

**GEOGRAPHIES OF IMMIGRANTS AT RISK FOR
HOMELESSNESS IN GREATER VANCOUVER**

by

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ABSTRACT

This research introduces methods and results that explore geographies of immigrants at-risk for homelessness. Recent immigrants, in particular, are identified as a group at elevated risk of homelessness. The research draws on a range of data sources of varying resolution including CMHC housing indicators, census data and a postal survey, to illustrate how census-based socioeconomic GIS can be improved by using high-resolution data augmented with complementary primary data. Three findings are highlighted: 1) recent immigrants at-risk for homelessness—especially those spatially concentrated—are disproportionately located in Vancouver’s inner suburbs (Burnaby and Richmond); 2) while the majority of recent immigrants at-risk are located in at-risk areas, a sizeable minority are dispersed in areas that are otherwise well-housed; and 3) risk of homelessness is often highly localized and misrepresented by coarsely aggregated census data.

Keywords: Immigration, Housing Need, Homelessness, Geographic Information Systems (GIS), Greater Vancouver

DEDICATION

To my Grandparents – Alyce and Ray.

You encouraged and supported my educational pursuits, but showed me that wisdom can be attained many ways.

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1 INTRODUCTION

1.1 Introduction

Sustained high levels of immigration since the early 1990s have reshaped the social geography of Canadian cities, and refocused research and public policy attention on immigration related issues (Hiebert, 2000). The impact of immigrants in Canadian society is intensified in Canada's three largest cities: Montreal, Vancouver and Toronto where the vast majority settle. The recently conducted Longitudinal Survey of Immigrants to Canada (LSIC) revealed that almost three-quarters of new immigrants settled in these three cities upon arrival, with almost half settling in Toronto (Statistics Canada, 2005). In Vancouver, and especially Toronto, recently arrived immigrants are a sizable proportion of the overall population. At the time of the 2001 census, immigrants who arrived 1991-2001 represented 16.5% and 17.0% of the two cities' census metropolitan area (CMA) populations.

Ley and Hiebert (2001) discuss the possible implications of the current tendency of Canadian immigration policy to function as *de facto* population policy. Two of the issues they discuss are particularly relevant to this research: the impact of highly concentrated immigrant settlement on housing markets, and anxiety about the economic difficulties experienced by many new immigrants. By settling predominantly in the largest Canadian cities, especially Vancouver and Toronto, immigrants have also chosen to locate in the country's most expensive housing markets. At the same time, immigrants arriving since the early 1990s have experienced deteriorating economic welfare,

represented by declining initial earnings and rising rates of low-income (Picot, 2004). It has been posited that declining immigrant economic performance (in terms of income) might reflect the decoupling of immigration levels from economic prospects, as the early 1990s saw increased immigration rates coincide with a period of lacklustre job growth (Ley & Hiebert, 2001). However, during the buoyant economic conditions of the late 1990s rates of low-income continued to rise among immigrants, while falling among non-immigrants (Picot & Hou, 2003).

There is a clear danger of overdrawing on these findings and painting an overly dire picture of immigrant economic circumstances. While economic success is an important part of successful settlement and integration, Preston et al. (2003) show the economic experiences of immigrants are complex and assessing their economic contribution depends on the data examined. In their study, the economic well-being of immigrants looked troubling when unemployment, median income and incidence of low-income were examined, but more positive when ratios of income-tax to government benefits and/or entrepreneurship were considered. Similarly, the practice of analyzing 'average' immigrant socioeconomic performance is misleading and conceals the diversity that exists among immigrants (Kazemipur & Halli, 2000a). With immigrants now comprising over one-third of Vancouver and Toronto's CMA populations, there is no 'average' or 'typical' immigrant (Hiebert, 2000). Immigrants in these two cities differ greatly in terms of the social and financial capital they arrive with in Canada. As Murdie (2004, 151) suggests: "not all of these immigrants are low income and not all have difficulties affording appropriate housing." As a result, it is incorrect to assume that

immigrants enter the housing market in similar ways (Ray, 1994) or are equally at-risk for homelessness.

Nonetheless, recent immigrants (as a group) are affected by broad changes in the Canadian economy that have produced a 'new poverty' that disproportionately impacts certain segments of the labour force (Bunting, Walks, & Fillion, 2004; Kazemipur & Halli, 2000a, 2000b). Dear and Wolch (1993) discuss increasing disparities in income and declining supply of affordable housing as structural factors producing homelessness (or at least the potential for it). Specifically the decline in well-paying (manufacturing) jobs combined with the increasing trend of new jobs being either low-skill/low-pay or high-skill/high-pay is identified as contributing to a situation where the 'poor' or disadvantaged no longer have sufficient income for even the lowest quality housing available. Disentangling housing need and homelessness in Canada is complex and involves more than just changing economic and labour market conditions - and the resulting consequences borne by individual households.

Housing need (and homelessness) also involves defects in Canada's housing system. There is a growing wealth and income gap between renters and owners, and the housing market (as it is currently structured) is incapable of addressing the social need for affordable rental housing because low-income households have insufficient financial resources (i.e. income) to generate an appropriate market response (Hulchanski, 2004; Moore & Skaburskis, 2004). CMHC (2003) reported that housing affordability improved between 1996 and 2001 as the overall incidence of households spending either 30% or 50% of their income on shelter costs both declined. TD Economics (2003) cautions that households at the bottom of the socioeconomic spectrum did not participate equally in the

improved economic conditions enjoyed by 'average' households. In fact, they point to the lack of income gains among lower income households, and the shrinking supply of low-cost rental housing as key drivers of affordability need in Canada.

TD Economics provides a two-fold explanation for the shrinking supply of affordable rental housing: (i) changes in the tax treatment of rental property have made construction of rental housing less attractive to private sector developers, and (ii) the senior levels of government (i.e. federal and provincial) have reduced their role in funding new social housing units. In fact, they point out the federal government ceased funding for new social housing in the mid-1990s, and has only recently (a decade later) moved toward a renewed role in funding social housing. This explanation is echoed by other studies examining housing affordability need in Canada (see Bunting et al., 2004; Moore & Skaburskis, 2004).

1.2 Research Problem

In Canada, census data are widely utilized in social science research and policy-making. The ability to link census data to geography files using geographic information systems (GIS) make it easier to map and analyze, but also reintroduces certain problematic practices associated with census mapping for geographic governance (Crampton, 2004). Improved computing capabilities and spatial data handling have increased the utility of GIS software and census data for conducting fine-scale neighbourhood analyses for planning or public policy purposes (Martin, 2003). However, enhanced spatial analysis capabilities are not always matched by an awareness of the impact of scale in analytical or cartographic results. As a result, census tracts (a medium

resolution areal unit) remain the scale of choice for most planners and researchers, rather than the smallest areal units available, which would be preferable (Schlossberg, 2003).

Examining the spatial dimensions of immigrants at-risk for homelessness shares with studies of neighbourhood poverty and deprivation sensitivity to the scale of areal units employed for analysis. Harris and Longley (2002) point out that various measures of deprivation tend to reveal similar results using more coarsely aggregated data, but produce quite different results using finer areal units. Bunting (1991) notes that social area analyses, based on census tracts, provide too aggregate a picture of social difference to discern many of the social changes occurring in Canadian cities. This observation is particularly salient given that Canadian metropolitan areas do not exhibit as sharp an inner-city/suburban socioeconomic divide as found in many American cities, but instead have impoverished (and affluent) areas located in both urban zones (Ley & Smith, 2000).

Bourne and Bunting (1993) suggest a trend exists toward more social, ethnic and geographical polarization of housing conditions. However, they also note that income inequality, as measured by the skewness index (the gap between average and median incomes), is widening within cities suggesting greater spatial overlap between lower-income and more affluent households. Similarly, it is noted that suburban areas are becoming more 'urban' in the sense that they are becoming more diverse. Bunting (1991) points out that social difference is articulated spatially quite differently between inner city and suburban areas. In particular, she notes that social geographies are finer-grained in the inner city, whereas social differences tend to occur more broadly in suburban areas. This is not in small part a function of the geographical provision of housing, especially rental housing. In Greater Vancouver, suburban areas tend to contain broad-areas of

mostly single-family homes interspersed with highly concentrated pockets of rental apartments located in the vicinity of important transportation or social infrastructure (i.e. public transit, shopping centres, and/or community or educational facilities).

The ‘messy irregularity’ that characterizes contemporary urban social geography is precisely what has prompted a call for a new urban geography based on disaggregate, high-resolution socioeconomic data (Longley, 2003; Longley & Harris, 1999). Though this push seems to be mostly emitting from UK-based researchers, no doubt spurred on by governmental interest in neighbourhood renewal (see www.neighbourhood.gov.uk), the argument for high-resolution data-rich spatial analysis applies equally to Canadian urban research and public policy. Bunting et al. (2004) points out the spatial dimensions of the housing need (and at-risk homelessness) in Canadian cities have received scant attention, despite recognition solutions will need to be ‘spatially-situated.’ Their study articulates the uneven geography of housing need between and within Canadian cities using census tracts. Following the argument delineated by Longley and Harris (and others) that coarsely aggregate census data conceals meaningful, but highly localized socioeconomic variation, this research is interested in extending this analysis by using finer-grained data that is better able to discern the often highly localized geography of housing need in Greater Vancouver.

1.3 Research Objectives

The purpose of this research is to examine the geographies of immigrants at-risk for homelessness in Greater Vancouver. Risk of homelessness (or acute housing need) is pressing social problem in Canada and the subject of a small, but growing body of literature. As noted, with the exception of Bunting et al. (2004) few studies have focused

explicitly on articulating the spatial dimensions of housing need within metropolitan areas. Similarly, Murdie (2004) points out that even less is known specifically about housing need amongst immigrants in Canadian cities, especially outside of Toronto. To address this gap, a high-resolution approach is presented for discerning and describing the spatial dimensions of risk for homelessness amongst immigrants.

The approach presented addresses the challenge of articulating the geographies of immigrants at-risk for homelessness in two ways: (i) by identifying the spatial distribution of 'at-risk' areas, and – using data obtained from a postal survey – exploring in greater detail the possible housing conditions and experiences in two such areas, and (ii) by describing the spatial distribution of immigrants at-risk for homelessness based on area concentrations relative to the city-wide rate.

1.4 Data and Methods

Socioeconomic GIS analyses require 'mappable' statistics. Censuses collect a wide range of information on populations, while offering extensive spatial coverage, making them the primary source of detailed socioeconomic data in most countries (Martin, 1998). This research relies largely on two sets of 2001 Canada census data: (i) electronic profile data provided through the Data Liberation Initiative (DLI), and (ii) custom cross-tabulated data purchased from Statistics Canada that includes Canada Mortgage and Housing Corporation (CMHC) census-based housing need indicators. To complement the census-based findings a postal survey was conducted in two areas identified as 'at-risk' by the GIS approach developed in Chapter two. Discerning the spatial dimensions of risk for homelessness using census data warrants a discussion of the variables employed as indicators, as well as an overview of the consequences of scale and

boundary delineation in analyses of areal census data.¹ This is followed by a description of the postal survey approach employed.

1.4.1 Measuring Housing Need in Canada

The core housing need model described in CMHC (1991) is a comprehensive, yet operational, way to measure housing need in Canada. Three aspects of housing need are considered by the core housing need model: affordability, suitability and adequacy.² If a household falls below any one of these housing need indicators - and has insufficient income to access housing meeting the standards set by the indicators - they are considered to be in core housing need. By assessing three different facets of housing need and including a means test, the core housing need model offers a workable approach for identifying housing need that is preferable to relying solely on shelter cost-to-income ratios.

CMHC (1991) acknowledges that compromises are made when developing a general indicator and that under ideal circumstances more nuanced measures would be preferred. In practice, the development of housing need indicators is largely controlled by the feasibility of collecting the data required for their implementation. For example, to be in adequacy need a household must reside in a dwelling in need of major repairs (according to the census definition). Murdie and Teixeira (2003) suggest that while some recently arrived immigrants do indeed live in deteriorated housing, many live in

¹ In order to ensure the anonymity of individual responses census data is published in aggregate form using areal units. An exception is public use microdata files (PUMFs) which are a random sample of anonymized census responses. PUMFs are not suitable for intraurban spatial analysis, because they are too coarsely identified geographically.

² The core housing need model consists of, *adequacy*: a dwelling should need only regular repairs, or at most minor repairs; *suitability*: based on the National Occupancy Standard (NOS), the number of bedrooms required for a household based on its size and composition; and *affordability*: a household should not spend more than 30% of its income on shelter costs.

relatively newer suburban rental housing that while not in need of major repairs, is not well maintained either.

Similarly, CMHC (1991) notes that assessing affordability need based on a household's current income is problematic, as households consider longer-term income prospects when making decisions about current housing consumption. Thalmann (1999) points out that identifying housing need based on the ability to access to acceptable housing is affected by the availability of units at or below the average market rent used for the means test. As Thalmann suggests, a household may be forced to pay more than the average market rent where vacancy rates are low, making lower cost housing difficult to access. TD Economics (2003) makes precisely this point with regard to the housing difficulties faced by low-income households in Toronto, Canada.

Identifying housing need is also complicated by the reality that neither overcrowding, nor affordability can be defined objectively. The core housing need model acknowledges this explicitly, stating that the standards used by the model were developed based on Canadian housing 'norms', and reflect changing housing conditions and societal values (CMHC, 1991). Hulchanski (1995) documents how particular shelter cost-to-income ratio thresholds came to be the accepted way to assess affordability, concluding that they represent an arbitrary 'rule of thumb' that can be quite misleading when used to define housing need for public policy purposes, or to predict a household's ability to pay a particular rent or mortgage payment. Myers et al. (1996) makes a similar argument about the use of simple measures like persons per room to identify overcrowding, pointing out the threshold used is largely subjective, and has changed over-time – tending to become stricter as housing conditions improve and societal expectations increase.

Immigrant specific housing research suggests that discrimination may also play a role in housing need (Dion, 2001). Hulchanski (1997) identifies specific barriers to housing based on preliminary findings from the 'Housing New Canadians' research project (a research partnership focused on the housing experiences of new immigrants in Toronto).³ Barriers to accessing housing are divided into two groups: primary barriers like race, ethnicity/culture/religion and gender; and secondary barriers such as level of income, source of income, knowledge of housing system, language/accent, household type and size, knowledge of institutions and culture, and experience with the dominant institutions and culture. According to Hulchanski, primary barriers reflect individual or household characteristics that are social constructions that either cannot be changed, or would be extremely difficult to change, whereas secondary barriers are individual or household characteristics that can change, especially with increased residency.

1.4.2 Identifying Risk of Homelessness

This research is interested in the portion of the homelessness continuum that includes persons at-risk for homelessness, the 'hidden' homeless (involuntary doubling-up), and those living in substandard housing situations. Collectively these housing situations are referred to in definitions as 'relative' homelessness. The inclusion of housing situations beyond 'literal' homelessness reflects the reality that homelessness varies in severity and often occurs in stages (Golden et al., 1999). In this research 'at-risk' homelessness is identified using the CMHC's in core housing need measure, except only renter households spending at least half their income on shelter costs are considered. This approach, known as in core housing need and spending at least half (INALH), has

³ More information about the Housing New Canadians research project can be found @ www.hnc.utoronto.ca

already been employed by Woodward et al. (2002) to measure and profile the population at-risk for homelessness in Greater Vancouver, although they included both renter and owner households in their population estimate.

As a concept INALH best identifies persons or households at economic risk of homelessness. Woodward et al. (2002) notes INALH does not identify the entire at-risk population as there are many circumstances that cannot be discerned that might cause someone to become homeless (e.g. domestic violence or relationship/family break-up). Additionally, the reliance on housing affordability measured using shelter cost-to-income ratios may be an imperfect way to identify certain households, especially new immigrants. The core housing need model does not assess households without positive income or shelter costs that exceed household income. This criteria, described in greater detail in Chapter three, results in the disproportionate exclusion of recent immigrants from core housing need assessment.

1.4.3 Using Areal Census Data for Intraurban Analysis

Analysis of areal data is highly sensitive to the scale and specification (boundary delineation) of areal units employed. This is a seminal issue in spatial analysis known as the 'modifiable areal unit problem' (MAUP), and given the nature of the research warrants further discussion, focusing on the choice of areal units for spatial analysis. Canadian census data are disseminated using a hierarchical data model, where populations are partitioned into areal units that nest within each other, as they get progressively smaller. For intraurban (i.e. neighbourhood level) analysis the census offers two census geographies: census tracts (CTs) and dissemination areas (DAs). CTs represent large neighbourhoods with populations between 2500-8000, while DAs are

small 'statistical' areas intended to contain between 400-700 people (Statistics Canada, 2002).

MAUP recognizes that changing either the scale or boundaries of the areal units employed for analysis will impact the statistical results (see Openshaw, 1984b). Also impacted are the visual (or cartographic) patterns discernable when areal data is mapped. Where the incidence of poverty, deprivation and housing need are more localized or spatially mismatched with the areal units employed, their cartographic and/or statistical representation may be more an artefact of census geography, than representative of the underlying social geography. Commenting on American urban underclass research, Sheppard (1990) questions whether census tracts reflect the scale of neighbourhood envisaged in Wilson (1987), and suggests that future studies could either concentrate on people rather than areas, or use finer spatial divisions. This speaks to the basic question, posed in Openshaw (1984a), that confronts studies interested in examining intraurban patterns of social difference or the identification of impoverished, deprived or otherwise 'at-risk' areas: how well do area-based classifications developed from aggregate census data describe the people who live within?

The ability to identify areas with unusually high rates of selected indicators of deprivation is highly dependent on the internal homogeneity of areas. Using the finest resolution areal units available has been suggested as a way to reduce ecological fallacy and MAUP as smaller areas are more likely to be homogeneous (Openshaw, 1984a). However, Morphet (1993) points out the boundaries of small-area census data are seldom meaningful (i.e. their boundaries do not match underlying social geographies) resulting in areal units which contain sub-areas from a socioeconomic perspective. Morphet's

analysis suggests using small-areas census data (DAs in the Canadian census) does not entirely ameliorate the shortcomings of CTs for social area analysis. In choosing between CTs and DAs, one must consider the following question: which scale of areal unit is best suited to revealing underlying socioeconomic variation of interest? DAs are often preferable because their smaller size minimizes (though does not necessarily eliminate) internal socioeconomic variation, therefore, they are more likely to reveal social differences between areal units in the area(s) being examined.

1.4.4 Housing Conditions Postal Survey

Socioeconomic GIS analysis offers valuable insights into the extensive patterns of at-risk homelessness within metropolitan regions, but this is only one perspective. GIScience literature acknowledges that GIS methods are better suited to generating certain types of knowledge. Employing multiple methods has been suggested as a strategy for mitigating a significant weakness inherent to most GIS approaches: the reliance on secondary data that often indirectly measures the phenomena being examined. Kwan (2002) suggests more sophisticated GIS analyses are possible when secondary data is complemented with other contextual information or primary data collected using qualitative and/or quantitative methods.

To 'ground-truth' the results of the GIS analysis, a postal questionnaire was sent to all households living in rental apartments in two dissemination areas (DAs) identified as 'at-risk'. A total of 122 households returned completed questionnaires (out of the 588 mailed out) for an overall response rate of 20.7%. The intent of the postal questionnaire was to obtain more detailed and specific information on the housing conditions experienced in the two dissemination areas selected. The survey questionnaire contains a

mix of questions, with some intended to provide comparability with related census data (i.e. household income, rent, household size, immigrant status and year of arrival, etc.), and others intended to directly ask respondents to assess their housing conditions and financial circumstances. As the survey was designed as an extension of the census-based GIS analysis, the results are intended to be viewed in conjunction with the GIS-based findings, rather than as standalone results. The survey findings indicate possible housing conditions in the 'specific' DAs surveyed. However, non-response rates suggest care should be exercised interpreting the results, as it was not possible to control for who responded, and therefore, it is not certain the sample is representative of the overall DA populations.

1.5 Thesis Overview

The thesis is organized into four chapters to conform to the requirements for two papers to be presented as a thesis. Chapter one introduces the research, describing the research problem and objectives, as well as providing the necessary context and background information to assess the two papers included. Chapter four summarizes the results, discusses the possibilities and limitations of the approaches presented, and suggests directions for improvement and future research. Chapter two and three are fully self-contained papers, although both address a common topic: risk of homelessness amongst immigrants (especially recently arrived immigrants). Given Chapters two and three address a common theme, overlap inevitably occurs, but the two papers differ significantly in terms of focus and intent.

Chapter two examines the use of census-based socioeconomic GIS to identify 'at-risk' areas. The primary focus is the role and impact of scale in analytical and

cartographic results and the implications for policy-makers who increasingly use the census in conjunction with GIS to inform policy decisions. Chapter two argues that using fine-scale dissemination area level census data in conjunction with other complementary high-resolution data is often preferable to the use of census tract data for social area analysis. An approach is presented for discerning spatially concentrated poverty, deprivation and housing need that offers incremental improvement to existing socioeconomic GIS practices.

Chapter three examines the geographies of immigrants at-risk for homelessness using a custom census cross-tabulation that includes the following data dimensions: immigrant status (by period of arrival), tenure status, and CMHC housing indicators (including core need status). Rather than focus exclusively on areas where risk of homelessness is concentrated, Chapter three examines the spatial distribution of persons in households identified as at-risk for homelessness based on the core housing need measure. The value of this approach is it allows patterns of concentration and/or dispersion to be examined, which is complementary to the focus on identifying at-risk areas in Chapter two.

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2 IMPROVING CENSUS-BASED SOCIOECONOMIC GIS FOR PUBLIC POLICY: RECENT IMMIGRANTS, SPATIALLY CONCENTRATED POVERTY AND HOUSING NEED IN VANCOUVER

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The author of the thesis is first author, with Dr. Nadine Schuurman and Dr. Jennifer Hyndman second and third authors respectively. As first author, I conducted the analysis and wrote the first drafts. Subsequent drafts were fine-tuned and edited in conjunction with my co-authors. While the finished papers contain important contributions from both co-authors, they are substantively the work of the thesis author.

