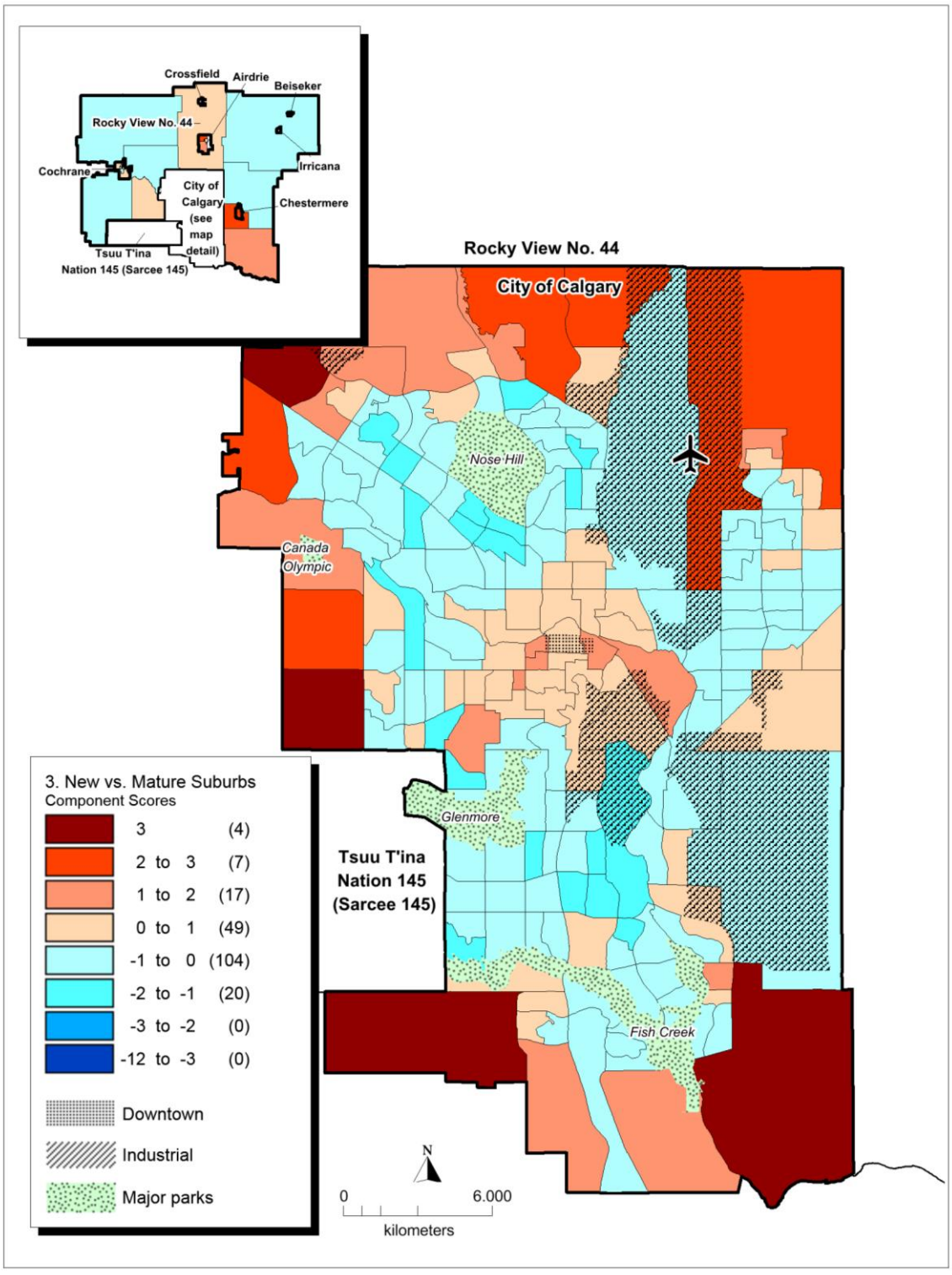


Figure 4.5: Component 3: "New Suburbs vs. Mature Suburbs" (Component Scores), Calgary CT 2006.

4.4.4 Dimension 4: Rental Poverty

"Rental Poverty" is the title of Dimension 4 that is defined only by positive loadings (Table 4.8). It is defined by situations in which a high percentage of the neighbourhood is low income and spends more than 30% of income on rent. Overall, the presence of such a Component entirely related to the tenure situation is well known in the literature (See Chapter 2).

In this case, neighbourhoods with high levels of HD due to the rental situation seem to be far from the inner city, although no linear relationship can be seen (Figure 4.6). In the case of Calgary, rental poverty might be associated to suburb areas in where rent values can be less than in the inner city.

Table 4.8: Component Loadings and Interpretation of Dimensions Oblimin Component 4

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
4	Ev7	PERCLOWINCRENTERGE30	0.782	**Rental Poverty**
	Ev8	PERCLOWINCRENTERGE50	0.746	
	Ev10	PERCRENTERGE50	0.697	
	Ev9	PERCRENTERGE30	0.574	

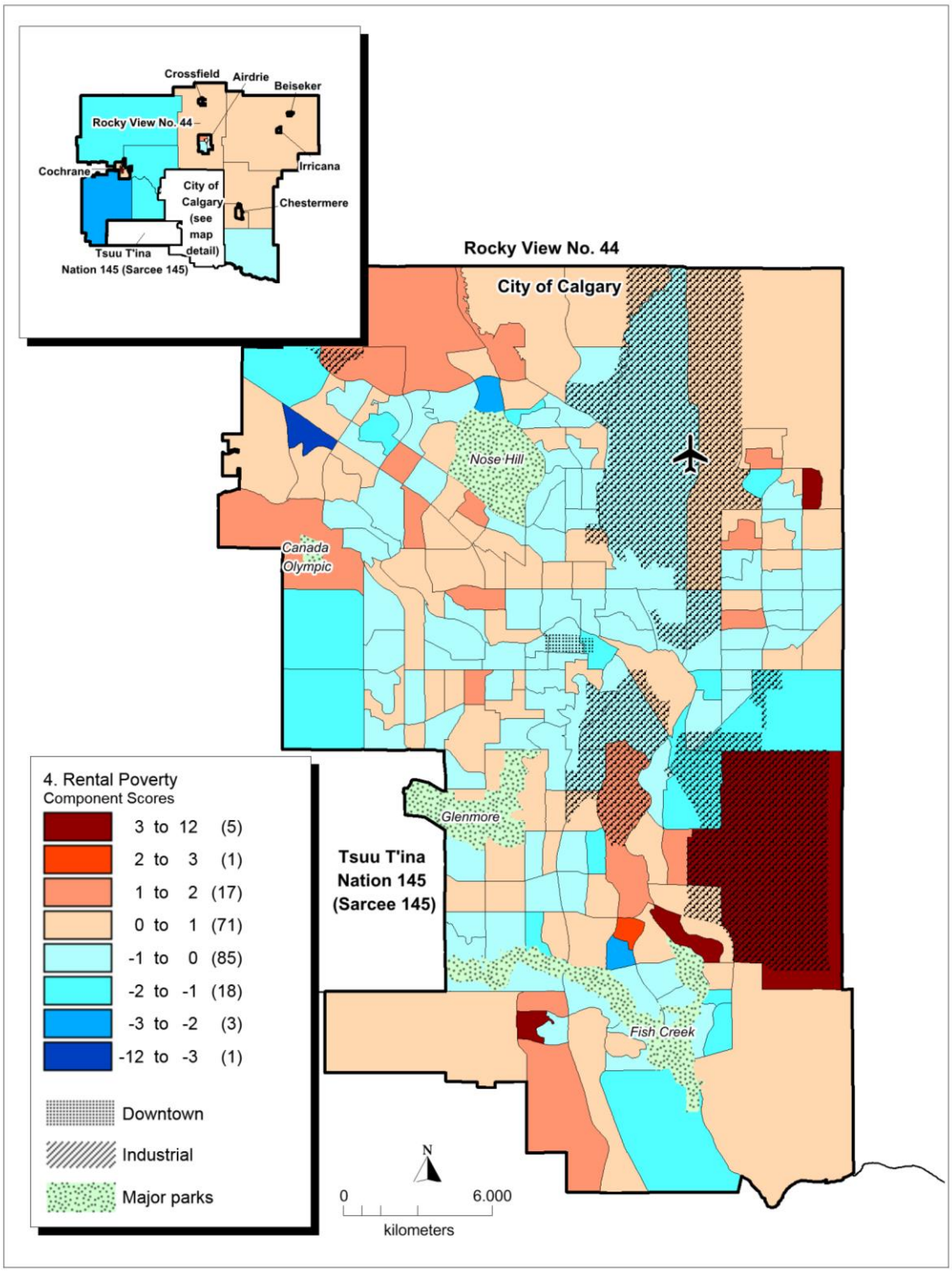


Figure 4.6: Component 4: "Rental Poverty" (Component Scores). Calgary CT 2006.

4.4.5 Dimension 5: Ethnic and Immigrants with children

The key characteristics behind the profile of component 5 are defined by the variables for Visible Minority population and the percentage of Immigrants with Children.Note that the percentage of childless couples is shown with a negative loading, but the loading is very low (Table 4.9). It is interesting to see that three ethnicities group together in a single component: Arab and West Asian (e.g., Iranian, Afghan, etc.) and South Asian (e.g. East Indian, Pakistani, Sri Lankan, etc.).

The spatial pattern of this Component shows that these groups are concentrated in the northern part of the city, especially the North East (Figure 4.7).These are potentially recent immigrants in these new low income areas.

Table 4.9: Component Loadings and Interpretation of Dimensions Oblimin Component 5

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
5	Hv2	PERCPHMVISMIN	0.772	**Ethnic and Immigrants with children**
	Hv9	PERCRENTERPHMARABWASIAN	0.746	
	Hv5	PERCRENTERPHSASIAN	0.671	
	Hv1	PERCRECIMMIG	0.615	
	Bv3	PERCCHILDLESSCOUP	-0.397	

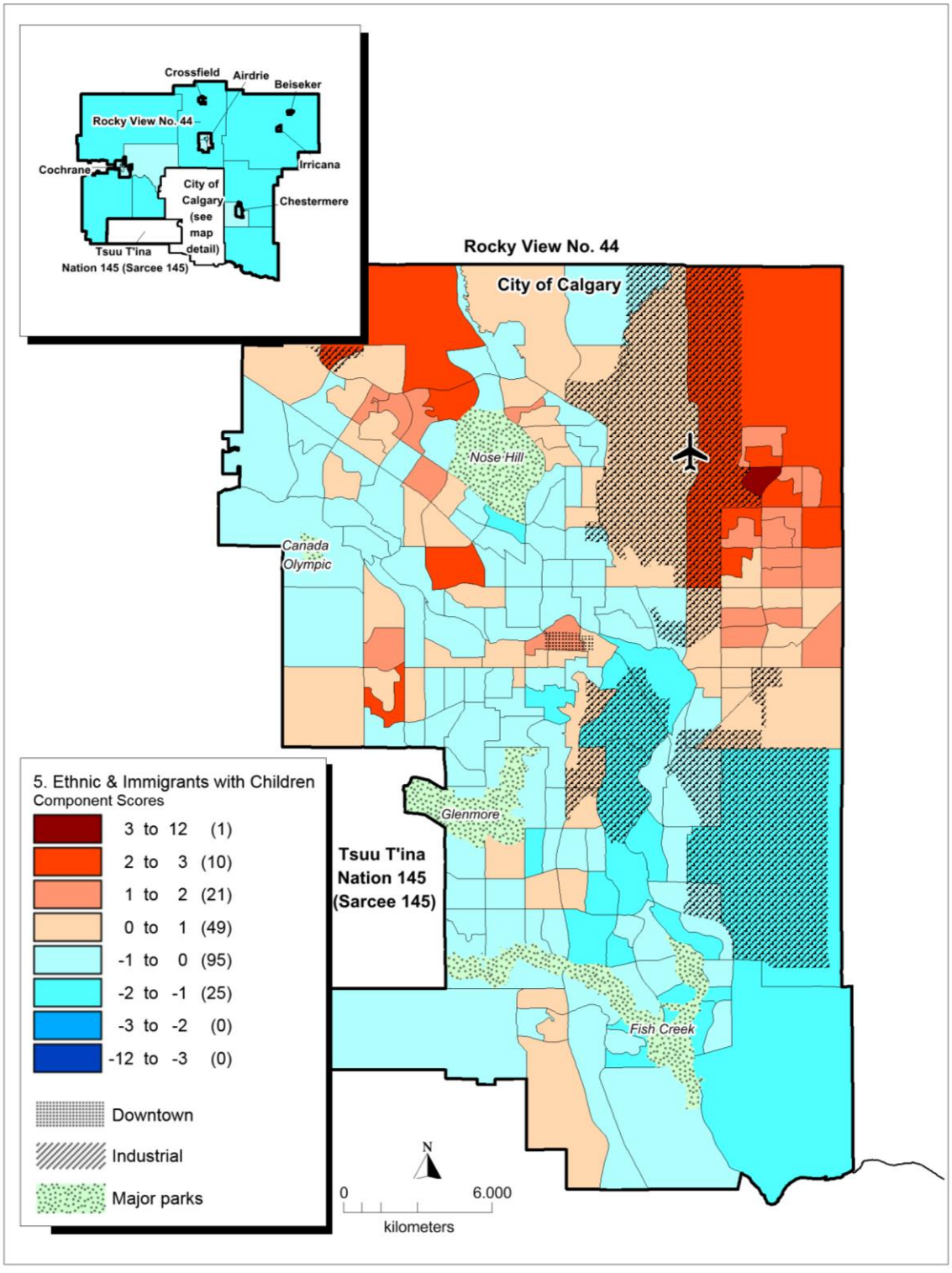


Figure 4.7: Component 5: "Ethnic & Immigrants with Children" (Component Scores), Calgary CT 2006.

4.4.6 Dimension 6: Renter/Owner Income Disparity

Dimension 6 is defined by only one negative loading regarding the income disparity between renters and owners (See Table 4.10). Neighbourhoods that present high levels of disparities between those two cases would be more likely to be places for housing disadvantage.

The map shows the income disparity between owners and renters seem to have very low variation throughout the city and more acute in part of SW in relatively wealthy neighbourhoods (Figure 4.8).