2.1 Abstract

Not all socio-economic phenomena are easily detected using census data alone. We present an innovative approach developed to discern the spatial dimensions of risk for homelessness amongst recent immigrants in Vancouver, Canada. Dasymetric mapping and a postal survey are employed to improve the resolution and utility of census data. The results illustrate the potential for developing a more nuanced understanding of the spatial dimensions of complex socioeconomic phenomena using a combination of secondary data and primary data. Higher-resolution data aids in identifying and understanding socioeconomic phenomena that are highly localized and misrepresented by coarsely aggregated data. Finally, the potential for population surveillance is discussed and weighed against the benefits for policy-makers, non-governmental organizations, and researchers.

2.2 Introduction

Data describing the socioeconomic and demographic characteristics of areas and populations remain the “essential backbone” of empirical social science studies (O'Sullivan, 2004). Indeed, census data is often relied upon as “framework” data in social scientific research using geographic information systems (GIS). Its elevated status is due to widespread use - as one of the few comprehensive sources of ‘mappable’ statistics. While it is not possible to provide a precise accounting of census data usage, it is safe to consider its role ubiquitous in academic and policy-oriented research employing GIS.

Crampton (2004) suggests that the automated mapping functionality of GIS software has reinstated the problematic practice of census mapping to represent (and manage) populations. Crampton advocates reintroducing dasymetric mapping practices to socioeconomic GIS to improve the representation of populations. A dasymetric mapping approach uses ancillary data sources like land-use and remotely sensed imagery, in conjunction with high-resolution census data, to produce more meaningful spatial units for mapping (Eicher & Brewer, 2001). While GIS enables fast and efficient choropleth mapping of census data, GIS methods also facilitate dasymetric mapping. In this study dasymetric mapping is used as a tool to highlight the combination of housing stress and new immigration.

In Canada, the relationship between sustained immigration, the concentration of new immigrants in just a few cities (Montreal, Vancouver, and Toronto), and the resulting urban and social change produced, has attracted considerable research attention (Hiebert, 2000). Increasing levels of immigrant poverty and unaffordable housing are cited as barriers that new immigrants (and refugees) face in obtaining suitable housing

(Mattu, 2002; Miraftab, 2000; Murdie, 2004; Statistics Canada, 2003). The combination of poverty and unaffordable housing may leave many new immigrants precariously housed and at-risk for economically induced homelessness (Bunting, Walks, & Filion, 2004). Although studies have examined the spatial association of immigrants with concentrated poverty and deprivation (see Kazemipur & Halli, 1997; Ley & Smith, 1997, 2000), less is known about their presence in areas of severe housing need.

A GIS approach was developed to identify areas where concentrations of poverty, deprivation, and housing need intersect with recent immigrants. A dasymetric approach to census mapping was implemented using municipal land-use data, remotely sensed imagery and high-resolution (small-area) census data. The resulting cartographic representations reveal the existence of geographically dispersed, but highly localized concentrations of poverty, deprivation, and housing need. It is shown that these concentrations are frequently more localized than, or imperfectly matched to, census tract geography, often rendering them invisible in cartographic or statistical results at this spatial resolution.

In addition a postal survey was conducted to complement the findings of the GIS analysis. Census areal units that showed potential for hidden homelessness amongst recent immigrants were identified by GIS analysis. Final selection of two tracts was made using local knowledge, and site visits were used to better understand the housing conditions of residents. This mixed approach provided rich and disaggregate household level data, as well as the opportunity to ask residents more directly about their housing situations than the census alone reveals. Based on these data, we were able to conclude that spatial concentrations of poverty, deprivation, and housing need intersect with highly

localized concentrations of low-quality/low-cost housing supply – some of which are associated with recent immigrants.⁴ There are a number of background issues that bear on this research. The paper begins by describing socioeconomic GIS and its role in geographic governance, which is followed by a brief discussion of the issues facing new immigrants to Canada. We then present details of the study and methodology, and conclude with a discussion of the implications of using such high resolution data as an adjunct to census data.

2.3 Socioeconomic GIS

A great majority of GIS use in social science employs very simple cartographic techniques. Martin (2003, 305) describes this convention pointing out “[t]he majority of non-academic use of socioeconomic GIS rarely moves beyond the level of shaded area census mapping, yet these representations of people and their characteristics provide some of the most emotive GIS outputs, particularly in the realm of geodemographic classification.” Businesses use GIS in the form of geodemographics, because the resulting maps provide a useful ‘abstraction’ of the world that helps them make decisions and ‘target’ market (Harris, Sleight, & Webber, 2005; Longley, 2003; Longley & Harris, 1999). For socioeconomic GIS – outside the academic community (and sometimes within it) census mapping is often seen as being - all there is to - GIS analysis.

The use of GIS for market research has prompted serious epistemological and methodological critiques, as well as privacy concerns (see Curry, 1997; Goss, 1995a, 1995b). It has been argued (recently) that geographers be ‘pragmatic’ and incorporate

⁴ In the Canada census, ‘recent immigrants’ refers specifically to immigrants who have arrived since the last census (within the last 5 years).

geodemographic classification and 'lifestyles' data into their analyses of urban systems (see Longley, 2003; Longley & Harris, 1999). O'Sullivan (2004) is sceptical about the potential of 'lifestyles' data for analysis, pointing out it is not freely available, is usually irretrievably flawed from a statistical perspective, and is often poorly maintained, while others have voiced concern about their possible impact on individual privacy rights (see Curry, 1997). Goss (1995b, 182) focuses on the 'strategic intent' of geodemographic systems, noting GIS's promotional discourse is "replete with metaphors of vision, insight, omniscience, prediction, manipulation, and control." Geodemographics and socioeconomic GIS typified by systematic area (neighbourhood) classification engage in what Pickles (2004) calls the 'cartographic gaze' characterized by Cartesian perspectivalism, ocularcentrism, and the epistemology of the grid.

Academic studies that employ census mapping to identify (and label) areas/neighbourhoods by ethnicity, immigrant status, visible minority status, or as being deprived, impoverished, or at-risk create power-laden images. While socioeconomic GIS research in the academic realm is motivated by very different impulses than the application of geodemographics in business or marketing, it shares similar societal implications. Goss (1995b) speaks to this problem, commenting he is less concerned with the issue of validity (whether or not geodemographics works), and does not rule out the possibility that it has benign uses, but is concerned that widespread usage of geodemographic classifications might actualize its models of social identity and residential structuring.

This is problematic given the important role of mapping in geographic governance (Crampton, 2004) where census mapping (facilitated by GIS) is used to

identify and define 'problem' areas for public policy development and action. While reservations about the use of socioeconomic GIS (and in particular geodemographics) exist, this has not slowed interest outside the confines of critical human geography for this type of analysis. Put simply "...the growing role of census mapping in the identification and definition of neighbourhoods and communities, and often in resource allocation and facility planning, ensures that policy-makers and the public are increasingly interested in the results of our analysis" (Martin, 2003, 305).

2.4 GIS and Governmentality

Crampton (2004) shows the use of thematic mapping has played a central role in enabling the state to shift the focus of governance from people to populations, by tracing their development and refinement since the late eighteenth century for political means. Taylor and Johnston (1995, 58) note, "the state represents a concentration of formal power that both facilitates and relies upon the collection of information." Censuses are a prominent element in the 'governmentalization of the state' as they provide the statistical information used to determine public policy (Hannah, 2000). In conjunction with surveying and mapping, censuses are a vital element in the establishment of 'territorial mastery' (Hannah, 2000) in which maps link law and population with territory, while simultaneously creating it (Wood, 1992). Censuses are a way to 'see' populations, rendering them legible, and manageable.

To 'see like a state' implies "certain forms of knowledge and control require a narrowing of vision. The great advantage of such tunnel vision is that it brings into sharp focus certain limited aspects of an otherwise far more complex and unwieldy reality" (Scott, 1998, 11). Statistical representation is "political to the core", and "the census is

one of the contested sites upon which relations between the state and civil society are worked out” (Kobayashi, 1992, 513). Census taking involves using categories that are socially constructed, leading Kobayashi to suggest, that the categories and the means of establishing categories be examined critically, as ‘statistexts’, that are created from competing representations that census takers must reduce into a singular representation (as problematic as this is).

Researchers or policy makers who use census data to develop indicators or indexes for identifying and measuring social phenomena such as deprivation, poverty or housing need operate in a similar manner. Critical cartographies view maps as social constructions with embedded power relations that can be understood by what they conceal, subjugate, and/or silence (Crampton, 2001; Harley, 1989; Pickles, 2004). The appeal of census mapping is that it reduces the complexity of the real world into shaded-area patterns that separate an overall population into groups visually (often through the use of progressively increasing colour intensity). This reduces, simplifies, and generalizes information collected by censuses, which are already reductions themselves.

2.5 The Plight of New Immigrants: poverty, deprivation, and housing need

According to the most recent Canadian census, new immigrants are earning a lower proportion of the average Canadian wage in 2000 than they were in 1990; this is despite generally high education levels among new immigrants (see Statistics Canada, 2003). The deteriorating economic circumstances experienced by many new immigrants has been called the “new poverty” in Canada (Kazemipur & Halli, 2000) - one that is linked to global economic restructuring, and is spatially concentrated in neighbourhoods

disproportionately inhabited by visible minorities and immigrants (Kazemipur & Halli, 1997). Ley and Smith (1997, 29) ask, “[a]t what point in this apparently deteriorating trajectory do immigrants then become a significant part of the growing poverty problem in Canada with its accompanying burdens of deprivation, homelessness, and welfare dependency?”

Canadian policy-makers are concerned that the incomes of recent cohorts of immigrants do not appear to be following the traditional pattern of gradual convergence with the national mean income (Picot, 2004). Others have noted that while new immigrants do experience significantly lower initial earnings than past cohorts, there is evidence that their earnings catch-up capacity is greater (Li, 2003) although highly dependant on entrance class (see CIC, 1998). Significantly lower initial earnings, when compared with non-immigrants, is particularly problematic because contemporary immigrants settle overwhelmingly in Canada’s largest – and most expensive – cities (Hiebert, 2000). This has stirred concern that new immigrants might become entrapped in impoverished, or deprived conditions like those described in American urban underclass studies (see Clark, 1998; Hughes, 1990; Wilson, 1987).

Finding suitable housing in a supportive community is seen as a vitally important part of successful immigrant settlement and integration (Murdie & Teixeira, 2003). There is no singular immigrant housing experience (Ray, 1994). Immigrants to Canada are diverse, both in terms of social and financial capital, as well as culturally, and this produces differing immigrant experiences (Ley, 1999). While it is inappropriate to conceptualize an ‘average’ or ‘typical’ immigrant in Canadian cities, there is good reason to expect that certain new immigrants are precariously housed and at-risk for

homelessness. Murdie (2004, 147) points out “[f]or many newcomers, the process of finding appropriate housing is made more difficult by the lack of adequate financial resources, high housing costs, a shortage of rental vacancies, and discriminatory practices in the housing market.”

Canada Mortgage and Housing Corporation’s Core Housing Need model identifies households unable to access acceptable housing (CMHC, 1991).⁵ Analysis of immigrant households using 2001 census data revealed that while recent immigrants have lower incomes and homeownership rates, and higher rates of core housing need when compared to non-immigrants, the housing conditions of previous immigrant cohorts converge with those of non-immigrants with increased residency in Canada (CMHC, 2004). Still the incidence of in core housing need for recent immigrant renters in Vancouver was 39.2%, almost 10% higher than for non-immigrants, and the gap was even more extreme (35.0% to 16.9%) when all recent immigrant and non-immigrant households are used (CMHC, 2004). A recent CMHC report, on evolving housing conditions in Canadian cities, found recent immigrant households (and aboriginal households) in core housing need tend to be more spatially concentrated than the incidence of core housing need more broadly (Engeland et al., 2005).

2.6 Defining At-Risk Areas: poverty, deprivation, and housing need

According to Bramley (1988, 24) “...there is no single, simple definition of homelessness, but rather a range of definitions including partially overlapping approaches

⁵ The Core Housing Need model consists of, *adequacy*: a dwelling should need only regular repairs, or at most minor repairs; *suitability*: based on the National Occupancy Standard (NOS), the number of bedrooms require for a household based on its size and composition; and *affordability*: Shelter cost-to-income ratio must be below 30%. To be considered in core housing need a household must fall below at least one housing need indicator and have insufficient income to access housing meeting housing norms (CMHC, 1991).

and categories...and we cannot assume that everyone agrees about the definition of homelessness.” Homelessness can be seen as “the end state of a long and complex social process and personal process...[t]he culmination of a long process of economic hardship, isolation, and social dislocation” (Wolch, Dear, & Akita, 1988, 443). Households with low incomes must spend excessive amounts of their income for housing making them less able to weather difficult financial circumstances caused by family break-up, injury, illness or loss of employment, leaving them at-risk for homelessness (Ringheim, 1990). Households finding themselves in this situation may also experience ‘shelter poverty’ where consumption of other non-shelter necessities is limited in order to pay the rent (Stone, 1993). In this context, at-risk homelessness refers not to those already homeless, but to those who are precariously housed (i.e. living in substandard housing, doubled-up, or paying excessive rent-to-income ratios) (Bunting et al., 2004). At-risk areas are locations where concentrated poverty, deprivation and housing need intersect.

Canadian studies have already investigated the relationship between spatially concentrated poverty, deprivation and immigrants (Kazemipur & Halli, 1997; Ley & Smith, 1997, 2000; Smith, 2004). Immigrants have been linked to areas of concentrated poverty, defined by high-rates of low income, but linking immigrants to deprived areas has proven less conclusive. Ley and Smith (2000) found at best a weak link between concentrations of immigrants and deprivation in Montreal, Vancouver and Toronto using 1971 and 1991 census data, while a recent update using 2001 census data found the relationship strengthened over the last decade (Smith, 2004). In concluding Smith (2004) acknowledges two problems confronting this type of research: the scale of analysis, and the choice of indicators.

American studies of urban deprivation describe large, contiguous areas of deep poverty and disadvantage concentrated in inner-city neighbourhoods (Ley, 1999). Ley and Smith (2000) found that deprivation in Montreal, Vancouver and Toronto, while sharing similarities with the American pattern in 1971 have since diverged – by 1991 it was more geographically dispersed (often in suburban locations) and not as deep (indicated by fewer overlapping indicators). Their analysis can support several possible conclusions: (1) concentrated poverty and deprivation (an urban underclass) are not prominent in large Canadian cities, (2) poverty and deprivation may be indicated by different factors, or (3) in Canadian cities the geographical distribution of poverty and deprivation may differ from the American case.

The geography of low-cost residential housing offers at least a partial explanation. High Canadian housing expectations (as well as building and habitability code requirements) have contributed to affordability problems by limiting the supply of low-cost rental housing available (Moore & Skaburskis, 2004). In Vancouver increased homelessness has been partially attributed to the loss of low-cost housing (single room occupancy hotels (SROs) and rooming houses) via the gentrification of areas immediately surrounding the downtown core (Hulchanski et al., 1991). In Canadian cities a number of factors, including waning government support for social housing, municipal zoning and housing market forces, have converged to severely limit the construction of new rental apartments. As a result when low-cost housing is redeveloped it is seldom replaced elsewhere (Moore & Skaburskis, 2004).

Bunting et al. (2004) investigates the geographic dimensions of housing affordability need in (and between) Canada's major metropolitan areas.⁶ For Vancouver, statistical analysis revealed that affordability need among renter households, while higher in the inner city, is geographically dispersed with a significant proportion of stressed households found in the inner and outer suburbs. Similarly, cartographic analysis reveals a dispersed geographical pattern, where (with the exception of the downtown/downtown eastside) areas of concentrated housing affordability need are spatially contained in localized pockets, rather than as large contiguous areas (see Bunting et al., 2004, 383). This reflects the geographic distribution of dedicated rental housing in Vancouver.

2.7 Spatial Resolution: moving beyond census tracts

The intraurban (neighbourhood) studies of poverty, deprivation and housing need discussed here all use census tract level data, which warrants further discussion. Recent studies in the U.K. have investigated the use of small-area census data for identifying deprived areas (Harris & Longley, 2002; 2004, 91) asking "at what scale does deprivation and social exclusion exist and persist?" Similarly, Sheppard (1990) asks whether census tracts are the appropriate scale to observe the indicators and formation of an urban underclass. It is his contention that the scale of neighbourhood described by Wilson (1987) is smaller than a census tract, warning that the functional neighbourhoods perceived by residents could be more localized, and mismatched with census tracts (Sheppard, 1990).

⁶ Bunting et al. (2004) defines housing affordability need as households spending 50% or more of their income on shelter costs. This is a more conservative measure than the affordability standard used in the CMHC's Core Housing Need model (30%) in that it reduces the number of households identified overall by about half. The households identified are therefore considered to be experiencing severe housing affordability stress.

Consider the residential geography of Ghanaian immigrants in Toronto, Canada. Owusu (1999, cited by Hiebert 2000) found that at the census tract level Ghanaians did not appear to be spatially concentrated, but shifting the analysis to a finer-scale revealed a high-degree of clustering – 30% of Ghanaians lived in just 17 enumeration areas (out of about 7500).⁷ This unusual micro-geography is explained by the tendency of Ghanaians to reside in low-rent limited dividend housing which is scattered throughout suburban Toronto (Owusu, 1999).⁸ Replicating studies that examine the relations between spatially concentrated poverty, deprivation, and immigrants in Canadian cities also revealed significantly different results when analysis was conducted with finer-scale dissemination areas instead of census tracts (see Appendix 1).

In practice, studies employing high-resolution data are a rare exception. Coarsely aggregated census data over-generalize socioeconomic patterns, yet studies of Canadian cities have consistently employed lower-resolution census tracts to conduct neighbourhood analyses or study spatial patterning, rather than use available higher-resolution enumeration areas or dissemination areas. Traditional preference for census tracts may be attributed to several factors: (1) they were originally designed for socioeconomic analysis and planning purposes, (2) they allow for temporal analysis as their boundaries seldom change (except for splitting to account for population growth, which follows a protocol that allows them to be easily re-aggregated), and (3) with minimum populations of 2500 they are statistically stable. In contrast enumeration areas

⁷ Enumeration areas (EAs) were the smallest areal unit available for the Canada census prior to 2001 when they were replaced by dissemination areas (DAs). Both EAs and DAs represent small-areas (400-700 people approx.), but EAs were designed as a collection unit, whereas DAs were designed and implemented for analysis purposes. Census tracts (CTs) are larger, representing “neighbourhood-like communities” with target populations of 2500-8000 (Puderer, 2001; Statistics Canada, 2002).

⁸ Limited dividend housing are high-rise apartment blocks that charge below-market rents in return for reduced mortgage rates funded by the Federal Government of Canada.

– the smallest areal unit available prior to the 2001 census – had none of these characteristics.

The introduction of dissemination areas for the 2001 census is an improvement over enumeration areas, in that they were designed with input from the research community (Puderer, 2001), are less prone to suppression (small population counts), and their boundaries remain stable from census to census facilitating easier temporal analysis than was possible with enumeration areas (see Schuurman et al., forthcoming). The introduction of dissemination areas offers Canadian socioeconomic research an improved ability to incorporate high-resolution analyses going forward. While this conflicts with privacy concerns (see Curry, 1997) and concerns about the statistical stability of rates produced with small counts remain (Nakaya, 2000), these are offset by potential benefits. Employing higher-resolution data produces more granular representations that allow researchers and policy-makers, to see highly-localized socioeconomic conditions hidden by more coarsely aggregated data.

2.8 Identifying At-Risk Areas: poverty, deprivation, housing need, and recent immigrants

We present an approach for identification of areas where recent immigrants are at-risk for homelessness using census data that identifies where concentrated poverty, deprivation and housing need intersect with concentrations of recent immigrants. Poverty and deprivation are identified at the dissemination area level using approaches developed for existing studies conducted using census tracts. Poverty areas are identified using thresholds that classify areal incidence of low-income according to the following scheme: non-poverty - below 20%, poverty - 20 to 29%, high poverty - 30 to 39% and extreme

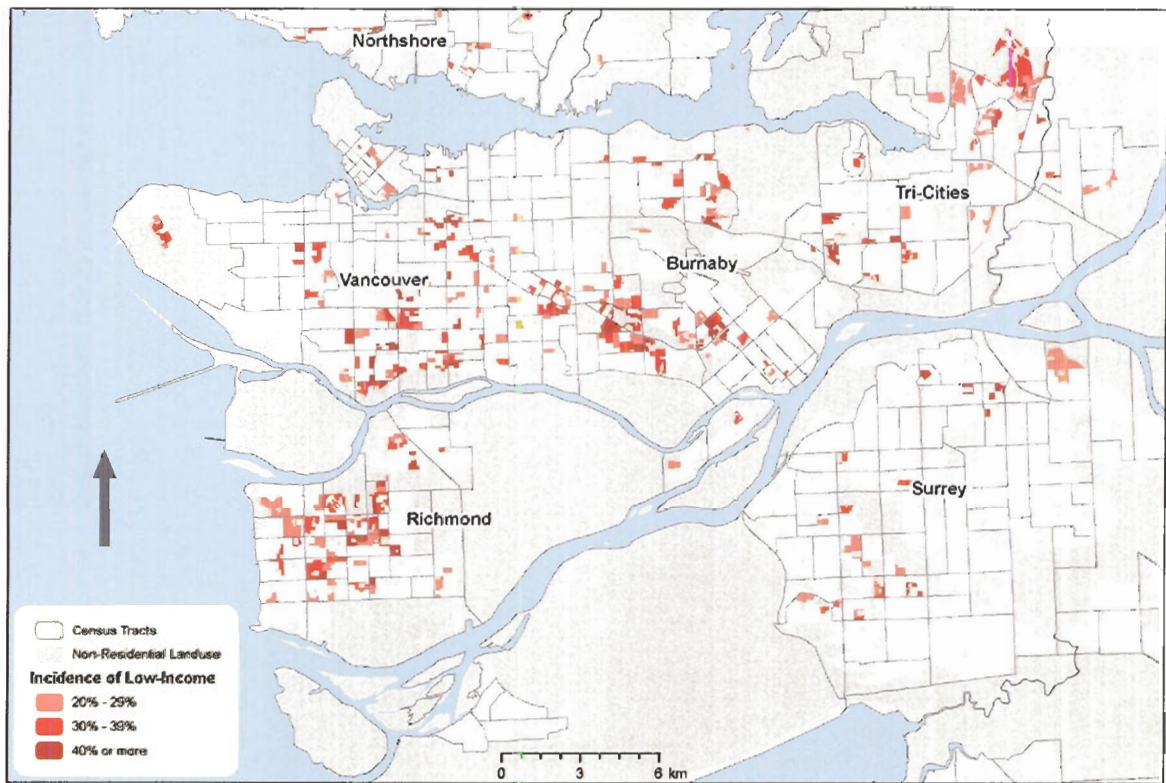
poverty - 40% or higher (see Kazemipur & Halli, 1997; Ley & Smith, 1997). Deprived areas are identified using the urban underclass approach employed by Ley and Smith (2000). A dissemination area is considered deprived if it exceeds twice the census metropolitan area (CMA) median value for the following indicators: (1) incidence of female lone-parent families, (2) male unemployment rate, (3) percentage non-high school graduates and (4) percentage of income from government transfer payments. We have modified their low income requirement by raising the minimum incidence rate from at least 20% to 40% in order to limit identification to areas with the most extreme concentrations. Finally, areas are considered to have concentrated housing need if their incidence of in core housing need exceeds twice the CMA median value (23.5% for dissemination areas).