Table 4.10: Component Loadings and Interpretation of Dimensions Oblimin Component 6

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
6	Dv4	RATIOMEDRENTERINCTOMEDOWNERINC	-0.648	**Renter/Owner Income Disparity**

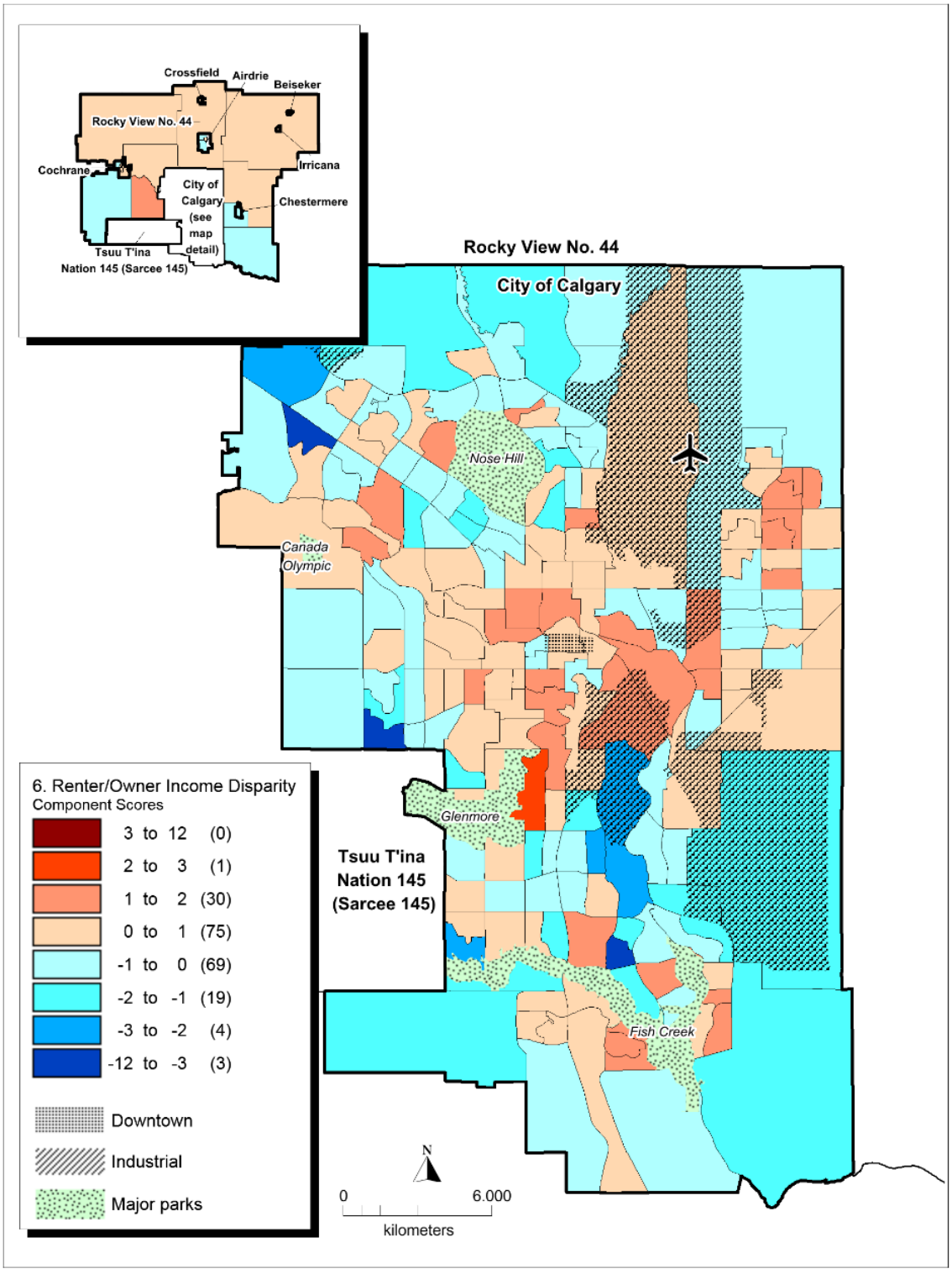


Figure 4.8: Component 6: "Renter/Owner Income Disparity"

(Component Scores). Calgary CT 2006.

4.4.7 Dimension 7: Black and Latin American Renters

The percentage of Black and Latin American renters as primary household maintainers appear as a unique dimension that seems to explain HD in Calgary (Table 4.11).Yet the map of this Component does not show any significant variation throughout the city with values scattered in the city with no particular concentration (Figure 4.9). The reasons why Black and Latin American renters group as one significant component that account for the variation of HD in the city of Calgary should be deeper analyzed.

Table 4.11: Component Loadings and Interpretation of Dimensions Oblimin Component 7

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
7	Hv4	PERCRENTERPHMBLACK	0.919	**Black and Latin American Renters**
	Hv10	PERCRENTERPHMLATAMERIC	0.914	

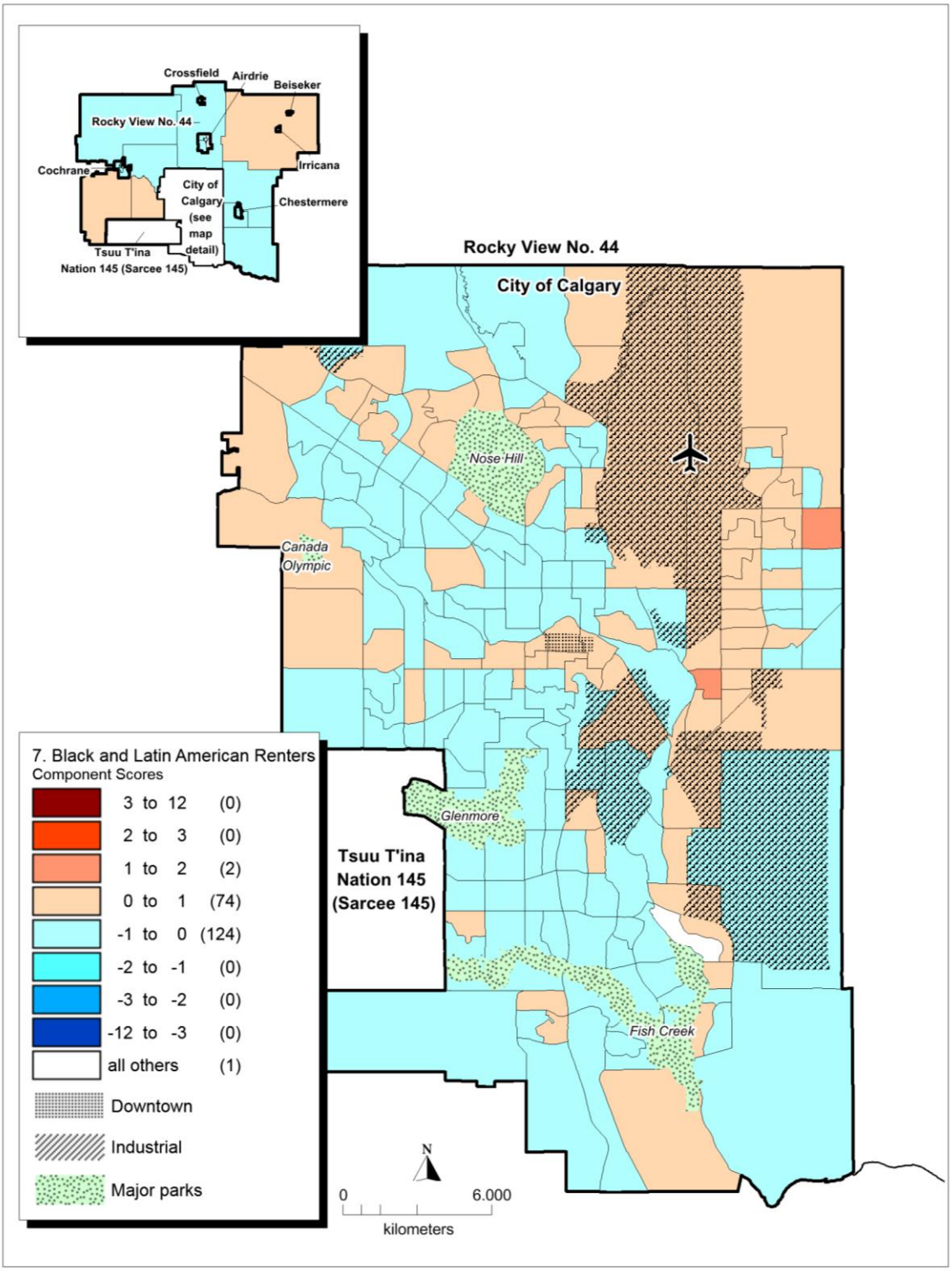


Figure 4.9: Component 7: "Black & Latin American Renters" (Component Scores). Calgary CT 2006.

4.4.8 Dimension 8: High Rental Cost

As one expect, variables related to high rental cost appear to be a unique dimension in trying to explain HD (Table 4.12). As the literature suggests, rental housing is increasingly related to affordability issues and housing disadvantage (Tsenkova and Witwer 2011, Moos 2015). However, Figure 4.10 shows that high rental cost is more associated with the new suburbia than the inner city. This might be the case since the percentage of high rental costs (paying 150% than the metropolitan average) in such a wealthy city as Calgary is in brand new areas with large housing stock.

Table 4.12: Component Loadings and Interpretation of Dimensions Oblimin Component 8

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
8	Ev3	PERCHIGHRENTAL150	0.876	**High Rental Cost**
	Ev1	AVRENTRATIO	0.617	

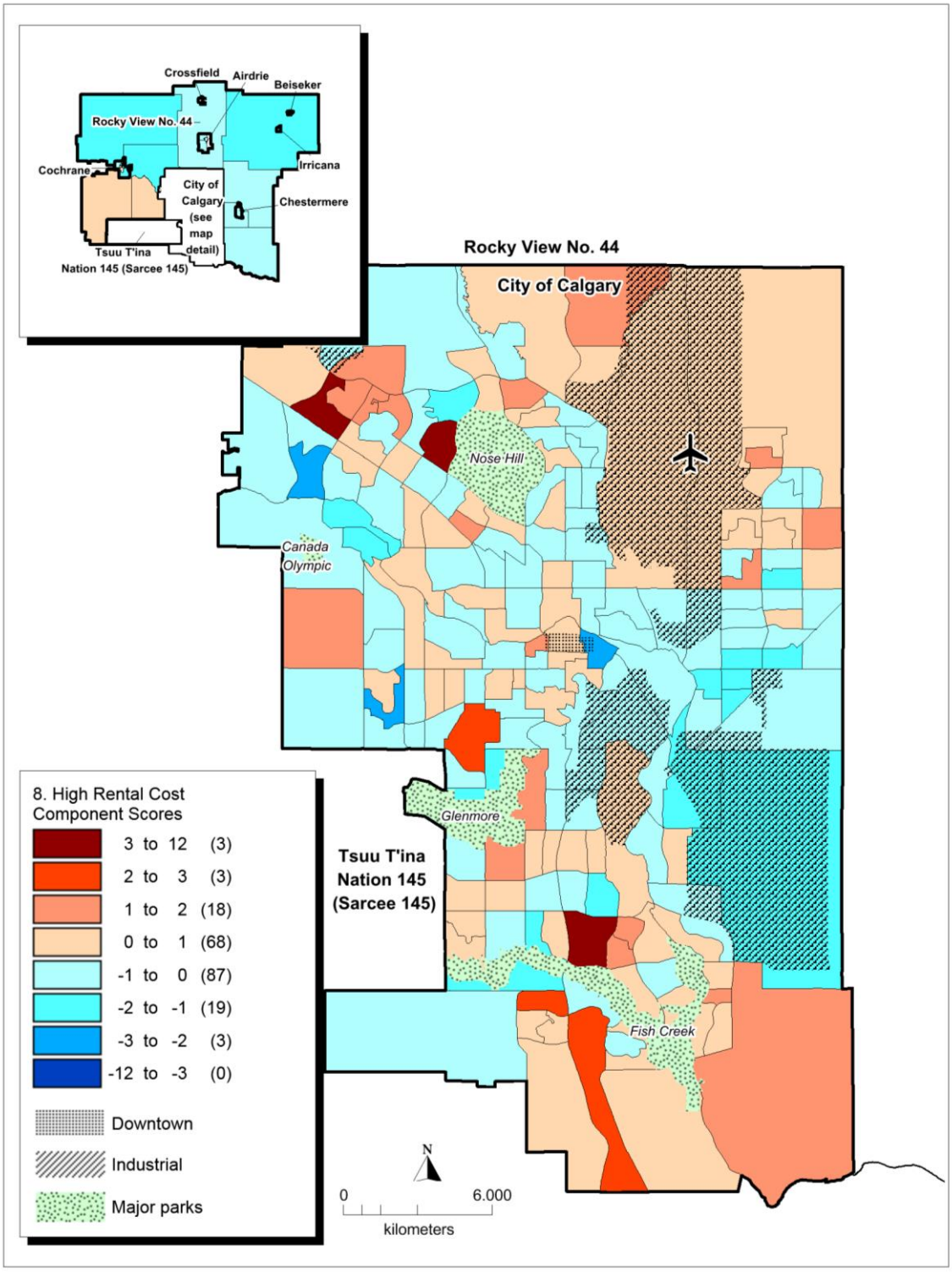


Figure 4.10: Component 8: "High Rental Cost" (Component Scores), Calgary CT 2006.

4.4.9 Dimension 9: Seniors and Seniors Renters

The literature also suggests that certain age groups have in the recent years been struggling more than usual, especially areas with high proportions of seniors and female senior primary household maintainers (Crook 2008, Hulchanski 2002, Pomeroy 2001).Additionally old PHM and people spending more than 50% of their income on shelter and struggling with shelter costs. Dimension 9 provide empirical evidence for that as it has a unique relation with HD (See Table 4.13).

Figure 4.11 shows that this situation might be more evident in West parts of the city, particularly the SW. Overall it seems to be related to mature neighbourhoods, including the gentrified centre.

Table 4.13: Component Loadings and Interpretation of Dimensions Oblimin Component 9

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
9	Bv4	PERC65PLUS	0.746	**Seniors and Seniors Renter**
	Cv2	PERCOLDPHM	0.742	
	Cv4	PERCRENTERSFEMOLDHM	0.736	
	Ev2	PERCLOWRENTAL50	0.570	

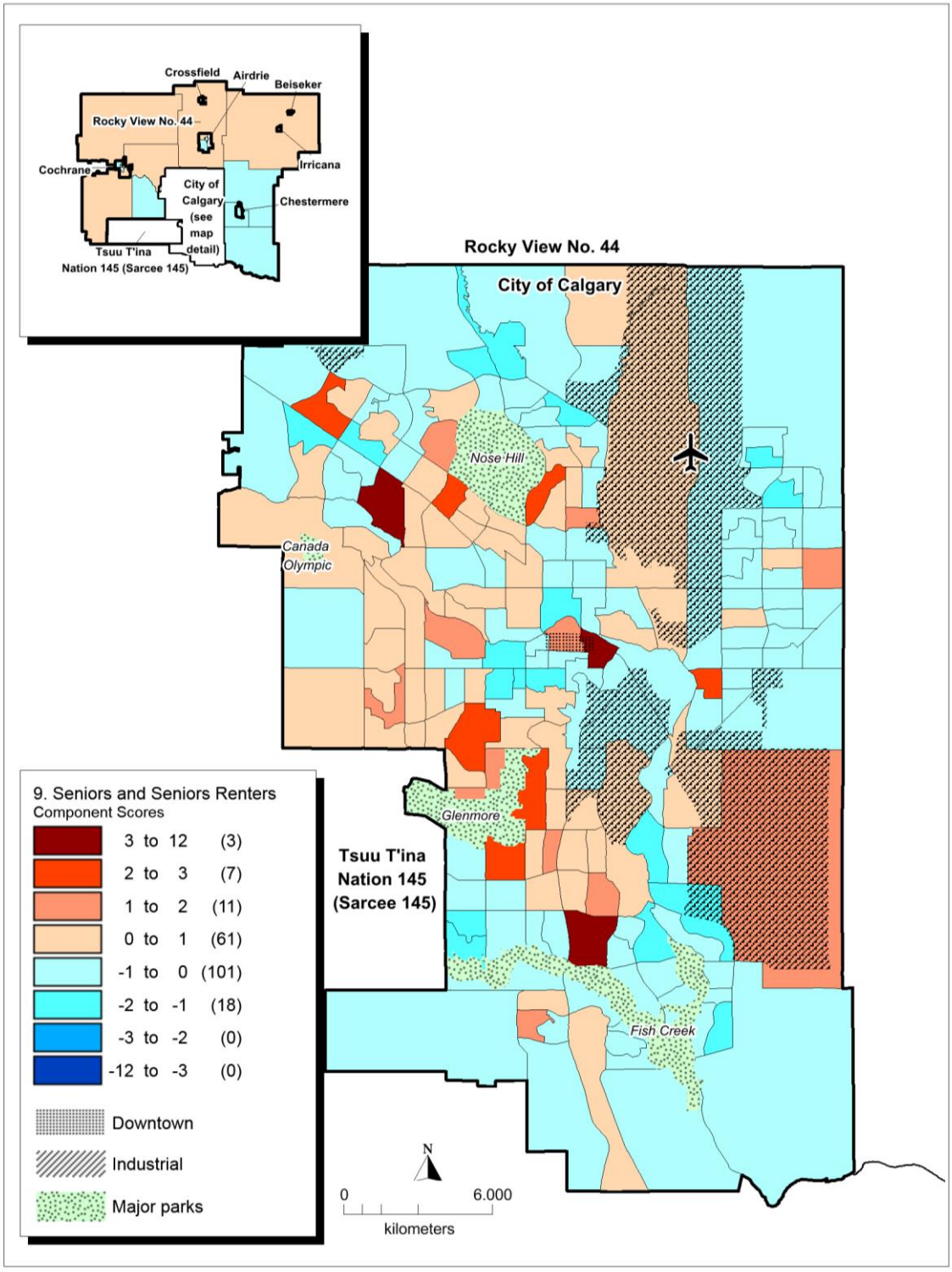


Figure 4.11: Component 9: "Seniors and Senior Renters" (Component Scores), Calgary CT 2006.