To better represent the spatial variation of these socioeconomic phenomena cartographically, a dasymetric mapping approach is used. Census data are disseminated as counts or summary values for areal units using a hierarchical data model where smaller less aggregated areal units nest inside larger more aggregated ones. Census areal units must completely divide-up geographic space, producing representational difficulties for cartographic output of urban areas, as some areal units will contain significant non-residential land-use and be misrepresented visually (Martin, 2005). Dasymetric approaches mitigate this by using secondary data sources such as land-use data or remotely sensed imagery to display statistical data using more meaningful spatial zones that more accurately reflect the underlying geographic distribution of populations (Eicher & Brewer, 2001; Holt, Lo, & Hodler, 2004). Unlike more sophisticated dasymetric approaches that aim to create interpolated population surfaces, the approach implemented

here only uses polygon land-use data to redraw areal unit boundaries so they contain residential land-use only. The aim is to improve representation by eliminating areas of non-residential land-use that can distort cartographic representation of census data by overemphasizing the visual importance of low-density areal units.

Figure 2-1 identifies impoverished dissemination areas where recent immigrants represent at least 17.2 percent of the population (or twice their CMA-wide proportion). While useful in an exploratory sense, this representation is problematic because it identifies at-risk areas that appear to be intuitively incorrect when juxtaposed with local understandings. For example, the dark-red areas in Richmond and medium-red areas above the Tri-Cities label are associated with immigrants (mostly from Hong Kong), but they are not considered poor areas. Quite the opposite, they are regarded locally as desirable and affluent areas. Yet census data indicates unusually high rates of low-income in these areas. One explanation is that low-income does not account for net worth or assets, information the census does not measure. Many recent business-class immigrants from East Asia are 'asset-rich' yet 'income-poor' as they are admitted to Canada as entrepreneurs/investors often declaring assets in excess of a million dollars (Canadian) upon arrival (Ley, 1999, 2003).

Figure 2-1: Impoverished areas with high recent immigrant presence



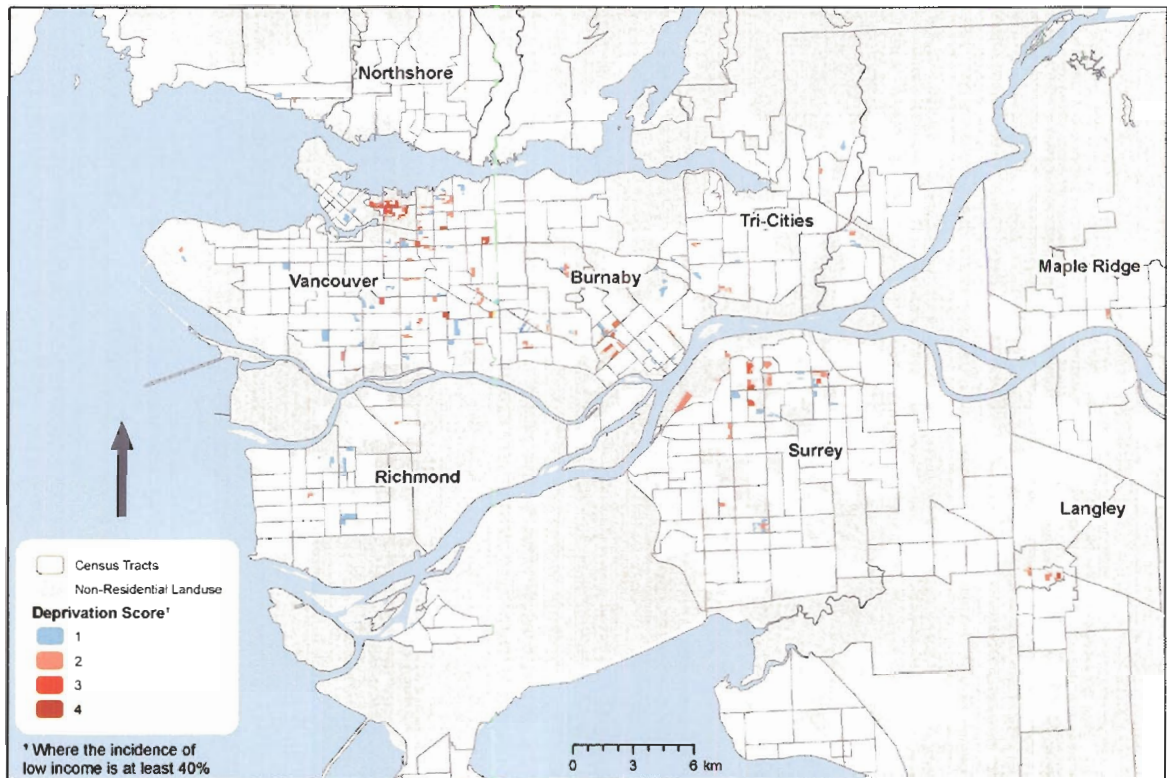
Data Sources: Statistics Canada, Census 2001, electronic profile data; GVRD Land-use data

Figure 2-2 identifies deprived dissemination areas that also contain high concentrations of core housing need (at-risk DAs). This approach identified 174 dissemination areas out of 3255 (5.3%) containing 102,565 people (or 5.2% of the total CMA population). As a proportion of their respective CMA populations, both non-immigrant and non-recent immigrant presence in at-risk DAs were similar (4.4% and 5.4%), while the recent immigrant presence was considerably higher at 9.8%. These results are also echoed by the population composition within at-risk DAs, where 16.3% were recent immigrants, slightly less than double their proportion of the CMA population (8.6%). While recent immigrants are over-represented in at-risk DAs, it is important to consider that they represent only a moderate proportion of the population in at-risk DAs,

which itself only represents a small proportion of the CMA's population. That said, almost 1 in 10 recent immigrants in the Vancouver area reside in at-risk DAs.

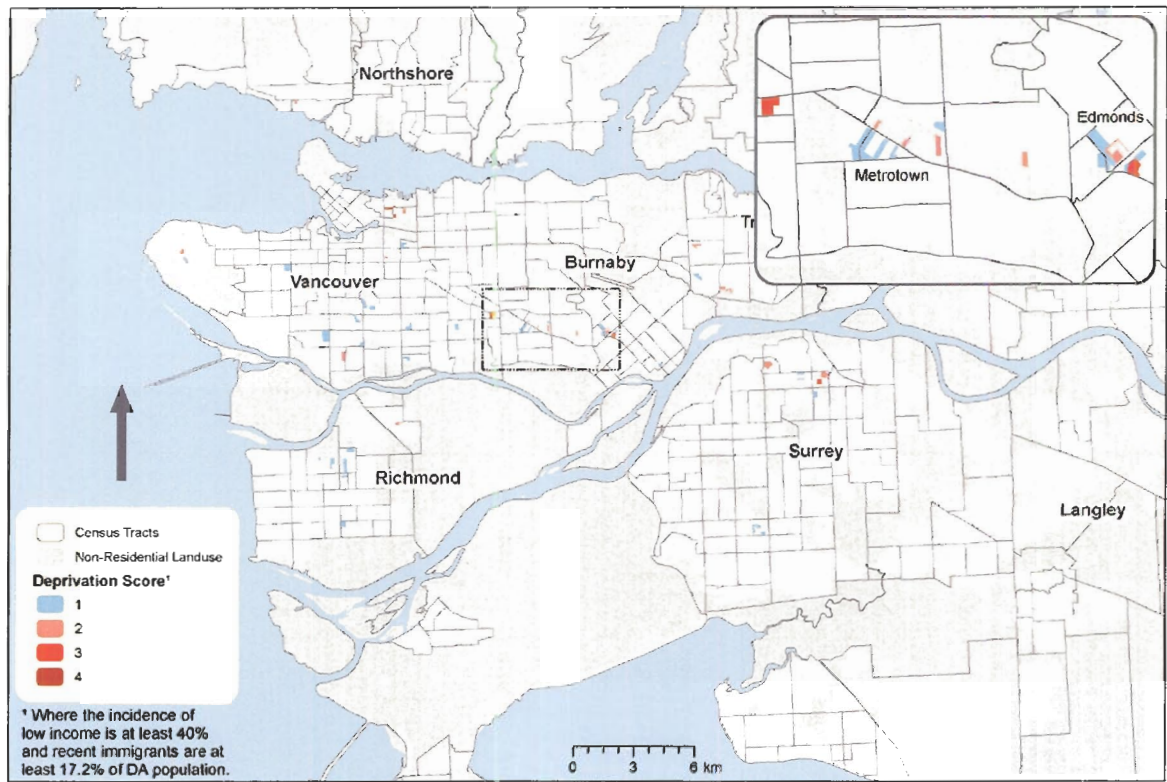
Figure 2-3 further refines the analysis by identifying at-risk DAs that contain a high concentration of recent immigrants (at least 17.2% of DA population). This approach narrowed 174 at-risk DAs down to 59. Significantly, this simple technique shows that recent immigrants are concentrated within a select number of at-risk DAs, with 70.3% residing in approximately one-third of at-risk DAs (or 6.9% of all recent immigrants reside in at-risk DAs that account for only 1.9% of the Vancouver CMA's total population).

Figure 2-2: At-risk areas



Data Sources: Statistics Canada, Census 2001, electronic profile data and custom table J3537R (includes CMHC census-based indicators and data); GVRD Land-use data

Figure 2-3: At-risk areas with high recent immigrant presence



Data Sources: Statistics Canada, Census 2001, electronic profile data and custom table J3537R (includes CMHC census-based housing indicators and data); GVRD Land-use data

Cartographic analysis reveals at-risk DAs are geographically dispersed across the metropolitan area, but significant clustering of at-risk DAs (especially those with deprivation scores 2 or higher), is prominent in the area known as the downtown eastside (an area immediately east of Vancouver's central business district). Less prominent are scattered clusters of at-risk DAs found along the SkyTrain route that runs from the downtown core diagonally (north-west to south-east) to the Whalley area of Surrey (see figure 2-2). Clustering of at-risk DAs where recent immigrants are concentrated is more limited - as figure 2-3 shows. In this case small areas with multiple at-risk DAs are only really present in the Metrotown and Edmonds areas of Burnaby. The presence of at-risk DAs associated with recent immigrants in Burnaby, one of Vancouver's inner suburbs, echoes the findings of other studies, which have noted increasingly poor immigrants in

Canadian cities are found in suburban locations where low cost rental apartment are available (Bunting et al., 2004; CMHC, 2003; Ley & Smith, 1997, 2000; Smith, 2004).

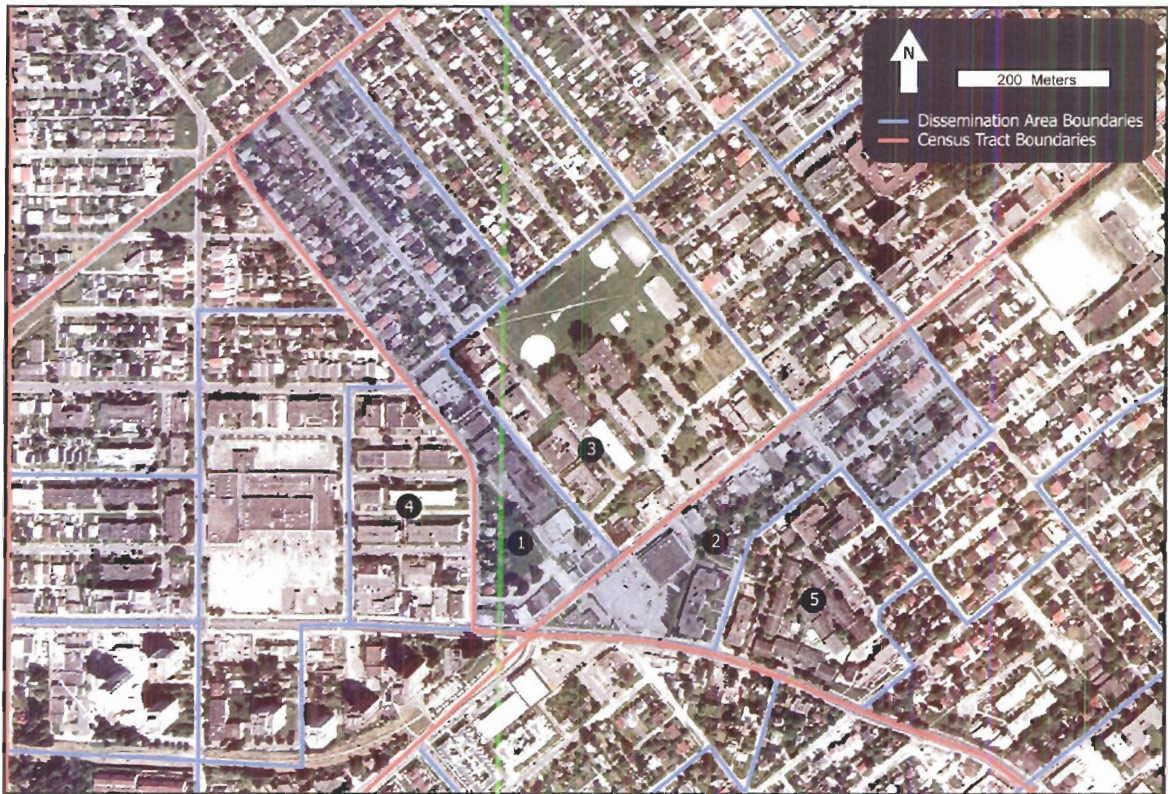
While this approach helps identify areas at-risk, it does not reveal much about the individual households (especially recent immigrant ones) that reside within them. Nor does it address the problem of ecological fallacy. While it is possible to identify at-risk areas and describe whether or not they are associated with concentrations of recent immigrants, it is not possible to distinguish between at-risk recent immigrants and recent immigrants who merely reside in at-risk areas. This problem is inherent to area-based profiles created using census data (Openshaw, 1984a; Voas & Williamson, 2001). Notwithstanding the important role neighbourhoods are seen to play in the 'cycle of poverty' (see Wilson, 1987), many residents of at-risk areas may themselves not be at-risk. Conclusions that do not recognize this reality are seen as committing an ecological fallacy.

Similarly, while the dasymetric mapping approach employed here improves cartographic representation, it does not mitigate the modifiable areal unit problem (MAUP). MAUP recognizes that areal unit boundaries are both arbitrary and modifiable making maps and statistical results dependent on the scale and configuration of the areal units employed (Openshaw, 1984b). Dasymetric approaches have been used to create population density surfaces that mitigate MAUP using known relationships between land-use (or zoning) and population distribution (Holt et al., 2004; Mennis, 2003). The suitability of dissemination area boundaries for revealing spatial variations in socioeconomic conditions, like deprivation and housing need, is largely a function of how well they are matched to the geographical distribution in housing tenure and dwelling

type (Alvanides, Openshaw, & Rees, 2002; Morphet, 1993). While there is a noted relationship, between dwelling type and tenure, and spatially concentrated poverty, deprivation and housing need in the Vancouver metropolitan area (i.e. low-rent apartments), it is complex at the DA level, and for recent immigrants the relationship is tenuous at best – preventing the implementation of a more sophisticated dasymetric approach in this study.

Figure 2-4 shows census tract and dissemination area boundaries superimposed on remotely-sensed imagery of the Edmonds neighbourhood in Burnaby. The remotely-sensed imagery highlights how the irregular geometric shapes of census geography frequently do not reflect socially homogeneous ‘optimal’ zones for analysis (Alvanides et al., 2002). The dissemination areas labelled 1 and 2 (in figure 2-4) are split between mostly owner-occupied single-family detached dwellings and rental apartments. Site visits revealed that rental apartments in the mixed-housing dissemination areas (1 and 2) were similar in age and condition to apartments in the more homogeneous DAs (3, 4, and 5); most of the apartments in the mixed-housing DAs were across the street from rental apartments in the more homogeneous DAs. It is difficult to ascertain the overall impact this has on the spatial analysis across the entire study region (Greater Vancouver), but it illustrates that additional high-resolution data along with contextual information can reveal, even at relatively fine-resolution, that relevant spatial variation may remain hidden in a census map (see Morphet, 1993).

Figure 2-4: Edmonds area census geography



Data Sources: Vancouver data © Triathlon Ltd, 1995. Processed and distributed by Triathlon Ltd., a subsidiary of MDA; Statistics Canada, Census 2001

2.9 Complementing Socioeconomic GIS

Recent GIScience literature has suggested employing multiple methods to allow for more sophisticated analysis than is possible with GIS methods alone (Kwan, 2002; Pavlovskaya, forthcoming). Kwan (2002, 651) recognizing the limitations of a GIS approach, suggests several mitigation strategies, including “complementing secondary data with other contextual information” and “collecting primary quantitative and/or qualitative data from individual subjects.” To augment our exploratory GIS approach and ascertain potential for at-risk homelessness in a more nuanced way, a postal survey of all households living in rental apartments in two of the dissemination areas identified in figure 2-3 was conducted. This included one dissemination area from each of the

Metrotown and Edmonds areas of Burnaby, British Columbia.⁹ The specific dissemination areas selected for the postal survey were determined using a combination of local knowledge and site visits with the aim of selecting areas where the physical condition of housing and tenure status of residents within would be reasonably homogeneous. The survey questionnaire asked participants about neighbourhood safety, their housing conditions, and the adequacy of their financial resources, as well as asking directly about household structure and living arrangements, financial resources, housing costs, and immigration status.

A total of 122 households returned completed surveys (out of the 588 questionnaires mailed out) for an overall response rate of 20.7%. The survey yielded interesting insights into the subtle differences between the two areas, which share similar levels of recent immigrants and low income according to the most recent census. When asked about the physical condition of their apartment, 26.2% of respondents from Edmonds reported it was in poor or substandard condition, while only 6.3% of the Metrotown respondents did. Similarly when asked whether they considered their neighbourhood safe, 45.2% of Edmonds respondents answered no, while only 28.8% of Metrotown respondents did.

The difference between areas was just as apparent in the responses to questions about economic welfare. Asked to indicate their income from a set list of household revenues, 23.8% of Edmonds respondents said they earned less than \$1000 per month, while 15.1% of Metrotown respondents fell under this level. More significantly, only 28.6% of Edmonds respondents reported monthly household incomes over \$2000, while

⁹ DA unique identifiers: 59151259 (Edmonds DA) and 59151314 (Metrotown DA)

47.7% of Metrotown respondents did. This means the majority of respondents from both areas surveyed reported household incomes that, annualized, would fall below \$24,000 which is less than half the Vancouver CMA median household income (\$49,940). The proportion falling below \$24,000 was noticeably higher in the Edmonds DA compared to the Metrotown DA (71.4% to 52.3%), indicating a difference in the depth of poverty. This was also detected in the responses to another question asking whether the respondents had enough money for food, clothing, and transportation after paying rent.¹⁰ In response only 23.8% of Edmonds respondents answered yes, in contrast to 47.5% of Metrotown respondents.

Both the survey and census revealed that approximately 50% of the population in the two study areas are recent immigrants, indicating that they function as reception neighbourhoods. The postal survey asked respondents if they were born outside Canada, and if applicable, to indicate the year they came, and their country of origin. Survey responses indicated that 28.6% of Edmonds respondents had immigrated to Canada in the past 2 years, while this was the case for 21.3% of Metrotown respondents. In relation to the place of birth question, one-third of respondents from the Edmonds area were from African countries, a very small group in Greater Vancouver – so small that census privacy norms render this highly variegated group largely ‘invisible’ in published DA level data (most African countries are included in the category ‘all other places of birth’). Thus, developing fine-scale understandings of the residential geography of pan-African

¹⁰ Respondents could answer Yes; Usually, Sometimes; or No. The Edmonds responses were Yes - 23.8%; Usually - 26.2%; Sometimes - 19%; No - 28.6%. The Metrotown responses were Yes - 47.5%; Usually - 28.8%; Sometimes - 10%; No - 11.3%. Percentages may not add up to 100% due to non-responses to this question.

immigrant population in Vancouver is limited. This issue has proved problematic for research interested in relatively small and newly arrived groups, especially refugees.

The housing conditions experienced by new immigrants and (especially) refugees are of particular research interest. While our survey does not distinguish between responses by entrance class, there is a contingent of survey participants from African countries that are typically associated with refugees in the Edmonds sample. There is no way to verify if these participants are indeed refugees, but their responses to the survey's housing questions echo what other studies on refugee housing experiences have reported (see Mattu, 2002; Miraftab, 2000). Perhaps most striking is the degree of overcrowding reported. We have used persons per room to report overcrowding in the survey responses because the persons per bedroom measure used by CMHC (1991) requires more detailed information about household composition than our survey collected. Using this measure, overcrowding is indicated when household density exceeds 1 person per room, while it has been suggested that 1.5 persons per room indicates more extreme overcrowding (Myers, Baer, & Choi, 1996).

As the number of African responses in our Edmonds sample is quite small (14 out of 42) results drawn from them should be used with caution. They represent a largely invisible and arguably ignored group in Greater Vancouver.¹¹ Among African households, 11 exceeded 1 person per room (with 7 of these exceeding 2 persons per room), while only 3 were below the threshold for overcrowding. The degree of overcrowding may be explained partly by large households residing in rental apartments;

¹¹ African Immigrants in Greater Vancouver have received little research attention with the exception of Creese and Kambere (2002).

7 responses were from households with 5 or more members.¹² When asked whether they had enough money for food, clothing, and transportation after paying rent 11 responded no, indicating a limited ability to obtain housing that is not overcrowded, which was also indicated by their low reported incomes in the survey. African respondents also indicated their housing is in poor condition (only 3 responded it was in good condition, while 7 reported it was in poor condition). African survey respondents from the Edmonds area appear to be precariously housed and at-risk of homelessness, generating new questions for both researchers and policy-makers.

The postal questionnaire is an important addition to this study, and offers more direct, in-depth information than is available in census data yielding deeper insight into the conditions experienced by residents. The survey also provided more temporally relevant information that highlighted changes in the two areas that had occurred since the last census. The postal survey was able to aid in illuminating certain 'blind-spots' in the census data, yet without the census we would not have known where or whom to survey. The next logical step might be to employ semi-structured interviews or focus groups (with willing survey respondents) to follow up and expand on the responses to survey, though this was not part of our project.

2.10 Conclusion

Harris and Longley (2004) assert that geographic research has become too focused on specificity at the expense of understanding system-wide phenomena. While knowledge generated by systematic social area analysis approaches are useful, their

¹² Responses to the question: how many people live in your apartment were, 5 persons – 1; 6 persons – 2; 7 persons – 2; 8 persons – 1; 9 persons – 1

limitations have been the focus the perceived qualitative/quantitative divide within human geography (Sheppard, 2001). Generalized indicators, models and area-profiling may identify the contours of social difference, but they cannot adequately represent the complexity of street level realities, or disentangle the diverse range of experiences within identified areas. Research approaches that Harris and Longley (2004) deem “introspective and individualistic” are more suited for this task. In this study, a high-resolution GIS analysis was conducted in conjunction with a postal survey to aid in developing an improved – though still incomplete – understanding of groups that are at-risk for homelessness in Vancouver, Canada. The approach is a compromise – one that represents an incremental improvement in GIS practice.

It is incremental in that it leaves many of the tensions identified by GIS critics unresolved. High-resolution analyses, especially those using ‘lifestyles’ data (see Harris & Longley, 2004; Longley, 2003, 2005; Longley & Harris, 1999) have not adequately addressed the surveillance and privacy concerns long voiced by critical scholars (see Curry, 1997; Goss, 1995b; Pickles, 1995). GIS-facilitated dasymetric mapping represents an improvement for the geographic governance of populations, but it retains the basic problem of treating them as manageable resources (Crampton, 2004). Here the divide between GIS critics and researchers is most clearly illustrated. Proponents see the over-reliance on coarsely aggregated data and models as problematic, while critics view the project itself largely as problematic.

The compromise advocated here is a high-resolution approach, one that recognizes that census data (and mapping) will likely continue to dominate GIS use for socioeconomic analysis. Rather than abandon census mapping in socioeconomic GIS

(which would be impractical in our opinion), the resulting representations should be used more cautiously, with - as Hannah (2001) suggests - a more thorough awareness of the advantages and disadvantages (technical and political) of the underlying (census) data. The approach described here attempts to achieve this by explicitly acknowledging the 'situated' and 'partial' nature of results produced by census data and/or GIS analysis alone (Kwan, 2002; Pavlovskaya, forthcoming). The postal survey complements GIS analysis by highlighting potential 'blind-spots' produced by census mapping, and by also suggesting directions for future research. This would include extending this approach to include more qualitative methods like focus groups and semi-structured interviews that would allow more active participation by the residents in the construction and representation of their housing conditions and experiences.

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3 GEOGRAPHIES OF IMMIGRATION AND HOMELESSNESS IN GREATER VANCOUVER

A version of this chapter has been submitted to *Cities: The International Journal of Urban Policy and Planning* for consideration in the World Urban Forum 2006 special issue – *Counting on Vancouver: Our View of the Region*.

The author of the thesis is first author, with Dr. Nadine Schuurman and Dr. Jennifer Hyndman second and third authors respectively. As first author, I conducted the analysis and wrote the first drafts. Subsequent drafts were fine-tuned and edited in conjunction with my co-authors. While the finished papers contain important contributions from both co-authors, they are substantively the work of the thesis author.

3.1 Abstract

Recent immigrants as a group are at elevated risk of homelessness. Using Canada Mortgage and Housing Corporation (CMHC) census-based housing indicators, we generate geographies of immigrants at-risk for homelessness. Contemporary immigration research has cautioned against treating immigrants as a ‘homogeneous’ group as this masks their diversity, both cultural and in terms of the social and financial capital they possess. Our approach to discerning risk of homelessness uses fine-grained cross-tabulated data to ‘zoom-in’ on the housing conditions of immigrants by period of arrival and tenure status. Initial findings indicate that: 1) spatial concentrations of recent immigrants at-risk of homelessness are found in inner suburban locations; 2) the majority of these at-risk immigrants are recent arrivals; and 3) recent immigrants are disproportionately excluded from housing need estimates because they are significantly over-represented among households that have shelter costs that exceed their incomes, which are not considered interpretable.

3.2 Introduction

Relatively little is known about housing affordability need amongst immigrants in Canada (Murdie, 2004), and with the exception of Bunting et al. (2004), little research addresses the intraurban spatial dimensions of housing affordability within Canadian metropolitan areas. Given the increasing socioeconomic disparity between renters and owners (see Hulchanski, 2004), and the deteriorating economic welfare experienced by new immigrants (Picot, 2004; Picot & Hou, 2003; Picot & Sweetman, 2005), this is a surprising research gap. We address this gap by examining the spatial distribution of at-risk homelessness within Greater Vancouver using Canada Mortgage and Housing Corporation (CMHC) census-based housing indicators cross-tabulated by immigrant status (by period of arrival), and tenure status.

The importance of access to stable housing during the settlement process cannot be understated, “for immigrants and refugees, finding a suitable place to live in a supportive community is an important first step towards successful integration” (Murdie, 2004, 147). Results from the first wave of the Longitudinal Survey of Immigrants to Canada (LSIC) sheds light on the early settlement experiences of new immigrants (see Statistics Canada, 2003; Statistics Canada, 2005). According to the LSIC 81% of new immigrants interviewed had pre-arranged their housing, although it may have been only temporary as over 75% indicated that they would need to look for different accommodation after arrival. Almost a third of new immigrants settling in Vancouver reported difficulties finding suitable housing, and overall 31% of immigrants (Canada-wide) cited high housing costs as a problem; this echoes the findings of previous studies

on immigrant (and refugee) housing experiences in Vancouver (see Mattu, 2002; Miraftab, 2000).

Using focus groups comprised of immigrants and refugees, Mattu (2002, 35) revealed, “they [immigrants and refugees] are living in overcrowded, unaffordable, substandard, ‘dirty’, unpleasant, and poorly maintained accommodations.” In the case of refugees this is not surprising given that they receive income assistance upon arrival in Canada equivalent to provincial social assistance rates, and it is estimated that recipients spend 75% of their income on rent (Mattu, 2002). While refugees are clearly at-risk due to their limited financial means upon arrival, immigrants are a much larger group and vary more widely in their economic circumstances requiring a more complex examination.

In this paper, we examine the spatial dimensions of recent immigrants at-risk for homelessness. Our approach eschews coarsely aggregated census data typically used for spatial analysis by employing cross-tabulated census data. Cross-tabulated data provide greater flexibility and specificity when examining how variables relate to specified population groups within areas. Thus, the spatial dimensions of housing need within Vancouver are examined by tenure and immigrant status (by period of arrival), using geographic information systems (GIS), to provide a more focused and specific spatial understanding of immigrant housing experiences. First, however, we summarize and interpret contemporary literature on immigration and homelessness in order to set the stage for this approach.

3.3 Contemporary Immigration Trends

Ley and Murphy (2001) identify two important characteristics of contemporary immigration: i) immigrants as a group are extremely diverse both socioeconomically and in terms of origin, and ii) immigration has become highly concentrated in large metropolitan centres, known as ‘gateway’ or ‘global’ cities. These changes are attributed to shifts in immigration policy and the effects of globalization (Forrest, Poulsen, & Johnston, 2003; Ley & Murphy, 2001; Pamuk, 2004). Canadian immigration policy changed significantly with the Immigration Act of 1967. The new act replaced admissions based on preferred source countries with a merit-based system (Kelley & Trebilcock, 1998). Post-1967, immigrants have increasingly come from non-European (predominantly Asian) countries, increasing Canada’s ethnic diversity.

More important to this study is the role of immigrant entrance classes. Immigrants to Canada are now admitted via three broad entrance classes: economic (business and skilled workers), family and political (refugees). This has increased the socioeconomic diversity among immigrants as applicants in each class are evaluated using different criteria – meaning new immigrants now arrive in Canada possessing considerably different amounts of financial and social capital. Like refugees, some newly arrived family and economic class immigrants experience substandard housing conditions and/or may be at-risk for homelessness, but the diversity of immigrants clearly makes it inappropriate to view immigrants or their housing experiences in a singular way. That there is no longer a ‘typical’ or ‘average’ immigrant (Ley & Hiebert, 2001), needs to be carefully considered when examining risk of homelessness amongst immigrants, especially recent immigrants.

Commenting on studies investigating the socioeconomic performance of immigrants, Kazemipur and Halli (2000) caution against treating immigrants as a 'homogeneous' group or examining their "average" performance. Their study suggests that income disparity is greater among immigrants than non-immigrants, with immigrants over-represented at the high and low ends of the income spectrum and under-represented in the middle. Picot (2004) points out during the 1990s rising rates of low-income in Canada's largest cities (Montreal, Vancouver, and Toronto) were in large part concentrated among immigrants. This rising incidence of low-income among the immigrant population can be explained by the declining economic performance of new immigrants, represented by the widening gap between the initial earnings of immigrants and those of non-immigrants (Li, 2003). Declining initial earnings help explain diverging economic welfare in the late 1990s, where low-income rates rose among recent immigrants, while falling among non-immigrants (Picot & Hou, 2003).

Explaining rising levels of immigrant poverty is complicated by the diversity of immigrants and their experiences. While immigrants have been linked to spatially concentrated poverty in Canadian cities (Kazemipur & Halli, 1997; Ley & Smith, 1997), concern that this will lead to social exclusion may be overstated. There is limited empirical evidence to date linking immigrants to traditional measures of deprivation (Ley & Smith, 2000; Smith, 2004). Additionally, Ley (1999) cautions against focusing too narrowly on low individual income levels, as this is often mitigated by higher household income. Similarly, the unusual case of business/investor class immigrants, who (within Canada) disproportionately settle in Greater Vancouver, suggests care should be exercised with 'official' statistics as they offer at best a partial view of the immigrant

experience (Ley, 2003). Business/investor class immigrants, despite declaring assets on average over a million dollars (Canadian) upon arrival, have surprisingly low incomes (Ley, 1999). As a result, they confound easy attempts to characterize immigrant housing affordability need, as despite having low incomes, business/investor class immigrants often own expensive homes in desirable neighbourhoods.

3.4 Defining Homelessness

“Any attempt to understand and to address homelessness must start by defining the nature of the problem. A review of the literature on homelessness shows a significant lack of consensus about how the problem should be defined and about which courses of action are appropriate solutions. Our society has not agreed on a definition of homelessness and views it from many perspectives. Consequently, homelessness is both difficult to define and even more difficult to measure.” (Hulchanski et al., 1991, 6)

Why is defining homelessness so problematic? There are many reasons, but simply put the word is itself burdened with many possible meanings (Hulchanski, 2000) and any definition affects who gets counted, therefore determining the size of the problem (Layton, 2000). Attempting to estimate the magnitude of homelessness is complicated by the politically sensitive nature of definitions that are socially constructed. Defining homelessness requires making a normative judgment about what constitutes a society’s minimum level of acceptable housing (Peressini, McDonald, & Hulchanski, 1996). While homelessness is recognized as fundamentally a housing problem (Hulchanski, 2002), some are critical of inclusive definitions of homelessness, because as they claim, the size of the problem is exaggerated by conflating homelessness with housing problems (see Sarlo, 1999).

Contemporary definitions split homelessness into two broad groups: absolute homelessness which refers to persons or households literally without physical shelter (i.e.

sleeping rough or living in homeless shelters); and relative homelessness which includes a range of housing situations characterized as being at-risk for homelessness. Inclusive approaches that define homelessness as a continuum that includes housing issues are now widely accepted and evident in most contemporary Canadian policy papers and reports on homelessness. An influential policy report “Taking Responsibility for Homelessness: An Action Plan for Toronto” (often referred to as simply the Golden Report) is representative of reports that define homelessness broadly (Golden et al., 1999). Homelessness is recognized as a continuum that varies in severity and duration, with pathways that often occur in stages, prompting the authors of the Golden Report to argue for a broad definition: “we have included in our definition...those who are ‘visible’ on the streets or staying in hostels, the ‘hidden’ homeless who live in illegal or temporary accommodation, and those at imminent risk of becoming homeless” (1999: iii). Similarly a recent research project conducted to profile and estimate the size of the homelessness problem in Greater Vancouver split the problem into two groups: those (literally) homeless and those at-risk for homelessness (see Woodward et al., 2002).

At-risk households may have serious housing issues, but they are housed. Murray (1990: 19) points out that households in core housing need (an at-risk group) are at medium-level risk, “that they may, with the slightest deterioration in income or family circumstances, be pushed along the continuum toward its bottom end of no fixed address and no shelter.” This is the essence of what is meant by at-risk. Being at-risk does not mean (or guarantee) eventual homelessness, only that the pre-conditions are in place that might lead to eventual ‘literal’ homelessness. According to Murray (1990: 35) “most people at-risk cannot find appropriate housing that is affordable and offers security of

tenure.” Focus on the cost of housing, or more specifically the affordability of acceptable housing, is evident in housing and homelessness literature. A lack of low-cost affordable housing results in high rent-to-income ratios among the least well-off members of society putting them at-risk for economically induced homelessness (Bunting et al., 2004; Moore & Skaburskis, 2004).

3.5 Risking Homelessness

Two-thirds of responses from homeless individuals enumerated in a recent homeless count in Greater Vancouver cited economic reasons for their being homeless - with lack of income and cost of housing accounting for 44% and 22% of responses respectively (Goldberg et al., 2005).¹³ Similarly, a study of “hard to house” people in Toronto noted that while many factors contribute to eventual homelessness, lack of job security and low incomes (whether from social assistance or employment) are significant factors in housing instability (CMHC, 2003c). Consistent with other studies on at-risk homelessness, CMHC (2003c) also found the precarious financial position of participants left little room for adverse events. Both studies cited the very low incomes provided through government social assistance programs as inadequate to meet the actual cost of rent (CMHC, 2003c; Goldberg et al., 2005).

Studies examining the housing experiences of refugees (and immigrants) have also noted that for refugees (who receive federal government financial support roughly equivalent to provincial social assistance rates) low welfare rates limit access to acceptable housing. The “2005 Greater Vancouver Homeless Count” presented counts for

¹³ Multiple responses were possible - 44% lack of income; 22% cost of housing.

five sub-groups of homeless individuals: women, Aboriginal people, unaccompanied youth aged 24 or under, seniors (persons aged 55+), and the 'long-term homeless' (Goldberg et al., 2005). Separate counts of homeless refugees or immigrants were not provided. Woodward et al. (2002) identified immigrants, along with Aboriginals, women, persons with disabilities, lone parents, youth (aged 10-19) and seniors (aged 55+), as at-risk groups in Greater Vancouver.

Woodward et al. (2002) defined at-risk for homelessness as households (or persons in households) in core housing need and spending at least half of household income on shelter costs modified (INALHM).¹⁴ The core housing need model was developed by the CMHC to identify households, in Canada, that are unable to obtain adequate, suitable, or affordable housing without spending at least 30% of their pre-tax household income (CMHC, 1991).¹⁵ Moving from the 30% shelter cost-to-income ratio (STIR) used in the core housing need model, to a 50% threshold, typically reduces the number of households identified by more than half. INALH is therefore a more conservative approach, identifying only households experiencing acute housing affordability need. Renter households INALH are considered to be at greater risk for homelessness (especially if they are already in low-rent housing) than owner households INALH, as they have limited ability to reduce their housing costs, and cannot draw on accumulated home equity in times of financial difficulty (Bunting et al., 2004). Given the

¹⁴ Woodward et al. (2002) used INALH as defined by the CMHC, but modified to include Native households residing in non-farm, non-band, or non-reserve housing.

¹⁵ The Core Housing Need model consists of, *adequacy*: a dwelling should need only regular repairs, or at most minor repairs; *suitability*: based on the National Occupancy Standard (NOS), the number of bedrooms required for a household based on its size and composition; and *affordability*: Shelter cost-to-income ratio must be below 30%. To be considered in core housing need a household must fall below at least one housing need indicator and have insufficient income to access housing meeting all three housing standards. Only non-farm, non-reserve households with positive income exceeding shelter costs are included in core housing need counts (CMHC, 1991).

increased relative risk of homelessness faced by renter households our analysis is necessarily focused on renters, though we acknowledge that homeownership does not eliminate risk of homelessness.

3.6 Data and Methods

This paper examines the spatial dimensions of recent immigrants at-risk for homelessness using CMHC census-based housing need indicators. A custom census cross-tabulation was obtained with the following data dimensions: immigrant status (by period of arrival), tenure status, shelter cost-to-income ratios, housing standards and core need status. Cross-tabulated census data allow researchers to create custom population counts (for areal units) from differing configurations of available data dimensions. Cross-tabulated data permits the tabulation of the number of recent immigrants in households in core housing need instead of having a count of persons in households in core housing need and a separate count representing the number of recent immigrants for an areal unit. This allows for much more explicit linkages between recent immigration and housing need than is the case using standard areal census data.

Consistent with existing research on at-risk homelessness in Greater Vancouver (see Woodward et al., 2002), INALH is used to identify the population at-risk of homelessness, except here only renters are considered to be at-risk.¹⁶ However, the core housing need model (and by extension INALH) may be problematic with regard to the identification of recent immigrants as not all households are assessed. Households with

¹⁶ Woodward et al. (2002) used INALH modified to include persons in Native households. The dataset used for analysis in this paper did not include this modification. According to Woodward et al. (2002) Aboriginals were a high-risk group with 15.2% of all Aboriginals (renters and owners) in Greater Vancouver identified as at risk using 1996 census data (6,990 of 45,890 total Aboriginal persons).

shelter costs that exceed their income or do not have a positive income, are not considered by the core housing need model, as their shelter cost-to-income ratios (STIRs) are not deemed interpretable and therefore housing affordability cannot be assessed (CMHC, 2005). This makes sense given the core housing need model is used to compare housing conditions country-wide and is a generalized indicator. It is beyond the capability of a generalized indicator to disentangle the range of circumstances that produce STIRs that are not interpretable and assess whether or not a household is in core need.

Nevertheless, a major finding of our analysis is that many immigrants at-risk for homelessness are missing from official data. LSIC results pertaining to the housing and financial situations of new immigrants suggest the exclusion of households without positive income that exceeds shelter costs might impact recent immigrants as a category for analysis. First wave results (data collected from immigrants after 6 months in Canada) reveal 13% of immigrants had STIRs 100% or more and that 14% of immigrants reported no family income (Statistics Canada, 2005). This echoes data used for analysis in this paper. Recent immigrants are over-represented among the population in households with STIRs 100% or more (26.6% of STIRs 100% or more, but only 8.5% of the total population).

STIRs 100% or higher (or reporting no income) may not indicate dire living conditions. They may, for example, describe a family with sufficient assets to buy a comfortable home, but where the chief income earner is living and working off-shore. The concern here is that STIRs provided in census datasets inflate the number of recent immigrants excluded from assessment by the core housing need model by virtue of how

they are calculated. Moreover, this exclusion highlights the difficulties encountered when variables are derived using immigrant income. Census respondents are asked to provide information on their previous year's income and their monthly shelter costs. The household STIR is calculated by dividing monthly shelter costs by monthly income (total income divided by 12) multiplied by 100 to provide a percentage (Statistics Canada, 2002). Clearly, this is extremely problematic for newly arrived (recent) immigrants, as the STIR ratio for many would be the product of current monthly shelter costs divided by a monthly income derived from less than a full year's earnings.¹⁷ In recognition of this problem, analysis is extended to examine not just in core housing need and INALH, but also the population in household that fall below more than one CMHC housing need indicator.

Finally, findings presented in this paper have been tabulated using dissemination areas (DAs). This requires further explanation as most Canadian "neighbourhood" level studies of this nature have used census tract (CT) level data. CTs are intended to represent "neighbourhood-like communities" with populations between 2500-8000 people, while DAs are small-areas intended to contain between 400-700 people. With larger population and household counts CTs are considered more reliable for statistical analysis as larger count sizes reduce error and uncertainty associated with long-form (20% sample) census data (see Statistics Canada, 2002, 294). However, the higher spatial resolution of DAs better matches the geography of rental housing in Greater Vancouver,

¹⁷ Recent Immigrants are not the only group impacted by the manner in which STIRs are calculated in census data. Anyone reporting less than a complete year's income or income not reflective of typical earnings would produce misleading results. What is suggested here is that recent immigrants by virtue of being newly arrived in Canada are disproportionately impacted. Additionally, the CMHC also cautions users to be aware of the temporal mismatch between the income and shelter cost data as it may impact some households (CMHC, 2003a). For example income data in the 2001 census is from 2000, but the shelter cost data is from the month of the census – in this case May 2001.

especially in suburban locations where CTs are too coarsely aggregated to discern highly localized pockets of rental housing.