4.4.10 Dimension 10: Chinese and SE Asian Renters

Chinese and SE Asian (e.g., Vietnamese, Cambodian, Malaysian, Laotian, etc.) renters also seem to have a relation to the housing disadvantage, showing as an unique component (Table 4.14). Interestingly, Figure 4.12 suggests that the high concentration of these minorities seem to be in the suburbia and not in the inner city – where the traditional Chinatown is – evidencing the recent ethnoburb idea suggested by many scholars (Kobayashi and Peake 2000, Li 1998) (See Chapter 2).

Table 4.14: Component Loadings and Interpretation of Dimensions Oblimin Component 10

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
10	Hv6	PERCRENTERPHMCHINESE	-0.754	**Chinese and SE Asian Renters**
	Hv7	PERCRENTERPHMSEASIAN	-0.618	

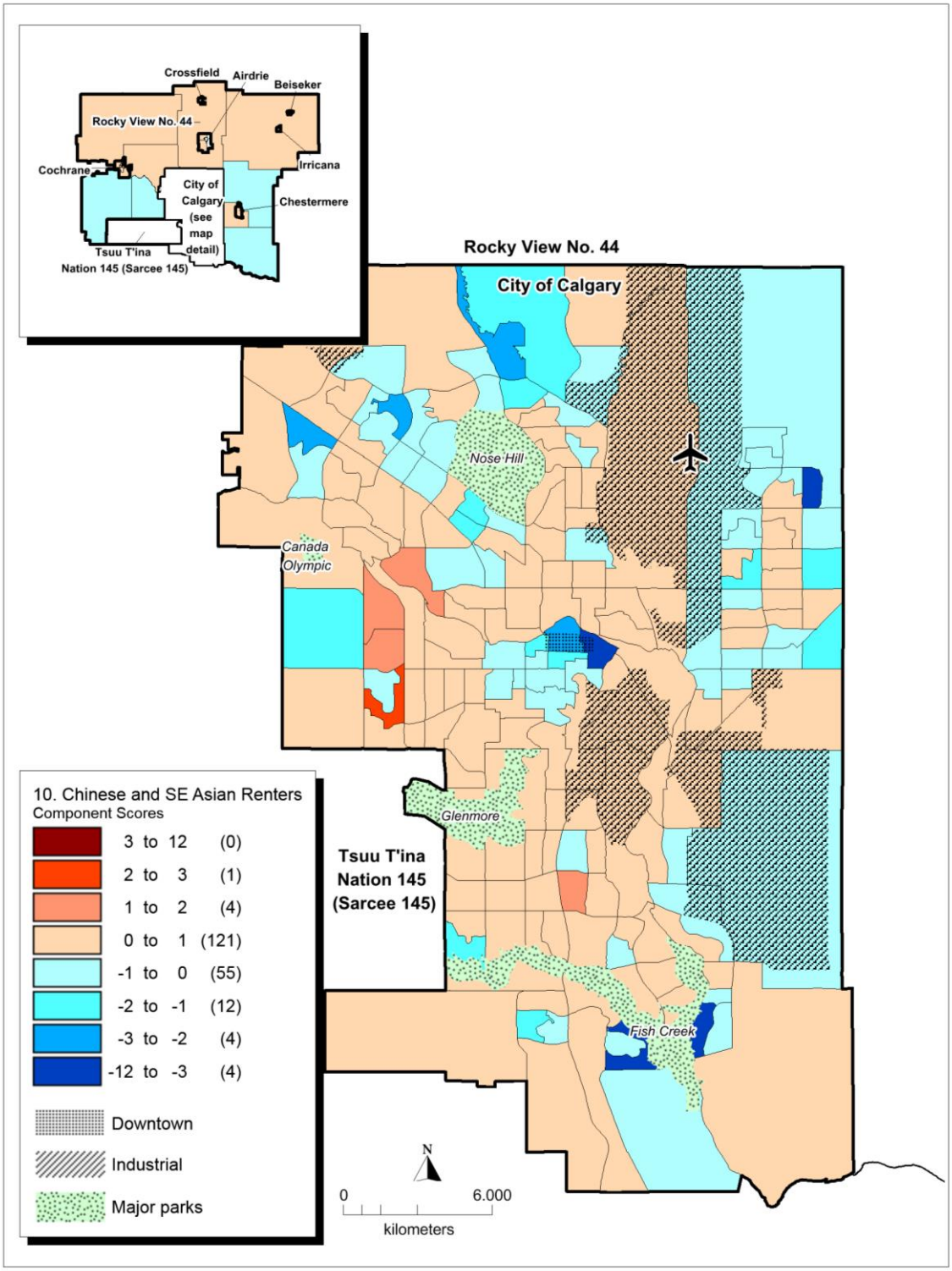


Figure 4.12: Component 10: "Chinese and SE Asian Renters" (Component Scores), Calgary CT 2006.

4.4.11 Dimension 11: Filipino Renter vs. Old Housing Stock

The last but not least dimension related to HD refers to a specific ethnic group in one end of the spectrum (negative loading) and old housing stock in the other end (positive loading). That means that in neighbourhoods where you find old housing stock there is a lower concentration of Filipino PHM that are renters.

Table 4.15: Component Loadings and Interpretation of Dimensions Oblimin Component 11

Extract Order	Variable Code	Variable Titles	Component Loading (Oblimin)	Title of Dimensions
11	Hv8	PERCRENTERPHMFILIP	-0.900	**Filipino Renter vs. Old Housing Stock**
	Fv1	PERCOLDHSG	0.389	

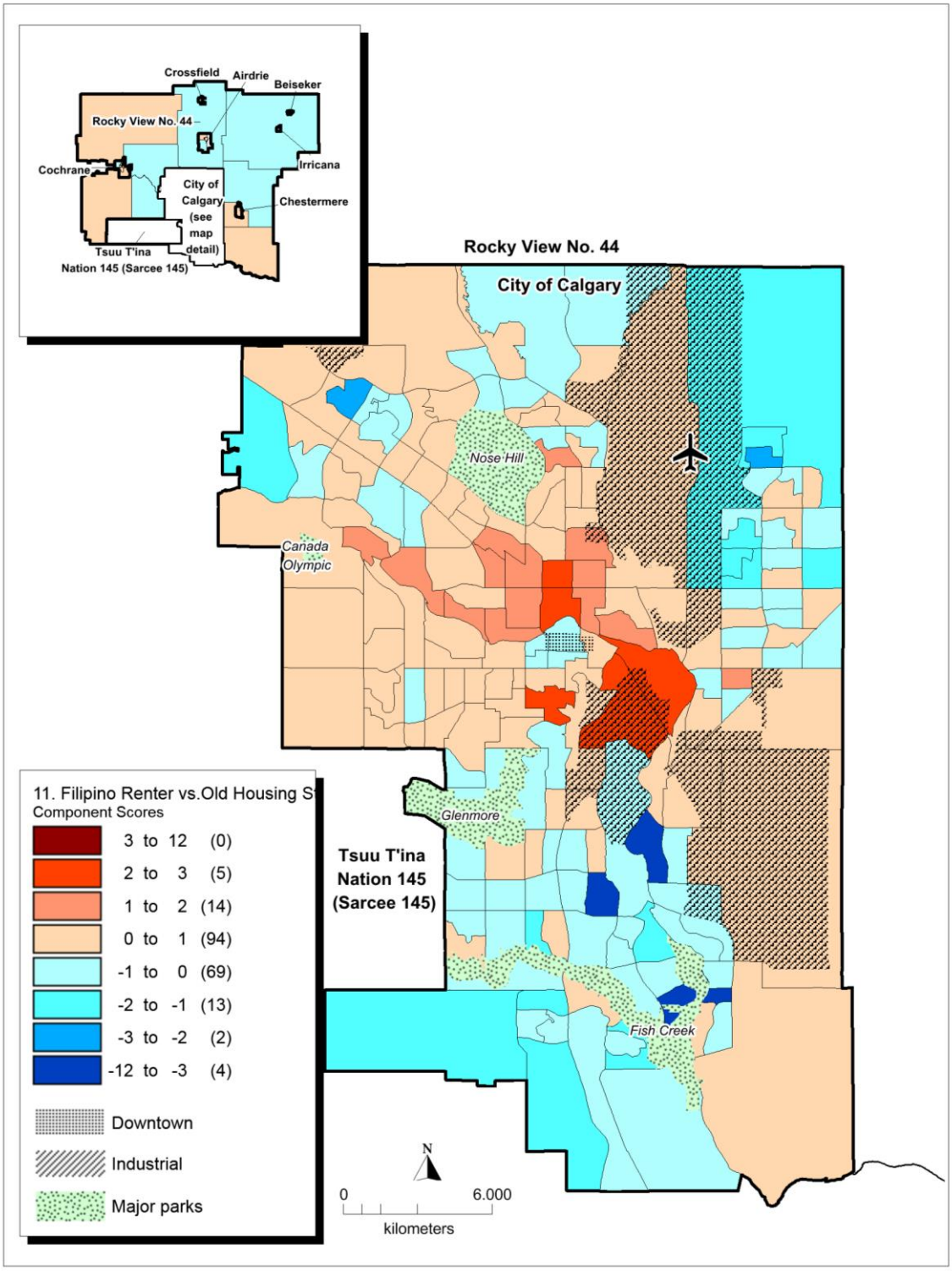


Figure 4.13: Component 11: "Filipino Renters vs. Old Housing Stock" (Component Scores), Calgary CT 2006.

4.5 Regression Analysis

In order to determine which of the eleven dimensions identified above are significant predictors of the geography of HDI in Calgary, a stepwise multiple regression was carried. The HDIALL index was the dependent variable, and the independent variables were the 11 component scores for the Calgary CTs.

4.5.1 Key Predictors of HDI

The results for of the regression analysis show that only 7 of the 11 dimensions account for or, are significant predictors of housing disadvantage in the city of Calgary. Together, these 7 dimensions account for 74% of all the variation of HDI (Table 4.16). However, the two dominant predictors are Components 1 (Owner vs. Renter Divide) and 2 (Socioeconomic Status), with much higher coefficients than the other five significant predictors (See Beta standardised coefficient that indicates the magnitude of the correlation between each component (IV) and HDI (DV) in the table below).

The coefficients for the 7 predictors (or scores) show that Component 1 (Owner vs. Renter Divide) is the most important predictor of HDI. This is followed by Component 2 (S.E.S.), Component 4 (Rental Poverty), Component 5 (Ethnic and Immigrant with Children), Component 3 (New Suburbs vs. Mature Suburbs), Component 11 (Filipino Renter vs. Old Housing Stock), and Component 8 (High Rental Cost), (see Tables 4.16 and 4.17 for more explanation on how much each factor contribute in predicting HDI).

Table 4.16: Stepwise Multiple Regression Model Results

Comp	Extraction Order (Significant Predictors)	Beta	Name
1	1	0.43	**Owner vs. Renter Divide**
2	2	-.27	**Socio-Economic Status**
3	5	-.06	**New vs. Mature Suburbs**
4	3	.13	**Rental Poverty**
5	4	.10	**Ethnic and Immigrants with Children**
6	-	-	Renter/Owner Income Disparity
7	-	-	Black and Latin American Renters
8	7	-.05	**High Rental Cost**
9	-	-	Seniors and Seniors Renter
10	-	-	Chinese and SE Asian Renters
11	6	.06	**Filipino Renter vs. Old Housing Stock**

Predictors: (Constant), Comp 1, Comp 2, Comp 4, Comp 5, Comp 3, Comp 11, Comp 8
Dependent Variable: HDIALL
R^2= 0.74

A few things can be noted from these results: First of all, the literature points to evidence that renters are struggling more than owners (See Chapter 2). Such a situation might be unfolding in Calgary in a scenario where there is a big disparity between home owners and renters, which in this case is called the "Owner vs. Renter Divide". If this dimension seem to be the strongest in accounting for HD in Calgary, that means that in neihgbourhoods where we can find high levels of HDIALL, the big picture for renters and owners is very different. I am referring to areas with high percentage of apartments, with few rooms, with high percentage of one person households and young primary household maintainers and high percentage of millennials. Regarding the housing stock, age diversity is high and structure type of dwelling is diverse. Therefore, one would expect these neighbourhoods would be around central areas of the city and the inner city, where gentrification has taken

place, and attractive to the younger generation (e.g. Millennials) with streets full of amenities (See Figure 4.3).

The second highest predictor for HD in Calgary is S.E.S. which again is expected. In neighborhoods with high Socioeconomic status HD appears to be high. Speculations can be made about the reasons: Would that be because in general the population is well off but the ones who struggle, really struggle? In other words, a high discrepancy occur within neighbourhoods. By looking at the ecology of S.E.S. in Calgary (See Figure 4.4), it is very clear that there is an axe dividing people with high socioeconomic status more concentrated on the West of the city versus people with low socioeconomic status in areas like the NE, a division that seems to be a persistent historical pattern in the city.

Rental Poverty and Ethnic and Immigrant with Children follow as the next highest components that account for HD in Calgary but explanation levels are low. Both were identified in the recent literature related to affordability issues (See Chapter 2). In this case, Rental Poverty is found in peripheral neighbourhoods where rent tends to be cheaper. High percentages of Visible Minorities, Arabs, West and South Asians and immigrants in general seem to be associated with housing disadvantage. Interestingly, they are concentrated in areas like the NE and in much less extent in the SE – another evidence of the old North/South dichotomy in the city.

The New Suburbs vs. Mature Suburbs Dimension -- where owner costs are lower than 50% of the median -- also appear as predictor of housing disadvantage,

but again a low one. In one hand new suburbs with brand new housing stock is more costly than the opposit of mature suburbs with some run down dwellings, which could be one of the reasons for housing disadvantage to appear in certain suburbs and not the others.

Again, the affluent SW region does not seem to be an areafor housing disadvantage. HD seems to be related to neighbourhoods with low proportions of Filipino renters and old housing stock. This is particular interesting and intriguing in a first glance, given the fact that Filipino Renters are located in the SE area of the city in regions with newer housing stock and potentially wealthier than areas with old housing stock.

Finally, High Rental Cost – which is determined by corridors throughout the CMA – is also present in this model that accounts for HD in a CT scale. As the literature suggests, areas with high proportions of rent tend to be associated with HD when those who cannot afford homeownership find themselves with no escape from the high prices of the private rental market.