3.7 At-Risk for Homelessness in Greater Vancouver

Before addressing explicitly the spatial dimensions of recent immigrants at-risk for homelessness, it is necessary to elaborate further, using city-wide statistics, on why we have chosen to focus on recent immigrants. The answer is three-fold. First, recent immigrants (those who arrived 1996-2001) are a sizable group in Greater Vancouver, representing 8.6% of the area's population. Second, the 2001 census revealed households with a recent immigrant primary household maintainer (PHM) have a very high incidence of low income, which at 51.5%, is 2.7 times that of non-immigrant households.¹⁸ Third, immigrant households are on average larger than those of non-immigrants (CMHC, 1996, 2003b, 2004). The combination of comparatively low incomes and the need for larger apartments (which are more expensive and in short supply) has been cited as a barrier immigrants face in accessing acceptable housing (Murdie, 2004).

In 2001, there were 115,475 persons in households INALH in Greater Vancouver, or 6.1% of the population. Of the population in households INALH, only 62,915 were renters, thereby reducing the population considered at-risk for homelessness in this analysis to 3.3% of the overall population. Table 3-1 reveals that renters (as a group) experience core housing need at three times the rate of owners (24.7% to 8.2%), but examining in core housing need using the overall population (even when separated by tenure) obscures the exceptionally high incidence rate of recent immigrant renters

¹⁸ Analysis by authors of Metropolis core data GO0528 Table 2 (Statistics Canada, Census 2001)

(37.5%). Not only do recent immigrants have a much higher incidence rate of core housing need, but the differential between renters and owners is considerably narrower than in the broader population. Finally as discussed, recent immigrants are disproportionately represented in the population with STIRs 100% or more and therefore disproportionately excluded by the core housing need model. Table 3-1 shows that 16.3% of recent immigrant renters have STIRs 100% or more. Of this group, more than half are below more than one CMHC housing need indicator (see table 3-2). This is clearly problematic; as it excludes many recent immigrant renters from core need consideration, even though they are experiencing housing need.

Table 3-1: Incidence of Core Housing Need, INALH and STIRs 100% or more by tenure status for Immigrants and non-Immigrants.

Greater Vancouver	Total Population	Non-Immigrants	Immigrants (by period of arrival)			
			All	pre-1991	1991-1995	1996-2001
Total Population	1,895,505	1,143,140	724,830	408,625	154,290	161,915
Owners	1,302,830	788,935	505,410	317,650	108,185	79,575
Renters	592,670	354,205	219,420	90,975	46,110	82,335
In Core Housing Need	14.2%	11.3%	18.5%	12.9%	21.4%	29.9%
Owners	8.2%	5.5%	12.2%	8.2%	16.8%	21.9%
Renters	27.4%	24.3%	33.0%	29.2%	32.1%	37.5%
INALH	6.1%	4.8%	8.0%	5.4%	9.2%	13.2%
Owners	4.0%	2.6%	6.2%	3.8%	8.5%	12.6%
Renters	10.6%	9.8%	12.0%	10.9%	10.9%	13.9%
STIRs 100% or more	4.8%	3.0%	6.9%	3.3%	8.2%	15.0%
Owners	3.3%	1.8%	5.4%	2.5%	8.0%	13.5%
Renters	8.2%	5.6%	10.4%	5.9%	8.5%	16.3%

Note: Percentages were calculated using the column total, renter or owner populations. Total Population includes non-permanent residents.

Data Source: Statistics Canada, 2001 Census, J3537R (includes CMHC housing indicators and data)

It is worth considering the role of low income in producing housing need, as the two are highly correlated (at the DA level $r = 0.81$). Moore and Skaburskis (2004)

analyzed acute housing affordability need (STIRs 50% or more) concluding income inequality was the main factor generating increased affordability need in Canada. Echoing this assessment, 2001 census data published in CMHC (2005), shows a considerable gap in average income between all renter households (\$45,304) and those INALH (\$14,772) in Greater Vancouver. Engeland et al (2005) analyzed high-need census tracts within large Canadian cities, finding that in Greater Vancouver the highest-need tracts (defined as the top 10% by incidence of core housing need) had average rents 26.7% lower than elsewhere in the city. Areas of concentrated core housing need have low rents, but many households still have incomes insufficient to bring their STIR below the 30% threshold considered affordable. Analysis conducted for this paper found that 29.1% of persons in households INALH in Greater Vancouver are below more than one CMHC housing standard, indicating that at the very bottom rung of the housing market some households not only must spend an unsustainably high proportion of their income on shelter costs, but also must live in overcrowded and/or substandard conditions to access housing.

Table 3-2 provides the within group rate of persons in households below more than one CMHC housing need indicator by immigrant status and period of arrival. The table shows that recent immigrant renters are more likely than non-immigrant renters to be below more than one housing need indicator regardless of core need status or STIR. The presence of a gap between the percentage of persons below more than one housing indicator and the percentage that are also in core need, suggests that some households (even accounting for the exclusion of STIRs 100% or more) are “voluntarily”

experiencing multiple housing need.¹⁹ Some immigrant groups engage in “doubling-up” or living in overcrowded (and/or substandard) housing conditions as an adaptive strategy to achieve home ownership (Murdie, 2004; Murdie & Teixeira, 2003). This applies to some owner households, but for renters with limited financial resources and low incomes “doubling-up” or living in overcrowded and/or substandard housing may be a last resort to avoid “literal” homelessness.

Table 3-2: Population Below More Than One CMHC Housing Need Indicator.

Greater Vancouver		Total Population	Non-Immigrants	Immigrants (by period of arrival)			
				All	pre-1991	1991-1995	1996-2001
Total Population		1,895,505	1,143,140	724,830	408,625	154,290	161,915
Owners		1,302,830	788,935	505,410	317,650	108,185	79,575
Renters		592,670	354,205	219,420	90,975	46,110	82,335
Below more than one CMHC housing need indicator	All	8.0%	5.6%	11.2%	6.4%	13.5%	21.0%
	Owners	5.1%	3.5%	7.5%	4.9%	11.0%	13.2%
	Renters	14.5%	10.4%	19.7%	11.8%	19.5%	28.6%
	STIRs 30-99%	5.7%	4.3%	7.8%	4.7%	9.5%	13.7%
	Owners	3.8%	2.8%	5.3%	3.6%	7.5%	9.1%
	Renters	10.0%	7.8%	13.5%	8.8%	14.1%	18.3%
	STIRs 100% or more	1.4%	0.7%	2.2%	0.8%	2.4%	5.8%
	Owners	0.7%	0.3%	1.2%	0.5%	2.0%	2.8%
	Renters	3.1%	1.4%	4.6%	1.5%	3.4%	8.7%
	In Core Housing Need	3.9%	2.7%	5.6%	2.8%	7.0%	11.6%
	Owners	1.7%	1.0%	2.6%	1.4%	4.2%	5.2%
	Renters	8.8%	6.4%	12.6%	7.6%	13.4%	17.7%
	INALH	1.8%	1.1%	2.7%	1.3%	3.3%	5.6%
	Owners	0.9%	0.5%	1.4%	0.7%	2.4%	3.0%
Renters	3.7%	2.6%	5.5%	3.3%	5.5%	8.0%	

Note: Percentages were calculated using the column total, renter or owner populations. Total Population includes non-permanent residents.

Data Source: Statistics Canada, 2001 Census, J3537R (includes CMHC housing indicators and data)

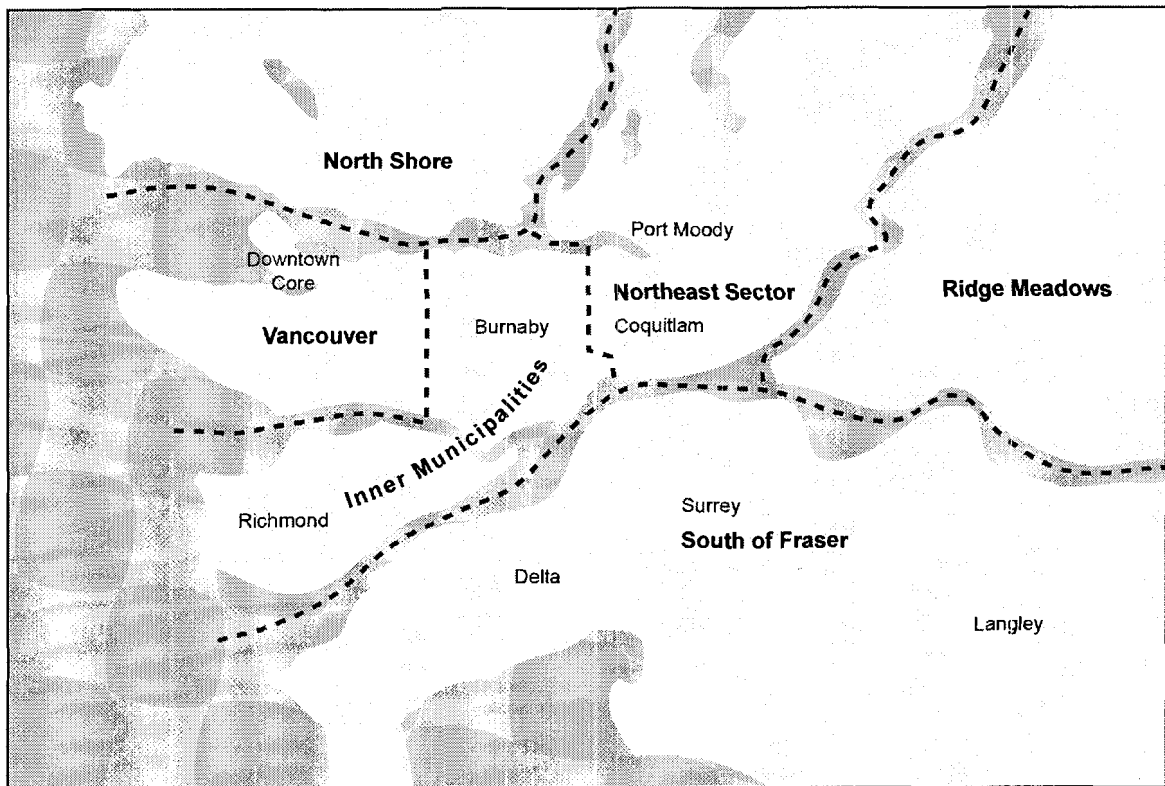
¹⁹ Voluntary in the sense that according to the core housing need model, while these households are below more than one housing indicator, they have incomes sufficient to access acceptable housing (housing that meets the affordability, adequacy and suitability indicators).

3.8 The Geography of Recent Immigrants At-Risk for Homelessness

To detail the spatial dimensions of recent immigrants at-risk for homelessness, we start by examining the macro level spatial variations of housing need. Figure 3-1 provides the basic layout of Greater Vancouver and its sub-regions. To examine the broad contours of housing need within the study area, DA level counts have been aggregated into sub-regions that conform to those used by the Greater Vancouver Regional District (GVRD) and in Woodward et al. (2002).²⁰ Other studies have employed different strategies for partitioning metropolitan areas for analysis. To measure intra-metropolitan distributions, Ley and Smith (2000) and Bunting et al (2004) classified areas within Canadian cities using four zones (inner city, inner suburbs, outer suburbs and exurbs) according to the dominant period of construction for dwellings within groupings of contiguous census tracts (except Exurbs which were identified by their very low population densities). The sub-regions used in this study represent groupings of municipalities (administrative areas), rather than socioeconomic zones.

²⁰ The GVRD is the area's regional government. These sub-regions were used to describe the regional patterns of at risk homelessness in Woodward et al. (2002), which was a report on absolute and relative homelessness in Greater Vancouver prepared for the GVRD. Inner Municipalities – Burnaby, New Westminster and Richmond; South of Fraser (river) – Surrey, Delta, White Rock and Langley (township and city); North Shore – North Vancouver (district and city), West Vancouver, Bowen Island, Lions Bay and western parts of electoral area C; Northeast Sector – Coquitlam, Port Coquitlam, Port Moody, Belcarra, Anmore and the eastern parts of electoral area C; Ridge Meadows – Pitt Meadows and Maple Ridge; Vancouver includes the University Endowment lands (electoral area A).

Figure 3-1: Overview of Greater Vancouver



Source: created by author

In order to focus specifically on those at-risk for homelessness, only the spatial distribution of renters in core housing need or INALH is examined. It should be noted that the distribution of renters within Greater Vancouver is highly uneven. In particular, renters are disproportionately located in the City of Vancouver, which contains only 27.8% of the area's total population, but 40.2% of all renters, while being under-represented in the other sub-regions, except in the Inner Municipalities (very slightly over-represented). It is also important to distinguish between the 'within group' distribution (i.e. where are at-risk recent immigrants located) and the 'within sub-region' distribution (the relative importance of at-risk recent immigrants in a particular sub-region). Table 3-3 shows the 'within group' distribution providing the ability to discern differences in spatial distribution between the overall population and the sub-groups,

while table 3-4 provides the 'within sub-region' distribution, which reveals the composition of each sub-region's population.

Table 3-3: Distribution of Immigrant and non-Immigrant Renters in Greater Vancouver.

Greater Vancouver		All	Non-Immigrants	Immigrants (by period of arrival)			
				All	pre-1991	1991-1995	1996-2001
All Renters	GVRD Total	592,675	354,205	219,425	90,980	46,110	82,340
	Vancouver	40.2%	38.1%	42.3%	46.5%	42.5%	37.5%
	Inner Municipalities	22.4%	19.8%	26.5%	22.6%	25.7%	31.3%
	South of Fraser	20.7%	23.6%	16.9%	17.0%	18.5%	15.8%
	Northeast Sector	7.2%	7.9%	6.3%	5.5%	6.0%	7.5%
	Ridge Meadows	2.3%	3.3%	0.8%	1.2%	0.7%	0.5%
	North Shore	7.2%	7.3%	7.2%	7.2%	6.6%	7.5%
Renters In Core Housing Need	GVRD Total	162,385	86,140	72,310	26,610	14,800	30,900
	Vancouver	39.0%	36.8%	41.4%	48.3%	41.8%	35.3%
	Inner Municipalities	22.7%	19.0%	27.0%	21.3%	25.0%	32.8%
	South of Fraser	22.3%	26.2%	17.8%	18.1%	19.7%	16.6%
	Northeast Sector	7.3%	8.3%	6.5%	4.6%	6.6%	8.0%
	Ridge Meadows	2.8%	4.4%	1.0%	1.6%	1.0%	0.6%
	North Shore	5.9%	5.3%	6.3%	6.0%	5.9%	6.8%
Renters INALH	GVRD Total	62,915	34,700	26,380	9,930	5,005	11,445
	Vancouver	39.0%	39.1%	39.4%	45.7%	39.0%	34.2%
	Inner Municipalities	23.7%	19.2%	29.1%	22.4%	30.9%	34.1%
	South of Fraser	20.5%	24.7%	14.7%	16.8%	12.8%	13.7%
	Northeast Sector	7.1%	7.6%	6.9%	5.8%	7.5%	7.5%
	Ridge Meadows	2.6%	3.7%	1.3%	1.8%	1.4%	0.9%
	North Shore	7.0%	5.6%	8.6%	7.6%	8.5%	9.7%

Note: Counts in this table were produced by aggregating DA counts (except GVRD totals). Due to random rounding percentages may not add-up to 100. Total Population (All) includes non-permanent residents.

Data Source: Statistics Canada, 2001 Census, J3537R (includes CMHC housing indicators and data)

Examining the 'within group' distributions first, it is note-worthy that the relative distribution of renters in core housing need or INALH roughly matches the overall distribution of renters, with two exceptions. Table 3-3 reveals the sub-regional distribution of recent immigrant renters departs from the general pattern, with a

significantly larger proportion located in the inner municipalities, especially among those in core housing need or INALH. Recent immigrant renters in core housing need or INALH are also slightly over-represented in the Northeast Sector and North Shore sub-regions, while being under-represented in the City of Vancouver and South of Fraser sub-regions. This indicates a tendency for recent immigrant renters to be more dispersed between sub-regions than renters overall. Conversely, table 3-3 shows that immigrant renters who arrived pre-1991 (including those in core housing need or INALH) are slightly more centralized than renters in general, with a higher proportion located in the City of Vancouver.

Examining the 'within sub-region' renter composition, in absolute terms non-immigrant renters are the largest sub-group in core housing need and INALH, both city-wide and for all sub-regions. Only in Vancouver and the Inner Municipalities do non-immigrants make-up less than half of the total population in core housing need; for INALH this is the case for Inner Municipalities and the North Shore. This is not surprising as non-immigrants are the largest population group city-wide, as well as in each sub-region. It should be noted however, that while non-immigrant renters are the largest sub-group in core housing need and INALH, they are under-represented when compared to their overall proportion of renters city-wide and within each sub-region (see table 3-4).

Table 3-4: Composition of Renters within Sub-Regions

GVRD Sub-regions		Renters	Immigrated Pre-1991	Immigrated 1991-1995	Immigrated 1996-2001	Non-Immigrants
All Renters	GVRD Total	592,675	15.3%	7.7%	13.9%	59.8%
	Vancouver	236,230	17.8%	8.2%	13.0%	56.7%
	Inner Municipalities	131,745	15.4%	8.9%	19.5%	53.0%
	South of Fraser	121,840	12.5%	6.8%	10.7%	68.2%
	Northeast Sector	42,335	11.6%	6.5%	14.5%	65.2%
	Ridge Meadows	13,590	7.9%	2.4%	2.6%	86.0%
	North Shore	42,665	15.5%	7.2%	14.2%	60.1%
Renters In Core Housing Need	GVRD Total	162,385	16.4%	9.4%	19.2%	53.0%
	Vancouver	62,805	20.3%	10.1%	17.4%	50.0%
	Inner Municipalities	36,540	15.4%	10.4%	27.8%	44.3%
	South of Fraser	35,960	13.3%	8.3%	14.3%	62.2%
	Northeast Sector	11,785	10.4%	8.6%	20.9%	59.9%
	Ridge Meadows	4,490	9.4%	3.2%	3.9%	82.7%
	North Shore	9,430	16.8%	9.5%	22.2%	48.4%
Renters INALH	GVRD Total	62,915	15.8%	8.8%	18.2%	55.1%
	Vancouver	24,385	18.5%	8.8%	15.9%	55.3%
	Inner Municipalities	14,830	14.9%	11.5%	26.1%	44.6%
	South of Fraser	12,840	12.9%	5.5%	12.1%	66.2%
	Northeast Sector	4,470	12.9%	9.2%	19.0%	58.6%
	Ridge Meadows	1,620	10.8%	4.6%	6.2%	79.6%
	North Shore	4,400	16.9%	10.6%	25.0%	44.0%

Notes: Counts in this table were produced by aggregating DA counts (except GVRD totals). Due to random rounding and the inclusion of non-permanent residents in the total renter population percentages do not add-up to 100.

Data Source: Statistics Canada, 2001 Census, J3537R (includes CMHC housing indicators and data)

The next section of our analysis deals with the intraurban spatial patterns of recent immigrants at-risk for homelessness by analyzing and mapping DA-level rates of core housing need based on multiples of the city-wide rate.²¹ This approach has been employed in other studies to examine the spatial dimensions of deprivation and housing need in large Canadian cities (Bunting et al., 2004; Ley & Smith, 2000; Smith, 2004). It should be noted that renters INALH will be analyzed, not separately, but based on their

²¹ Multiples of city-wide rates are analogous to location quotients.

presence in DAs classified by their incidence of core housing need.²² It is not practical to examine renters INALH at the DA level in isolation. Renters INALH are an exceedingly small group, making up only 3.3% of the city-wide population. At the DA level this translates into very small counts, except when examining multiples many times the city-wide rate and at this level very few DAs are identified.

Table 3-5: Renters In Core Housing Need and INALH by DA Concentration

Greater Vancouver		All DAs	Location Quotients (multiples of the city-wide rate)*				
			Less than 1.0	1.0 - 1.49	1.5 - 1.99	2.0 - 2.99	3.0 or more
Number of DAs		3,215	63.0%	12.1%	8.3%	9.4%	7.1%
Renters In Core Housing Need	All - In Core Need	161,010	21.0%	15.6%	14.4%	22.1%	26.9%
	Immigrated pre-1991	26,350	19.3%	14.0%	14.9%	23.0%	28.7%
	Immigrated 1991-1995	15,205	17.8%	18.8%	16.1%	24.2%	23.1%
	Immigrated 1996-2001	30,945	16.6%	15.5%	13.6%	21.6%	32.7%
	non-Immigrants	85,275	24.3%	15.6%	14.2%	21.4%	24.5%
Renters INALH	All - INALH	62,545	24.3%	16.1%	14.0%	21.2%	24.4%
	Immigrated pre-1991	9,865	23.6%	13.8%	14.2%	23.0%	25.3%
	Immigrated 1991-1995	5,500	22.2%	23.7%	14.3%	22.2%	17.6%
	Immigrated 1996-2001	11,355	20.5%	14.8%	14.3%	20.4%	30.0%
	non-Immigrants	34,435	26.6%	15.7%	14.1%	20.6%	23.0%

Note: *DAs are classified by their concentration (location quotient) of persons in core housing need relative to the city-wide rate for all renters (8.6%). Core need and INALH totals include non-permanent residents.

Data Source: Statistics Canada, 2001 Census, J3537R (includes CMHC housing indicators and data)

Table 3-5 indicates the role of concentration in the spatial distribution of renters in core housing need and INALH. The concentration of renters in core housing need is revealed by the degree to which they are found in relatively few DAs with relatively high rates of core housing need. Almost half of renters in core need live in DAs that have rates

²² The relatively small size of the INALH population, both city-wide and in individual DAs, precludes conducting a reliable analysis using thresholds based on multiples of city-wide rate. In order to insure the confidentiality of census respondents published data is randomly rounded.