It is important to note that four of the eleven components were not significant predictors of HDI in Calgary. These are:Renter/Owner Income Disparity, Black and Latin American Renters, Seniors and Seniors Renter, and Chinese and SE Asian Renters. In general, these are minor axes derived from the factor analysis. Perhaps this is due the fact that partial characteristics of these components are imbedded in stronger components that show as significant predictors of HDI in the model (e.g. the Renter/Owner Income Disparity is in reality less significant than S.E.S., which does include income characteristics).

4.5.2 Residuals' Spatial Structure

By looking at the geography of the residuals one can began to look at the spatial characteristics in the "error" of the predictive model and the magnitude of the predictors (See Figures 4.14 and 4.15). There seems to be no significant over/under prediction in the model, since they are not showing a clear pattern of residuals. Some might say that there is a bias in regions like University of Calgary/University Heights which show in an over prediction, but those are not geographically significant to conclude that the model produce error when looking into the big picture. For the most part, there is little evidence of a systematic or regionalized pattern of model error. It is important to note that no relation in this analysis is noticed in relation to missing variables.

Table 4.17: Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-2.0051	1.2665	.0000	.59487	201
Residual	-.92107	1.90663	.00000	.35574	201

a. Dependent Variable: HDIALL

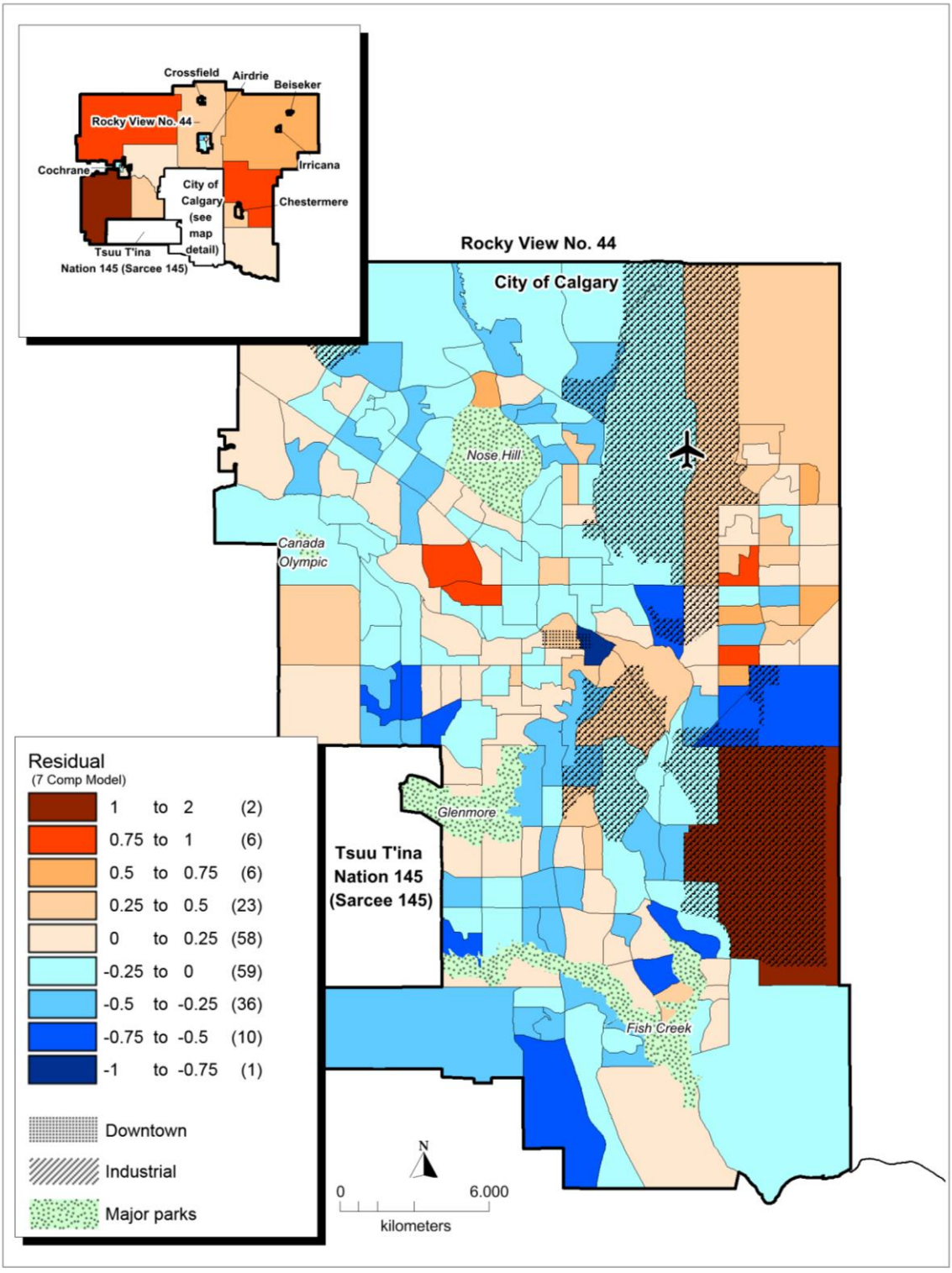


Figure 4.14: Geography of the Residuals (Error).

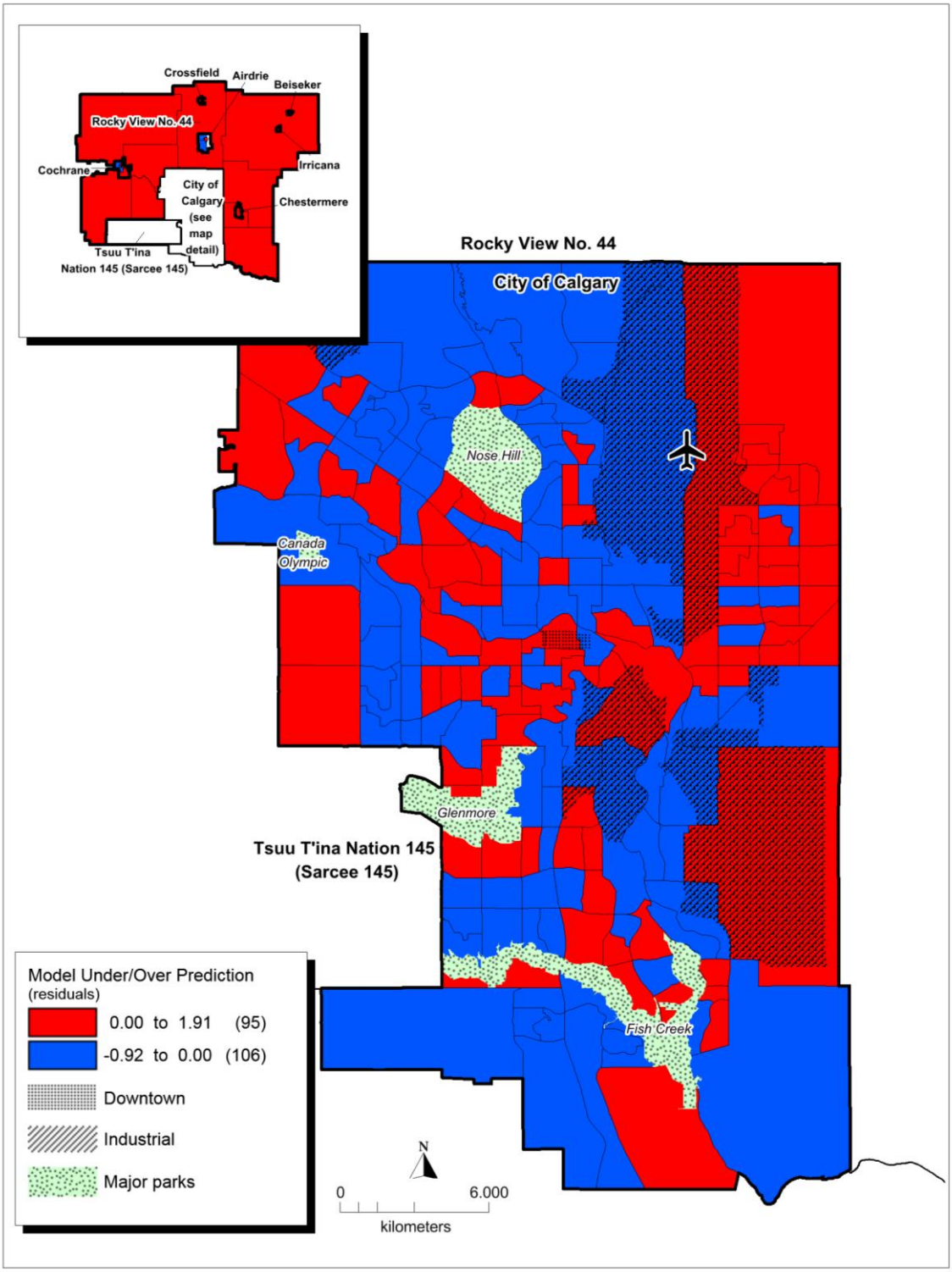


Figure 4.15: Geography of the Generalized Residuals (Error).

4.6 Interview Results

In the 12 CTs selected based on the high levels of HDI and where the surveys happened, we could see the following:

4.6.1 Characteristics of the Sample

The sample contained a diverse demography of people, 48% being female respondents and 52% male. The large majority of people are from the under 40 years old (46%), followed by those aged 40 to 59 years old (40%). In a less frequent response rate, representing 14% of the sample, were people aged 60 years old or more. Married or in common law seemed to account for the largest portion of the sample (58%) and singles and divorcees had approximally the same frequency (20% and 19%, respectively).

Interestingly, 72% affirmed having no children living in the household, which is intriging due to the large proportion of people ages 18-40 years old, including empty nesters. That explains why 38% of the sample live in 2 persons households, and 26% in 1 person household, accounting for 64% of the interviews composing small households.

At a first glance, the majority of interviewed people seemed to not be part of a visible minority group (around 67%). Only 22% does not have either English or French as a mother tongue. That explains in part why the immigrant population in the sample only represents 26% (immigrants or people in the possesion of work or study visa) and amongst those, only approximatly one third is recent immigrants (moved to Canada less than 5 years ago). The majority of respondants (84%) believe

they live in ethnically diverse comunities, while 10% was not sure about it and only 6% believe they do not live in a place with diverse ethnicity.

Regarding educational achievement, the large majority possess some kind of secondary education, 43% on trade, vocational or technical certifications and 31% with at least one university degree. In these neighbourhoods, the sample only account for 7% being unemployed. In relation to income characteristics, 63% have their household income before tax below the estimated province median for the year of 2016 ($93,835)(Statistics Canada 2017d), and only 10% seem to be well off, as we would expect. This means that high income in those neighbourhoods are concentrated in the hands of a very small part of the population and a large part of it lives with low income in comparison to the Calgary median – which does not necessarily means they are struggling. The fact is, as suggested by the literature on income polarization, the people whithin this two poles do not represent a large part of the population anymore (median class). Interestingly, the general perception of people when asked about the others incomes in that neighbourhood seem to point towards a middle income category, according to 56.7% of respondents, while only ¼ of them would say their incomes were totally diverse (Table 4.18). When asked if income limits the areas whitin the city in where they could afford to live in, 82% of the respondants said yes. Although most of them seem to be able to afford participating in leisure activities (Table 4.19).

Table 4.18: Perceived Income of People in the Neighbourhood

	Frequency	Percent	Valid Percent	Cumulative Percent
Low income	17	14.2	**14.2**	14.2
Middle income	68	56.7	**56.7**	70.8
Totally diverse	30	25.0	**25.0**	95.8
I do not know	5	4.2	**4.2**	100.0
Total	120	100.0	**100.0**	

Table 4.19:Table 4.19: Income Limits Participating in Leisure Activities

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	6	5.0	**5.0**	5.0
Agree	44	36.7	**36.7**	41.7
Uncertain	7	5.8	**5.8**	47.5
Disagree	47	39.2	**39.2**	86.7
Strongly Disagree	16	13.3	**13.3**	100.0
Total	120	100.0	**100.0**	

When asked about the type of dwelling they live in, 55% said to live in single detached homes, followed by high-rise apartments (14%) and low-rise apartments (10%). Rent was the dominant form of tenure (53%) although home ownership was not far behind. Length of residence varied, ranging from 3 months to 40 years, although the largest percentage seemed to be living in the same neighbourghood for a period of 3 years. Mobility through neighbourhoods seemed to be high and 88% afirmed to be living in a different neighbourhood than their preveious residence was.

The reasons why one would choose certain neighbourhood to live are diverse. Most of them involve things such as affordability, acessibility, and location

(Table 4.20). On the other hand, the resons why one would be willing to move out from their current neighbourd vary by life stage or situation (e.g. family growing or decreasing) (27%), due to the dwellings characteristics and not the neighbourhood itself (24%), safety representing 18% of the sample followed by moving towards a more central location (15%).

Table 4.20: Why did you choose this neighbourhood? (Categories)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Amenities	6	5.0	**5.1**	5.1
	Walkability	1	0.8	**0.9**	6.0
	Accessibility	28	23.3	**23.9**	29.9
	Convenience	2	1.7	**1.7**	31.6
	Life History	5	4.2	**4.3**	35.9
	Environmental Amenities	4	3.3	**3.4**	39.3
	Affordability	34	28.3	**29.1**	68.4
	Location	16	13.3	**13.7**	82.1
	Social Ties	9	7.5	**7.7**	89.7
	Positive Evaluation	10	8.3	**8.5**	98.3
	Cultural Needs	1	0.8	**0.9**	99.1
	Housing Attributes	1	0.8	**0.9**	100.0
	Total	117	97.5	**100.0**	
Missing	System	3	2.5		
Total		120	100.0		

In general, less than 50% of people seemed to rely on public transportation to commute (44%), while the rest of the sample use it occasionally or do not use it at all (27%) (Table 4.21).

Table 4.21: Use of Public Transport for Commuting

	Frequency	Percent	Valid Percent	Cumulative Percent
Never	33	27.5	**27.5**	27.5
Less than once per month	16	13.3	**13.3**	40.8
1 to 2 times per month	9	7.5	**7.5**	48.3
3 to 5 times per month	9	7.5	**7.5**	55.8
More than 6 times per month	53	44.2	**44.2**	100.0
Total	120	100.0	**100.0**	

4.6.2 General Themes

Some general themes can be driven from the interviews in relation to the statement of "Calgary as one of the most unequal CMAs in 2016". Some people would acknowledge that but affirm that this did not affect their lives at all or at least not their day to day life. Others have mentioned the historically known cycles of boom and bust and how it affects the city in general, especially in regards of unemployment levels:

"About a year ago I had a really hard time finding a job."

"I lost my job three months ago and it's not easy to find a new one."

"If either my husband or I lose our job, it would be a problem."

"Not, but it could affect if I lose my job. I can definitely see it in other low-income neighborhoods in Calgary, though."

"Yes. Life has drastically changed in the past few years. I don't go out as much anymore."

"Yes. Right now, the economy in Calgary has improved a little so hopefully things will get better soon."

"Yes. Those are difficult times for Alberta. They say that the recession is over but it's hard to believe it."

"Yes. We're coming out of the recession. A lot of people lost their jobs."

"It does. I see many homeless people. Places super expensive. I was looking for a place to live and even if they were old, it's because of location! They charge me $2000 for a place for one."

Some respondents argued that this seems not to be a unique characteristic of Calgary, but that in their perception, most cities are like that:

"Everywhere is like that. I have family all over Canada and it's always like this. Very rich people and very poor people and we all in the middle."

"I don't feel that Calgary is any different than other cities."

"Yes. But I think in Toronto it's worse."

Many of the interviewed pointed out different situations that would illustrate the problem of polarization in their lives or with more disadvantage people:

"Definitely. I live on my own and I know how hard it is to live with one income."

"Especially for us with 3 kids at home."

"I personally don't feel that but if I had a family to feed, I believe I would."

"Probably. I make a fair amount of money and I still have to buy second hand clothes and I can see it can be tough for people who make less than I do."

"Yes. People expect me to have a car and go out more. It takes time to explain that I can't. To find a job without a car was hard."

In a less frequency response rate it was people that related the inequalities in Calgary to ethnicity or that compared their current place of residence with the country they originally come from:

"I feel that there's more Latin vs. North American inequality."

"It's better than in the Philippines."

"No. Gap is hugger where I come from. Poor people here get funding very easily."

4.6.3 Photo Essay

In addition to the interviews, I also documented through photographs and general descriptions, the visual reality of these 12CTs. In the following sections I will give a brief description of the my perception of the neighbourhoods in these areas.

4.6.3.1 Centre

In the Beltline area that has been under gentrification for decades a very diverse housing stock is present. As we can see in Figures 4.16 and 4.17, the area is dominated by relatively old and also brand new high-rise apartment buildings, a lot of them representing the "condoazation" of the downtown, but also some low-rise buildings, and some single family homes, most of which have been turned into commerce due to their central location, and construction sites are spread all over the neighbourhood (Fig. 4.18 to 4.20). In general, the area is very alive, with lots of entertainment and commerce, with a heated real state but it is also a place of contrasts with a lot of social problems like homelessness and drug abuse.

Figure 4.16: Relatively Old and Dense High Rise Residential Building

Figure 4.17: Contrast between New High Rise Residential Towers and Older Dwelling

Figure 4.18: Victorian Style House from Early Twentieth Century

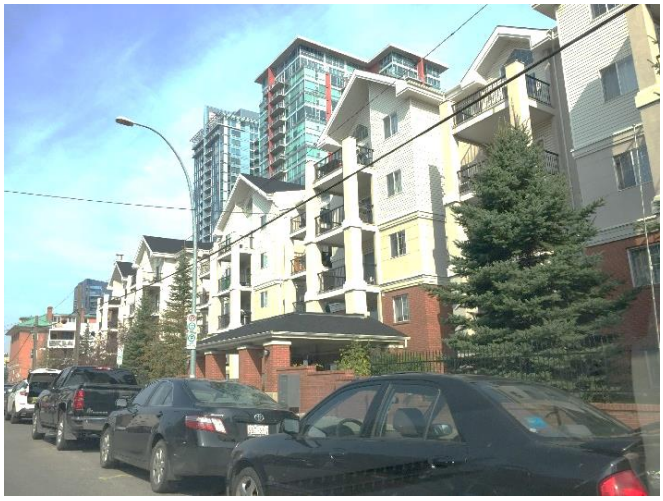


Figure 4.19: Mixed Typology of Dense Housing Stock.

Figure 4.20: Landscape Dominated by High Rises and Construction Sites

In Mission, the real state seem to be in really good condition. With less high-rise buildings in comparisson to the Beltline, the neighbourhood have a lot of row houses and low-rise apartments on top of the centenary single family houses (Figures 4.21 to 4.23).

Figure 4.21: Relatively Old Residential Apartment Building

Figure 4.22: Contemporary Townhouses

Figure 4.23: Single family Homes

Bankview is the other neighbourhood that striked out as being one of the most disadvantaged in Calgary. Some of the housing stock has been renovated, but in general it has an older housing stock, primarily with single family houses from the 1960s, considerably well maintained (Figures 4.24 to 4.28)

Figure 4.24: Old Single-family House with Stucco Facade.

Figure 4.25: Contemporary Style Semi-detached House.

Figure 4.26: Example of Common Style Single family House in the Neighbourhood.

Figure 4.27: Modern Townhouse (Left) and Renovated Single Family Home (Right).

Figure 4.28: Older Single-family House.

4.6.3.2 North East

Large part of the neighbourhoods selected based on their levels of HD are located in the North East to Calgary. Starting with Franklin and Meridian -- that are industrial areas with the exception of a small fenced part of Franklin destinated to residents of an specific religion – and Albert Park/Radisson, all part of the same CT, we can see that it portrait a region with an old housing stock (from the 1950/60s), with some houses needing some sort of care, such as new painting, new fences, garden maintainance and others (Figures 4.29 to 4.32). Lack of care in the neighbourhod is also perceived in situations where you see abandoned supermarket carts in public spaces (Figures 4.33 and 4.34). Duplexes and row houses are also seen in the neighbourhoods, some of which are brand new (Figures 4.35 to 4.37). Overall, the area seems to be the place of residence of a large ethnic community (Fig 4.38). Marlbourough posses similar characteristics with the latest mentioned neighbourhoods above.

Figure 4.29: House Needing Small Repairs Such as Painting.

Figure 4.30: House NeedingNew Fence.

Figure 4.31: House Needing Garden Care.

Figure 4.32: **House With Bushes in Front of Garage Door.**

Figure 4.33: Abandoned Supermarket Cart at Sidewalk.

Figure 4.34: Abandoned Supermarket Cart at Neighbourhood Park.

Figure 4.35: New Semi-detached House.

Figure 4.36: **Brand NewLow Rise Complex of Apartments.**

Figure 4.37:**Row Houses.**

Figure 4.38:**Example of Ethnic Community Institution in the Area.**

Forrest Lawn follows the same line as the previously mentioned neighbourhoods. A large ethnic population can be seen in the neighbourhood, which also can be seen in the local commerce. Regarding the housing stock, most of them are single family houses with also some row houses in the area, with some dwellings could also need repairs and maintainence. In the neighbourhood we could see signs of graffiti and a lot lawn to be mowed (Figures 4.39 to 4.44).

Figure 4.39:Single family House.

Figure 4.40:Example of Ethnic Community Retail in the Area.

Figure 4.41: Relatively Older Single family House.

Figure 4.42: Typical Row House in the Neighbourhood.

Figure 4.43:Old Single family House and Graffiti on the Sidewalk.

Figure 4:44:**Graffiti in the Neighbourhood and Garden Needing Care**.

Penbrook Meadows and Abbeydale seemed to have a better housing stock maintainence than the previous mentioned neighbourhoods, although the age of the housing stock and the typology seem to be the same. In the CT where these neighbourhoods are located at, there is also a trailer park complex (Figures 4.45 and 4.46).

Figure 4.45:Trailer Park in the Area.

Figure 4.46:Older Single family House Needing Gardening Care.

Apart from the approximately 50 year old housing stock in Rundle predominated with single family houses, the neighbourhood have a large faire of row houses. In general, the housing stock is well maintained and a very diverse demograpic seems to live in that region (Figures 4.47 to 4.49).

Figure 4.47:**Row Houses.**

Figure 4.48:**Row Houses**.

Figure 4.49:**Well Maintained Single family Houses**.

4.6.3.3 North

Greenview, Highland Park and a part of Thorncliffe are the neighbourhoods that comprise the North region with high HD levels. Those are very consolidated neighbourhoods with very well maintained single detached houses for the most part (Figures 4.03 and 4.51).

Figure 4.50:Well Maintained Older Housing Stock.

Figure 4.51:Well Maintained Single family House.

4.6.3.4 North West

Finally, on the North West of the city the CT pointed out with high levels of HD relates to University Heights and the University of Calgary. In general this is a very well off area, with a large portion of very well cared of single detached homes. In a certain area of the CT, a high-rise apartment building, a few low-rise and row houses seem to be the place of residence of a very diverse community (Figures 4.52 to 4.58).

Figure 4.52:**Well Maintained Single family Spacious House**.

Figure 4.53:**Low Rise Apartment Buildings**.

Figure 4.54:**Older Multi-Family Housing Stock**.

Figure 4.55:Well Maintained Multi-Family Dwelling.

Figure 4.56:Well Maintained Single Detached Dwellings.

Figure 4.57:Well Maintained Modern House.

Figure 4.58: **Modern Multi-Family Building**.

4.7 Conclusion

This chapter explored the various reasons behind Housing Disadvantage in a Canadian context. More specifically, it was found that it can be measured by eleven unique dimensions that include social and neighbourhood characteristics (See 4.4). Overall, the findings here point to the well known tenure gap in our cities, where an increasing gap between those who own and the ones who rent is getting more evident and leading to situations of housing disadvantage for some. Even though a parcel of these findings have ben illustrated by the recent literature of housing affordability and income inequality, some unique dimensions lead to less explored assumptions (e.g. the relation between Filipinos vs. Old Housing Stock).

The chapter also obtained empirical evidence for housing disadvantage in the Calgary CMA, showing that in this case, a seven model approach should be suficient in accounting for HD. The seven predictors include tenure – including poverty amongst rentals and high rental costs -- and income characteristics, ethnic composition, and neighbourhoods as well as housing stock characteristics.

Lastly, the lived experience through the interviews in the selected

neighbourhoods and the photo essay provided a nuance to support the empirical data findings. Most people confirmed that affordability is an issue when living in Calgary and that although a large part believes to live in neighbourhoods with middle class people, in realiy they live in areas in where income is concentrated in a small part of the population while large majority lives with a low income in comparisson to the city average.

CHAPTER 5: CONCLUSIONS

5.1 Introduction

The main objective of this thesis was to fill the gap in my understanding of housing disadvantage in Canada, focussing on the Calgary CMA, by exploring social and spatial attributes variation throughout the region. It started with a review of the literature on the topic and unfolded to an empirical work with basis on the divided city concept that argue that cities have become more spatially segregated in terms of those who have and have-not. Income inequality has always been a significant feature of cities, but this thesis focused on the post-1970s period, when neoliberal governance has produced new forms of inequality.

5.2 Summary of Findings

The literature suggested that there are numerous variables that may explain or account for HD. Based on a review of these kinds of indicators, they were grouped into 8 sets of conceptually distinctives influences, namely (A) Tenure characteristics and Mobility; (B) Age, Family, and Household Characteristics; (C) Primary Household Maintainer (PHM) Characteristics (similar to Head of Household); (D) Aggregate Neighbourhood Income Characteristics; (E) Neighbourhood Costs and Housing Affordability Stress; (F) Housing Stock Characteristics; (G) Education and Occupational Characteristics of Neighbourhood and PHMs; and (H) Ethnic and Racial Characteristics of Neighbourhood and PHMs. This grouping does not assume some apriori structural uniqueness, or that there are strong correlations between all of the indicators with each group. It is simply used as an organizing framework for the

discussion of the extant literature.

The thesis did not aim to test the hypothesis that those eight sets of variables were distinctive. Rather, it addopted an exploratory approach to identify the structural characteristics or dimensionality of these indicators in Calgary. The empirical results, based on a PCA, revealed that eleven distinctive dimensions could be identified. These eleven unique dimensions were tested for their predictive utility in accounting for the geography of HD in Calgary. Seven of these were found to be significant predictors, while four were not.

The relatively new topic of HD in Canada also suggest that not only a multidimensional approach is necessary to understand how the ecology of housing disadvantage unfolds in the city, but also that in the Calgary CMA, for example, disadvantage might be better defined by other characteristics than the ones suggested in other studies such as Maaranen's (2015). In general, substandardness (measure by housing needing repairs) and crowded housing (more than one person per bedroom) do not seem to be enough indicators of HD in this particular CMA. Another aspect important to mention is in relation to indicators used by the government. For instance, the LICO (Low Income Cut-Off) is used in a national scale to determine the threshold in which families would more likely spend large part of their income on basic necessities. This might be a useful tool in many researches although it does not necessarily mean that a family below LICO in Toronto is equal a family below LICO in Saskatoon.

Although this study have shown its uniqueness in the matter of the disadvantage and have reinforced the linkage between rental poverty and

vulnerable minorities to be related to HD for example, this should be replicated in other CMAs and explored – perhaps in an overtime study – so any major conclusion can be made.

5.3 Policy Suggestions

Although the primary motivation of this research was to advance the theoretical understanding of housing disadvantage, it also has some implications for public policy. As an example, it provides base for policy implementation in certain areas of the Calgary CMA. Target groups can be prioritized if such analysis occur, benefiting the solution for housing problems also at a national scale. For instance, the "National Housing Strategy" announced late in 2017 by the Federal Government, a 10-year $40 billion initiative to reduce affordability issues and homelessness, would be more effective if each province or metropolitan area worked specifically with their ownpriorities. This study in comparisson to other studies that deal with income inequality and affordability (See Hulchanski and Maaranen 2015) in cities like Toronto and Vancouver where rental markets seem to be in worse condition than Calgary, finds different results than in those cities. Perhaps local tax and transfer systems as ways to garantee redistribution of wealth should be explored (Gibson 2012), although, one might say that place-specific policies would be more beneficial to each place than national wide policies.

The findings reinforce the necessity of a more specific plan for the provision of affordable housing, once it is known to not generate profite as other developments (Tsenkova and Witwer 2011). Other countries have shown that there are many ways in which this might be possible, such as incentives provided to

developers for the construction of affordable housing units, or even policies stipulating a mandatory percentage of units destinated to such projects. This could also work to create more diverse communities and possibly contribute to a less segregated city.

This research should not only benefit governmental decision-making processes but also non-profit organizations, such as community associations when allocating resources for example, that could aim to target specific groups to solve their problems and meet their necessities. Some additional themes derived from the interviews, like the lack of safety in some areas perceived by some residents, or the low frequencies in the availability of public transportation, might be useful for the promotion of community engagment and enhance residents' experience in their neighbourhoods.

Contemporary social issues should be mitigated by a balance of different scales of governance, in partnership with the private sector and the tertiary sector, as a matter of social justice.

5.4 Housing Disadvantage and Other Neighbourhood Implications

Housing affordability and income inequality can have implications other than the ones perceived through the urban patterns of housing disadvantage. One might say that the increasinging divided city of the last 40 years that leads to the segregation of the ones who "have-not" from the ones who "have" directly affects the urban services of our cities. This might be true in the sense that infra-structure might differ in these places, and new developments with high influx of money are often located in more affluent areas, leaving the socialy excluded living in areas with not only an

older housing stock, but with less upkeep than areas of residents with money. In the neighbourhoods observed in this research, it was noted that quite often in the CTs with high levels of HDIALL, a large percentage of the housing stock had deteriorated. This has neighbouhood implications for the way people perceive their area as a place to live, which also affects developers' subsequent investment decisions.

5.5 Directions for Future Research

Further research is necessary to understand the role of social and neighbourhood characteristics in accounting for housing disadvantage in Canadian cities. This study has enhanced the understanding of the housing disadvantage issue in the Calgary CMA. Although limited to one year analysis with 2006 data, because of non-representative data associated with the 2011 National Household Survey (NHS), the empirical research would have benefited if it could have been based on a longitudinal data. It would also benefit by extending the research to replicate the study in other cities for comparison and validation. Until then, the conclusions of this study are not universal, and some caution should be taken when drawing inferences about the results here presented in other cities. Such studies should focus on verifying if the same structure that is found here is replicated in other regions, or if different dimensions related to housing disadvantage.