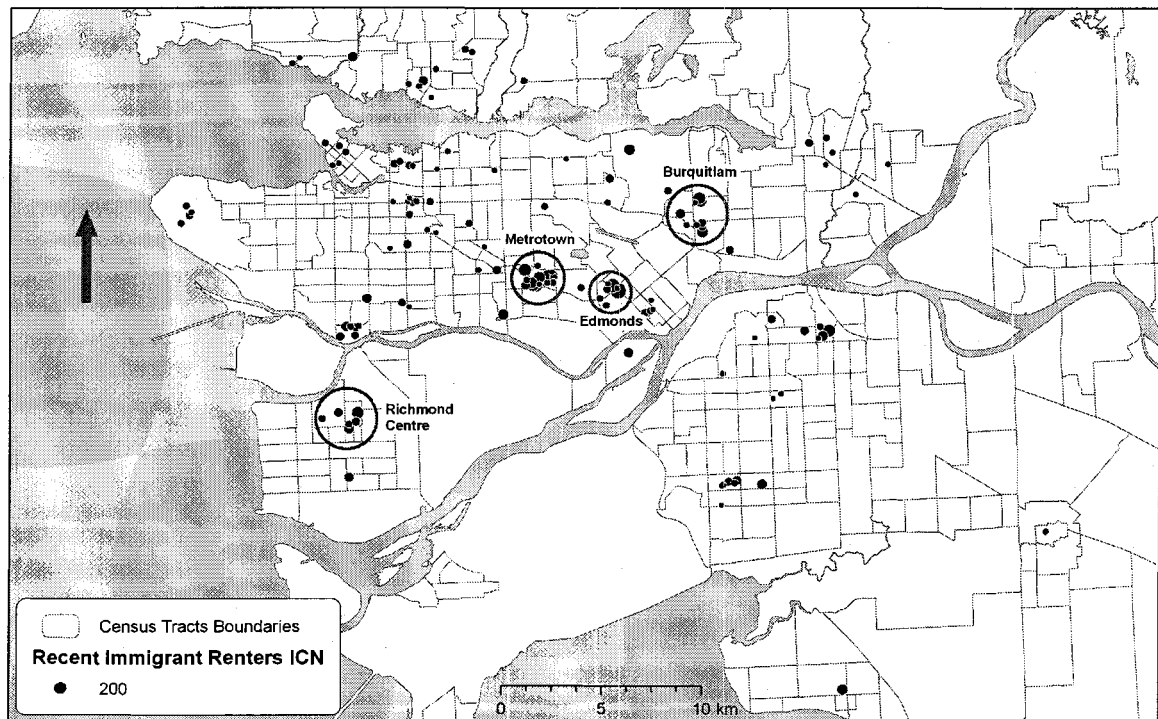
of core need twice the city-wide rate (for renters). Also of note is the relative lack of divergence in the pattern among the sub-groups, although recent immigrants are more concentrated than the other sub-groups in areas where core housing need is more than 3.0 times the city-wide rate. That said, table 3-5 also reveals a sizable minority of renters in core need (and INALH) live in DAs with relatively low incidence rates (less than 1.5 times the city-wide rate). This suggests that more than just 'problem' areas should be considered by policy-makers, as a sizable portion of the problem is geographically dispersed within populations that may be otherwise well-housed. However, the presence of areas where recent immigrants in housing need are concentrated in conjunction with high levels of poverty and deprivation raises the possibility of social isolation and exclusion. The remainder of our analysis focuses on examining spatially concentrated recent immigrants at-risk for homelessness.

3.9 Spatially Concentrated Recent Immigrants At-Risk for Homelessness

To identify areas where recent immigrants at-risk of homelessness are spatially concentrated, figure 3-2 maps DAs where the incidence of renters in core housing need is at least twice the city-wide rate and where a minimum of 50 recent immigrant renters in core need are present. This criteria identified 128 DAs that contain 11,320 recent immigrant renters in core housing need, with 3,785 of them INALH. To put this in context, the DAs identified contain one-third of all recent immigrant renters in core housing need and slightly more than one-third of all recent immigrant renters INALH. Spatially, there is clear clustering evident among the DAs with the largest populations of recent immigrant renters in core housing need. In particular, there are four areas that are

clearly identified in figure 3-3 that are associated with recent immigrant renters in core housing need: Metrotown, Edmonds, Burquitlam and Richmond Centre.

Figure 3-2: Spatially Concentrated Recent Immigrant Renters In Core Housing Need



Notes: DAs identified where they contain at least 50 recent immigrant renters in core housing need and have at least twice the city-rate rate for renters core need (17.2%).

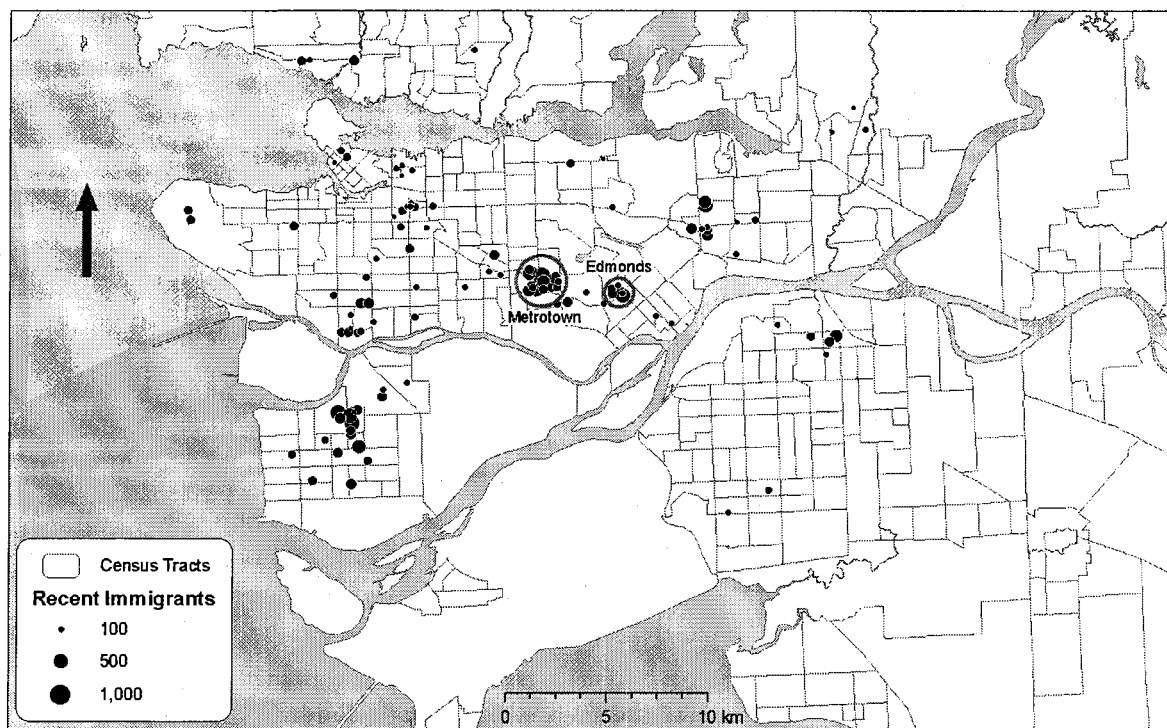
Data Sources: Statistics Canada, Census 2001, J3537R (includes CMHC housing indicators and data).

Figure 3-3 maps areas where concentrations of low-income and recent immigrants intersect. The DAs identified have low income rates of at least 40% and recent immigrant populations at least two times the city-wide rate (17.2%). This criterion identified 111 of 3215 DAs or 3.5%. In the DAs identified, recent immigrants comprised on average 30% of the population and the average incidence of low income was 49.4%.²³ To put this in context several Canadian studies interested in the relationship between immigrants and

²³ Low-income rates published for DAs in electronic profile data refer to persons in low income households.

neighbourhood poverty consider census tracts with rates of low income 40% or higher to be extreme poverty neighbourhoods (Kazemipur & Halli, 1997; Ley & Smith, 1997). Together, figures 3-2 and 3-3 clearly illustrate that concentrations of low income and core housing need associated with recent immigrants tend to coincide in very specific areas of Greater Vancouver.

Figure 3-3: Spatially Concentrated Recent Immigrants and Low Income



Notes: DAs are mapped using proportional circles if their low income rate is 40% or more and the % 'recent immigrants' is twice the CMA proportion (17.2%).

Data Source: Statistics Canada, Census 2001, Electronic Profile Data.

The strong relationship between low income and core housing need make figures 3-2 and 3-3 an excellent starting point for describing the geography of spatially concentrated recent immigrants at-risk for homelessness. The most significant concentrations of core housing are found in two inner suburban communities, Burnaby and Richmond (although one cluster straddles the Burnaby-Coquitlam border mostly on

the Coquitlam side). This is consistent with other Canadian studies that have noted the suburbanization of poverty and immigrants. Concentrations of recent immigrants and low income in Greater Vancouver are typically found in areas where housing is dominated by low-rent apartments. Also of note is the impact of public transit infrastructure. The most significant concentrations identified in figures 3-2 and 3-3 are located in areas well served by public transit, and with the exception of the DAs identified in Richmond, are located along the SkyTrain route.²⁴

A local understanding of the rental housing market in Greater Vancouver helps explain this pattern. Low-cost market rental housing largely exists in two forms: low-rise apartments and secondary (basement) suites. The geography of these two forms of low-cost rental housing could not be more different. Low-rise rental apartments tend to be clustered in localized pockets throughout the city, particularly in the suburban areas, and are strongly associated with relatively high rates of low income. Basement suites on the other-hand are dispersed throughout the city and their occupants' socioeconomic characteristics are largely averaged-out in census areal data by the (usually) more affluent upstairs (and surrounding area) owner households. Studies examining the housing conditions of immigrants and refugees in Greater Vancouver have noted the role of basement suites as a low-cost, albeit often substandard supply of housing (Mattu, 2002; Miraftab, 2000), but relatively little is formally known about them.

²⁴ The SkyTrain is an elevated rapid transit system (an above ground subway system). At present it comprises of two lines, the original (main) line that runs from the downtown core diagonally south-east thru East Vancouver, South Burnaby and New Westminster to North Surrey, and another splits off in New Westminster and runs east-west thru the northern part of Burnaby and east-side of Vancouver connecting back with the main-line before entering the downtown core.

3.10 A Tale of Two Neighbourhoods: Edmonds and Metrotown

To conclude our analysis, two of the areas identified – Edmonds and Metrotown – are examined in greater detail. ‘Zooming in’ on these areas allow us to complement our analysis of census data with results from a postal survey on the housing conditions of renters.²⁵ To better ascertain risk of homelessness among recent immigrants a postal questionnaire was sent to all households living in rental apartments in one DA in each of the Edmonds and Metrotown areas (identified with circles in figures 3-2 and 3-3).²⁶ The two DAs surveyed were chosen using a combination of local knowledge, site visits, and census data, with the aim of selecting DAs where the physical condition of housing and the tenure status of residents within would be reasonably homogeneous. The questionnaire, while close-ended, asked participants about neighbourhood safety, housing conditions, and adequacy of household financial resources. The questionnaire also asked directly about the participants’ living arrangements and household composition, income, housing costs, and immigration status (and if applicable their country of origin and year of arrival in Canada).

A total of 122 households returned completed surveys (out of 588 mailed) for an overall response rate of 20.7%, though response rates and sample sizes differed between the two areas surveyed. As the Metrotown DA contained more rental units than the Edmonds DA and had a somewhat higher response rate, Metrotown is over-represented in the total sample having produced approximately two-thirds of all responses. As the interest here is in better discerning the risk of homelessness at the small-area (i.e.

²⁵ The postal survey was intended to ‘ground-truth’ the census indicators, and while designed carefully, should not be considered a ‘scientific’ survey. The survey was conducted between late November and early December 2004, with most responses arriving during December 2004 and January 2004.

²⁶ DA unique identifiers: 59151259 (Edmonds DA) and 59151314 (Metrotown DA)

neighbourhood) level, the survey results are summarized and discussed for each area separately. Results from both areas are derived from relatively small samples and should be used with caution. They are intended to be used in conjunction with our census-based findings, rather than in isolation. In the discussion that follows, postal survey results are examined in conjunction with census data for the Edmonds and Metrotown areas, focusing specifically on the two DAs surveyed.

Statistical and cartographic profiles of the Edmonds and Metrotown areas, defined using census tracts, provide an overview (see Appendices 3 and 4 for cartographic output). Both areas have large immigrant populations, which at the time of the 2001 census, accounted for more than half of each areas' residents. Moreover, with recent immigrants representing 20.5% and 31% of the population in Edmonds and Metrotown respectively, these two areas are contemporary immigrant receiving neighbourhoods. With regard to risk of homelessness, both areas have rates of low-income and core housing need that are approximately twice their respective incidence in Greater Vancouver as a whole, and contain multiple DAs identified as 'at-risk' in Chapter two.

Moving away from aggregate description, both Edmonds and Metrotown contain important internal socioeconomic variation. This is especially the case in the Edmonds area, which contains considerably more single-family homes than the Metrotown area (as defined by the census tracts examined). Fine-scale analysis (using DAs) reveals socioeconomic difference is related to the distribution of dwelling types (i.e. low-rise apartments, high-rise apartments, townhouses, single family homes, etc.) and tenure (owners vs. renters). The DAs with the highest rates of low-income and core housing

need are associated with low-rise (mostly) rental apartments. These are also the DAs where recent immigrants tend to concentrate within the two areas.

The specific DAs selected were composed of mostly low-rise rental apartments and were similar in terms of low-income, core housing, and recent immigrant composition. The postal survey results reflect this, but also reveal subtle differences between the areas as well. Both the postal survey and the census indicate that approximately half of the population in the DAs surveyed are recent immigrants. The postal survey, however, also allows for more recent arrivals to be discerned. This revealed that 28.6% of Edmonds respondents had immigrated to Canada in the past 2 years, while this was the case for 21.3% of Metrotown respondents.

The postal survey revealed a noticeable difference in the depth of poverty between the two DAs surveyed. While both areas had (according to the 2001 census) similar rates of low-income (approximately 60%) in the survey 71.4% of Edmonds respondents reported monthly household incomes that, annualized, would fall below \$24,000, compared to 52.3% of the respondents from Metrotown. To put this in context \$24,000 is less than half the Vancouver CMA median household income. This may be related to an important difference in immigrant composition with regard to place of birth (and possibly entrance class) between the two DAs. One-third of the Edmonds respondents who identified themselves as immigrants came from African countries that produce refugees, whereas Metrotown respondents who identified themselves as immigrants predominantly came from Asian countries.

While the postal questionnaire did not ask whether participants were refugees, the African responses to the survey's housing questions echo what other studies on refugee

housing experiences have reported (see Mattu, 2002; Miraftab, 2000). Most African respondents were living in overcrowded housing (i.e. more than one person per room), and half rated the physical condition of their housing as poor. The difference in the depth of poverty between the two areas is also highlighted in the responses to another question asking whether the respondents had enough money for food, clothing, and transportation after paying rent.²⁷ Respondents could answer yes; usually; sometimes; or no. In response 47.5% of Metrotown respondents answered yes, while in contrast only 23.8% of Edmonds respondents did. Equally significant, 47.6% of Edmonds respondents answered no or sometimes. In combination with the very low incomes reported by survey participants this indicates a sizeable segment of the Edmonds DA's population are paying an unsustainable amount of their income on shelter costs (rent) leaving them at-risk of homelessness. By comparison the Metrotown DA surveyed exhibits a more moderate level of disadvantage (relative to the Edmonds DA). This finding implies that while risk for homelessness is present in both locations, the problem is more acute in the Edmonds DA.

3.11 Conclusion

The geography of recent immigrants at-risk for homelessness in Greater Vancouver provides additional empirical evidence that contemporary immigrants do not conform to the patterns of settlement described in traditional models. Instead, analysis indicates that spatially concentrated recent immigrants at-risk for homelessness are

²⁷ Respondents could answer Yes; Usually, Sometimes; or No. The Edmonds responses were Yes - 23.8%; Usually - 26.2%; Sometimes - 19%; No - 28.6%. The Metrotown responses were Yes - 47.5%; Usually - 28.8%; Sometimes - 10%; No - 11.3%. Percentages may not add up to 100% due to non-responses to this question.

located, not in low rent inner city areas, but in low rent suburban areas. This analysis, however, does not adequately describe the spatial dimensions of recent immigrants at-risk for homelessness. Rather than identifying a basic pattern that comes into focus as analysis is conducted at finer spatial resolution, complexity is revealed.

The rental housing market in Greater Vancouver acts to both concentrate and disperse households with the most acute housing need. Renters at-risk for homelessness are generally found either concentrated in areas with low-rise rental apartments or dispersed in areas with low or moderate rates of housing need, possibly explained by the existence of basement suites, an important area for further research. The role of rental housing in concentrating or dispersing poverty has not been thoroughly examined, but clearly impacts studies that rely on analysis of areal census data. Social area analysis using census data is affected by the modifiable areal unit problem (MAUP), which holds that changing the scale and/or configuration of the areal units employed produces different analytical results (Openshaw, 1984).

Our findings suggest that studies or policies that focus too narrowly on spatially concentrated poverty, economic disadvantage, or housing need risk ignoring a sizable portion of the population at-risk of homelessness. Examining core housing need as well as INALH (in core housing need and spending at least half of household income on shelter costs) by tenure and immigrant status revealed that using these indicators to identify “economic” risk of homelessness can be problematic for recently arrived immigrants because of the exclusion of households without income or whose shelter costs exceed household income.

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4 CONCLUSION

4.1 Summary and Discussion

The primary aim of this research was to articulate the spatial dimensions of immigrants at-risk for homelessness in Greater Vancouver. Homelessness among new immigrants, especially refugees, is known to be a problem (Hyndman & Friesen, 2002) but its extent and spatial nature remain relatively unexplored in the Greater Vancouver context. Other studies have examined the housing experiences of immigrants and refugees in the Greater Vancouver area (see Mattu, 2002; Miraftab, 2000). These studies, however, employed research methods (focus groups, interviews and surveys) that while extremely apt for identifying the broad array of housing issues faced by immigrants and refugees (and provide visceral accounts of the housing conditions and living situations experienced by the research participants) offer a very limited spatial perspective and little guidance as to the overall extent of the problems identified. Similarly, the Longitudinal Survey of Immigrants to Canada (LSIC) offers a richly detailed perspective on the settlement process, including housing related issues, but it only offers coarse geographic resolution. Despite limitations, Canadian census data offers the best combination of comprehensive variable coverage and extensive (and detailed) spatial coverage for this research.

Homelessness is extremely difficult to find, measure and remedy. Among immigrants and refugees homelessness may be expressed in ways other than presence among the 'street' homeless population. For immigrants and refugees, homelessness

more often takes the form of 'hidden' homelessness characterized by involuntary 'doubling-up' or sharing housing accommodation; in other cases it is revealed by unsustainable rent burdens (Hyndman & Friesen, 2002; Mattu, 2002). The common thread is precarious housing tenure that ultimately translates into increased risk of homelessness. There is no precise way to identify and map 'hidden' homelessness using secondary datasets like the 2001 Canada census. Instead, borrowing from a term used in population health research, housing need (along with poverty and deprivation) represent the 'sentinel conditions' for 'hidden' homelessness to exist. In this case, sentinel conditions refer not to the existence or extent of a problem, but to environments where the phenomenon is most likely to emerge.

This research employed Canada Mortgage and Housing Corporation's (CMHC) core housing need model (see CMHC, 1991) to identify, in conjunction with traditional indicators of deprivation and poverty, 'at-risk' areas. An area-based approach is effective for finding "problem areas" or in this case neighbourhood-scale areas where risk of homelessness is concentrated along with other markers of socioeconomic disadvantage. Using high-resolution dissemination area (DA) level census data revealed several pockets where multiple DAs were identified as 'at-risk'; a small number of which contained significant recent immigrant populations. Two such areas were selected for further study: Edmonds and Metrotown. Both areas are located in Burnaby (an inner suburb of Vancouver) and were examined in greater detail using census data augmented with complementary information obtained from a postal survey conducted in one DA for each area, along with other contextual information gleaned from site visits and ancillary high-

resolution data such as (cadastral) property assessment data and remotely-sensed imagery.

‘Zooming-in’ and examining two ‘at-risk’ areas up-close confirms that the GIS-based approach does identify neighbourhood-like areas where immigrants at-risk for homelessness are a significant presence. The postal survey was an aid in ‘ground-truthing’ the effectiveness of the census-based indicators. It was also used in combination with other contextual information to discern subtle (and not-so subtle) differences between the two areas surveyed – differences that were not easily identified by the generalized indicators. This suggests caution should be exercised when interpreting the results of area-based socioeconomic analysis, as key variables (or composite indicators) often do not provide sufficient nuance to distinguish meaningful differences between similarly identified areas. Detailed examination of specific census areal units may help reveal certain differences between areas, but for specific social phenomena like deprivation or risk of homelessness, more direct information is required to clarify whether the indirect census-derived indicators used function adequately as a proxy for the phenomena itself.

In addition to identifying ‘at-risk’ areas and their spatial distribution in Greater Vancouver, the research also sought to articulate the spatial dimensions of immigrants at-risk for homelessness. This necessarily involves more than identifying those immigrants who reside in areas where poverty, deprivation and housing need are concentrated, but also those who exhibit the characteristics that indicate increased risk for homelessness but reside in areas where the incidence of housing need is moderate or low. This allows the relative importance of concentration and dispersion to be better understood, and reduces

the tendency to over-emphasize “problem areas” when a significant proportion of those at-risk for homelessness live dispersed in areas where the population is generally well-housed and not at-risk for homelessness. This point is particularly important in Greater Vancouver, where the secondary rental market (i.e. basement suites) represents an increasingly important supply of affordable low-cost rental housing, but is dispersed throughout the city. Impoverished or at-risk residents in these areas are generally averaged-out in areal data, potentially rendering them invisible when ‘spatially-situated’ public services or policy solutions are considered.

4.2 Research Contribution

The research presented in this thesis makes several important research contributions. Most significantly, it addresses an important research gap. Policy-makers need to better understand the housing situations of immigrants because, along with finding employment, accessing suitable housing is an important part of the settlement and integration process (Murdie & Teixeira, 2003). While existing studies have examined the intraurban spatial patterns of immigrants, poverty and deprivation in Canada’s largest cities (Kazemipur & Halli, 1997; Ley & Smith, 1997, 2000; Smith, 2004), little research has explored the spatial dimensions of immigrant housing need or risk of homelessness, especially outside of Toronto. The work presented addresses this research gap (in part), by examining the spatial distribution of housing need and risk of homelessness in Greater Vancouver by immigrant status (including period of arrival).