References

American Psychological Association (APA) (2018). Socioeconomic Status. Retrieved from http://www.apa.org/topics/socioeconomic-status/

Balakrishnan, T. (1976). Ethnic Residential Segregation in the Metropolitan Areas of Canada. *The Canadian Journal of Sociology / Cahiers Canadiens de Sociologie*, 1(4): 481-498. doi:10.2307/3339757

Balakrishnan, T. (1982). Changing patterns of ethnic residential segregation in the metropolitan areas of Canada. *Canadian Review of Sociology/Revue canadienne de sociologie*, 19: 92-110. doi:10.1111/j.1755-618X.1982.tb01323.x

Balakrishnan, T.R., and Hou, F. (1999). Socioeconomic integration and spatial residential patterns of immigrant groups in Canada*. Population Research and Policy Review.* Kluwer Academic Publishers, 18(3): 201-217. doi:10.1023/A:1006118502121

Balakrishnan, T., and Wu, Z. (1992). Home Ownership Patterns and Ethnicity in Selected Canadian Cities. *The Canadian Journal of Sociology / Cahiers Canadiens De Sociologie, 17*(4), 389-403. doi:10.2307/3341216

Boal, F. W. (2008). Territoriality on the Shankill-Falls divide: Being wise after the event. *Irish Geography*, 41(3): 329–335. doi:10.1080/00750770802507004

Bourne, L. S. (1976). Urban Structure and Land Use Decisions. *Annals of the Association of American Geographers, 66*(4), 531-535. doi:10.1111/j.1467-8306.1976.tb01108.x

Booth, C. (1889). *Life and labour of the people.* London: Macmillan (republished 1969).

Booth, C. (1893). *Life and Labour of the People in London: First Results of An Inquiry Based on the 1891 Census*. Opening Address of Charles Booth, Esq., President of the Royal Statistical Society. Session 1893-94. Journal of the Royal Statistical Society, 56(4), 557-593. doi:10.2307/2979431

Bourne, L. S., and Rose, D. (2001). The changing face of Canada: the uneven geographies of population and social change. *The Canadian Geographer / Le Géographe canadien, 45*(1), 105-119. doi:doi:10.1111/j.1541-0064.2001.tb01174.x

Bryant, T. (2004). How knowledge and political ideology affects rental housing policy in Ontario, Canada: application of a knowledge paradigms framework of policy change. *Housing Studies, 19*(4), 635-651. doi:10.1080/0267303042000222007

Broadway, M. (1989). A Comparison of Patterns of Urban Deprivation Between Canadian and U.S. Cities. *Social Indicators Research* 2: 531-551.

Bunting, T., Walks, A. R., & Filion, P. (2004). The uneven geography of housing affordability stress in Canadian metropolitan areas. *Housing Studies, 19*(3), 361-393. doi:10.1080/0267303042000204287

Canada Mortgage and Housing Corporation (CMHC) (2018). Core Housing Need Status. Retrieved from https://cmhc.beyond2020.com/HiCODefinitions

Carter, T. (1990). *Housing affordability in Canada: are we addressing the problem?* Occasional Paper 24 (Winnipeg, MN, Institute of Urban Studies, University of Winnipeg).

Carter, T. S., & Osborne, J. (2009). Housing and Neighbourhood Challenges of Refugee Resettlement in Declining Inner City Neighbourhoods: A Winnipeg Case Study. *Journal of Immigrant & Refugee Studies, 7*(3), 308-327. doi:10.1080/15562940903150097

Choko, M., & Harris, R. (1990). The Local Culture of Property: A Comparative History of Housing Tenure in Montreal and Toronto. *Annals of the Association of American Geographers, 80*(1), 73-95. doi:doi:10.1111/j.1467-8306.1990.tb00004.x

Crook, T. (1998). The supply of private rented housing in Canada. *Netherlands journal of housing and the built environment, 13*(3), 327-352. doi:10.1007/bf02496782

Davies, W. K. D. (1978). Charles Booth and the Measurement of Urban Social Character. *Area, 10*(4), 290-296.

Davies, W.K.D. (1984). Social Differences within Cities. *Factorial Ecology*, 9: 297-345 Gower, Aldershot.

Davies, W.K.D. and Herbert, D.T. (1993). Communities in Cities: Perspectives in Social Geography. London: Bellhaven Press/Halstead-John Wiley. 196.

Davies, W.K.D. and Murdie, R.A. (1993). Measuring the Social Ecology of Cities. In *The Changing Social Geography of Canadian Cities*, Edited by: Bourne, L.S. and Ley, D.F. 52–75. Montreal: McGill-Queen's University Press.

Dinca-Panaitescu M, W. A. (2015). Income inequality, income polarization, and poverty. *Toronto: United Way Toronto and York Region Neighborhood Change Research Partnership, University of Toronto*.

Driedger, L. (1999). Immigrant/ethnic/racial segregation: Canadian big three and prairie metropolitan comparison. Canadian Journal of Sociology, 24(4), 485–510.

Duncan, O. D. and Duncan, B. (1955). A Methodological Analysis of Segregation Indexes. American Sociological Review 20(2): 210-217.

Engels, F. (1892) The Condition of the Working- Class in England in 1844 (Leipzig, 1845; Eng. trans.,New York, 1887, London).

Fong, E. (1997). Residential Proximity with the Charter Groups in Canada. *Canadian Studies in Population,* 24(2):103–24.

Fong, E. and Chan, E. (2011). Residential Patterns Among Religious Groups In Canadian Cities. *City & Community*, 10: 393–413.

Fong, E., & Shibuya, K. (2000). The Spatial Separation of the Poor in Canadian Cities. Demography, 37(4): 449-459.

Galabuzi, G. (2006). *Canada's Economic Apartheid: The Social Exclusion of Racialized Groups in the New Century.* Toronto: Canadian Scholars' Press.

Gibson, D. (2012). *A Social Policy Framework for Alberta: Fairness and Justice for All.* Edmonton, Alberta: Parkland Institute.

Goldberg, M. A. and Mercer, J. (1986). The Myth of the North American City. University of British Columbia Press, Vancouver.

Grant, J.L. and Filion, P. (2015). Emerging Urban Forms in the Canadian City. In Canada in Filion,P., Moos,M., Vinodrai, T. and Walker, R. (Eds). *Canadian Cities in Transition, Perspectives for an Urban Age,* Fifth Edition.

Hall, P. (2015). Global flows: making the city, made in the city. In Filion,P., Moos,M., Vinodrai, T. and Walker, R. (Eds). *Canadian Cities in Transition, Perspectives for an Urban Age,* Fifth Edition, pp. 38-50.

Harris, R. (1986). Home ownership and class in modern Canada. *International Journal of Urban and Regional Research, 10*(1), 67-86. doi:doi:10.1111/j.1468-2427.1986.tb00005.x

Harris, R. and Hamnett, C. (1987). The Myth of the Promised Land: The Social Diffusion of Home Ownership in Britain and North America. *Annals of the Association of American Geographers, 77*(2), 173-190. doi:doi:10.1111/j.1467-8306.1987.tb00152.x

Harris, R. and Lehman, M. (2001). Social and Geographic Inequities in the Residential Property Tax: A Review and Case Study. *Environment and Planning A: Economy and Space, 33*(5), 881-900. doi:10.1068/a33128

Harris, R., & Wahba, M. (2002). The Urban Geography of Low-income Housing: Cairo (1947–96) Exemplifies a Model. *International Journal of Urban and Regional Research, 26*(1), 58-79. doi:doi:10.1111/1468-2427.00363

Heather Smith and David Ley (2008). Even in Canada? The Multiscalar Construction and Experience of Concentrated Immigrant Poverty in Gateway Cities, Annals of the Association of American Geographers, 98:3, 686-713, DOI: 10.1080/00045600802104509

Hiebert, D. 1993. Jewish immigrants and the garment industry of Toronto, 1901–1931: A study of ethnic and class relations. Annals of the Association of American Geographers 83:243–71.Hulchanski, J.D. (2002) "Housing Policy for Tomorrow's Cities" Discussion Paper F|27 Family Network, Canadian Policy Research Network (CPRN).

Hulchanski, J.D. (2003). Housing policy for tomorrow's cities. *Canadian Policy Research Network*.

Hulchanski, J.D. (2010). *The Three Cities of Toronto: Income Polarization among Toronto's Neighbourhoods, 1970-2005*. Cities Centre, University of Toronto.

Hulchanski, J.D. (2014). *It is better not to know than to know: The 2011 and 2016 National Household Survey (NHS)*. Retrieved from http://neighbourhoodchange.ca/2011-and-2016-nhs/

Hulchanski, and Maaranen, R. (2015). Defining Neighbourhoods in Relation to Rental Housing Stress in Urban Canada. Neighbourhood Change Research Partnership, University of Toronto.

Hutton, T. and Vinodrai, T. (2015). Employment, Labour Markets, and Urban Change. In Canada in Filion,P., Moos,M., Vinodrai, T. and Walker, R. (Eds). *Canadian Cities in Transition, Perspectives for an Urban Age,* Fifth Edition, pp. 88-108.

Johnston, R., Poulsen, M., and Forrest, J. (2007). "The Geography of Ethnic Residential Segregation: A Comparative Study of Five Countries". Annals of the Association of American Geographers, 713-738.

Kazemipur, A. (2000). Ecology of deprivation: Spatial Concentration of Poverty in Canada. *The Canadian Journal of Regional Science / Revue Canadienne des Sciences Régionales, 23*(3): 403-426.

Kazempiur, A., & Halli, S. (2000). Neighbourhood Poverty in Canadian Cities. *The Canadian Journal of Sociology / Cahiers Canadiens De Sociologie, 25*(3), 369-381

Knox, P. and Pinch S. (2010). Segregation and Congregation. *Urban Social Geography: An Introduction.* 6: 165-186.

Kobayashi, A. and Peake, L. (2000), Racism out of Place: Thoughts on Whiteness and an Antiracist Geography in the New Millennium. *Annals of the Association of American Geographers*, 90: 392-403. doi:10.1111/0004-5608.00202

Kobayishi, A. & Preston, V. (2015). International migration and immigration: remaking the multicultural Canadian city. In Filion,P., Moos,M., Vinodrai, T. and Walker, R. (Eds). *Canadian Cities in Transition, Perspectives for an Urban Age,* Fifth Edition, pp. 129-150.

Laslett, P. (1987). The Emergence of the Third Age. Ageing and Society, 7(2), 133-160. doi:10.1017/S0144686X00012538

Li, W. (1998). Anatomy of a New Ethnic Settlement: The Chinese Ethnoburb in Los Angeles. Urban Studies, 35(3), 479-501. doi/10.1080/0042098984871

Luffman, J. (2006). Measuring housing affordability. *Perspectives on Labour and Income, 18*(4), 48-57.

Marcuse, P. (1993). What's so new about Divided Cities? *International Journal of Urban and Regional Research, 17*(3), 355-365.

Marcuse, P. and van Kempen, R. (2000). Conclusion: A Changed Spatial Order. *In Globalizing Cities (eds P. Marcuse and R. van Kempen).* doi:10.1002/9780470712887.ch12

Massey, D. S. (1993). "Latinos, Poverty, and the Underclass: A New Agenda for Research." *The Hispanic Journal of Behavioral Sciences*, 15 no. 4449-475

Massey, D. S. (1996). The age of extremes: Concentrated affluence and poverty in the twenty-first century. *Demography, 33*(4), 395-412. doi:10.2307/2061773

Massey, D. S. and Denton, N. A. (1993). *American Apartheid: Segregation and the Making of the Underclass*. Harvard University Press.

Massey, D. S. and Eggers, M. L. (1990). The Ecology of Inequality: Minorities and the.Concentration of Poverty 1970-1980. *The American Journal of Sociology*, 95(5): 1153-1188. United States: The University of Chicago Press.

Miron, J. R. (1995). Private Rental Housing: The Canadian Experience. *Urban Studies, 32*(3), 579-604. doi:10.1080/00420989550012988

Moore, E., & Skaburskis, A. (2004). Canada's increasing housing affordability burdens. *Housing Studies, 19*(3), 395-413. doi:10.1080/0267303042000204296

Moos, M. (2015). Generational Change and the City: How age defines the Urban Landscape. In Filion,P., Moos,M., Vinodrai, T. and Walker, R. (Eds). *Canadian Cities in Transition, Perspectives for an Urban Age,* Fifth Edition, pp. 343-363.

Morril, R. L. (1991). On the Measure of Spatial Segregation. *Geography Research Forum,* 11: 25-36. United States: University of Washington.

Mumford, L. (1961).*The city in history: Its origins, its transformations, and its prospects*. Harcourt, Brace & World, Inc., New York.

Okraku, I. O. (1987). Age Residential Segregation in Canadian Cities. *Canadian Review of.Sociology and Anthropology,* 24(3): 431-452.

Paradis, E., Wilson, R. M., and Logan, J. (2014). *Nowhere else to go: Inadequate housing & risk of homelessness among families in Toronto's aging rental buildings*. Cities Centre: University of Toronto. Retrieved from http://neighbourhoodchange.ca/documents/2014/04/paradis-et-al-2014-nowhere-else-to-go-inadequate-housing-risk-of-homelessness-among-families-in-torontos-aging-rental-buildings-rp231.pdf

Peach, C. (2009). "Slippery Segregation: Discovering or Manufacturing Ghettos?" *Journal of Ethnic and Migration Studies*, 35(9): 1381-1395. Routledge Taylor & Francis Group.

Pendakur, K., & Pendakur, R. (2002). Colour My World: Have Earnings Gaps for Canadian-Born Ethnic Minorities Changed over Time? *Canadian Public Policy / Analyse De Politiques, 28*(4), 489-512. doi:10.2307/3552211

Peters, E. (2001). Geographies of Aboriginals people in Canada. *The Canadian Geographer*, 45(1): 138-144. Queen's University.

Pomeroy, S. (2001) *Toward a Comprehensive Affordable Housing Strategy for Canada*, The Caledon Institute of Social Policy, Ottawa.

Pomeroy, S. (2004). Toward a Comprehensive Affordable Housing Strategy for Canada. .

Porter, J. (1968) *The Vertical Mosaic: Analyses of Social Class and Power in Canada*, Toronto: University of Toronto Press.

Ray, B. K. and Moore, E. (1991). Access to homeownership among immigrant groups in Canada. *Canadian Review of Sociology/Revue canadienne de sociologie, 28*(1), 1-29. doi:doi:10.1111/j.1755-618X.1991.tb00142.x

Randolph, B. and Holloway, D. (2005). Social Disadvantage, Tenure and Location: An Analysis of Sydney and Melbourne. *Urban Policy and Research, 23*(2), 173-201. doi:10.1080/08111470500135136

Tabachnick, B.G., and Fidell, L.S. (1989). *Using multivariate statistics* (3rd ed.). New York, NY: HarperCollins.

Teixeira, C. (1997). The Suburbanization of Portuguese Canadians in Toronto. *The Great Lakes Geografher*, 4(1): 25-39.

Teixeira, C. (2008). Barriers and outcomes in the housing searches of new immigrants and refugees: a case study of "Black" Africans in Toronto's rental market. *Journal of Housing and the Built Environment,* 23(4), 253-276

Townshend, I.J. (2002). Monitoring Community Dimensions: City-Wide Characteristics and Differentiation by Social Region. In Davies, W.K.D and Townshend, I.J (eds) Monitoring Cities: International Perspective. International Geographical Union, Urban Commission, pp.435-459

Townshend, I. and Coppola, F. (2016). Exploring Links between the "Three Cities" of Calgary and Changing Segregation Characteristics of Two Vulnerable Populations. Neighbourhood Change Research Partnership, CAG Halifax.

Townshend, I. and Walker, R. (2002). The Structure of Income Residential Segregation in Canadian Metropolitan Areas. *Canadian Journal of Regional Science*, XXV:1, 25–52.

Townshend, I., and Walker, R. (2015). Life Course and Lifestyle Changes: Urban Change through the Lens of Demography. Chapter 7. In Filion, P., Moos, M., Vinodrai, T. and Walker, R (eds) *Canadian Cities in Transition*, Fifth Edition. Oxford University Press, pp. 109-128.

Townshend, I., Miller, B., and Evans, L. (2018). Socio-Spatial Polarization in an Age of Income Inequality: An Exploration of Neighbourhood Change in Calgary's "Three Cities". University of Toronto.

Tsenkova, S. and Witwer, M. (2011). Bridging the Gap: Policy Instruments to Encourage Private Sector Provision of Affordable Rental Housing in Alberta, *Canadian Journal of Urban Research, 20(1)* 52-80.

Schnell, I. and Benjamini, Y. (2002). Understanding Changes in Urban Income Inequality and Social Divisions: Theories and Evidence in Contemporary Western Cities. In *Monitoring Cities: International Perspectives*, edited by. Davies, W.K.D and Townshend, I.J., 461-478. International Geographical Union, Urban Commission.

Skaburskis, A. and Moos, M. (2015). Urban economics: The Factors Shaping the Value of Land. In Filion,P., Moos,M., Vinodrai, T. and Walker, R. (Eds). *Canadian Cities in Transition, Perspectives for an Urban Age,* Fifth Edition, pp. 209-226.

Statistics Canada (2011). National Household Survey (NHS). Retrieved from http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5178

Statistics Canada (2013). Housing Suitability of Private Household. Retrieved from http://www23.statcan.gc.ca/imdb/p3Var.pl?Function=DEC&Id=100731

Statistics Canada (2016). Immigration and Ethnocultural Diversity in Canada. Retrieved from https://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/99-010-x2011001-eng.cfm#a8

Statistics Canada (2016b). Dictionary, Census of Population, 2016. Retrieved from https://www12.statcan.gc.ca/census-recensement/2016/ref/dict/households-menage020-eng.cfm

Statistics Canada (2017). Population size and growth rate among census metropolitan areas (CMAs) in Canada, 2006 to 2011 and 2011 to 2016, ranked by percentage growth in 2016. Catalogue no. 98-402-X2016001. Retrieved from https://www150.statcan.gc.ca/n1/daily-quotidien/170208/t003a-eng.htm

Statistics Canada (2017b). Five fastest growing census metropolitan areas located in the Prairies. Catalogue no. 98-402-X2016001). Retrieved from https://www150.statcan.gc.ca/n1/daily-quotidien/170208/dq170208a-eng.htm

Statistics Canada (2017c). Visible Minority and Population Group Reference Guide, Census of Population, 2016. Retrieved from http://www12.statcan.gc.ca/census-recensement/2016/ref/guides/006/98-500-x2016006-eng.cfm

Statistics Canada (2017d). Household income in Canada: Key results from the 2016 Census, The Daily. Retrieved from https://www150.statcan.gc.ca/n1/daily-quotidien/170913/dq170913a-eng.htm

Stelter, G. and Artibise, A. (1986). *Power and Place: Canadian Urban Development in the North American Context*, Vancouver: University of British Columbia Press.

Suttor, Greg. (2015). *Rental Housing Dynamics and Lower-Income Neighbourhoods in Canada*. Neighbourhood Change Research Partnership. University of Toronto.

van Kempen, R. (2007). Divided cities in the 21st century: challenging the importance of globalization. *Journal of Housing and the Built Environment*, 22(1): 13-31.

Voices-Voix. (2011). Statistics Canada (mandatory long-form census). Retrieved from http://voices-voix.ca/en/facts/profile/statistics-canada-mandatory-long-form-census

Walks, A. (2013). *Income Inequality and Polarization in Canada's Cities: An Examination and New Form of Measurement*, Toronto: University of Toronto Cities Centre Research Paper No. 227.

Walks, R.A. (2015). Growing Divisions: Inequality, Neighbourhood Poverty and Homelessness in the Canadian City. In Filion, P., Moos, M., Vinodrai, T. and Walker, R (eds) *Canadian Cities in Transition*, Fifth Edition. Oxford University Press, pp. 151-174.

Walks, R. A., Bourne, L. S. (2006). "Ghettos in Canada's cities? Racial segregation, ethnic enclaves and poverty concentration in Canadian urban areas". *The Canadian Geographer / Le Geographe canadien*, 50(3): 273-297.

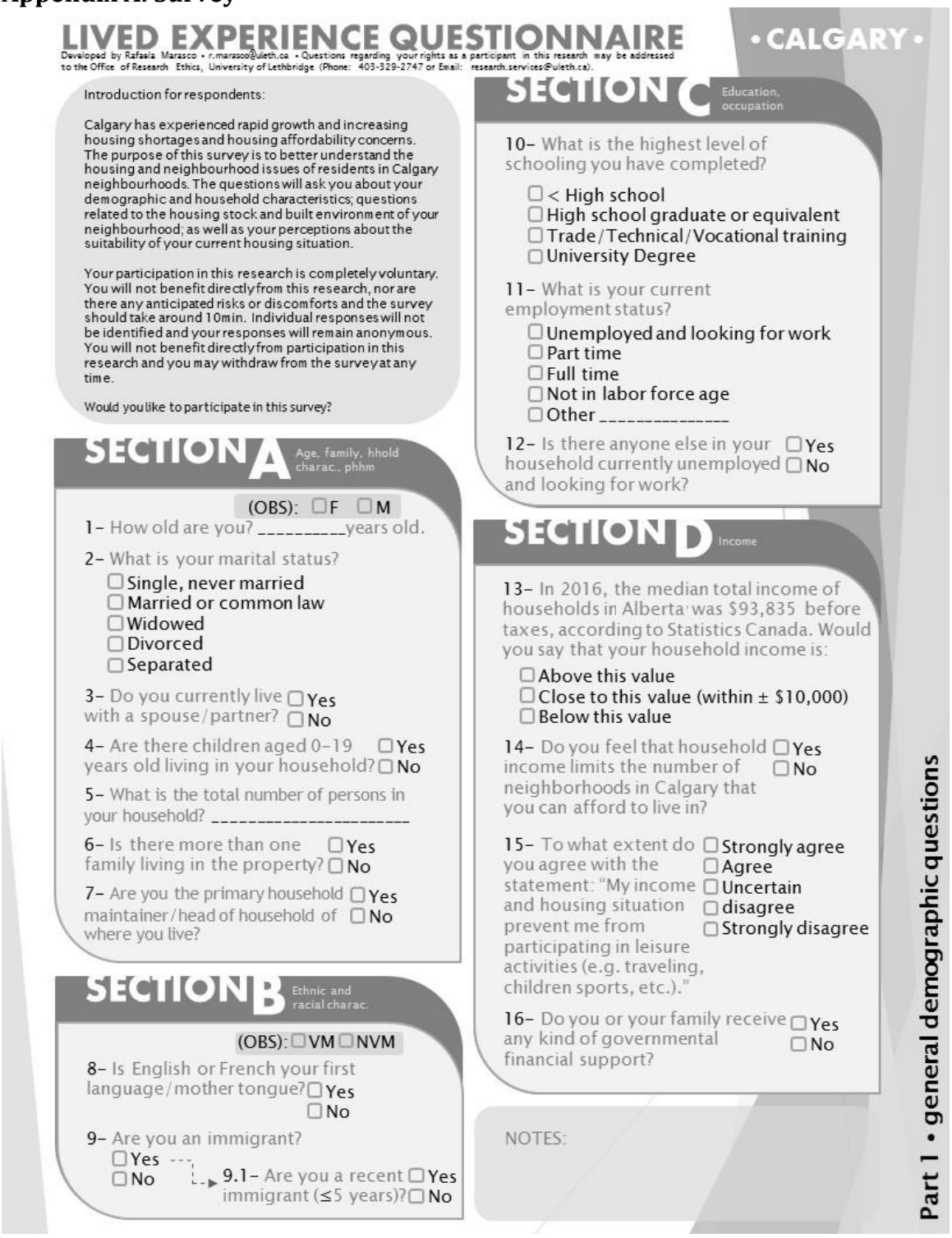
Wessel, T. (2002). Understanding Changes in Urban Income Inequality and Social Divisions: Theories and Evidence in Contemporary Western Cities. In *Monitoring Cities: International Perspectives*, edited by Davies, W.K.D. and Townshend, I.J. (30): 501-522. International Geographical Union, Urban Commission.

Woodsworth, J.S. (1909). *Strangers within our gates: or, Coming Canadians*. FC Stephenson.

Woodsworth, J. S. (1972). *My Neighbor: A Study of City Conditions, a Plea for Social Service. [1911]* Toronto, ON, Canada: University of Toronto Press.

Appendices

Appendix A: Survey



LIVED EXPERIENCE QUESTIONNAIRE

• CALGARY •

Developed by Rafaela Marasco • r.marasco@uleth.ca • Questions regarding your rights as a participant in this research may be addressed to the Office of Research Ethics, University of Lethbridge (Phone: 403-329-2747 or Email: research.services@uleth.ca).

Introduction for respondents:

Calgary has experienced rapid growth and increasing housing shortages and housing affordability concerns. The purpose of this survey is to better understand the housing and neighbourhood issues of residents in Calgary neighbourhoods. The questions will ask you about your demographic and household characteristics; questions related to the housing stock and built environment of your neighbourhood; as well as your perceptions about the suitability of your current housing situation.

Your participation in this research is completely voluntary. You will not benefit directly from this research, nor are there any anticipated risks or discomforts and the survey should take around 10min. Individual responses will not be identified and your responses will remain anonymous. You will not benefit directly from participation in this research and you may withdraw from the survey at any time.

Would you like to participate in this survey?

SECTION A — Age, family, hhold charac., phhm

(OBS): ☐F ☐M

1– How old are you? _____years old.

2– What is your marital status?
- ☐ Single, never married
- ☐ Married or common law
- ☐ Widowed
- ☐ Divorced
- ☐ Separated

3– Do you currently live with a spouse/partner? ☐Yes ☐No

4– Are there children aged 0–19 years old living in your household? ☐Yes ☐No

5– What is the total number of persons in your household? _____

6– Is there more than one family living in the property? ☐Yes ☐No

7– Are you the primary household maintainer/head of household of where you live? ☐Yes ☐No

SECTION B — Ethnic and racial charac.

(OBS): ☐VM ☐NVM

8– Is English or French your first language/mother tongue? ☐Yes ☐No

9– Are you an immigrant? ☐Yes ☐No

→ 9.1– Are you a recent immigrant (≤5 years)? ☐Yes ☐No

SECTION C — Education, occupation

10– What is the highest level of schooling you have completed?
- ☐ < High school
- ☐ High school graduate or equivalent
- ☐ Trade/Technical/Vocational training
- ☐ University Degree

11– What is your current employment status?
- ☐ Unemployed and looking for work
- ☐ Part time
- ☐ Full time
- ☐ Not in labor force age
- ☐ Other _____

12– Is there anyone else in your household currently unemployed and looking for work? ☐Yes ☐No

SECTION D — Income

13– In 2016, the median total income of households in Alberta was $93,835 before taxes, according to Statistics Canada. Would you say that your household income is:
- ☐ Above this value
- ☐ Close to this value (within ± $10,000)
- ☐ Below this value

14– Do you feel that household income limits the number of neighborhoods in Calgary that you can afford to live in? ☐Yes ☐No

15– To what extent do you agree with the statement: "My income and housing situation prevent me from participating in leisure activities (e.g. traveling, children sports, etc.)."
- ☐ Strongly agree
- ☐ Agree
- ☐ Uncertain
- ☐ disagree
- ☐ Strongly disagree

16– Do you or your family receive any kind of governmental financial support? ☐Yes ☐No

NOTES:

Part 1 • general demographic questions

SECTION E — Tenure charac., mobility, housing stock

17- What is your Postal Code? _ _ _ _ _ _

18- What is the type of dwelling (housing) you live in?

- ☐ Single-detached house
- ☐ Semi-detached house
- ☐ High-rise apartment
- ☐ Low-rise apartment
- ☐ Apartment/flat in a duplex
- ☐ Other _____

19- Do you own or rent? ☐ Own ☐ Rent

20- Is there a mismatch between your needs and the type of house you live in? ☐ Yes ☐ No

21- Does your house need major repairs (e.g. new roof, furnace, windows, etc.)? ☐ Yes ☐ No

22- To what extent are you satisfied with your current housing situation?

- ☐ Very dissatisfied
- ☐ Dissatisfied
- ☐ Uncertain
- ☐ Satisfied
- ☐ Very satisfied

23- How long have you lived in this property? _____ years _____ months

24- Was your previous place of residence in the same neighborhood? ☐ Yes ☐ No

25- Why did you chose to live in this neighborhood?

_____
_____
_____
_____
_____

26- Can you tell me about any difficulties you had in finding/securing accommodation?

_____
_____
_____
_____
_____

39- Calgary is considered to be one of the most income unequal (growing gap between rich/poor) cities in Canada. Do you feel that it affects your life in some way? Please, explain.

_____
_____
_____
_____

SECTION F — Neighborhood charac.,

27- When you think about people in your neighborhood, would you say that most people are:

- ☐ Low income
- ☐ Middle income
- ☐ Upper income
- ☐ Totally diverse
- ☐ I do not know

28- How often do you use public transport?

- ☐ Never
- ☐ Less than once p/ month
- ☐ 1 to 2 times p/ month
- ☐ 3 to 5 times p/ month
- ☐ More than 6 times p/ month

29- Do you believe that your neighborhood is adequately served with public transport? ☐ Yes ☐ No

30- Are grocery stores easily accessible from this neighborhood? ☐ Yes ☐ No

31- How important is access to the downtown core in your daily life?

- ☐ Important
- ☐ Moderately important
- ☐ Not important

32- Do you feel that the access to downtown core is too difficult from this neighborhood? ☐ Yes ☐ No

33- Would you move out from this neighborhood if you could?

☐ Yes ----▸ 33.1- Why? _____
_____
_____
_____
☐ No

34- In your opinion, how safe is this neighborhood?

- ☐ Very safe
- ☐ Safe
- ☐ Neutral
- ☐ Unsafe
- ☐ Very unsafe

35- On a scale of 1 to 5 (being 1=not involved and 5=very involved) how involved are you in the neighborhood?

☐1 ☐2 ☐3 ☐4 ☐5

36- "I feel a strong sense of community in this neighborhood". Do you:

- ☐ Strongly agree
- ☐ Agree
- ☐ Uncertain
- ☐ disagree
- ☐ Strongly disagree

37- Does any aspect of this neighborhood create any difficulties in your life?

☐ Yes ----▸ 37.1- What? _____
_____
_____
_____
☐ No

38- Compared to other neighborhoods in Calgary, do you think your neighborhood is an ethnically diverse community?

☐ Yes ☐ No ☐ Not sure

Part 2 • housing stock and urban morphology questions

Appendix B: Letter of Consent

Introduction for respondents:

You are being invited to participate in a research project lead by Rafaela Marasco, a graduate student at the University of Lethbridge, AB.

Calgary has experienced rapid growth and increasing housing shortages and housing affordability concerns. The purpose of this survey is to better understand the housing and neighbourhood issues of residents in Calgary neighbourhoods. The questions will ask you about your demographic and household characteristics; questions related to the housing stock and built environment of your neighbourhood; as well as your perceptions about the suitability of your current housing situation.

Your participation in this research is completely voluntary. You will not benefit directly from this research, nor are there any anticipated risks or discomforts and the survey should take around 10min. No personal identifying information will be collected. Individual responses will not be identified and your responses will remain anonymous. You may withdraw from the survey at any time during the interview by simply telling me you wish to stop. If you choose to withdraw, the information you have contributed will be destroyed. If you choose to withdraw after the completion of the interview, I will not be able to remove your information because there will be no way to link responses to a specific person.