Equally important from a socioeconomic GIS perspective is the examination of the role of census areal unit choice on statistical and cartographic results. Specifically, the analysis approach developed in Ley and Smith (2000) for identifying multiply deprived

census tracts in Canada's three largest cities (Montreal, Vancouver and Toronto) was replicated, for Greater Vancouver only, using 2001 census data at both the census tract and dissemination area scales. Shifting the scale of analysis from census tracts to dissemination areas produced significantly different results in terms of the number of areas identified and their spatial articulation. At the dissemination area level, in particular, multiply deprived areas are more numerous and less spatially contained than at the census tract level. This is particularly evident when more extreme overlap is examined (i.e. areas identified by three or four - out of four - indicators). Similar observations were made when spatial patterns of housing need were examined using both census tracts and dissemination areas.

These findings were not unexpected. The impact of scale and boundary delineation on analytical results stemming from analysis of areal census data is known as the modifiable areal unit problem (see Openshaw, 1984) and remains an unresolved issue that has long preoccupied researchers interested in spatial analysis (Fotheringham, Brunson, & Charlton, 2000). The approaches developed in this thesis do not offer a solution to this seemingly intractable problem, though the suggestion that high-resolution data helps mitigate the problems associated with areal data analysis is incorporated in the approaches presented. Examining the role of census geography stems from the exploratory stages of this research where it became clear that census tracts did not adequately capture the often highly localized concentrations of housing need, poverty and/or deprivation. Most studies examining the geographies of immigrant settlement or socioeconomic status have paid relatively little attention to the impact of census geography in analytical results.

4.3 Future Directions

The approach developed in this thesis is innovative in that it combines the results drawn from extensive spatial analysis using high-resolution areal census data with primary data collected from households producing a more richly-contextualized - though still spatial - understanding of risk for homelessness amongst immigrants. The primary data was collected to extend the overall analysis by 'ground-truthing' the census-based results, while offering a way to illuminate the 'blind-spots' inherent to a GIS-based approach. Yet, because the choice of survey areas/participants was directed by the results of the GIS analysis the ability to connect the primary data to specific types of areas is retained. The survey offers a more detailed perspective than census data analysis alone, but data was only obtained from a relatively small number of respondents and is specific to the two areas chosen.

Ideally a future implementation of this approach could make a number of refinements. Two possible refinements that would improve the robustness of the statistical profile generated would be, (i) where clustering of 'at-risk' areas is evident more DAs could be surveyed to provide larger sub-area samples, and (ii) survey a broader cross-section of area-types to provide a more complete picture of risk of homelessness across areas that differ socially, culturally and economically. Beyond improving the postal survey itself, a valuable extension of the research approach developed in this thesis, would be extending primary data collection to include qualitative methods. While the postal survey asked direct questions about the housing and financial situations of respondents, an approach like semi-structured interviews, would allow participants more of a role in revealing the issues they consider important, as well as

allow for further explanation and clarification of their survey responses, yielding greater insights into the housing experiences/conditions in the areas surveyed.

Finally, the incorporation of high-resolution 'life-styles' data in future studies would offer an additional perspective for distinguishing small-area (i.e. neighbourhood) scale socioeconomic difference. Harris and Longley (2002) question the assumed appropriateness of census geography for identifying deprivation or measuring intraurban socioeconomic differences. They believe that academic researchers and policy-makers should follow the lead of business and pragmatically use 'life-styles' data gleaned from warranty forms, customer loyalty cards and marketing surveys for spatial analysis (Longley, 2003; Longley & Harris, 1999).

A complete shift from census data at this point is impractical, and as O'Sullivan (2004) points out 'life-styles' data are not freely available, are statistically problematic (the nature of their data collection precludes them being representative samples), and suffer from variable data quality. Combined these factors lead O'Sullivan to conclude the data, while useful, is too unreliable for many types of analysis and modeling. Nevertheless, studies of social exclusion and disadvantage are hampered by a lack of data that directly measures material deprivation (see Townsend, 1987) or consumption poverty (see Pendakur, 2001) and rely on low-income as a surrogate measure. 'Life-styles' data offers high-resolution alternative, using consumption patterns, that might help illuminate possible differences between areas identified as low-income, deprived and/or in housing need. For immigration-related research in Greater Vancouver this might be especially useful for discerning areas where high rates of low-income indicate the

presence of asset-rich, but income-poor business/investor class immigrants, rather than poverty.

4.4 Work Cited

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APPENDICES

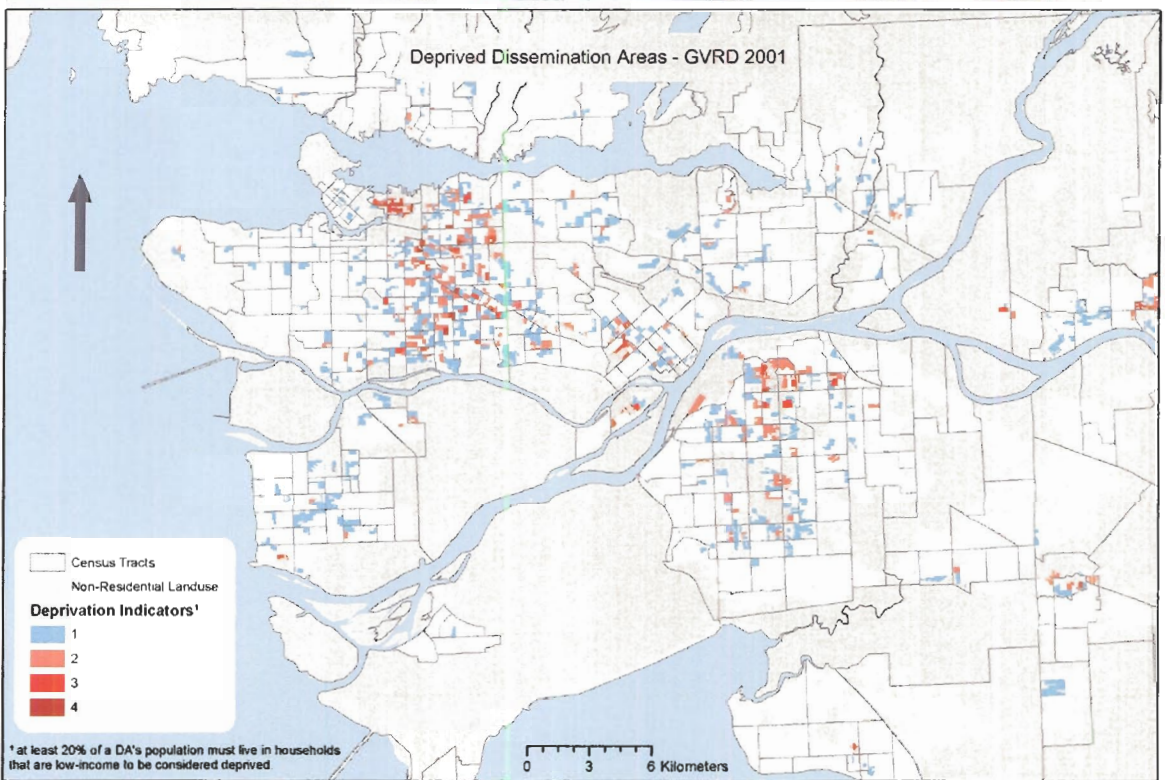
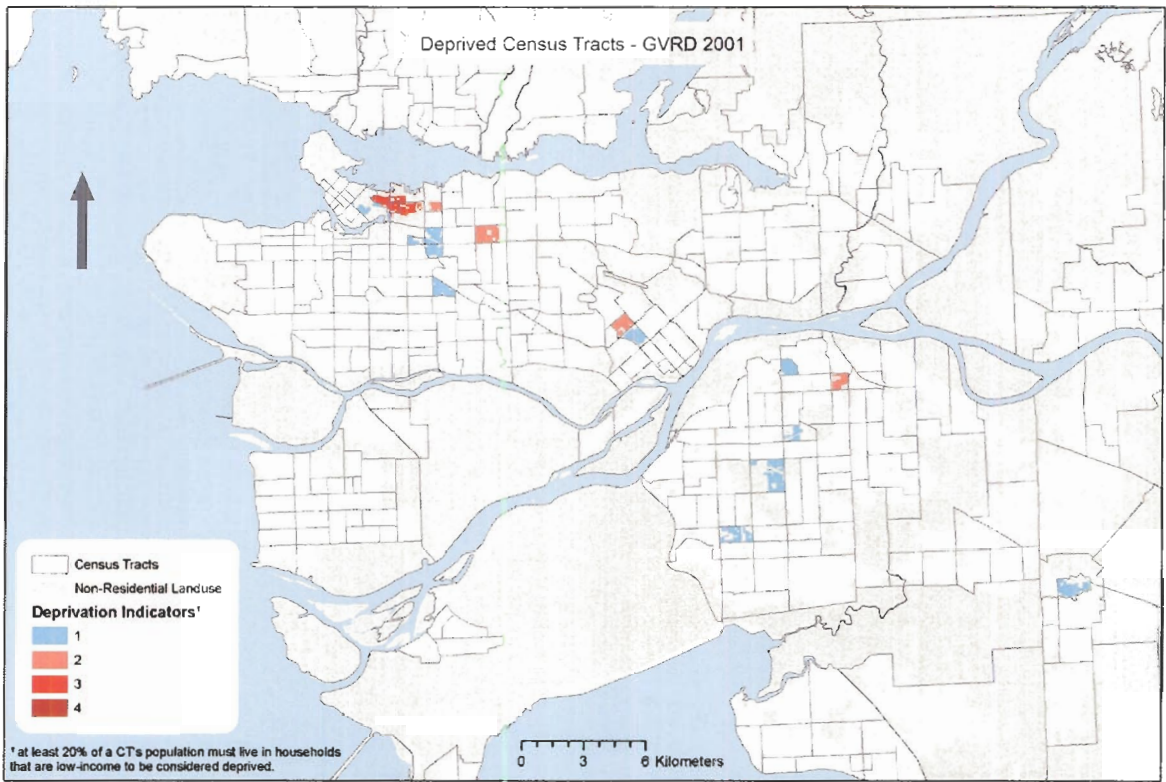
Appendix 1: Deprived CTs and DAs

Deprived Census Tracts and Dissemination Areas using Urban Underclass Approach ²	% Female Lone Parent	Male Unemployment Rate	% with No High School Diploma	% of Area Income from Govt. Transfer Payments
CMA-wide	8.5	7.3	21.4	9.6
CT Median	8.6	6.8	20.6	9.7
DA Median	8.2	6.9	20.2	9.4
2x CT Median	17.3	13.6	41.2	19.4
2x DA Median	16.3	13.8	40.4	18.8
No. CTs 2x CT Median	2	14	9	10
% of CTs (n=386)	0.5	3.6	2.3	2.6
No. DAs 2x DA Median	370	479	236	331
% of DAs (n=3255)	11.4	14.7	7.3	10.2
	1 Indicator	2 Indicators	3 Indicators	4 Indicators
Number of CTs (2x CT Median)	11	4	4	0
Deprived CTs ¹	10	5	5	0
Number of DAs (2x DA Median)	737	218	65	12
Deprived DAs ¹	451	168	61	10

¹ the incidence of low-income must be at least 20% of population

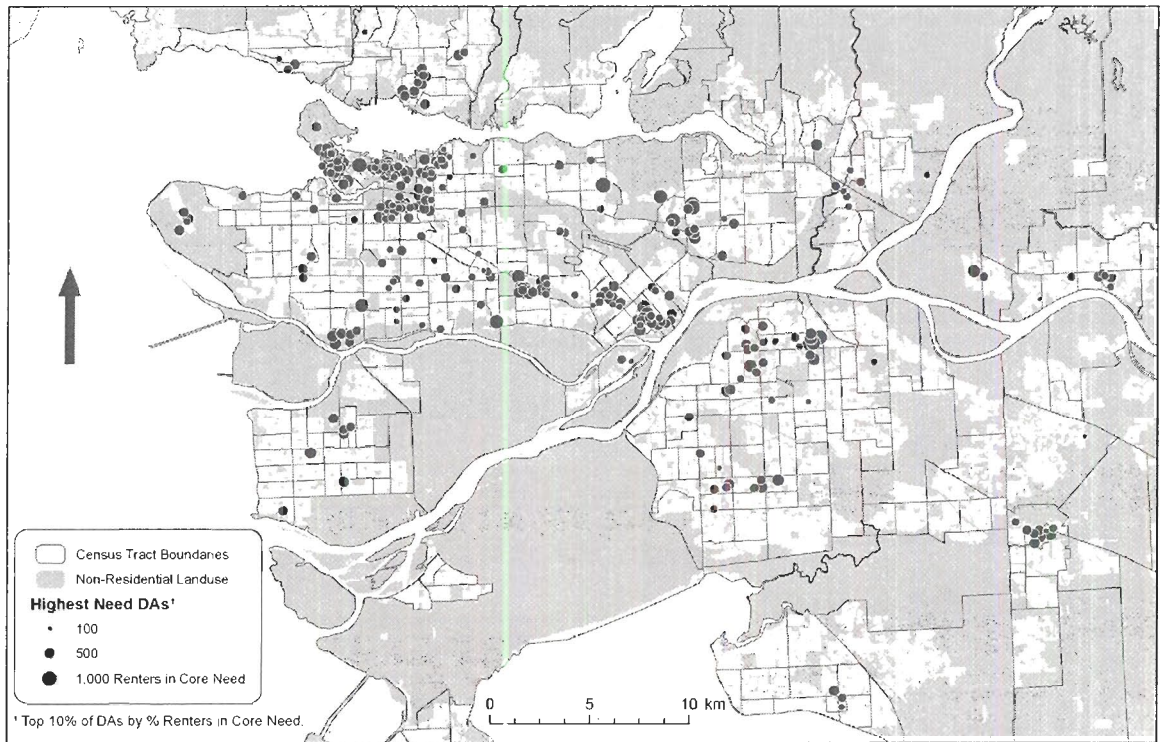
² urban underclass approach as defined in Ley and Smith (2000)

Data Source: Statistics Canada, 2001 Census, Electronic Profile data.



Data Source: Statistics Canada, 2001 Census, Electronic Profile data

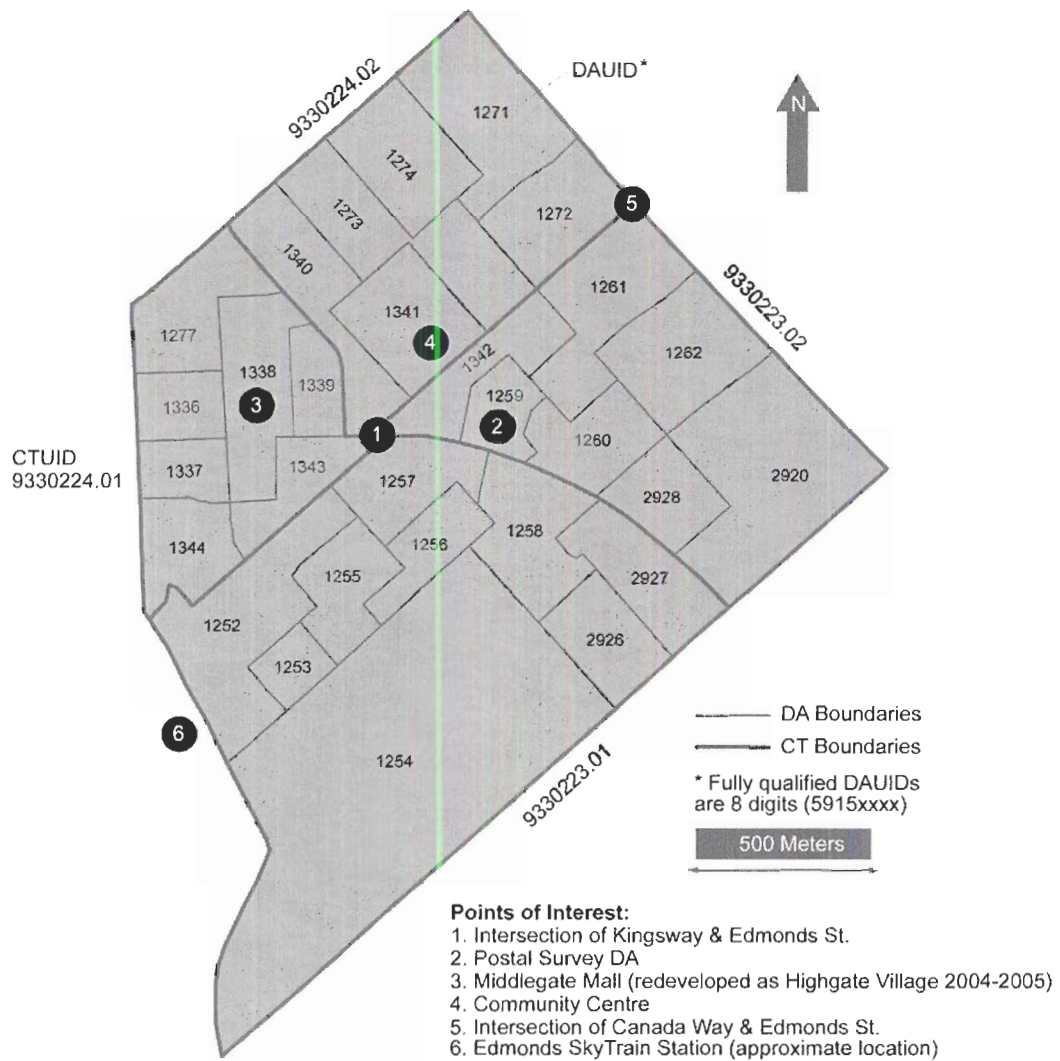
Appendix 2: Highest Core Need DAs



Data Source: Statistics Canada, 2001 Census, Custom Table J3537R (Includes CMHC housing indicators and data).

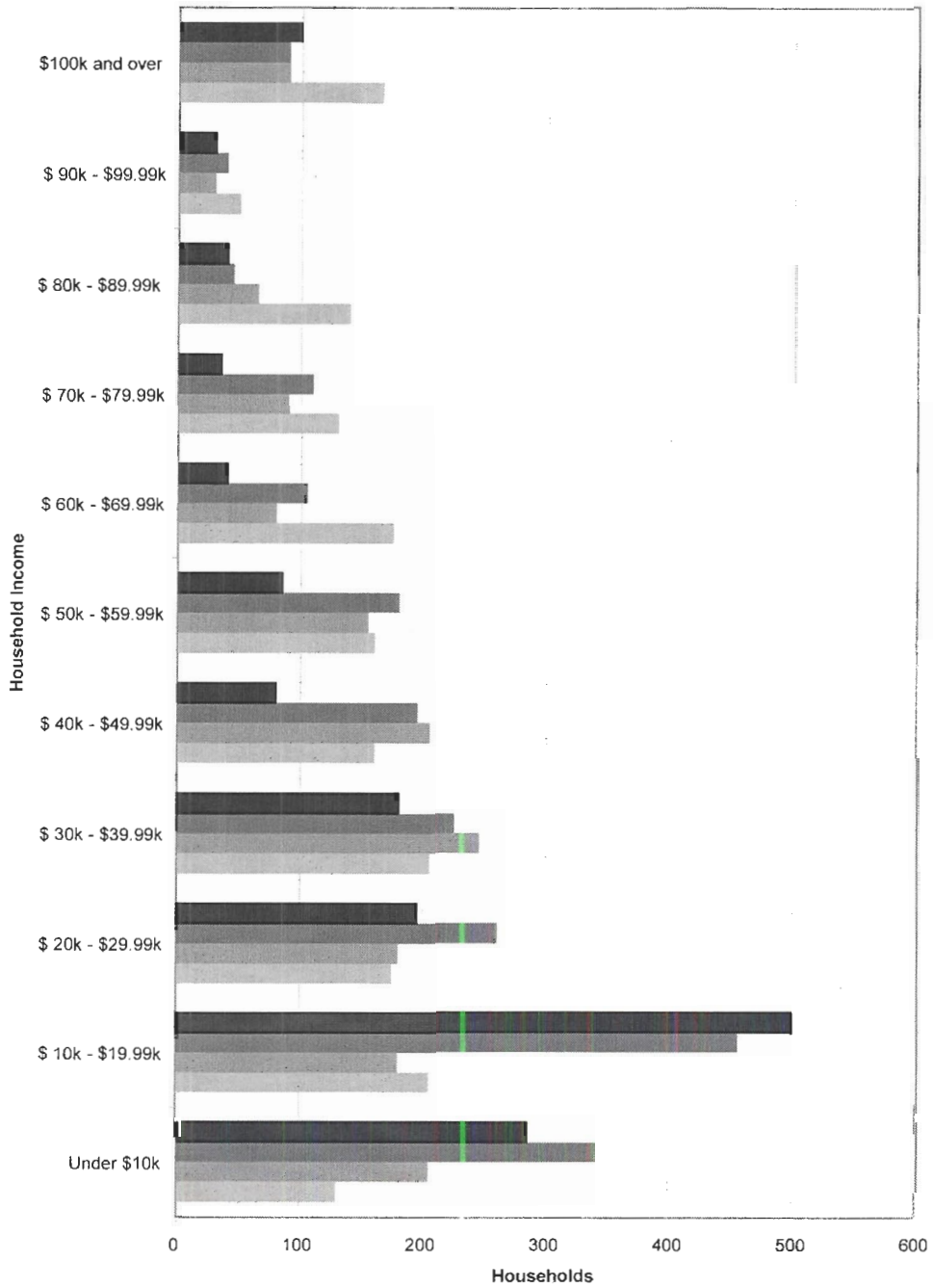
Appendix 3: Edmonds Area Census Profile

Edmonds Area: Census Unique Identifiers and Points of Interest



Data Source: Statistics Canada, 2001 Census data.

Edmonds Census Tract Income Distributions



Data Source: Statistics Canada, 2001 Census, Electronic Profile data

Edmonds Area: DA Census Profile - Income Characteristics



Data Source: Statistics Canada, 2001 Census, Electronic Profile Data. Note: income skewness was calculated as follows: $(\text{average} - \text{median household income}) / \text{median household income} * 100$

Edmonds Area: DA Census Profile - Selected Characteristics



Data Source: Statistics Canada, 2001 Census, Electronic Profile Data

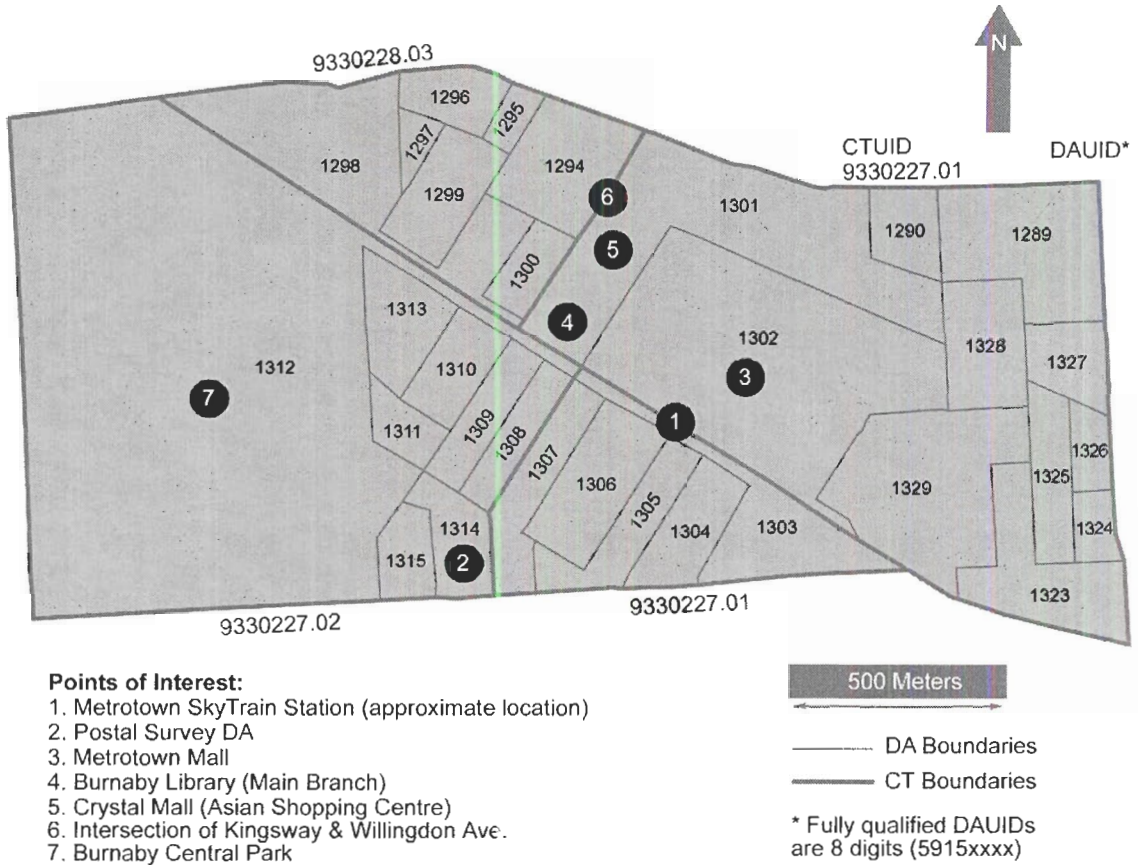
Edmonds Area: DA Census Profile - Housing Need



Data Sources: Statistics Canada, 2001 Census, Custom Table J3537R (includes CMHC housing indicators and data).

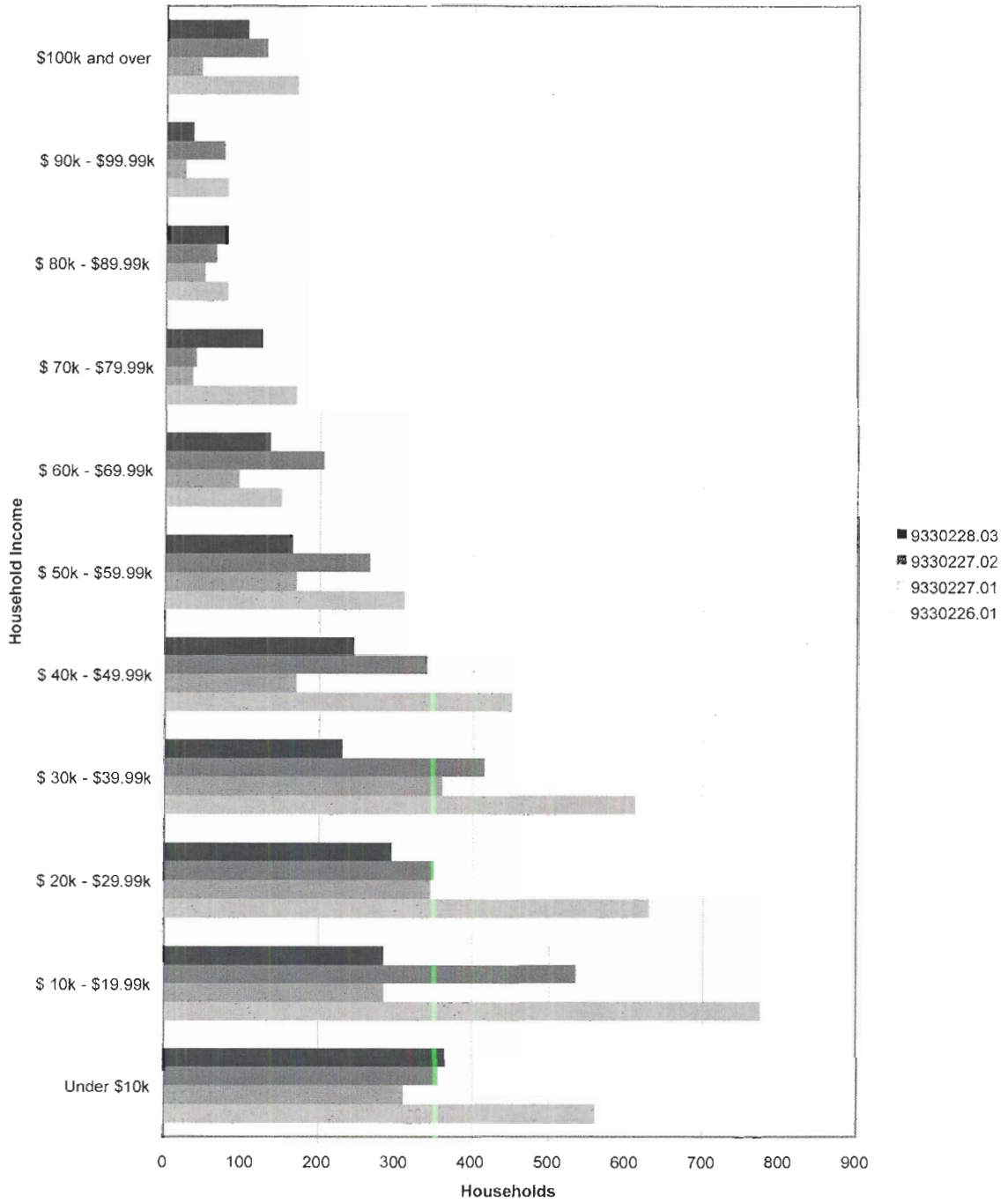
Appendix 4: Metrotown Area Census Profile

Metrotown Area: Census Unique Identifiers and Points of Interest



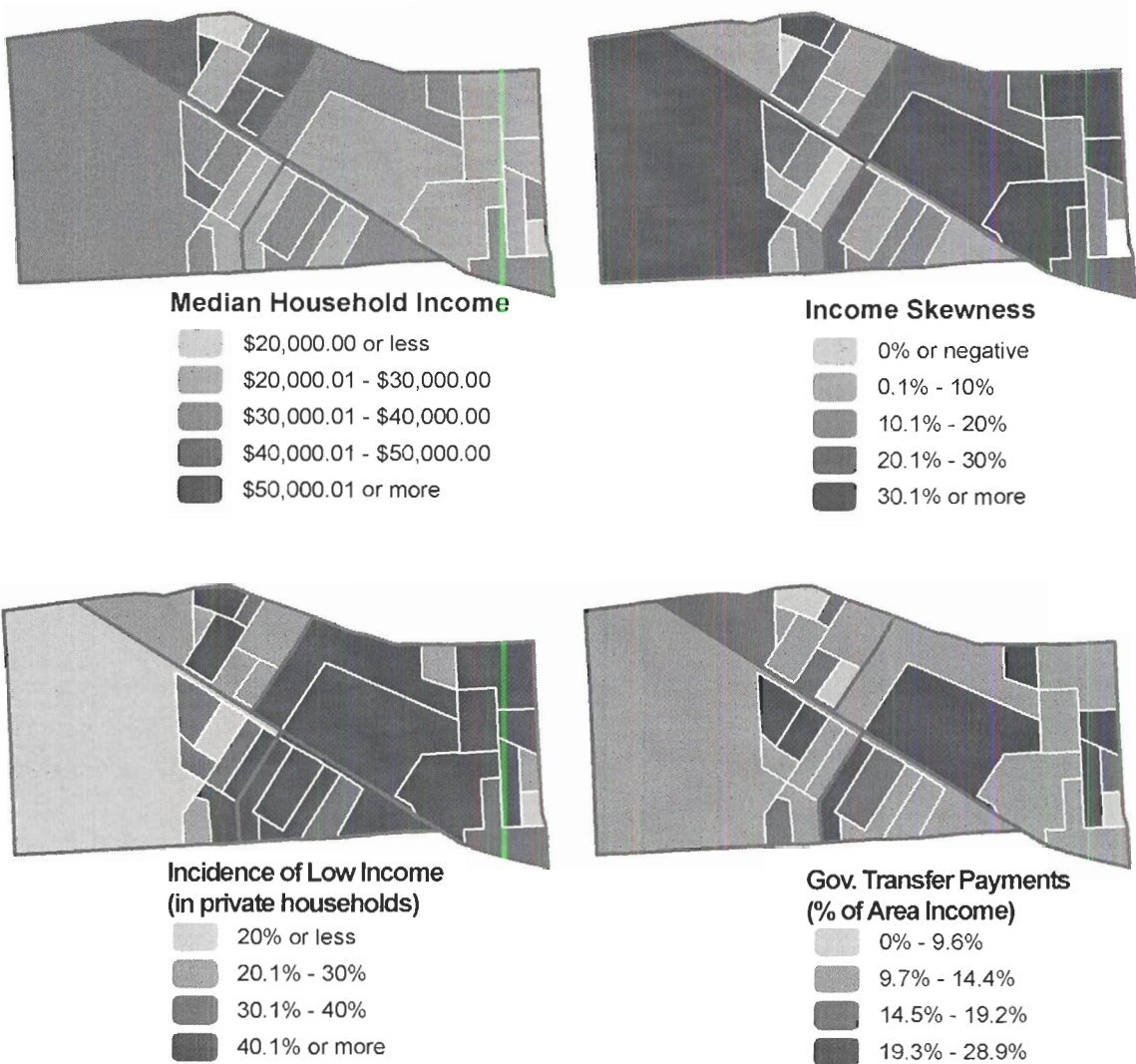
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Metrotown Census Tract Income Distributions



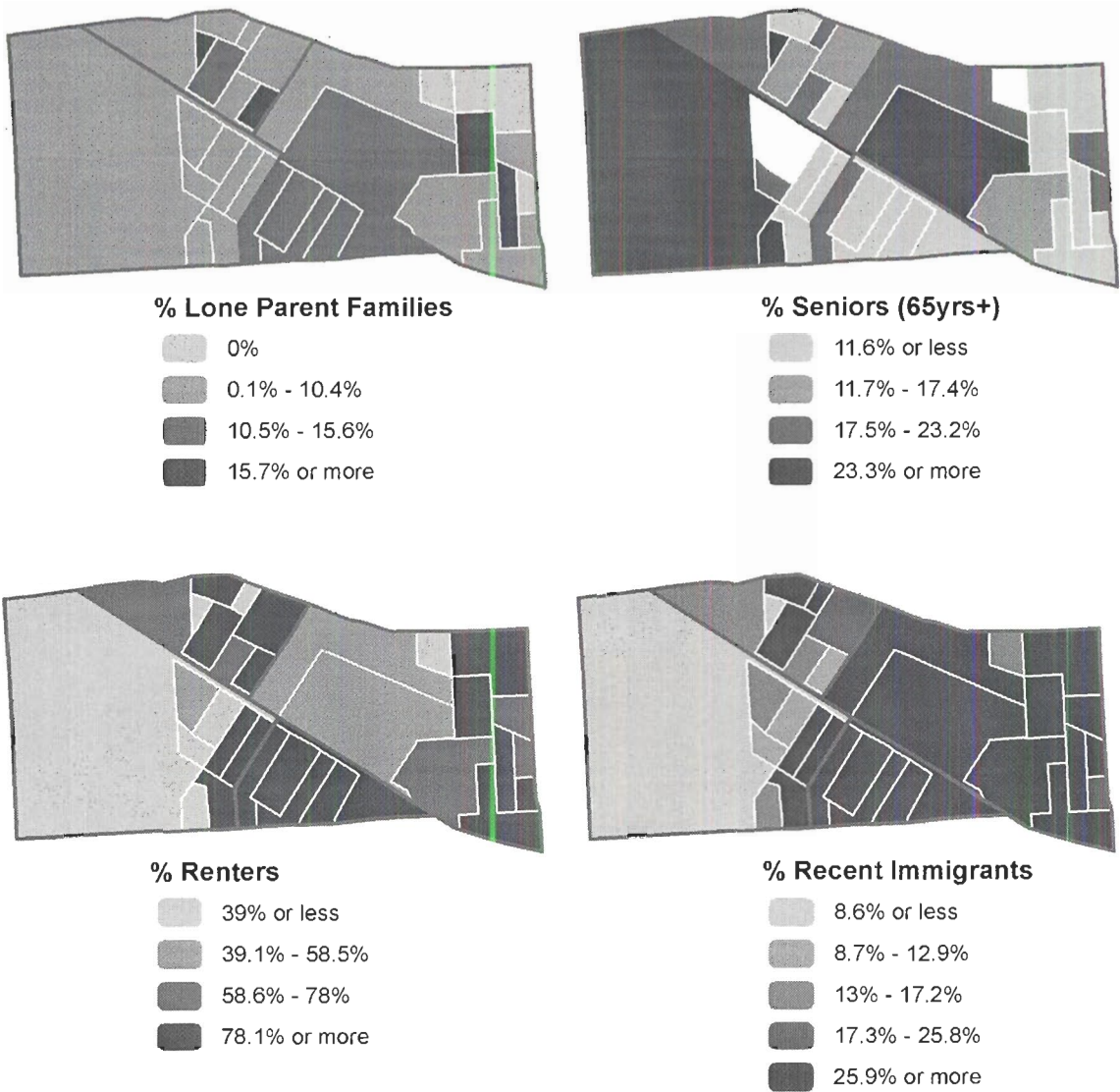
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Metrotown Area: DA Census Profile - Income Characteristics



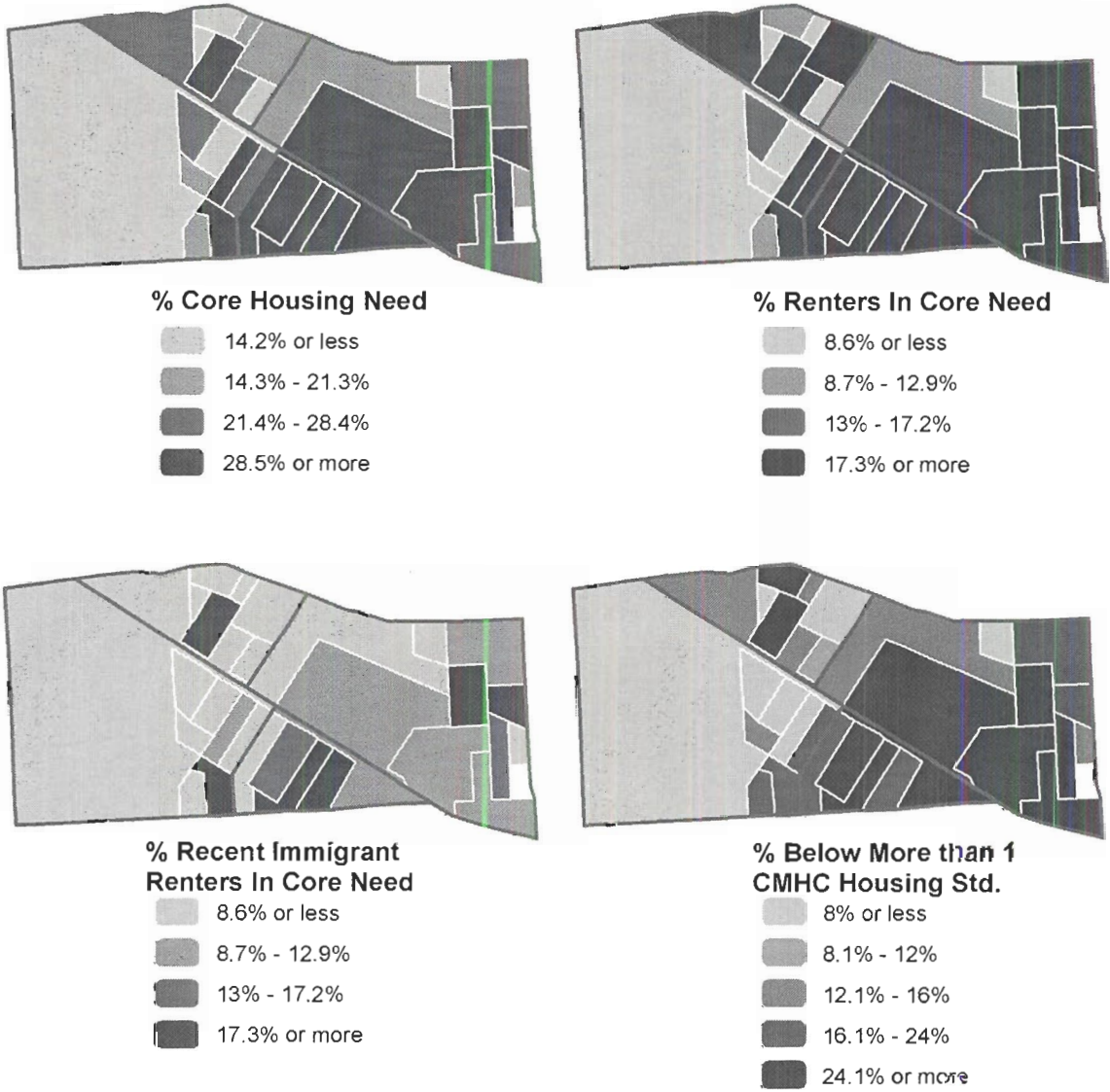
Data Source: Statistics Canada, 2001 Census, Electronic Profile Data. Note: income skewness was calculated as follows: $(\text{average} - \text{median household income}) / \text{median household income} * 100$

Metrotown Area: DA Census Profile - Selected Characteristics



Data Source: Statistics Canada, 2001 Census, Electronic Profile Data.

Metrotown Area: DA Census Profile - Housing Need



Data Sources: Statistics Canada, 2001 Census, Custom Table J3537R (includes CMHC housing indicators and data).

Appendix 5: Postal Survey Questionnaire

Housing Conditions Survey

Please select the best answer for each question

- 1) How would you rate the maintenance of your apartment? Circle one:
 - a. Good condition
 - b. Acceptable condition (okay)
 - c. Poor condition (substandard)
- 2) Do you consider your apartment building safe? Circle one: Yes or No
- 3) Do you consider your neighborhood safe? Circle one: Yes or No
- 4) Do you consider the size of your apartment large enough? Circle one: Yes or No
 - a. How many people live in your apartment?
Circle one: 1 2 3 4 5 6 7 8 Other - specify...
 - b. How many rooms are in your apartment? (excluding the kitchen and bathrooms)
Circle one: 1 2 3 4 5 6 Other - specify...
- 5) How much do you pay monthly for rent? Circle one of the following:

a. Below \$500	f. \$900-999
b. \$500-599	g. \$1000-1099
c. \$600-699	h. \$1100-1199
d. \$700-799	i. \$1200-1300
e. \$800-899	j. Over \$1300
- 6) What is your monthly household income? Circle one of the following:

a. Under \$800	g. \$1800-1999
b. \$800-999	h. \$2000-2199
c. \$1000-1199	i. \$2200-2399
d. \$1200-1399	j. \$2400-2599
e. \$1400-1599	k. \$2600-2799
f. \$1600-1799	l. Over \$2800

7) Do you have enough money for food, clothing, and transportation after paying rent?

Circle one: Yes Usually Sometimes No

8) Do you share your apartment with extended family members? Circle one: Yes or No

If yes,

a. What relation are the extended family members to you?

Circle those that apply:

- | | |
|--------------------------|----------------------------|
| i. Parents | v. Adult children |
| ii. Grandparents | vi. Grandchildren |
| iii. Uncle(s) or Aunt(s) | vii. Niece(s) or Nephew(s) |
| iv. Adult siblings | |

b. How many extended members live in your apartment?

Circle one: 1 2 3 4 5 Other – please specify...

c. Is this expected to be a short-term or long-term living arrangement?

Circle one: Short-term (0 to 6 months) Long-term (More than 6 months)

9) Do you share your apartment with person(s) that are not family members?

Circle one: Yes or No

If yes,

a. How many non-family members live in your apartment?

Circle one: 1 2 3 4 5 Other – please specify...

b. Is this expected to be a short-term or long-term living arrangement?

Circle one: Short-term (0 to 6 months) Long-term (More than 6 months)

10) Were you born outside Canada? Yes or No

If yes,

a. Where were you born? (Provide the name of the Country Only)

.....

b. What year did you come to Canada?

.....

Thank you for your participation. Please return the completed survey (this sheet), the consent form, and your address (if you would like a \$5 Save-On Foods gift certificate). Your identity will remain confidential. Thanks again for your participation.