The results from the study may be presented in writing in academic publications and presentations as part of the requirements of Rafaela's Master's degree, and in the Research Findings Report. If you wish to receive a copy of the study's findings, you may contact the researcher at the email given below.

If you require any information about this study, or would like to speak to the researcher (principal investigator), please email Rafaela Marasco at r.marasco@uleth.ca. Questions regarding your rights as a participant in this research may be addressed to the Office of Research Ethics, University of Lethbridge (Phone: 403-329-2747 or Email: research.services@uleth.ca).

Thank you for your interest in participating in this study.

Appendix C: Correlations Within Groups

Group A (Tenure and Mobility) Correlations

		PERCRENTED	PERCPHMMOVER5	RATIORENTAL	TOTMOVERS06
PERCRENTED	PC	1	.421**	1.000**	.446**
PERCPHMMOVER5	PC	.421**	1	.421**	.989**
RATIORENTAL	PC	1.000**	.421**	1	.446**
TOTMOVERS06	PC	.446**	.989**	.446**	1

**. Correlation is significant at the 0.01 level (2-tailed).

PC = Pearson Correlation

Sig. = Sig. (2-tailed)

Group B (Age, Family and Household Characteristics) Correlations

		AVPPH	PERC2PARFAM	PERCFEMLPF	PERCCHILDLESSCOUP	PERCMULTFAMHH	PERC65PLUS	AGEDIVERSITY10	PERC1PERSHHLD	PERC1PERSHHLDRENTER	RATIO1PHRENTERSTO1PH	PERCHILDRENCT	PERCALLCHILDRENINRENTAL	PERCMILLENIAL2534
AVPPH	PC	1	.901**	0,087	-0,075	.641**	-.495**	0,040	-.946**	-.709**	0,047	.826**	-.561**	-.581**
PERC2PARFAM	PC	.901**	1	-0,099	0,095	.317**	-.467**	-0,080	-.903**	-.747**	-0,061	.793**	-.690**	-.628**
PERCFEMLPF	PC	0,087	-0,099	1	-.284**	.149*	-0,065	.332**	-0,138	-0,047	0,094	0,122	.312**	-0,131
PERCCHILDLESSCOUP	PC	-0,075	0,095	-.284**	1	-.396**	.326**	.239**	-.157*	-.247**	-.166*	-0,046	-.394**	-.358**
PERCMULTFAMHH	PC	.641**	.317**	.149*	-.396**	1	-.285**	0,093	-.465**	-.303**	0,088	.423**	-.140*	-0,118
PERC65PLUS	PC	-.495**	-.467**	-0,065	.326**	-.285**	1	.584**	.456**	.321**	-0,036	-.570**	.144*	-.192**
AGEDIVERSITY10	PC	0,040	-0,080	.332**	.239**	0,093	.584**	1	-0,119	-0,052	0,042	0,024	0,015	-.495**
PERC1PERSHHLD	PC	-.946**	-.903**	-0,138	-.157*	-.465**	.456**	-0,119	1	.767**	-0,009	-.818**	.599**	.650**
PERC1PERSHHLDRENTER	PC	-.709**	-.747**	-0,047	-.247**	-.303**	.321**	-0,052	.767**	1	.555**	-.661**	.696**	.513**
RATIO1PHRENTERSTO1PH	PC	0,047	-0,061	0,094	-.166*	0,088	-0,036	0,042	-0,009	.555**	1	-0,027	.294**	-0,011
PERCHILDRENCT	PC	.826**	.793**	0,122	-0,046	.423**	-.570**	0,024	-.818**	-.661**	-0,027	1	-.496**	-.373**
PERCALLCHILDRENINRENTAL	PC	-.561**	-.690**	.312**	-.394**	-.140*	.144*	0,015	.599**	.696**	.294**	-.496**	1	.487**
PERCMILLENIAL2534	PC	-.581**	-.628**	-0,131	-.358**	-0,118	-.192**	-.495**	.650**	.513**	-0,011	-.373**	.487**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

PC = Pearson Correlation

Sig. = Sig. (2-tailed)

Group C (Primary Household Maintainer) Correlations

		PERCYOUNGPHM	PERCOLDPHM	PERCFEMPHM	RATIOFEMTOMALEOLDHM	RATIOFEMTOMPHM	PERCRENTERSFEMOLDHM
PERCYOUNGPHM	PC	1	0,019	.614**	.462**	.593**	-0,050
PERCOLDPHM	PC	0,019	1	.284**	.301**	.277**	.449**
PERCFEMPHM	PC	.614**	.284**	1	.656**	.989**	.139*
RATIOFEMTOMALEOLDHM	PC	.462**	.301**	.656**	1	.654**	.322**
RATIOFEMTOMPHM	PC	.593**	.277**	.989**	.654**	1	.149*
PERCRENTERSFEMOLDHM	PC	-0,050	.449**	.139*	.322**	.149*	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

PC = Pearson Correlation

Sig. = Sig. (2-tailed)

Group D (Neighbourhood Income Characteristics) Correlations

		MEDHHINC	PERCHHINCLT50MED	PERCHHINCGE150MED	MEDINCRATIO	AVHHINCRATIO	RATIOMEDRENTERINCTO MEDOWNERINC	LPFINCTOCOUPLEFAMINC	GOVTRANSFER06	LOWINCOME06	MEDINC	RMEDINC	AVINC	RAVINC	GINIGCR
MEDHHINC	PC	1	-.831**	.956**	1.000**	.833**	-0,102	-.238**	-.650**	-.739**	1.000**	1.000**	.833**	.833**	-.167*
PERCHHINCLT50MED	PC	-.831**	1	-.757**	-.831**	-.533**	-0,081	-0,066	.559**	.775**	-.832**	-.832**	-.534**	-.534**	.367**
PERCHHINCGE150MED	PC	.956**	-.757**	1	.956**	.841**	-.210**	-.298**	-.743**	-.753**	.955**	.955**	.842**	.842**	-0,029
MEDINCRATIO	PC	1.000**	-.831**	.956**	1	.833**	-0,102	-.238**	-.650**	-.739**	1.000**	1.000**	.833**	.833**	-.167*
AVHHINCRATIO	PC	.833**	-.533**	.841**	.833**	1	-.284**	-.402**	-.673**	-.574**	.832**	.832**	1.000**	1.000**	.286**
RATIOMEDRENTERINCTO MEDOWNERINC	PC	-0,102	-0,081	-.210**	-0,102	-.284**	1	.348**	.313**	0,053	-0,103	-0,103	-.285**	-.285**	-.394**
LPFINCTOCOUPLEFAMINC	PC	-.238**	-0,066	-.298**	-.238**	-.402**	.348**	1	.253**	0,040	-.236**	-.236**	-.400**	-.400**	-.255**
GOVTRANSFER06	PC	-.650**	.559**	-.743**	-.650**	-.673**	.313**	.253**	1	.640**	-.650**	-.650**	-.674**	-.674**	-.313**
LOWINCOME06	PC	-.739**	.775**	-.753**	-.739**	-.574**	0,053	0,040	.640**	1	-.737**	-.737**	-.574**	-.574**	0,134
MEDINC	PC	1.000**	-.832**	.955**	1.000**	.832**	-0,103	-.236**	-.650**	-.737**	1	1.000**	.833**	.833**	-.169*
RMEDINC	PC	1.000**	-.832**	.955**	1.000**	.832**	-0,103	-.236**	-.650**	-.737**	1.000**	1	.833**	.833**	-.169*
AVINC	PC	.833**	-.534**	.842**	.833**	1.000**	-.285**	-.400**	-.674**	-.574**	.833**	.833**	1	1.000**	.286**
RAVINC	PC	.833**	-.534**	.842**	.833**	1.000**	-.285**	-.400**	-.674**	-.574**	.833**	.833**	1.000**	1	.286**
GINIGCR	PC	-.167*	.367**	-0,029	-.167*	.286**	-.394**	-.255**	-.313**	0,134	-.169*	-.169*	.286**	.286**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

PC = Pearson Correlation

Sig. = Sig. (2-tailed)

Group E (Neighbourhood Housing Costs and Affordability Stress) Correlations

		AVRENTRATIO	AVOWNERCOSTRATIO	PERCLOWRENTAL50	PERCHIGHRENTAL150	PERCLOWOWNERCOST50	PERCHIGHOWNERCOST150	PERCLOWINCRENTERTHATAREFAMILIES	PERCLOWINCRENTERGE30	PERCLOWINCRENTERGE50	PERCRENTERGE30	PERCRENTEDGE50	RATIORENTEDGE50TOCITYRENTEDGE50	AVVALDWEL06
AVRENTRATIO	PC	1	.330**	-.430**	.328**	.141*	.484**	0,004	-.262**	.227**	0,031	.162*	.162*	.200**
AVOWNERCOSTRATIO	PC	.330**	1	-.184**	-0,004	-.538**	.794**	-0,059	-.257**	0,070	-.185**	-0,006	-0,006	.579**
PERCLOWRENTAL50	PC	-.430**	-.184**	1	-0,010	-.211**	-.275**	-.149*	-0,018	-.185**	0,121	-0,064	-0,064	-0,122
PERCHIGHRENTAL150	PC	.328**	-0,004	-0,010	1	-0,007	-0,091	-0,074	-0,127	0,009	.165*	0,068	0,068	0,089
PERCLOWOWNERCOST50	PC	.141*	-.538**	-.211**	-0,007	1	-0,024	0,014	0,013	0,052	0,018	0,066	0,066	-0,022
PERCHIGHOWNERCOST150	PC	.484**	.794**	-.275**	-0,091	-0,024	1	-0,101	-.311**	0,073	-.234**	0,021	0,021	.688**
PERCLOWINCRENTERTHATAREFAMILIES	PC	0,004	-0,059	-.149*	-0,074	0,014	-0,101	1	-0,126	-0,022	-0,109	-.150*	-.150*	-.274**
PERCLOWINCRENTERGE30	PC	-.262**	-.257**	-0,018	-0,127	0,013	-.311**	-0,126	1	.472**	.457**	.298**	.298**	-.259**
PERCLOWINCRENTERGE50	PC	.227**	0,070	-.185**	0,009	0,052	0,073	-0,022	.472**	1	.214**	.617**	.617**	-0,055
PERCRENTERGE30	PC	0,031	-.185**	0,121	.165*	0,018	-.234**	-0,109	.457**	.214**	1	.472**	.472**	-.195**
PERCRENTEDGE50	PC	.162*	-0,006	-0,064	0,068	0,066	0,021	-.150*	.298**	.617**	.472**	1	1.000**	-0,027
RATIORENTEDGE50TOCITYRENTEDGE50	PC	.162*	-0,006	-0,064	0,068	0,066	0,021	-.150*	.298**	.617**	.472**	1.000**	1	-0,027
AVVALDWEL06	PC	.200**	.579**	-0,122	0,089	-0,022	.688**	-.274**	-.259**	-0,055	-.195**	-0,027	-0,027	1

Correlation is significant at the 0.01 level (2-tailed).

Correlation is significant at the 0.05 level (2-tailed).

PC = Pearson Correlation

Sig. = Sig. (2-tailed)

Group F (Housing Stock) Correlations

		PERCOLDHSG	PERCNEWHSG5	AGEDIVHSG4CAT	PERCAPARTMENTS	STUCTYPEDIV6	AVRMDWEL	AVBEDRMDWEL
PERCOLDHSG	PC	1	-0,055	.514**	.308**	.221**	-.325**	-.405**
PERCNEWHSG5	PC	-0,055	1	-.369**	-0,022	-.147*	-0,011	-0,056
AGEDIVHSG4CAT	PC	.514**	-.369**	1	.504**	.554**	-.535**	-.559**
PERCAPARTMENTS	PC	.308**	-0,022	.504**	1	.385**	-.812**	-.900**
STUCTYPEDIV6	PC	.221**	-.147*	.554**	.385**	1	-.562**	-.470**
AVRMDWEL	PC	-.325**	-0,011	-.535**	-.812**	-.562**	1	.936**
AVBEDRMDWEL	PC	-.405**	-0,056	-.559**	-.900**	-.470**	.936**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

PC = Pearson Correlation

Sig. = Sig. (2-tailed)

Group G (Education and Occupation) Correlations

		PERC2564DEGREE	PERC2564FULLTIME	OCCUPDIVERSITY10	PERCLOWEDUC	PERCUNEMPLOYED	PERCSALESSERVICE
PERC2564DEGREE	PC	1	-.389**	.705**	-.815**	-0,113	-.438**
PERC2564FULLTIME	PC	-.389**	1	-.298**	.320**	-0,058	.230**
OCCUPDIVERSITY10	PC	.705**	-.298**	1	-.590**	-.252**	-.556**
PERCLOWEDUC	PC	-.815**	.320**	-.590**	1	0,053	.495**
PERCUNEMPLOYED	PC	-0,113	-0,058	-.252**	0,053	1	.347**
PERCSALESSERVICE	PC	-.438**	.230**	-.556**	.495**	.347**	1

**. Correlation is significant at the 0.01 level (2-tailed).

PC = Pearson Correlation

Sig. = Sig. (2-tailed)

Group H (Ethnic and Racial Characteristics) Correlations

		PERCPHMHOMELANG	PERCRECIMMIG	PERCPHMVISMIN	PERCPHMNOTCHARTER	PERCHMABORIGIDENTITY	PERCRENTERPHMBLACK	PERCRENTERPHSASIAN	PERCRENTERPHMCHINESE	PERCRENTERPHMSEASIAN	PERCRENTERPHMFILIP	PERCRENTERPHMARABWASIAN	PERCRENTERPHMLATAMERIC
PERCPHMHOMELANG	PC	1	.484**	.793**	-.777**	-0,031	0,079	.481**	.241**	.253**	0,072	.310**	0,100
PERCRECIMMIG	PC	.484**	1	.646**	-.588**	.207**	0,135	.425**	0,137	0,095	0,128	.264**	0,082
PERCPHMVISMIN	PC	.793**	.646**	1	-.921**	0,100	0,099	.665**	.290**	.376**	0,087	.357**	0,078
PERCPHMNOTCHARTER	PC	-.777**	-.588**	-.921**	1	-.158*	-0,101	-.591**	-.229**	-.350**	-0,110	-.318**	-0,067
PERCHMABORIGIDENTITY	PC	-0,031	.207**	0,100	-.158*	1	0,128	0,082	-.165*	0,057	-0,030	0,046	-0,016
PERCRENTERPHMBLACK	PC	0,079	0,135	0,099	-0,101	0,128	1	0,023	-0,056	0,012	-0,027	0,039	.772**
PERCRENTERPHSASIAN	PC	.481**	.425**	.665**	-.591**	0,082	0,023	1	0,060	.173*	0,037	.165*	0,016
PERCRENTERPHMCHINESE	PC	.241**	0,137	.290**	-.229**	-.165*	-0,056	0,060	1	.196**	-0,117	-0,090	-0,045
PERCRENTERPHMSEASIAN	PC	.253**	0,095	.376**	-.350**	0,057	0,012	.173*	.196**	1	0,034	-0,019	-0,043
PERCRENTERPHMFILIP	PC	0,072	0,128	0,087	-0,110	-0,030	-0,027	0,037	-0,117	0,034	1	-0,039	-0,042
PERCRENTERPHMARABWASIAN	PC	.310**	.264**	.357**	-.318**	0,046	0,039	.165*	-0,090	-0,019	-0,039	1	0,035
PERCRENTERPHMLATAMERIC	PC	0,100	0,082	0,078	-0,067	-0,016	.772**	0,016	-0,045	-0,043	-0,042	0,035	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

PC = Pearson Correlation

Sig. = Sig. (2-tailed)